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The Amphipoda (Crustacea) of Madang Lagoon: Lysianassidae, Opisidae, Uristidae, Wandinidae and Stegocephalidae *

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ABSTRACT. This is the first comprehensive study of lysianassoid and stegocephaloid amphipods from the north coast of Papua New Guinea. The study reports 19 species in 11 genera in five families living in several discrete habitats in the Madang Lagoon and Astrolabe Bay. In the Lysianassidae one new genus and eight new species (*Paralysianopsis mazamoz* n.sp., *P. padoz* n.sp., *Rhinolabia elliotti* n.sp., *R. jebbi* n.sp., *R. paeowai* n.sp., *Riwo mizeui* n.gen., n.sp., *Tryphosella astrolabensis* n.sp. and *T. wongada* n.sp.) are described. These are the first records of *Paralysianopsis* and *Rhinolabia* from the Indo-Pacific. In the Opisidae n.fam. one new species (*Podoprionella dagadugaban* n.sp.) is described. This is the first record of *Podoprionella* from the Indo-Pacific. In the Uristidae the new genus *Nagada* and three new species (*Nagada garagassi* n.sp., *N. papua* n.sp. and *N. uwedoae* n.sp.) are described. Two new species of Stegocephalidae (*Andaniotes bagabag* n.sp. and *A. karkar* n.sp.) are described. Species diversity was greatest among scavenging lysianassoids. Five lysianassoid genera (*Ichnopus, Nagada, Paralysianopsis, Rhinolabia* and *Tryphosella*) represented by eleven species (*Ichnopus malpatun* Lowry & Stoddart, 1992, *Nagada garagassi, N. papua, N. uwedoae, Paralysianopsis mazamoz, Rhinolabia elliotti, R. paeowai, R. jebbi, Riwo mizeui, Tryphosella astrolabensis* and *T. wongada*) and both *Andaniotes* species were only collected in baited traps and are considered to be at least opportunistic scavengers. *Podoprionella dagadugaban* was also collected in a trap, but it is suspected of being an epiparasite of fish. Three species (*Paralysianopsis padoz, Riwo mizeui* and *Tryphosella wongada*) were taken among living coral inside and outside the lagoon. Five species (*Nagada garagassi, N. papua, N. uwedoae, Rhinolabia jebbi* and *Tryphosella astrolabensis*) were found in deep water outside the lagoon, probably on sand and mud bottoms. Three free-living species (*Paralysianopsis padoz, Parawaldeckia lowryi* Myers, 1985 and *Pseudambasia acuticaudata* (Ledoyer, 1984)) and two suspected commensal species (*Pseudocyphocaris gosema* Lowry & Stoddart, 1990 and *P. lobata* Lowry & Stoddart, 1990) occurred among coral rubble. No lysianassoid species was found in seagrass beds or living among sponges, but *P. gosema* and *P. lobata* are suspected of living with the tunicate *Didemnum molle*. Little is known of the biogeographic affinities of this fauna because so little is known from other parts of the Indo-Pacific. However, *I. malpatun* also occurs in New Caledonia, *Pseudambasia acuticaudata* also occurs in New Caledonia and the Austral Isles, and *Parawaldeckia lowryi* also occurs in Fiji and Tonga.

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Contents

Introduction

During February and March of 1991 and 1992 one of us (JKL) participated in an international project to study the amphipods of the Madang Lagoon and adjacent areas. An account of the natural history (geological history and the physical and biological oceanography) of the lagoon is given in the first paper of this volume (Jebb & Lowry, 1995). As part of a study on the scavenging crustaceans in the lagoon, about 160 traps were set in the most obvious habitats inside and outside the lagoon. This method of sampling was very productive. As well as cirolanid isopods and cypridinid ostracodes, 12 species of lysianassoid and two species of stegocephalid amphipods were collected in the traps. Five more lysianassoid species were found free-living or as commensals within the lagoon. This paper presents the first comprehensive taxonomic account of lysianassoid amphipods from an area of Papua New Guinea. To put this faunule into perspective a resumé of the taxonomic status of tropical, shallow-water, Indo-West Pacific lysianassoids is presented.

Ecology

Lysianassoids appear to play subtle roles in the ecology of the Madang Lagoon area. They are uncommon in most habitats. Only five non-scavenging species (*Paralysianopsis padoz* n.sp., *Pseudambasia acuticaudata* (Ledoyer), *Parawaldeckia lowryi* Myers, *Pseudocyphocaris gosema* Lowry & Stoddart and *P. lobata* Lowry & Stoddart) occur among the coral rubble and none of these is common.

Lysianassoid scavengers are more diverse. Eleven species occur inside the lagoon or on the outer barrier reef face. However, in traps they are often found with cirolanid isopods which are more numerous and often larger. Whether they compete directly for food resources is unknown.

Four of the five scavengers which occur in the lagoon (*Nagada uwedoae* n.sp., *Rhinolabia elliotti* n.sp., *Riwo mizeui* n.sp. and *Tryphosella wongada* n.sp.) also occur at similar depths on the outer face of the barrier reef. *Rhinolabia elliotti* occurs inside the lagoon on sandy mud bottoms below 27 m depth and on the outer face of the barrier reef on sandy bottoms at similar depths. *Riwo mizeui* is most abundant on the tops and sides of reefs among living coral in the lagoon. It occurs in low numbers among coral outcrops on sandy mud and coarse sand bottoms from 17 to 50 m inside the lagoon and on the face of the outer barrier. *Tryphosella wongada* occurs abundantly on hard and soft coral bottoms, often near sand patches, in the outer lagoon and on the face of the outer barrier between 2 and 17 m depth. *Paralysianopsis mazamoz* n.sp. was found once on the back slope of the outer barrier on unconsolidated rubble at 15 m.

Six other scavengers (*Rhinolabia jebbi* n.sp., *R. paeowai* n.sp., *Tryphosella astrolabensis* n.sp., *Nagada garagassi* n.sp., *N. papua* n.sp. and *N. uwedoae*) occur outside the lagoon in deep water on the barrier face and onto the sea floor of Astrolabe Bay.

Nagada papua and *N. uwedoae* occur on the face of the outer barrier below 40 m depth on coarse sand bottoms. *Rhinolabia paeowai* occurs on the outer face of the barrier reef in depths exceeding 300 m. A larger species of *Tryphosella* Bonnier, 1893, *T. astrolabensis*, occurs in deep water on the outer face of the barrier reef and on the ooze off the reef in depths of 500 m. *Nagada garagassi* and *Rhinolabia jebbi* occur on the sea floor of Astrolabe Bay in depths of 500 m.

Podoprionella dagadugaban n.sp. was taken in a baited trap on a hard coral bottom at Padoz Natun reef. The mouthparts and gnathopods indicate that this species is not a scavenger. It is possible that *P.*

dagadugaban, like its close relatives in the genera *Normanion* Bonnier, 1893 and *Opisa* Boeck, 1876 is an ectoparasite of fish.

Biogeography of Madang Lagoon Lysianassoids

There is not yet sufficient knowledge about lysianassoid distributions in the Indo-West Pacific to enable realistic assessments of biogeography. One genus, *Riwo* n.gen., is currently considered endemic; it is the sister taxon of *Socarnella* Walker, 1904 currently known only from Sri Lanka. The other new genus, *Nagada*, also occurs in eastern Australian waters (unpublished data).

The distribution of *Ichnopus* Costa, 1853 was recently discussed by Lowry & Stoddart (1992). It is a true Indo-West Pacific genus which has relict species in the Mediterranean Sea and the eastern North Atlantic Ocean. The only species known from the Madang area, *Ichnopus malpatun* Lowry & Stoddart, is also known from New Caledonia.

Species of *Podoprionella* Sars, 1895 are extremely rare. The currently known distribution (eastern North Atlantic Ocean, Mediterranean Sea and Bismarck Sea) is based on so few records that no generalisations can be made.

Parawaldeckia Stebbing, 1910 occurs in southern South America, throughout the Subantarctic, Australia, Papua New Guinea, Fiji and Tonga. It has not been reported from the northern or western Indian Ocean. The only species known from the Madang area, *Parawaldeckia lowryi*, is also known from Fiji and Tonga.

Paralysianopsis Schellenberg, 1931 has a similar distribution to that of *Parawaldeckia*, but it has also been reported from Madagascar on the African plate and is not known from the islands east of Papua New Guinea. At the moment it appears to have a disjunct distribution, but we have good evidence that *Paralysianopsis* is widespread in Australian waters. *Paralysianopsis padoz* is not reported outside northern Papua New Guinea.

Pseudambasia Stephensen, 1927 appears to be widespread (at least five tectonic plates) in the Indo-West Pacific area, and is also known from the Subantarctic and southern South America. The only species known from the Madang area, *Pseudambasia acuticaudata*, is also known from New Caledonia and the Austral Isles.

Until now *Rhinolabia* Ruffo, 1972 was known only from the Mediterranean Sea. The new species described here are not known from outside northern Papua New Guinea.

Tryphosella is a widespread genus with many species, but the species described here have peculiar morphological characters in the first gnathopods which also occur in at least one species from New Caledonia (Lowry & Stoddart, 1994). *Tryphosella astrolabensis* and *T. wongada* are not known from outside northern Papua New Guinea.

Status of Tropical Indo-West Pacific Lysianassoids

The tropical Indo-West Pacific is a huge area (extending over about 12 tectonic plates) generally considered to be the most diverse marine environment on earth. Invertebrate groups such as hard corals, echinoderms, decapod crustaceans and the larger molluscs, are relatively well known for the area. Many other groups are poorly known. Through the efforts of workers such as Pirlot (1933, 1936), Schellenberg (1938), Birstein & Vinogradov (1958, 1960, 1963, 1964), J.L. Barnard (1965, 1970), Ledoyer (1972, 1973, 1978a,b, 1979a,b, 1984, 1986), Myers (1985, 1986, 1989, 1990, 1995) and Lowry & Stoddart (1990, 1992, 1993, 1994), a good foundation for the study of tropical Indo-West Pacific Amphipoda is in place. There are currently more than 1000 amphipod species known from this area. It would be extremely difficult to estimate how many amphipod species may be present, but in this project at least 166 species have been collected from the Madang Lagoon alone.

Collecting Lysianassoids. Although scientific collections have been made in the Indo-West Pacific since the middle of last century, the efforts have been sporadic and non-systematic. Many collecting expeditions have been geographically wide-ranging but habitat-specific, for example the *Challenger, Valdivia, Galathea*, several Russian *Vityaz* expeditions and the French MUSORSTOM expeditions sampled the deep sea; the ORSTOM collections reported by Repelin (1978) and the *Ob* and *Vityaz* collections reported by Birstein & Vinogradov (1964) sampled the oceanic pelagics. Others have been geographically limited but attempted to sample more than one habitat, for example the John Murray Expedition in Arabian waters, the *Siboga* Expedition in Indonesia, and Ledoyer's reports from Madagascar. Many reports of Indo-West Pacific lysianassoids result from limited sampling in limited geographical areas, for example the reports of J.L. Barnard and A.A. Myers from Pacific islands and the ORSTOM sampling in the Philippines, Indonesia and New Caledonia.

Lysianassoid amphipods occur in almost all possible habitats. Tropical lysianassoids are often small (Steele, 1983) and may be overlooked or not caught in sampling programs designed to collect large invertebrates. The full range of species present has probably never been collected from any one area.

Conventional dredges, trawls and grabs are good collectors of lysianassoid amphipods. However, scavenging lysianassoids are not often taken by dredges or grabs, presumably because they are motile enough to avoid them. They are collected most efficiently with baited traps. Species associated with living coral or coral rubble, such as *Parawaldeckia* spp., are most efficiently collected by scuba divers. Pelagic predators, such as species of *Cyphocaris* Boeck, 1871 and some species of *Ichnopus* can only be taken with plankton nets. The

same is true for abyssopelagic members of the cebocarid group. It takes a combination of all these methods to collect adequately the lysianassoids of any area.

We know of no tropical collection resulting from the use of all of these collecting methods. The collection from the Madang area of Papua New Guinea, reported here, does not contain a pelagic component or a deep sea component. The collections studied by Ledoyer from the Malagasy area appear to lack only the scavenging component. In order to make comparisons or gain an understanding of the diversity or ecological role of Indo-West Pacific lysianassoids, complete collections are needed from at least several areas on each plate within the Indo-West Pacific area.

Table 1 documents records of tropical Indo-West Pacific lysianassoids. There are currently 174 lysianassoid species known from the tropical Indo-West Pacific area, about 21% of the known world species. Tectonic plates are used for listing the distribution of taxa in Tables 1 and 2, although the text may refer to geographic areas on a plate. We have delimited "tropical" by 25°N and 25°S.

Diversity. Lysianassoids have never been considered to be diverse components of tropical amphipod faunas (J.L. Barnard, 1969; Barnard & Karaman, 1991). However, even with the collection limitations outlined above, the data currently available indicate that tropical lysianassoids are more diverse than the literature implies. Using the table compiled by Ledoyer (1986) for shallow- and deep-water Indian Ocean gammaridean amphipods, only corophioids (22%) and gammaroids (14.5%) are more diverse at the species level than are lysianassoids (12.6%). At the generic level corophioids and lysianassoids are equally diverse and gammaroids are less diverse. In a shallow water, high tropical area such as the well-sampled Madang Lagoon, corophioids comprise 32% of the genera and 30% of the species; gammaroids comprise 10% and 14% respectively and lysianassoids make up 10% and 9% of the genera and species. Consequently it must be considered that lysianassoids are a more important part of the tropical fauna than was previously thought.

Generic Status. There are currently about 69 genera known from the tropical Indo-West Pacific (Table 2), about 40% of the known world genera. Of the 35 shallow-water (less than 500 m) genera, seven can be considered cosmopolitan; eight are known from the North Atlantic Ocean, the Mediterranean Sea and the Indo-West Pacific Ocean, and may be post-Tethyan; fourteen appear to have southern origins and may be post-Gondwanan; and six are currently considered to be endemic to the tropical Indo-West Pacific area. These genera are listed in Table 3.

Conclusions. Lysianassoid amphipods are more diverse in tropical Indo-West Pacific marine environments than the literature implies. Based on current evidence they appear to be the third most diverse group of gammaridean amphipods after the Corophioidea and the Gammaroidea. Collecting for lysianassoids in the Indo-West Pacific has been sporadic and inefficient. A combination of trapping, habitat collections by divers, dredging and plankton samples are essential to collect the majority of lysianassoid amphipods in an area. To date trapping for lysianassoid amphipods has been largely ignored in the Indo-West Pacific.

Methods

In recent regional studies (Lowry & Stoddart, 1993, 1994) species have been reported in the superfamily Lysianassoidea with no attempt at family classification. In this paper we present species in their known family groups and establish a new family group, Opisidae. Family groups are treated in alphabetical order.

Descriptions have been generated from the taxonomic database program DELTA (Dallwitz *et al.*, 1993).

Coded setal types on the mandibular palp follow the scheme presented by Lowry & Stoddart (1993).

Lowry & Stoddart (1995) changed the terminology they had previously used to describe setae and spines. This change was based primarily on arguments about the homology of setae and spines presented by Oshel & Steele (1988) and Watling (1989). The terminology mainly follows Watling (1989) with a few modifications. What were previously referred to as setae are now referred to as slender setae and what were previously referred to as spines are now called robust setae. What were previously referred to mainly as teeth (non-articulating extrusions of the cuticle), are now referred to as spines.

Lowry & Stoddart (1992) explained the 7/4 setal-tooth arrangement on the outer plate of maxilla 1 of hirondelleid and scopelocheirid taxa and the 7/4 crown setal-tooth arrangement of the Uristidae. Lowry & Stoddart (1993) explained the 6/5 setal-tooth arrangement of the Lysianassidae. An explanation of the 8/3 crown setal-tooth arrangement found among species of Opisidae occurs under the description of the family.

All material is lodged in the Australian Museum, Sydney (**AM**), the British Museum (Natural History), London (**BMNH**) and the United States National Museum of Natural History, Washington, D.C. (**USNM**). A set of types is held in trust at the Australian Museum for the National Museum of Papua New Guinea, Port Morseby.

Complete station data is published in this volume (Jebb & Lowry, 1995, pp. 1–24).

The following abbreviations are used in the figures: **A**, antenna; **C**, coxa; **E**, epistome and upper lip; **EP**, epimeron; **G**, gnathopod; **H**, head; **MD**, mandible; **MDP**, mandibular palp; **MP**, maxilliped; **MPIP**, maxilliped inner plate; **MPOP**, maxilliped outer plate; **MPP**, maxilliped palp; **MX**, maxilla; **MX1IP**, maxilla 1 inner plate; **MX1OP**, maxilla 1 outer pate; **MX1P**, maxilla 1 palp; **P**, peraeopod; **ST**, setal-tooth; **T**, telson; **U**, uropod; **UR**, urosome; **l**, left; **r**, right; **lat**, lateral.

Systematics

Lysianassoidea

Lysianassidae

Paralysianopsis Schellenberg

Paralysianopsis Schellenberg, 1931: 7.–K.H. Barnard, 1932: 38.–Lowry & Stoddart, 1984: 103.–Barnard & Karaman, 1991: 513.
Austronisimus K.H. Barnard, 1931: 425.

Diagnosis. Callynophore present in female and male. Antenna 2 not elongate in male. Mandible: left lacinia mobilis a robust seta or cuspidate peg; molar with reduced column, sparsely or not setose, triturating surface well developed to vestigial distal patch. Maxilla 1: outer plate ST7 contiguous with or slightly displaced from ST6, STA–STD bicuspidate or apically bifurcate; palp with small apical conate setae, with or without serrate apical margin. Maxilliped: outer plate small, medial robust setae vestigial. Gnathopod 1 weakly subchelate. Gills present from gnathopod 2 to peraeopod 6, not pleated. Uropod 2: inner ramus not constricted to strongly constricted. Uropod 3: outer ramus usually 2-articulate, article 2 long. Telson entire, occasionally incised.

Species composition. *Paralysianopsis* contains 5 species: *Paralysianopsis incerta* (Ledoyer, 1986); *P. mauritiensis* Ledoyer, 1978a; *P. mazamoz* n.sp.; *P. odhneri* Schellenberg, 1931; and *P. padoz* n.sp.

Remarks. *Paralysianopsis* may be a widespread southern genus. It is related to scavenging genera such as *Aruga* Holmes, 1908, *Rhinolabia, Socarnopsis* Chevreux, 1911 and *Waldeckia* Chevreux, 1906, but it has rarely been taken from traps and is probably only an occasional scavenger. *Paralysianopsis* appears most closely related to *Rhinolabia* and differs from it in the molar which is a triturating button and the palp of maxilla 1 which has reduced apical conate setae and a partially serrate margin.

Key to Species of *Paralysianopsis*

1. Upper lip strongly produced in a sharp point 2
—— Upper lip slightly produced, bluntly rounded 3
2. Uropod 2, inner ramus weakly constricted; uropod 3, outer ramus 2-articulate ..... *P. odhneri*
—— Uropod 2, inner ramus not constricted; uropod 3, outer ramus 1-articulate ..... *P. mauritiensis*
3. Gnathopod 1, palm acute; uropod 2, inner ramus weakly constricted; telson longer than broad, entire 4
—— Gnathopod 1, palm transverse; uropod 2, inner ramus strongly constricted; telson about as long as broad, incised ..... *P. incerta*
4. Maxilla 1, outer plate STB–STC 2-cuspidate; maxilla 1, palp apical conate setae vestigial; gnathopod 1 palm without spine; uropod 3, article 2 of outer ramus about 2 × article 1 ..... *P. mazamoz*
—— Maxilla 1, outer plate STB–STD apically bifurcate; maxilla 1, palp apical conate setae small but well-developed; gnathopod 1 palm with large acute spine; uropod 3, article 2 of outer ramus about 1.3 × article 1 ..... *P. padoz*

Paralysianopsis mazamoz n.sp.

Figs 1, 2

Type material. HOLOTYPE, female, 2.8 mm, non-ovigerous, AM P41755; 2 PARATYPES, AM P41756; back slope of outer barrier directly north of Wongad, Madang Lagoon, Papua New Guinea, 5°07.98'S 145°49.51'E, baited trap on unconsolidated rubble with *Padina* and some living *Halimeda* on *Halimeda* flake sediment, 15 m, J.K. Lowry & S.J. Keable, 12–13 March 1991, stn JKL/PNG-205.

Diagnosis. Upper lip slightly produced, rounded. Mandible: molar sparsely setose with weak triturating surface. Maxilla 1: outer plate STB and STC bifurcate, STD apically bicuspidate; palp serrate with vestigial apical spines. Gnathopod 1: palm acute, smooth, without spine. Uropod 2: inner ramus weakly constricted. Uropod

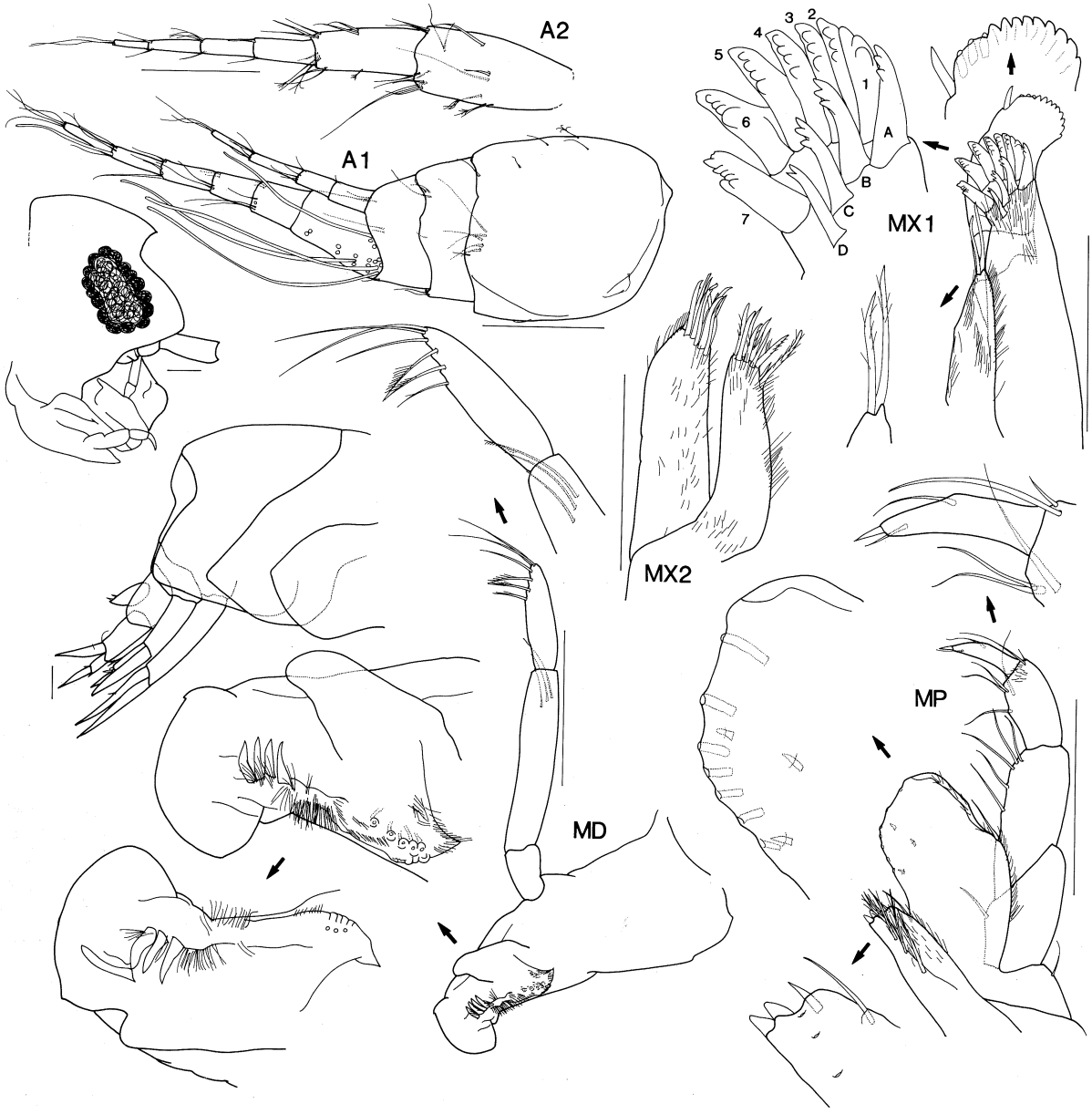

Fig. 1. *Paralysianopsis mazamoz* n.sp., holotype female, 2.8 mm, AM P41755, back slope of outer barrier near Wongad, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

3: outer ramus 2-articulate, article 2, 1.9 times article 1. Telson entire, slightly emarginate.

Description. Holotype female, 2.8 mm; male not known. *Head and body*: without setae; colour not known. *Head*: deeper than long; lateral cephalic lobe large, narrowly rounded; rostrum absent; eyes oval. *Antenna 1*: medium length, 0.2 × body; peduncular article 1 short, length 1.1 × breadth; peduncular article 2 short, 0.29 × article 1; peduncular article 3 long, 0.25 × article 1; accessory flagellum long, 0.5 × primary flagellum, 4-articulate, article 1 short, 1 × article 2, not forming cap; flagellum 6-articulate, callynophore weak 2-field in female, without posterodistal slender or robust setae, without flagellar robust setae, calceoli absent. *Antenna 2*: subequal in length to antenna 1; peduncle without brush setae in female, peduncular article 1 not greatly enlarged, peduncular articles 4 and 5 not enlarged in female; flagellum 6-articulate, calceoli absent.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: fused, with central bulge. *Mandible*: incisors symmetrical, small, with slightly convex margins; left lacinia mobilis present, a long slender peg; accessory setal row without distal setal tuft, left row with 3, right

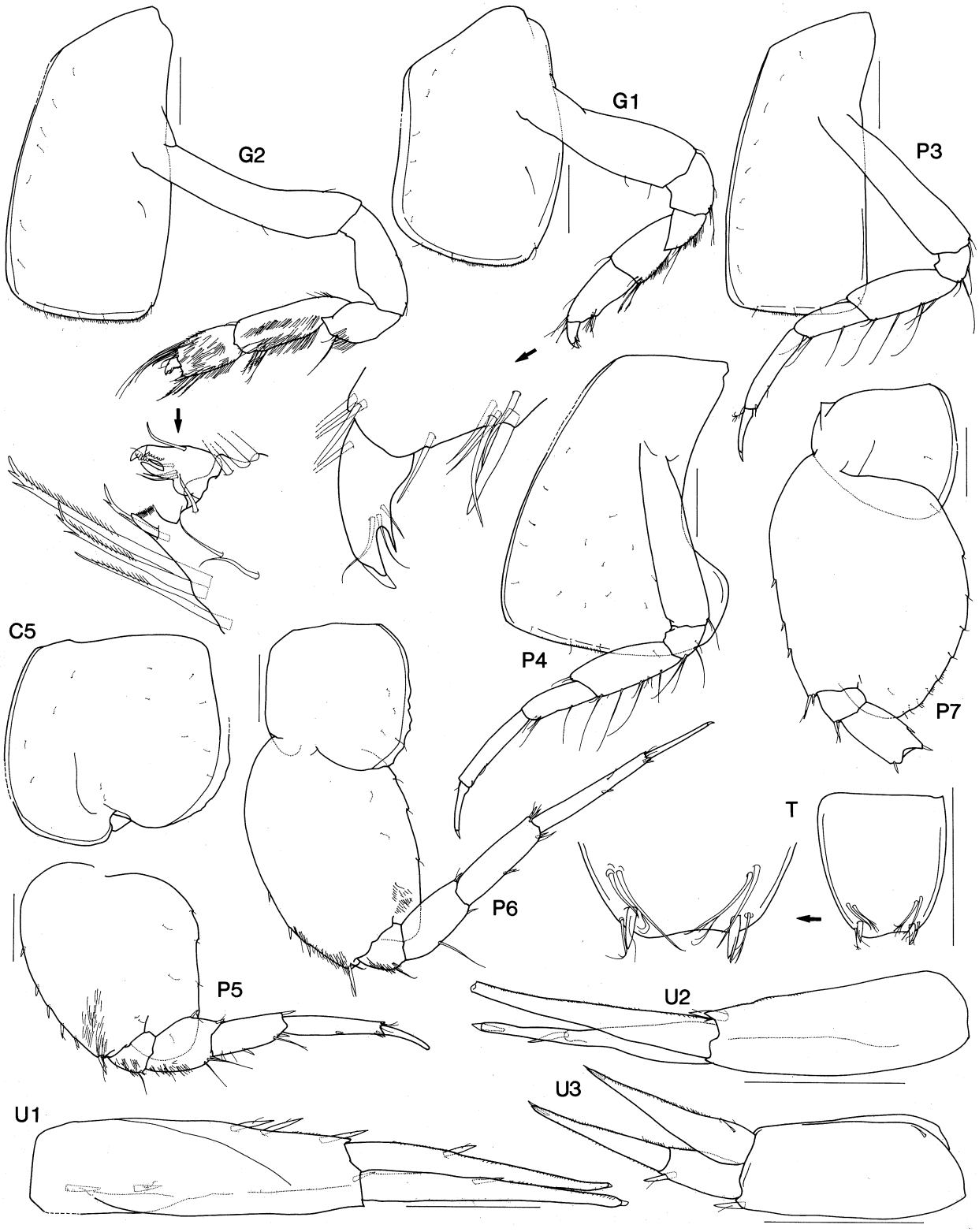

Fig. 2. *Paralysianopsis mazamoz* n.sp., holotype female, 2.8 mm, AM P41755, back slope of outer barrier near Wongad, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

with 4 short, slender, simple setae, intermediate setae present, probably simple; molar with reduced column, sparsely setose with weak triturating surface; mandibular palp attached midway; article 1 short, length 1.5 × breadth; article 2 elongate, slender, length 4.9 × breadth, 1.7 × article 3, with 3 posterodistal A2-setae, without D2-setae; article 3 slender, blade-like, short, length 3.8 × breadth, without A3- or B3-setae, with 4 distal D3-setae and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate with 11 setal-teeth; outer row with ST1–ST3 large, stout, weakly to multicuspidate, ST4 and ST5 large, stout, 4-cuspidate, ST6 large, broad, 4-cuspidate distally, ST7 symmetrical, slightly displaced from ST6, large, broad, 5-cuspidate distally; inner row with STA large, slightly displaced from STB–STD, 2-cuspidate, STB large, broad, 2-cuspidate, STC long, slender, 2-cuspidate, STD long, slender, apically bifurcate; palp large, 2-articulate, with 3 short terminal conate setae, without subterminal setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilla 2*: inner plate narrow, outer plate broad, subequal in length. *Maxilliped*: inner plate large, subrectangular, with 2 apical nodular setae, oblique setal row reduced with 4 pappose setae; outer plate small, subovate, with many apical simple setae, without apical robust setae, medial robust setae vestigial, submarginal setae short, simple; palp large, 4-articulate, article 2 broad, length 2.5 × breadth, 1.6 × article 3, article 3 short, slender, length 1.9 × breadth, dactylus well developed, with 2 subterminal setae, unguis present.

Coxae: 1 to 4 with setal fringe along ventral margin. *Gnathopod 1*: subchelate; coxa large, as long as coxa 2, anterior margin straight, posterior margin slightly convex; basis long, slender, length 3.1 × breadth, anterior margin smooth, with simple setae; ischium short, length 1.3 × breadth; merus, posterior margin with patch of short setae; carpus subrectangular, short, length 1.9 × breadth, subequal in length to propodus, with patch of very fine setae near posterior margin; propodus large, subrectangular, length 2.1 × breadth, margins subparallel, posterior margin smooth, straight, without robust or slender setae, palm acute, margin straight, smooth, posterodistal corner with 1 robust seta; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 2.6 × breadth; carpus long, length 3.2 × breadth, posterior margin straight; propodus subrectangular, short, length 1.7 × breadth, palm transverse, with straight margin with serrate pad, posterodistal corner with 1 medial robust seta; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus not expanded anteriorly, female merus-carpus without plumose setae, not known for male; propodus with 1 slender seta and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; merus not expanded anteriorly, female merus-carpus without plumose setae, not known for male; propodus with 1 slender seta and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin smooth; merus slightly expanded posteriorly; propodus with 1 robust seta and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, slightly lobate posteriorly; basis expanded posteriorly with smooth posterior margin, without anteroventral lobe; merus not expanded posteriorly; propodus with 1 robust seta and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly with 2 robust setae; propodus and dactylus not known.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner rounded. *Epimeron 3*: posteroventral corner narrowly rounded. *Urosomites*: 1 to 3 dorsally smooth; urosomite 3 without small dorsolateral robust seta. *Uropod 1*: without fine setae; peduncle with 2 dorsolateral, 1 apicolateral, 2 dorsomedial and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer and inner ramus each with 1 dorsal robust seta. *Uropod 2*: without fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 1 dorsal robust seta; inner ramus with 1 dorsal robust seta, with weak constriction. *Uropod 3*: peduncle long, length 2.2 × breadth, without dorsolateral flange, without dorsal or midlateral robust or slender setae, with 1 distoventral robust seta, without plumose setae; rami lanceolate, inner ramus reduced, about 0.83 × outer ramus; outer ramus 2-articulate, article 2 long, 1.9 × article 1, article 1 with 1 lateral robust seta; inner ramus without medial or lateral robust setae; plumose setae absent in female. *Telson*: length 1.1 × breadth, entire, without dorsal robust or slender setae, distally emarginate, with 2 marginal penicillate setae, without simple marginal setae, with 2 marginal robust setae.

Etymology. Named for Mazamoz reef in Madang Lagoon.

Remarks. *Paralysianopsis mazamoz* could be considered as the female of *P. padoz*, but the weakly triturating molar, the patch of setae between the accessory setal row and the molar, the vestigial apical conate setae on the palp of maxilla 1 outer plate, the lack of a spine on the palm of gnathopod 1, the slightly different cuspidation of the inner row of setal-teeth on maxilla 1, the differently shaped epimeron 3, the longer article 2 of the outer ramus of uropod 3 and the slightly emarginate telson indicate that this is a distinct, but closely related, species.

Distribution. Madang Lagoon, Papua New Guinea, in 15 m depth.

Paralysianopsis padoz n.sp.

Figs 3, 4

Type material. HOLOTYPE, male, 2.3 mm, AM P41570; PARATYPE, male, AM P41571; Padoz Tinan reef, Madang Lagoon, Papua New Guinea, 5°09.53'S 145°48.88'E, formalin wash of clean rubble and one piece of circular, flat-topped coral with numerous sponges and ascidians on underside, 2 m, J.D. Thomas, 9 January 1989, stn JDT/PNG-3.

Diagnosis. Upper lip slightly produced, rounded. Mandible: molar with reduced column and convex triturating surface. Maxilla 1: outer plate STB to STD apically bifurcate; palp without serrations, with small well-developed apical conate setae. Gnathopod 1: palm acute, with large spine. Uropod 2: inner ramus weakly constricted. Uropod 3: outer ramus 2-articulate, article 2, 1.3 × article 1. Telson entire, distally rounded.

Description. Holotype male, 2.3 mm; female not known. *Head and body*: without setae; colour not known. *Head*: deeper than long; lateral cephalic lobe large, broad, distally truncated; rostrum absent; eyes long, oval. *Antenna 1*: medium length, 0.26 × body, peduncular article 1 short, length 0.9 × breadth; peduncular article 2 short, 0.44 × article 1; peduncular article 3 long, 0.25 × article 1; accessory flagellum long, 0.6 × primary flagellum, 4-articulate, article 1 long, 2.7 × article 2, not forming cap; flagellum 6-articulate, callynophore strong 2-field in male, without posterodistal slender or robust setae, without flagellar robust setae or aesthetascs, calceoli absent. *Antenna 2*: subequal in length to antenna 1, weakly geniculate between peduncular articles 3 and 4, article 3 short, 0.39 × article 4; peduncle with strong brush setae in male; peduncular article 1 not greatly enlarged; flagellum 6-articulate, calceoli absent.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome straight, upper lip produced, hemispherical. *Mandible*: incisors symmetrical, small, with slightly convex margins; left lacinia mobilis present, a short smooth robust seta; accessory setal row without distal setal tuft, left row with 3, right with 4 short, slender, simple robust setae, with simple intermediate setae; molar with reduced column and convex triturating surface; mandibular palp attached midway, article 1 short, length 1.5 × breadth; article 2 elongate, slender, length 4.25 × breadth, 1.7 × article 3, with 3 distomedial A2-setae, without D2-setae; article 3 slender, blade-like, short, length 3.4 × breadth, without A3- or B3-setae, with 3 distal D3-setae on posterior margin and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate with 11 setal-teeth; outer row with ST1–ST3 large, stout, weakly to multicuspidate, ST4 large, stout, 4-cuspidate, ST5 large, stout, 5-cuspidate, ST6 large, broad, 4-cuspidate distally, ST7 symmetrical, contiguous with ST6, large, broad, 5-cuspidate distally; inner row with STA large, broad, 2-cuspidate, STB–STD long, slender, apically bifurcate; palp large, 2-articulate, with 3 short terminal conate setae, without subterminal setae, flag seta present on distolateral corner, distomedial margin smooth. *Maxilla 2*: inner plate narrow, outer plate broad, subequal in length *Maxilliped*: inner plate large, subrectangular, with 2 apical nodular setae, oblique setal row reduced with 3 pappose setae; outer plate small, subovate, without apical setae, with 2 vestigial apical robust setae, medial robust setae vestigial, submarginal setae vestigial; palp large, 4-articulate, article 2 broad, length 2.3 × breadth, 1.4 × article 3, article 3 long, broad, length 2.4 × breadth, dactylus well developed, with 1 subterminal seta, unguis present.

Coxae: 1 to 4 without setal fringe along ventral margin. *Gnathopod 1*: subchelate; coxa large, as long as coxa 2, anterior margin straight, posterior margin straight; basis long, slender, length 3.1 × breadth, anterior margin smooth, without setae; ischium short, length 1.2 × breadth; merus, posterior margin with patch of short setae; carpus subrectangular, short, length 1.6 × breadth, subequal in length to propodus, with patch of very fine setae near posterior margin; propodus large, subrectangular, length 2.2 × breadth, margins slightly converging distally, posterior margin smooth, straight, without setae, palm extremely acute, margin straight, with long acute spine, posterodistal corner with 1 large medial robust seta; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 2.9 × breadth; carpus long, length 3.7 × breadth, posterior margin straight; propodus subrectangular, short, length 1.6 × breadth, palm transverse, with straight margin with serrate pad, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus weakly expanded anteriorly, male merus-carpus without plumose setae, not known for female; propodus with 1 seta and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; merus weakly expanded anteriorly, male merus-carpus without plumose setae; propodus with 1 slender seta and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin minutely crenate; merus slightly expanded posteriorly; propodus and dactylus not known. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus not expanded posteriorly; propodus and dactylus not known. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin straight; merus not expanded posteriorly with 2 robust setae; propodus and dactylus not known.

Oostegites not known. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner rounded. *Epimeron 3*: posteroventral corner produced, narrowly rounded. *Urosomites*: 1 to 3

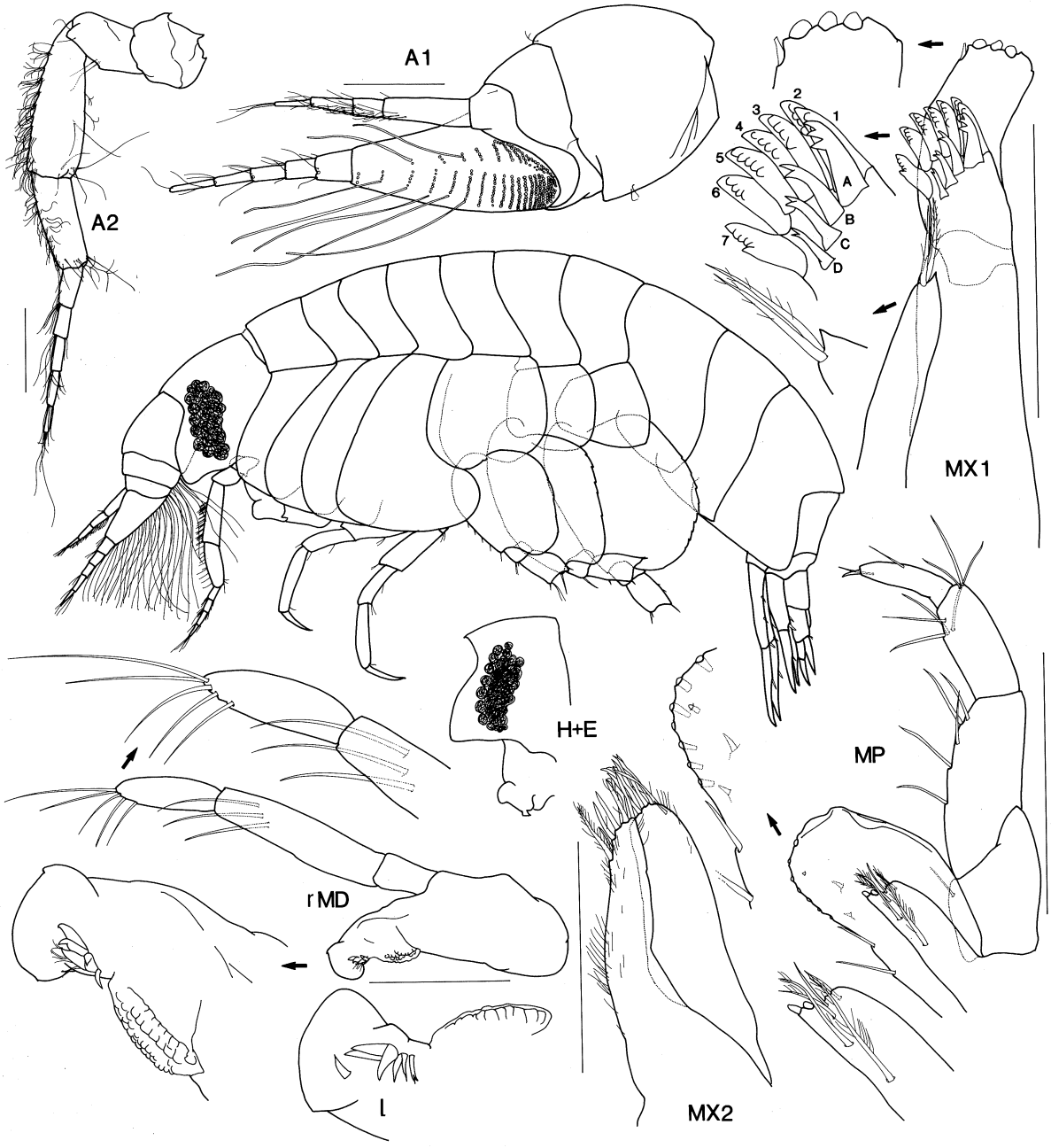

Fig. 3. *Paralysianopsis padoz* n.sp., holotype male, 2.3 mm, AM P41570, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

dorsally smooth; urosomite 3 without small dorsolateral robust seta. *Uropod 1*: without fine setae; peduncle with 2 dorsolateral, 1 apicolateral, 2 dorsomedial and 1 apicomedial robust setae, without robust setae along distal margin; rami subequal in length; outer ramus with 1 lateral robust seta; inner ramus with 1 robust seta. *Uropod 2*: without fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae, without robust setae along distal margin; outer ramus slightly longer than inner ramus; outer ramus with 1 dorsal robust seta; inner ramus with 1 dorsal robust seta, with slight constriction. *Uropod 3*: peduncle long, length 2.3 × breadth, without dorsolateral flange, with 1 apicolateral and 2 apicomedial robust setae; rami lanceolate, subequal in length; outer ramus 2-articulate, article 2 long, 1.3 × article 1, article 1 with 1 lateral robust seta; inner ramus without robust setae; plumose setae absent in male, not known for female. *Telson*: length 1.3 × breadth, entire, with 2

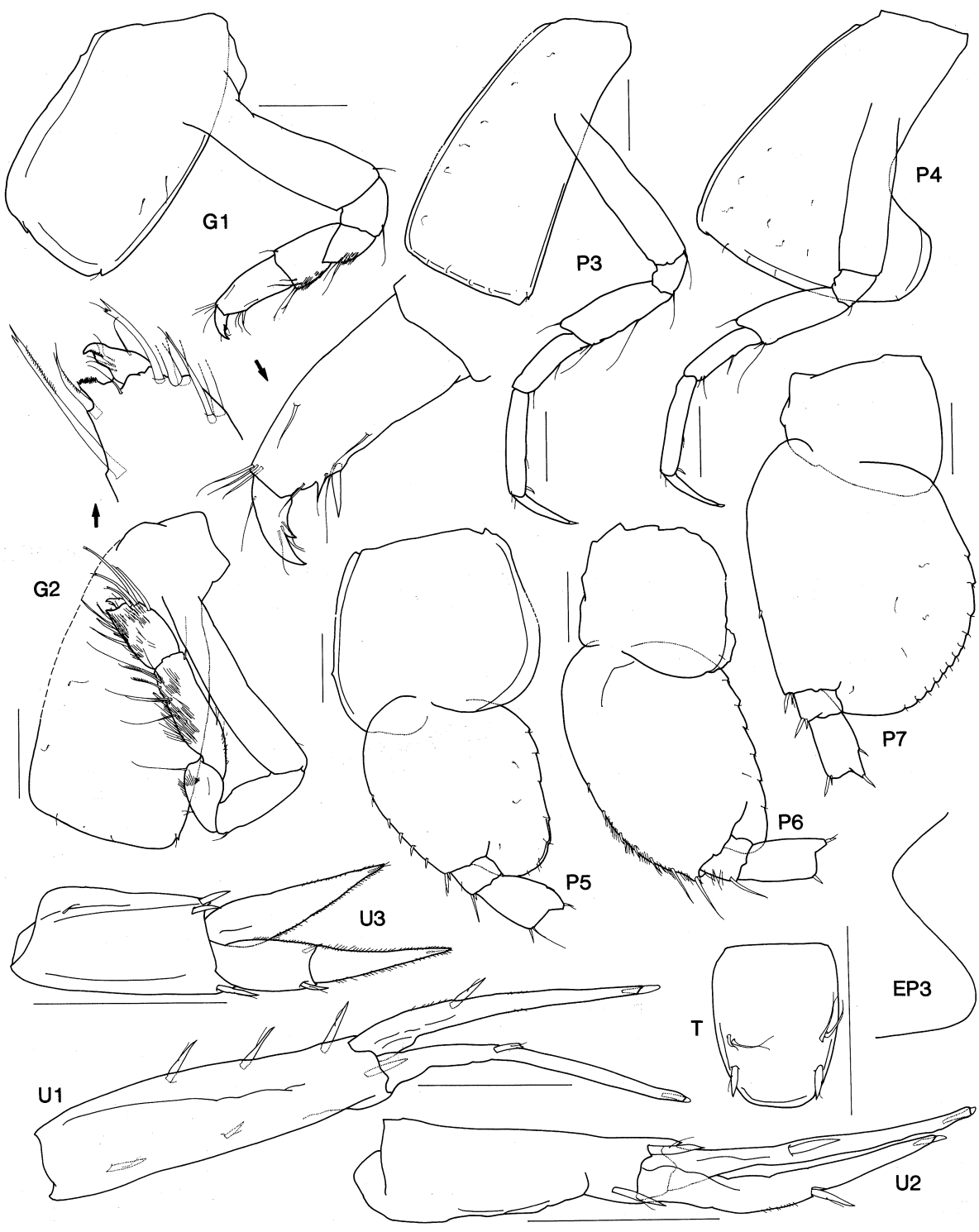

Fig. 4. *Paralysianopsis padoz* n.sp., holotype male, 2.3 mm, AM P41570, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

dorsal robust setae, distal margin rounded, without marginal simple or robust setae.

Etymology. Named for Padoz reef in Madang Lagoon.

Remarks. *Paralysianopsis padoz* differs from *P. mazamoz* as indicated under that species. It differs from other species of *Paralysianopsis* as follows: *Paralysianopsis incerta* has a transverse palm on gnathopod 1, a stronger constriction on the inner ramus of uropod 2, subequal rami on uropod 3 and a notched telson; *P. mauritiensis* has a sharply pointed upper lip, an unconstricted inner ramus on uropod 2 and a 1-articulate outer ramus on uropod 3; *P. odhneri* has a strongly produced, acute upper lip and a distally tapering, truncated telson.

Paralysianopsis padoz is known only from coral rubble, sponges and ascidians.

Distribution. Madang Lagoon, northern Papua New Guinea in 2 m depth.

Parawaldeckia Stebbing

Parawaldeckia Stebbing, 1910: 571.–Lowry & Stoddart, 1983: 327.–Barnard & Karaman, 1991: 515.

Remarks. The diagnosis of *Parawaldeckia* proposed in the revision of Lowry & Stoddart (1983) is expanded to include the rugose molar with setose margins found in *P. lowryi*, in addition to the smooth flap with setose margins found in all other species.

Parawaldeckia lowryi Myers

Figs 5–7

Parawaldeckia lowryi Myers, 1985: 97, figs 77, 78.
Parawaldeckia mua Myers, 1986: 272, figs 2, 3.

Type material examined. *Parawaldeckia lowryi*: HOLOTYPE, female, 4.2 mm, AM P35203; 10 PARATYPES, AM P35204; Momi Bay, Viti Levu, Fiji, coral debris, mainly *Acropora* fragments at reef edge, A.A. Myers, 7 September 1979, stn 40. *Parawaldeckia mua*: HOLOTYPE, female, 4.0 mm, AM P36954, Pangaimotu Island, Tonga, among *Amphiroa* sp. on inner reef, A.A. Myers, 23 September 1979.

Additional material examined. AM P41620 to P41625, P41783 from stations: AAM/PNG-17 (3), JDT/PNG-3 (5), JDT/PNG-20 (16), JDT/PNG-21 (1 male), JDT/PNG-22 (32), JDT/PNG-24 (19), JKL/PNG-26 (37), JKL/PNG-240 (4).

Material described. Female (ovigerous, 7 eggs), 3.5 mm; male, 4.0 mm, AM P41572; Padoz Tinan reef, Madang Lagoon, Papua New Guinea, 5°09.53'S 145°48.88'E, formalin wash of clean rubble and one piece of circular, flat-topped coral with numerous sponges and ascidians on underside, 2 m, J.D. Thomas, 9 January 1989, stn JDT/PNG-3.

Description. *Head and body*: without setae; colour white. *Head*: exposed, deeper than long; lateral cephalic lobe large, narrow, subacute; rostrum absent; eyes oval, black, enlarged in reproductive male. *Antenna 1*: short, 0.1 × body, peduncular article 1 short, length 1 × breadth; peduncular article 2 short, 0.1–0.3 × article 1; peduncular article 3 short, 0.05–0.3 × article 1; accessory flagellum long, 0.7 × primary flagellum, 3-articulate, article 1 long, 1.5 × article 2, not forming cap; flagellum 6-articulate (male 8), callynophore absent in female (strong 2-field in male), without posterodistal slender or robust setae, without flagellar robust setae, calceoli absent in female (present in reproductive male). *Antenna 2*: subequal in length to antenna 1 (1.3 × body length in male); peduncle without brush setae (strong in male), peduncular article 1 not greatly enlarged, female weakly geniculate between peduncular articles 3–4, article 3 short, 0.5 × article 4 (male weakly geniculate between peduncular articles 3–4, article 3 short, 1 × article 4), peduncular article 4 short, broad, article 5 elongate in male, length 1.6 breadth; flagellum 5-articulate (male 75), calceoli absent in female (present on most articles in reproductive male).

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: fused, with slight distal sinus. *Mandible*: incisors symmetrical, large, with slightly convex margins; laciniae mobilis absent; accessory setal row without distal setal tuft, left and right rows each 6 short, slender, serrate setae, without intermediate setae; molar a reduced rugose flap without setose margins; mandibular palp attached proximally, article 1 long, length 2.4 × breadth; article 2 elongate, slender, length 4.6 × breadth, 1 × article 3, without A2-, B2- or C2-setae, without (male 2) D2-setae on distal third of posterior margin; article 3 falcate, long, length 5 × breadth, without A3- or B3-setae, without (male 5–6) D3-setae along most of posterior margin, without E3-setae. *Maxilla 1*: inner plate narrow without apical setae; outer plate broad with 11 setal-teeth in 6/5 arrangement; outer row with ST1–ST3 large, stout, weakly cuspidate, ST4 large, stout, 2-cuspidate, ST5 large, stout, 4-cuspidate, ST6 large, stout, 8-cuspidate, ST7 symmetrical, contiguous with ST6, large, broad, multicuspidate medially; inner row with STA large, slightly displaced from STB–STD, 2-cuspidate, STB–STC short, broad, 2-cuspidate, STD broad, smaller than STC, 2-cuspidate; palp large, 2-articulate, with smooth apical margin, without subterminal setae or flag seta, distomedial margin with 2 large serrations. *Maxilla 2*: inner and outer plates narrow, subequal in length. *Maxilliped*: inner plate large, subrectangular, with 3 apical nodular setae, oblique setal row reduced with 2 simple setae; outer plate medium size, subovate, without subapical notch, without apical setae, apical robust setae, medial robust setae or submarginal setae; palp large, 4-articulate, article 2 slender, length 2.2 × breadth, 1.5 × article 3, article 3 long, slender, length 2 × breadth, dactylus reduced with serrate inner margin, with 2 subterminal setae, unguis absent.

Gnathopod 1: simple; coxa large, as long as coxa 2, anterior margin concave, anteroventral corner produced,

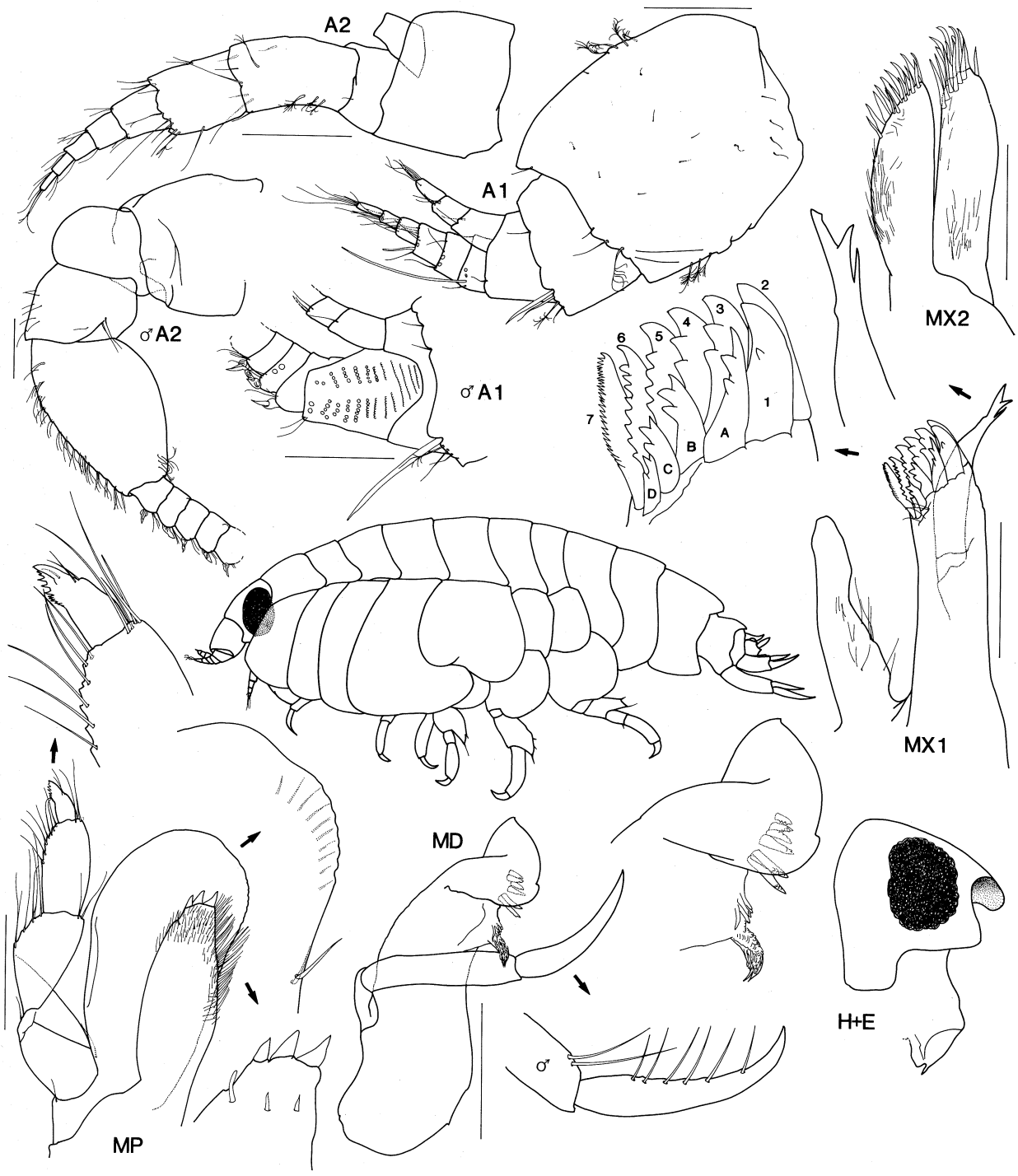

Fig. 5. *Parawaldeckia lowryi* Myers, 1985, female, 3.5 mm, AM P41572, male, 4.0 mm, AM P41572, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

rounded, posterior margin straight; basis long, slender, length 2.9 × breadth, anterior margin smooth, without setae; ischium short, length 1.4 × breadth; merus, posterior margin with group of long simple setae; carpus subrectangular, short, length 1.4 × breadth, subequal in length to propodus; propodus small, subtriangular, length 1.7 × breadth, tapering distally, posterior margin rugose with weak indentations, each with several setae, palm absent; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.5 × breadth; carpus very long, length 4.3 × breadth, posterior margin straight; propodus subrectangular, long, length 2 × breadth, palm slightly obtuse, with convex, serrate

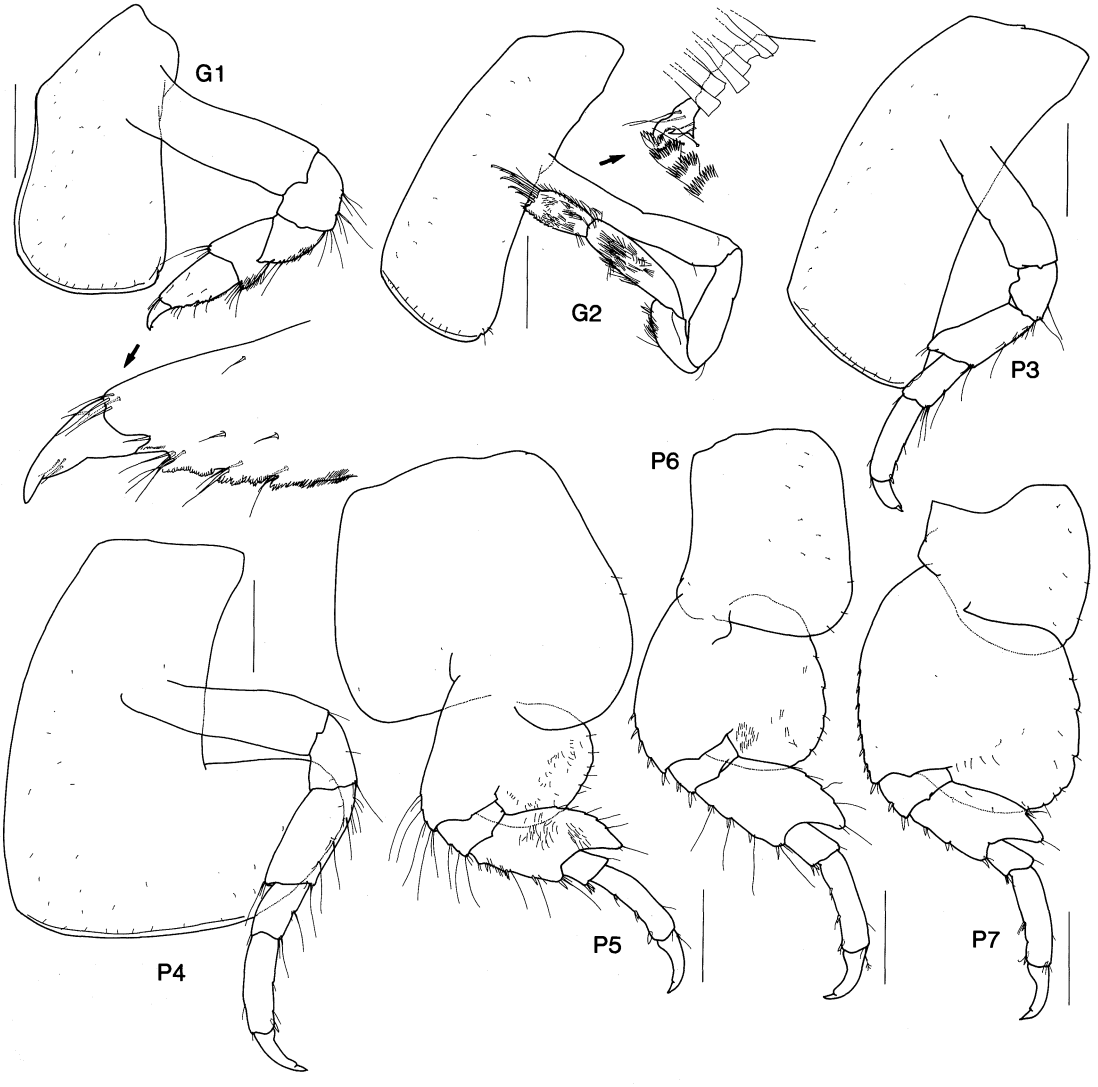

Fig. 6. *Parawaldeckia lowryi* Myers, 1985, female, 3.5 mm, AM P41572, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

margin, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; male and female merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 4*: coxa with very large posteroventral lobe, anterior margin rounded, posterior margin sloping anteriorly; male and female merus-carpus without plumose setae; propodus with 2 setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa bilobate, posterior lobe slightly produced ventrally; basis expanded with posterior margin minutely crenate; merus expanded with rounded posterior margin; propodus with 2 robust setae and 1 distal locking seta along anterior margin; dactylus short, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus expanded with rounded posterior margin; propodus with 2 robust setae and 1 distal locking seta along anterior margin; dactylus short, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin almost straight, minutely crenate, posteroventral corner subquadrate, posteroventral margin rounded; merus distally expanded, margin sloping proximally, straight distally with 3 setae; propodus with 2 robust setae, 1 distal slender seta and 1 distal locking seta along anterior margin and 5 slender setae along posterior margin; dactylus short, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 7, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner rounded. *Epimeron 3*: posteroventral

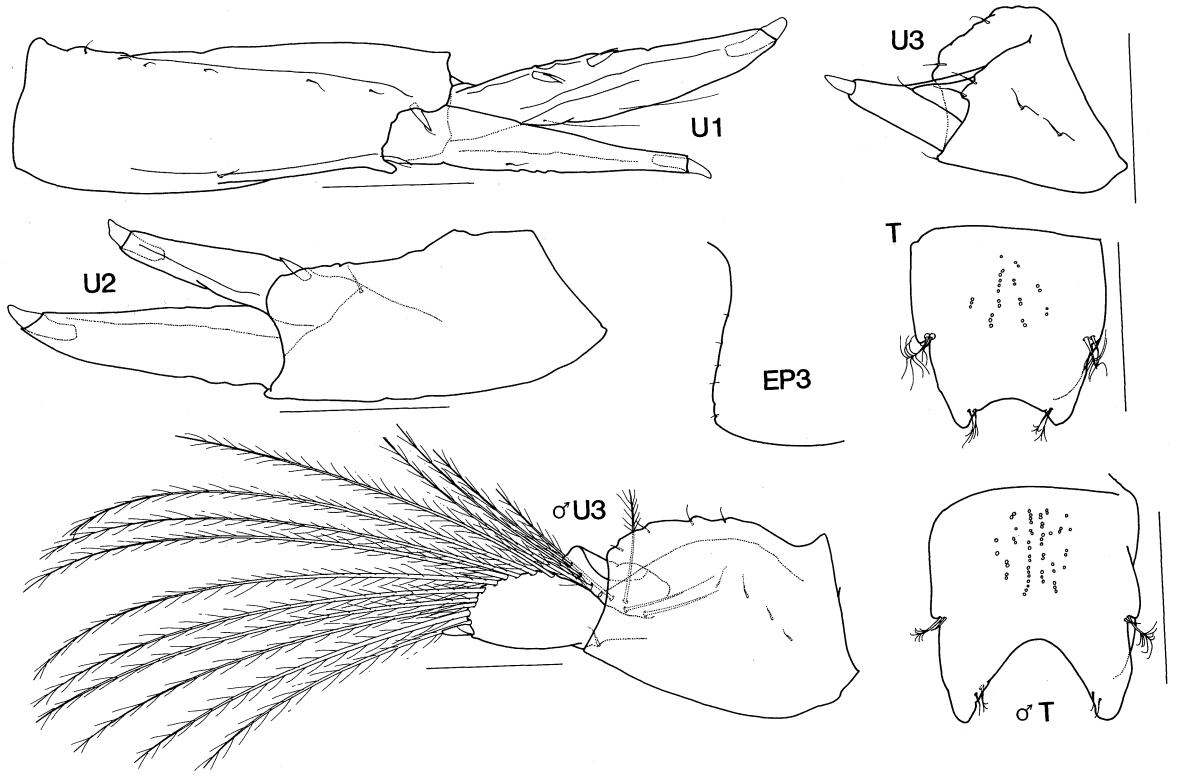

Fig. 7. *Parawaldeckia lowryi* Myers, 1985, female, 3.5 mm, AM P41572, male, 4.0 mm, AM P41572, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

corner subquadrate. *Urosomites*: dorsally smooth; urosomite 3 without small dorsolateral robust seta. *Uropod 1*: with long fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae (male with 2 dorsomedial robust setae), without robust setae along distal margin; outer ramus slightly longer than inner ramus; outer ramus with 2 lateral robust setae; inner ramus without robust setae. *Uropod 2*: without fine setae (present in male); peduncle with 1 dorsolateral robust seta, without robust setae along distal margin; outer ramus slightly longer than inner ramus; rami without robust setae; inner ramus without constriction. *Uropod 3*: peduncle short, length 0.9 × breadth, with dorsolateral flange, without dorsal robust setae, with 2 midlateral setae, without distoventral robust setae, with plumose setae in male; rami lanceolate, inner ramus reduced, about 0.4 × outer ramus; outer ramus 2-articulate, article 2 short; rami without robust setae, plumose setae present in male only. *Telson*: sexually dimorphic, as long as broad, emarginate or notched (36%), without dorsal robust setae, with 4 marginal penicillate setae, without marginal slender or robust setae.

Remarks. We have examined the type material of *P. lowryi*. The paratype collection, AM P35203, reported by Myers (1985) as 10 females, actually contains 4 females (1 ovigerous), 1 immature male and 5 juveniles. The immature male has a second antenna as in Myers' fig. 78, "female A2". The females have short second antennae, of about 5 articles. The un-attributed "MD" of Myers' fig. 78 is probably also from an immature male. The original female from the type collection has no setae on the mandibular palp article 3. The mature male holotype has 3 D2-setae and 4 D3-setae on the mandibular palp. There is slight variation in the shape of the peraeopod 7 merus, the shape of epimeron 3 and the relative lengths of the inner and outer rami of uropod 3, in both the Madang population and the type collection. We have also examined the holotype female of *P. mua* and can find no differences to separate it from *P. lowryi*.

Parawaldeckia lowryi differs from all known species in the genus by its rugose mandibular molar. It is most similar to *P. dabita* Lowry & Stoddart, 1983. However, *P. dabita* has E3-setae on the mandibular palp, a rounded dorsal boss on urosomite 3 and a non-emarginate telson. In the Madang Lagoon *P. lowryi* is found among coral rubble on the tops of reefs such as Yazi, Padoz and Guzem Natun in 2 to 3 m depth.

Distribution. Fiji, Tonga and northern Papua New Guinea in less than 10 m depth.

Pseudambasia Stephensen

Pseudambasia Stephensen, 1927: 305 (type species: *Pseudambasia bipartita* Stephensen, 1927 [= *Pseudambasia rossi* (Stephensen, 1927)] by monotypy).

Lowry & Stoddart (1983) discussed the *Parambasia* Walker & Scott, 1903 problem. They retained the name *Parambasia*, but much of their diagnosis was based on *P. rossi* (Stephensen, 1927). The original material of the type species of *Parambasia, P. forbesi* Walker & Scott, 1903, is lost and no new material has ever been reported. It is not possible to diagnosis the genus based on the original type species mainly because of lack of information about mouthparts. Stephensen (1927) described the female *Parambasia rossi*, but described the male, *Pseudambasia bipartita*, in a different genus and species (Lowry & Stoddart, 1983). We believe that *Parambasia* and *Pseudambasia* are congeneric, but we cannot diagnose *Parambasia* based on the type species. We therefore consider it to be a dubious genus and place all species previously considered as *Parambasia*, except *Parambasia forbesi*, in the genus *Pseudambasia*.

Diagnosis. Antenna 2 strongly geniculate between peduncular articles 3 and 4. Mandibular molar vestigial, represented by one or more serrate robust setae; palp article 3 with a weak to strong distal wrinkle. Gnathopod 1 sexually dimorphic, weakly to strongly subchelate in male. Uropod 3: outer ramus 1-articulate. Telson entire.

Species composition. *Pseudambasia* contains four species: *P. acuticaudata* (Ledoyer, 1984); *P. indentata* (Ledoyer, 1986); *P. nui* (Myers, 1985); and *P. rossi* (Stephensen, 1927).

Remarks. *Azotostoma* J.L. Barnard, 1965, *Kakanui* Lowry & Stoddart, 1983, *Pronannonyx* Schellenberg, 1953 and *Pseudambasia* all have antenna 2 strongly geniculate between articles 3 and 4 and all have entire telsons (the telson of *P. indentata* may be cleft according to Ledoyer, 1986). *Azotostoma* and *Pseudambasia* both have an apically smooth margin on the maxilla 1 palp and a 1-articulate outer ramus on uropod 3, but *Azotostoma* has a highly derived maxilla 2, maxilliped and gnathopod 1 which sets it apart from all of these taxa *Kakanui* and *Pronannonyx* both have terminal conate setae on the palp of maxilla 1 and non-dimorphic gnathopods and *Kakanui* has a 2-articulate outer ramus on uropod 3, all characters which distinguish these genera from *Pseudambasia*.

Distribution. *Pseudambasia* is known from the western Indian Ocean, south-east Asia, New Caledonia, Austral Isles, Australia, New Zealand, Auckland Islands and Campbell Island, from the intertidal to 400 m depth.

Pseudambasia acuticaudata (Ledoyer)

Figs 8, 9

Parambasia acuticaudata Ledoyer, 1984: 84, fig. 41.–Lowry & Stoddart, 1994: 282.

Material examined. AM P41626 to P41637, P41730, P41731 from stations: AAM/PNG-12 (2), AAM/PNG-16 (1), JDT/PNG-3 (5), JDT/PNG-10 (1), JDT/PNG-20 (8), JDT/PNG-22 (9), JDT/PNG-24 (19), JDT/PNG-26 (12), JDT/PNG-57 (1), JKL/PNG-212 (2), JKL/PNG-213 (1), JKL/PNG-240 (4), JKL/PNG-259 (7), JKL/PNG-266 (1).

Material described. Female, 2.5 mm; male, 2.3 mm, AM P41632; Yazi Natun reef, Madang Lagoon, Papua New Guinea, 5°09.23'S 145°48.98'E, formalin wash of rubble from hard, elevated substrate, not in connection with bottom sediments, J.D. Thomas, 26 January 1990, stn JDT/PNG-22.

Diagnosis. Gnathopod 2 with acute palm. Epimeron 3 with a small posteroventral notch. Uropod 2 with inner ramus weakly incised. Telson strongly tapering distally.

Description. *Head and body*: colour translucent with mottled brown head, body and upper coxae; without setae. *Head*: exposed, deeper than long; lateral cephalic lobe large, broadly rounded; rostrum small; eyes oval, dark brown, slightly enlarged in reproductive male. *Antenna 1*: peduncular article 1 short, length 1.4 × breadth; peduncular article 2 long, 0.5 × article 1; peduncular article 3 long, 0.4 × article 1; accessory flagellum short, 0.3 × primary flagellum, 2-articulate, article 1 long, 1 × article 2 (male, long, 1.6 × article 2), not forming cap; flagellum 7-articulate (male 10), callynophore absent in female (weak 1-field in male), without posterodistal slender or robust setae, without flagellar robust setae, calceoli absent. *Antenna 2*: subequal in length to antenna 1 (same in male); peduncle without brush setae in female or male, in female and male strongly geniculate between peduncular articles 3–4, article 3 long, 1 × article 4, articles 4 and 5 not enlarged in female or male; flagellum 6-articulate, calceoli absent.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: fused, straight. *Mandible*: incisors symmetrical, small, with slightly convex margins; laciniae mobilis absent; accessory setal row without distal setal tuft, left and right rows each with 3 short, slender, simple robust setae, without intermediate setae; molar absent, represented by large serrate robust seta; mandibular palp attached extremely proximally, article 1 long, length 2.2 × breadth; article 2 elongate, slender, length 3.9 × breadth, 1.1 × article 3, with 1 distal A2-seta; article 3 falcate, long, length 2.8 × breadth, without setae. *Maxilla 1*: inner plate narrow without apical setae; outer plate broad with 11 setal-teeth in 6/5 arrangement; outer row with ST1–ST3 large, stout, weakly cuspidate, ST4–ST6 large, stout, 1-cuspidate, ST7 symmetrical, slightly displaced from ST6, small, shorter than ST6, broad, 2-

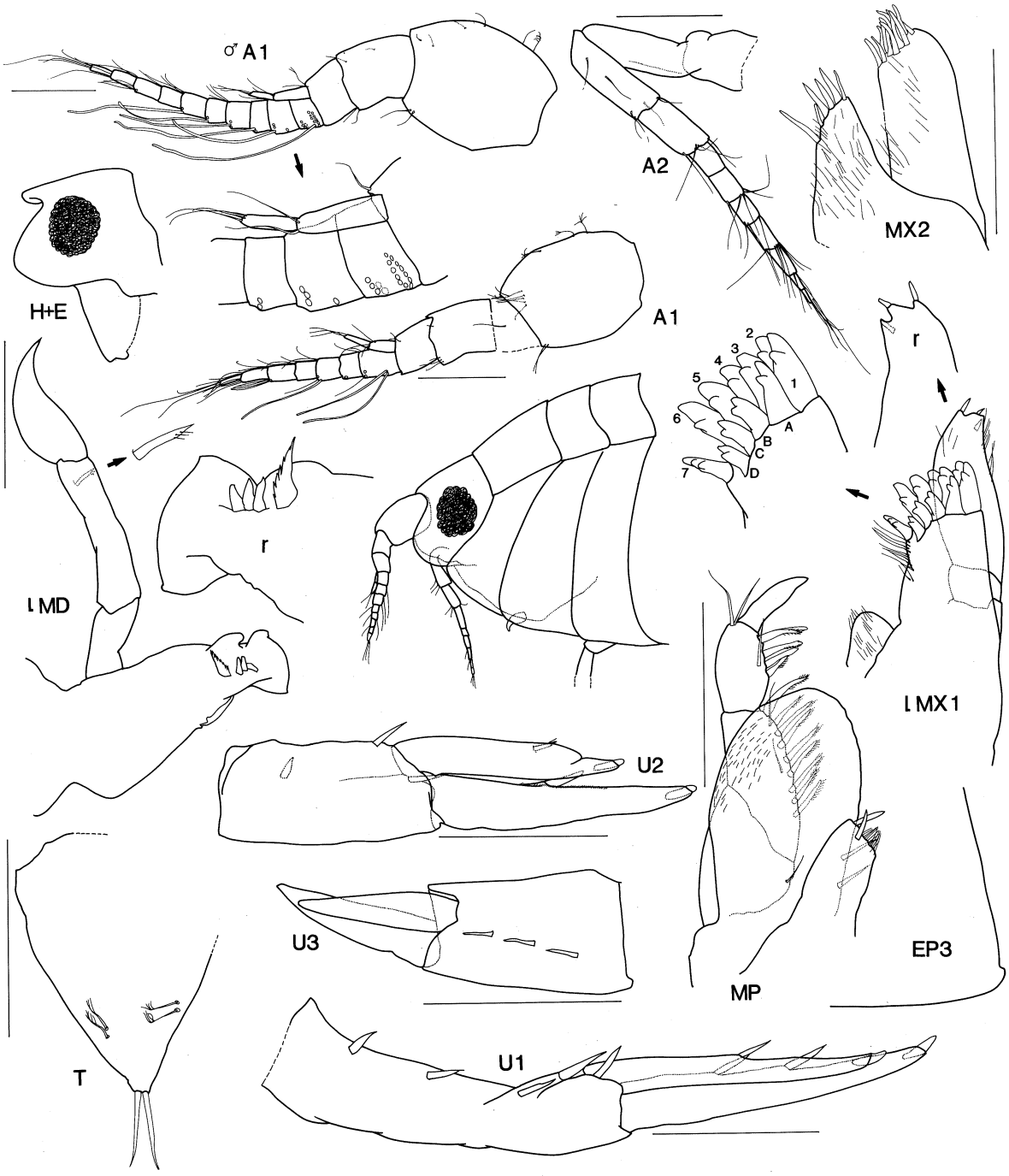

Fig. 8. *Pseudambasia acuticaudata* Ledoyer, 1984, female, 2.5 mm, AM P41632, Yazi Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

cuspidate; inner row with STA large, slightly displaced from STB–STD, 1-cuspidate, STB–STD short, broad, apically bifurcate; palp large, 2-articulate, with 3 short terminal conate setae and serrate apical margin, without subterminal setae, flag seta absent, distomedial margin smooth. *Maxilla 2*: inner and outer plates broad, inner plate 0.6 × length outer plate. *Maxilliped*: inner plate large, subrectangular, without nodular setae, with one long, slender apicolateral robust seta, oblique setal row absent; outer plate medium size, subovate, without subapical notch, without apical slender or robust setae, medial robust setae or submarginal slender setae; palp large, 4-articulate, article 2 slender, length 2.3 × breadth, 1.7 × article 3, article 3 short, broad, length 1.8 × breadth, dactylus well developed, without terminal setae, unguis absent.

Gnathopod 1: not sexually dimorphic, subchelate; coxa large, as long as coxa 2, anterior margin concave, anteroventral corner produced, rounded, posterior margin straight; basis long, slender, length 2.7 × breadth, anterior margin smooth, with simple setae; ischium long, length 1.6 × breadth; merus, posterior margin with patch of short setae and a few long slender setae; carpus subtriangular, short, length 1.4 × breadth, shorter than (0.9 ×) propodus, without denticulate patch near posterodistal margin; propodus large, subtriangular, length 1.7 × breadth, tapering distally, posterior margin smooth, straight, without robust or slender setae, without denticulate patch near posterior margin, palm extremely acute, margin straight, rugose, with 3 robust setae along margin; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium very long, length 4.2 × breadth; carpus long, length 3.3 × breadth, posterior margin straight; propodus subquadrate, short, length 1.6 × breadth, palm obscured; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus not expanded anteriorly, male and female merus-carpus without plumose setae; propodus without robust setae along posterior margin, with 1 distal locking seta; dactylus short, slender. *Peraeopod 4*: coxa with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; merus not expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin minutely crenate; merus expanded with rounded posterior margin; propodus with 2 slender setae and 1 distal locking seta along anterior margin; dactylus short, slender. *Peraeopod 6*: coxa large, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus slightly expanded and rounded posteroproximally, straight posterodistally with 2 setae; propodus with 1 slender seta and 1 distal locking seta along anterior margin; dactylus short, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin almost straight, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus slightly expanded, convex posterior margin with 1 seta; propodus with 2 slender setae and 1 distal locking seta along anterior margin, with 3 slender setae and 2 distal setae along posterior margin; dactylus short, slender.

Oostegites on peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner broadly rounded. *Epimeron 3*: posteroventral corner weakly notched. *Urosomites*: 2 and 3 fused; urosomites dorsally smooth. *Uropod 1*: peduncle with 3 dorsolateral, 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 2 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2*: peduncle with 1 dorsolateral, 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 1 dorsal robust seta; inner ramus with 1 dorsal robust seta and weak constriction. *Uropod 3*: peduncle short, length 1.7 × breadth, without dorsal robust setae, with 3 midlateral robust setae, without distoventral robust setae, without plumose setae; rami lanceolate, outer ramus reduced, about 0.9 × outer ramus; outer ramus 1-articulate; rami without robust setae, plumose setae absent in male and female. *Telson*: length 1.2 × breadth, entire, without dorsal robust setae, distal margin truncated, without marginal penicillate setae, without slender marginal setae, with 2 marginal robust setae.

Remarks. The population of *P. acuticaudata* living in the Madang Lagoon differs from *P. acuticaudata* in New Caledonia as follows: in the New Caledonia population the carpus of gnathopod 2 is 4 times as long as broad; the posterior margin of peraeopod 7 is more rounded; the peduncle of uropod 1 has only two robust setae; the peduncle of uropod 3 has no robust setae and the rami are subequal. With such small sample sizes it is not possible to evaluate the significance of these differences.

Pseudambasia nui is a very distinctive species which differs from *P. acuticaudata* in the strongly sexually dimorphic gnathopod 1, and the extremely long slender ischium and carpus of gnathopod 2.

The species from the Moluccas which Ledoyer (1979a) called *Lysianassa* sp. is probably a male of an undescribed species of *Pseudambasia*. It has a narrowly rounded lateral cephalic lobe, a much longer peduncular article 1 on antenna 1, a much longer, more slender mandibular palp article 3, a more strongly subchelate gnathopod 1, and differently shaped basis on peraeopods 5 to 7.

Pseudambasia acuticaudata differs from *P. rossi* as follows: molar represented by one large robust seta; mandibular palp article 3 much larger, falcate and without wrinkle; maxilla 1, ST7 smaller and slightly displaced from ST6; maxilla 1 palp with apical conate setae; maxillipedal palp, article 3 short, broad; urosomites 1 to 3 essentially fused, slight suture between urosomite 1 and 2 can still be detected; telson much longer than wide.

According to Ledoyer (1984) *P. acuticaudata* from Noumea, New Caledonia, occurs in seagrass beds (mainly *Halodule* and *Cymodocea*). In the Madang area *P. acuticaudata* is found inside the lagoon and at Planet Rock, Astrolabe Bay, living on dead coral rubble, often among algal turf, encrusting tunicates and sponges. *Halodule* beds occur in the Madang Lagoon but *P. acuticaudata* was never found there.

Distribution. The Austral Isles, New Caledonia and northern Papua New Guinea from the intertidal to 10 m depth.

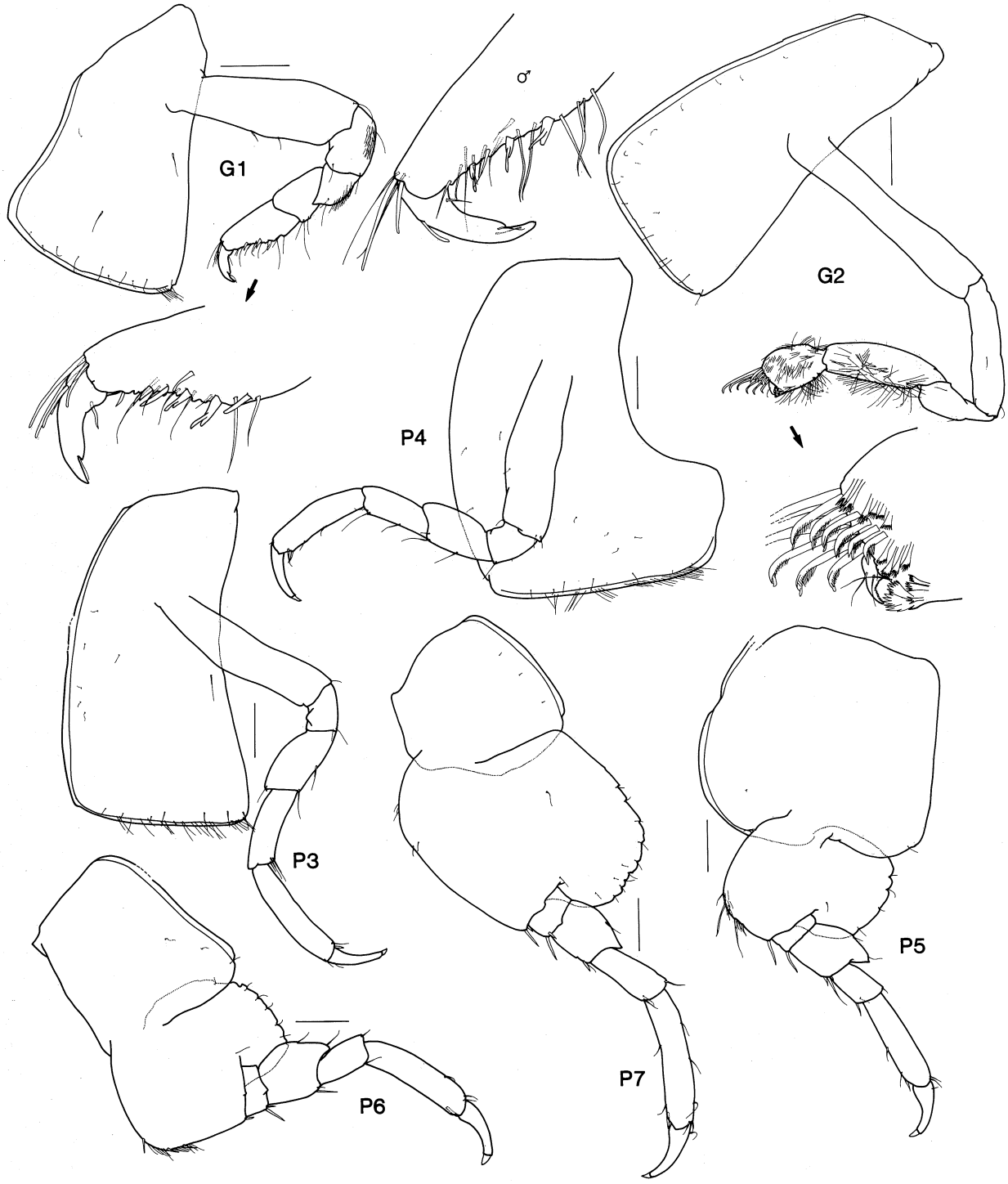

Fig. 9. *Pseudambasia acuticaudata* Ledoyer, 1984, female, 2.5 mm, AM P41632, Yazi Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

Rhinolabia Ruffo

Rhinolabia Ruffo, 1972: 103.–Barnard & Karaman, 1991: 525.

Diagnosis. Callynophore present in female and male. Antenna 2 not elongate in male. Mandible: left lacinia mobilis a robust seta or cuspidate peg; molar without a column, strongly to weakly setose, with vestigial distal triturating patch. Maxilla 1: outer plate ST7 slightly or strongly displaced from ST6, STA–STD 2- to 4-cuspidate or apically bifurcate; palp without apical conate setae, with serrate apical margin.

Maxilliped: outer plate small, medial robust setae vestigial or absent. Gnathopod 1 weakly to strongly subchelate. Gills present from gnathopod 2 to peraeopod 6, not pleated. Uropod 2: inner ramus weakly to moderately constricted. Uropod 3: outer ramus 2-articulate, article 2 long. Telson entire.

Species composition. *Rhinolabia* contains four species: *R. elliotti* n.sp., *R. jebbi* n.sp., *R. paeowai* n.sp. and *R. parthenopeia* Ruffo, 1972.

Remarks. This is a fringe genus between the tryphosine group which has a triturating molar and a well developed subchelate gnathopod 1 and the socarnine group in which the setose molar has a vestigial distal triturating patch and the first gnathopod is simple. In *Rhinolabia* the molar is of the socarnine type, but gnathopod 1 is functionally simple to weakly subchelate. It appears to be most closely related to the tryphosine genus *Paralysianopsis*. *Paralysianopsis* differs in having a better developed molar, terminal conate setae on the palp of maxilla 1 and medial robust setae on the outer plate of the maxilliped.

Species of *Rhinolabia* go into baited traps and are therefore scavengers. However, they are small and have only minimal impact on the bait which suggests that they are not competing strongly with other scavengers in the Madang area, such as species of the cirolanid isopod genera *Natatolana* and *Booralana*.

Distribution. Mediterranean Sea and northern Papua New Guinea in 27 to 500 m depth.

Key to Species of *Rhinolabia*

1. Upper lip strongly produced in a narrowly rounded or subacute point 2

—— Upper lip slightly produced, broadly rounded 3

2. Gnathopod 1, palm acute; uropod 3, rami subequal in length ..... *R. paeowai*

—— Gnathopod 1, palm extremely acute; uropod 3 inner ramus about 0.8 × outer ramus ..... *R. parthenopeia*

3. Gnathopod 1, palm transverse; uropod 3 inner ramus about 0.8 × outer ramus ..... *R. elliotti*

—— Gnathopod 1, palm extremely acute; uropod 3, rami subequal in length ..... *R. jebbi*

Rhinolabia elliotti n.sp.

Figs 10–12

Type material. HOLOTYPE, female, 3.1 mm, non-setose oostegites, AM P41573; 24 PARATYPES, AM P41574; Wongad Natun reef, Madang Lagoon, Papua New Guinea, 5°08.31'S 145°49.36'E, baited trap on sandy mud bottom with some *Halimeda* and some blue-green algae, 27 m, J.K. Lowry & J.K. Elliott, 30–31 January 1990, stn JKL/PNG-111. 7 PARATYPES, AM P41575, same locality, baited trap on sandy mud bottom and some blue-green algal cover, 29 m, stn JKL/PNG-112. 15 PARATYPES, AM P41700, back slope of outer barrier, directly east of Wongad, Madang Lagoon, Papua New Guinea, 5°08.98'S 145°49.51'E; *Halimeda* flake sediment at bottom of slope, very large sponges, baited trap, 27 m, J.K. Lowry & S.J. Keable, 12–13 March 1991, stn JKL/PNG-208.

Additional material examined. AM P41576, P41697 to P41703 from stns JKL/PNG-117 (4), JKL/PNG-168 (1), JKL/PNG-206 (1), JKL/PNG-207 (9), JKL/PNG-209 (18), JKL/PNG-210 (3), JKL/PNG-252 (3).

Diagnosis. Lateral cephalic lobe large, broadly rounded. Upper lip slightly produced, rounded. Gnathopod 1: palm transverse. Telson without marginal robust setae.

Description. Holotype female, 3.1 mm; paratype male, 1.9 mm, AM P41700. *Head and body*: without setae. *Head*: exposed, deeper than long; lateral cephalic lobe large, broadly rounded; rostrum absent; eyes reniform, brown, slightly enlarged in adult male. *Antenna 1*: medium length, 0.2 × body; peduncular article 1 short, length 1.1 × breadth; peduncular article 2 short, 0.3 × article 1; peduncular article 3 short 0.26 × article 1; accessory flagellum long, 0.5 × primary flagellum, 4-articulate (male 3), article 1 short, 1.2 × article 2, not forming cap; flagellum 8-articulate (male 6), callynophore weak 2-field in female, without posterodistal slender or robust setae, without flagellar robust setae, calceoli absent in female and male. *Antenna 2*: subequal in length to antenna 1 (same in male); peduncle with weak brush setae in female and male, peduncular article 1 not greatly enlarged, female weakly geniculate between peduncular articles 3–4, article 3 short, 0.65 × article 4, peduncular articles 4 and 5 not enlarged in female or male; flagellum 6-articulate (male 5), calceoli absent in female and male.

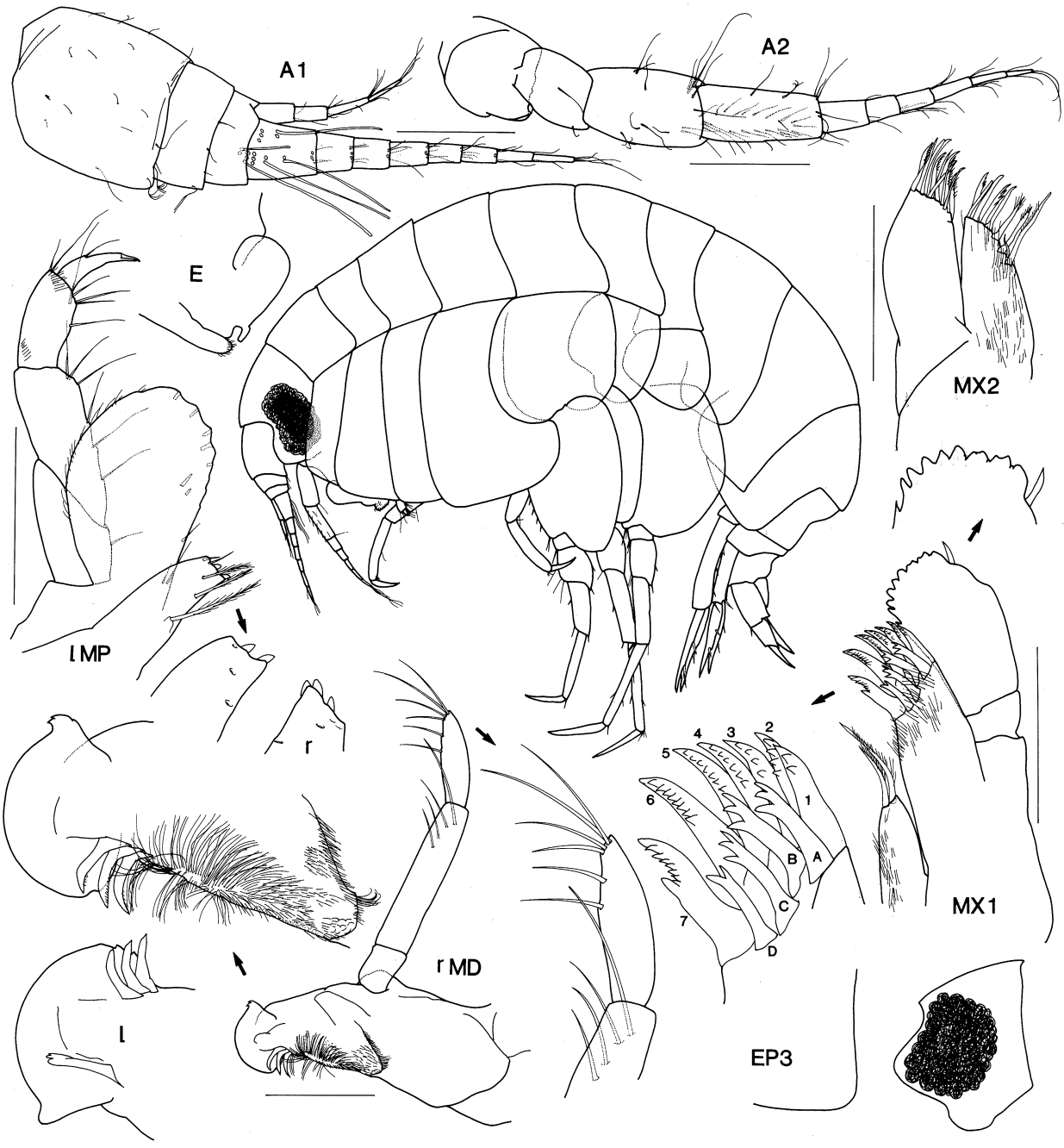

Fig. 10. *Rhinolabia elliotti* n.sp., holotype female, 3.1 mm, AM P41573; whole animal, paratype female, 2.8 mm, AM P41574, Wongad Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome concave, upper lip slightly produced, rounded. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a cuspidate peg; accessory setal row without distal setal tuft, left and right rows each with 3 short, slender, simple robust setae, without intermediate setae; molar setose with vestigial distal triturating patch; mandibular palp attached midway; article 1 short, length 1.25 × breadth; article 2 elongate, slender, length 4.5 × breadth, 1.6 × article 3, with 4 (male 3) posterodistal A2-setae, without B2- or D2-setae; article 3 slender, blade-like, long, length 3.1 × breadth, without A3- or B3-setae, with 4 (male 3) distal D3-setae and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate with 11 setal-teeth in a 6/5 arrangement; outer row with ST1 to ST3 large, stout, weakly to multicuspidate, ST4 large, stout, 6-cuspidate,

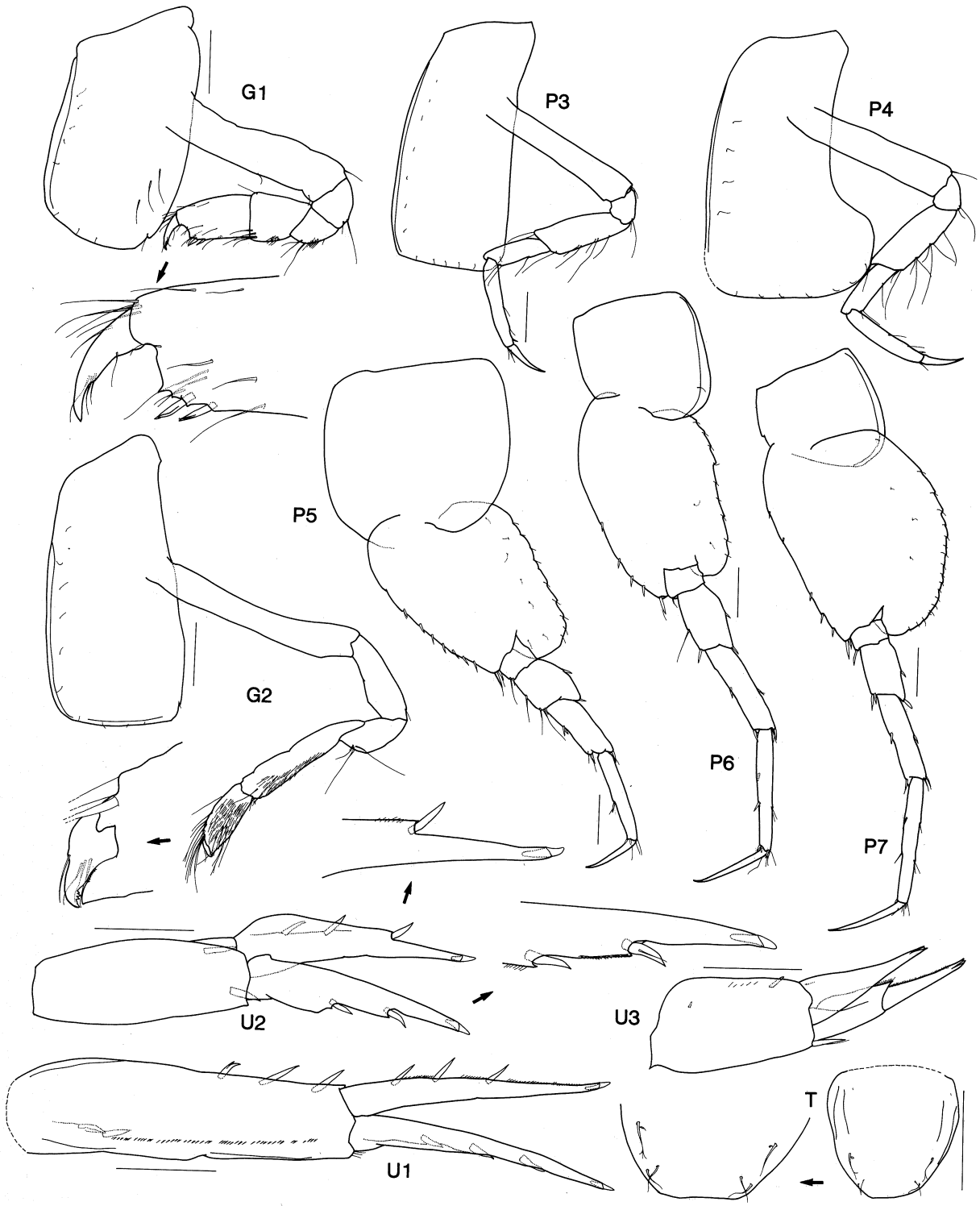

Fig. 11. *Rhinolabia elliotti* n.sp., holotype female, 3.1 mm, AM P41573, Wongad Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

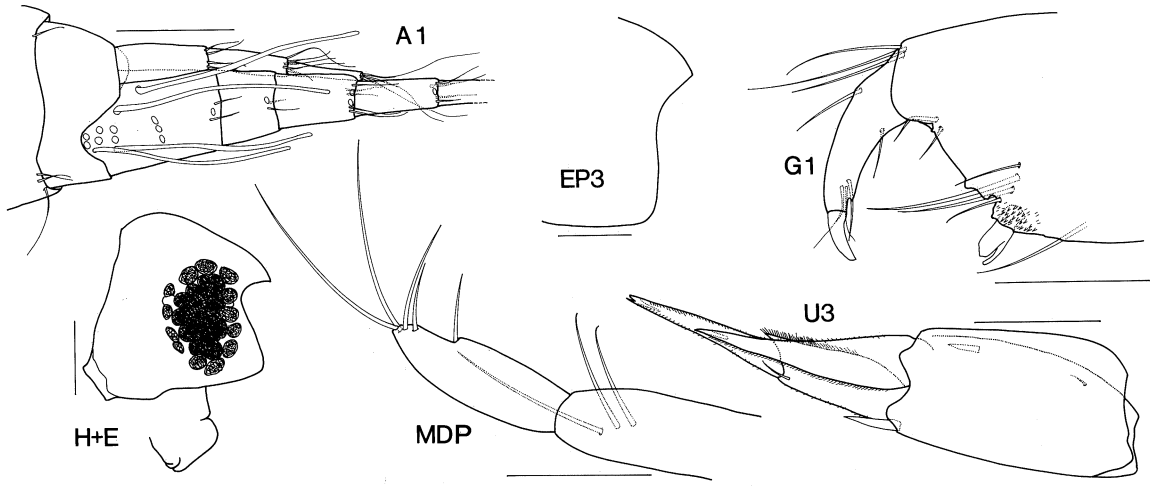

Fig. 12. *Rhinolabia elliotti* n.sp., paratype male, 1.9 mm, AM P41700, back slope of outer barrier, directly east of Wongad, Madang Lagoon, Papua New Guinea. Scales for H & E, EP3 represent 0.1 mm, remainder represent 0.05 mm.

ST5 large, stout, 7-cuspidate, ST6 large, broad, 8-cuspidate distally, ST7 slightly displaced from ST6, large, broad, multicuspidate distally; inner row with STA large, slightly displaced from STB–STD, 2-cuspidate, STB–STC long, slender, 2-cuspidate, STD long, slender, apically bifurcate; palp large, 2-articulate, with serrate apical margin, without subterminal setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilla 2*: inner plate narrow, outer plate broad, subequal in length. *Maxilliped*: inner plate large, subrectangular, with 2–3 apical nodular setae, oblique setal row reduced with 3 pappose setae; outer plate small, subovate, without apical slender or robust setae, medial robust setae or submarginal setae; palp large, 4-articulate, article 2 broad, length 2.7 × breadth, 1.4 × article 3, article 3 short, slender, length 2.5 × breadth, dactylus well developed, with 1 subterminal seta, unguis present.

Gnathopod 1: subchelate; coxa large, as long as coxa 2, anterior margin slightly concave, anteroventral corner rounded, posterior margin straight; basis long, slender, length 3.6 × breadth, anterior margin smooth, with 1 simple seta; ischium short, length 1.4 × breadth; merus, posterior margin with patch of short setae; carpus subrectangular, short, length 1.25 × breadth, shorter than (0.75 ×) propodus, with patch of very fine setae near posterior margin; propodus large, subrectangular, length 1.8 × breadth, margins subparallel, posterior margin smooth, straight, without robust or slender setae, without denticulate patch near posterior margin, palm transverse, margin straight, with short acute spine, posterodistal corner with 2 medial robust setae (male posterodistal corner with 1 stout robust seta); dactylus simple, without subterminal spines or robust setae. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3 × breadth; carpus very long, length 5.5 × breadth, posterior margin straight; propodus subrectangular, long, length 2.5 × breadth, posterior margin without strong distal robust setae, palm slightly obtuse, with convex, smooth margin, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus not expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior and posterior margins subparallel; merus not expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin minutely crenate; merus slightly expanded posteriorly; propodus with 1 robust seta and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, slightly lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin, with anteroventral lobe; merus not expanded posteriorly; propodus with 3 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly with 2 robust setae; propodus with 2 slender setae and 1 distal locking seta along anterior margin, with 5 slender setae along posterior margin and 1 distal robust seta; dactylus long, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner narrowly rounded. *Urosomites*:

1 to 3 dorsally smooth; urosomite 3 without small dorsolateral robust seta. *Uropod 1*: peduncle with 2 dorsolateral, 1 apicolateral and 2 dorsomedial robust setae; rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 3 dorsal robust setae. *Uropod 2*: peduncle with 1 apicolateral and 1 apicomedial robust setae; rami subequal in length; outer ramus with 2 dorsal robust setae; inner ramus with 3 dorsal robust setae, with weak constriction. *Uropod 3*: peduncle short, length 1.7 × breadth, without dorsolateral flange, with 1 apicomedial robust seta, without midlateral robust or slender setae, with 1 distoventral robust seta; rami lanceolate, inner ramus reduced, about 0.8 × outer ramus; outer ramus 2-articulate, article 2 long; rami without robust setae, plumose setae absent in female and male. *Telson*: as long as broad, entire, without dorsal robust setae, distal margin truncated, without marginal penicillate setae, with 4 simple slender submarginal setae, without marginal robust setae.

Etymology. Named for Joel Elliott, who gave up time from his own studies to assist as a diving partner on this project.

Remarks. *Rhinolabia elliotti* is most easily distinguished by its large, broadly rounded lateral cephalic lobe and its slightly produced and rounded upper lip. This is the only species of *Rhinolabia* with a transverse palm on gnathopod 1 and a telson without marginal robust setae. *Rhinolabia elliotti* is a scavenger which appears to be confined to shallow waters.

Distribution. Madang Lagoon, northern Papua New Guinea in 20 to 32 m depth.

Rhinolabia jebbi n.sp.

Figs 13, 14

Type material. HOLOTYPE, female, 5.2 mm, non-setose oostegites, AM P41577; 10 PARATYPES, AM P41578; 0.75 km east of Planet Rock, Astrolabe Bay, Papua New Guinea, 5°15.48'S 145°49.14'E, baited trap on silty mud bottom, about 500 m, J.K. Lowry, S.J. Keable, M.H.P. Jebb & A.A. Myers, 15–16 March 1991, stn JKL/PNG-231.

Diagnosis. Lateral cephalic lobe large, narrow, subacute. Upper lip produced, hemispherical. Gnathopod 1: palm extremely acute. Telson with 2 marginal robust setae.

Description. Holotype female, 5.2 mm; male not known. *Head and body*: without setae. *Head*: exposed, deeper than long; lateral cephalic lobe large, broad, subacute; rostrum absent; eyes oval. *Antenna 1*: short, 0.18 × body; peduncular article 1 short, length 1.3 × breadth; peduncular article 2 short, about 0.2 × article 1; peduncular article 3 short, about 0.2 × article 1; accessory flagellum long, 0.7 × primary flagellum, 6-articulate, article 1 long, 1.7 × article 2, not forming cap; flagellum 9-articulate, callynophore weak 2-field in female, without posterodistal slender or robust setae, calceoli absent in female. *Antenna 2*: subequal in length to antenna 1; peduncle with weak brush setae in female, female weakly geniculate between peduncular articles 3 and 4, article 3 short, about 0.6 × article 4, peduncular articles 4 and 5 not enlarged in female; flagellum 6+-articulate, calceoli absent in female.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome straight, upper lip produced, hemispherical. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a cuspidate peg; accessory setal row without distal setal tuft, left and right rows with 3 short, slender, simple setae, without intermediate setae; molar setose with vestigial distal triturating patch; mandibular palp attached midway, article 1 short, length 1.7 × breadth; article 2 elongate, slender, length 6.25 × breadth, 1.7 × article 3, with 4 posterodistal A2-setae, without B2- or D2-setae; article 3 slender, blade-like, long, length 5.3 × breadth, without A3-setae or B3-setae, with 7 distal D3-setae and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate with 11 setal-teeth in 6/5 arrangement; outer row with ST1 to ST3 large, stout, weakly to multicuspidate, ST4 large, stout, 6-cuspidate, ST5 large, stout, 5-cuspidate, ST6 large, broad, 5-cuspidate distally, ST7 slightly displaced from ST6, large, broad, 6- to 7-cuspidate distally; inner row with STA large, slightly displaced from STB–STD, 2- to 3-cuspidate, STB large, broad, 3- to 4-cuspidate, STC large, broad, 2-cuspidate, STD broad, smaller than STC, apically bifurcate; palp large, 2-articulate, with serrate apical margin, without subterminal setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilla 2*: inner plate narrow, outer plate broad, subequal in length. *Maxilliped*: inner plate large, subrectangular, with 2 apical nodular setae, oblique setal row strong with 6 pappose setae; outer plate small, subovate, without apical slender or robust setae, medial robust setae vestigial, submarginal setae short, simple; palp large, 4-articulate, dactylus well developed, with 2 subterminal setae, unguis present.

Gnathopod 1: subchelate; coxa large, as long as coxa 2, anterior margin straight, posterior margin straight; basis long, slender, length 4.7 × breadth, anterior margin smooth, with simple setae; ischium short, length 1.2 × breadth; merus, posterior margin with group of long simple setae; carpus subrectangular, short, length 1.9 × breadth, subequal in length to propodus; propodus large, subrectangular, length 2.3 × breadth, tapering distally, posterior margin smooth, straight, with few slender setae, palm extremely acute, margin concave, smooth, posterodistal corner with 1 medial robust seta; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.7 × breadth; carpus very long, length 4 × breadth, posterior margin straight; propodus subrectangular, long, length 2.9 × breadth, palm slightly obtuse, with straight, serrate margin, posterodistal corner

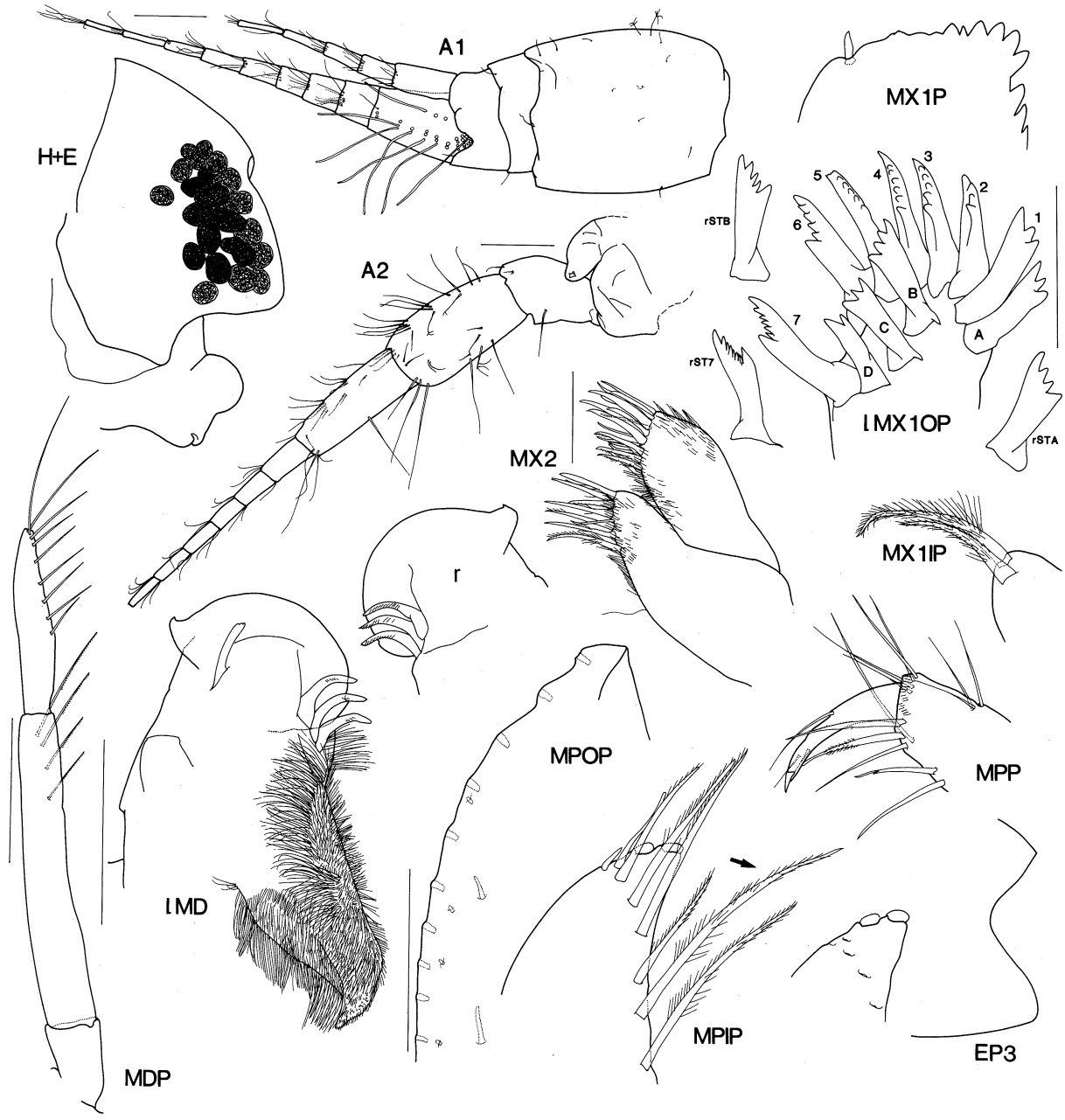

Fig. 13. *Rhinolabia jebbi* n.sp., holotype female, 5.2 mm, AM P41577, east of Planet Rock, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

with 2 medial robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 4: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; female merus-carpus without plumose setae; propodus with 2 setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin minutely crenate; merus slightly expanded posteriorly; propodus with 2 robust setae and 1 distal locking seta along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, slightly lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus not expanded posteriorly; propodus with 3 robust setae along anterior margin, distal locking setae obscured; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin almost straight, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly with 2 robust

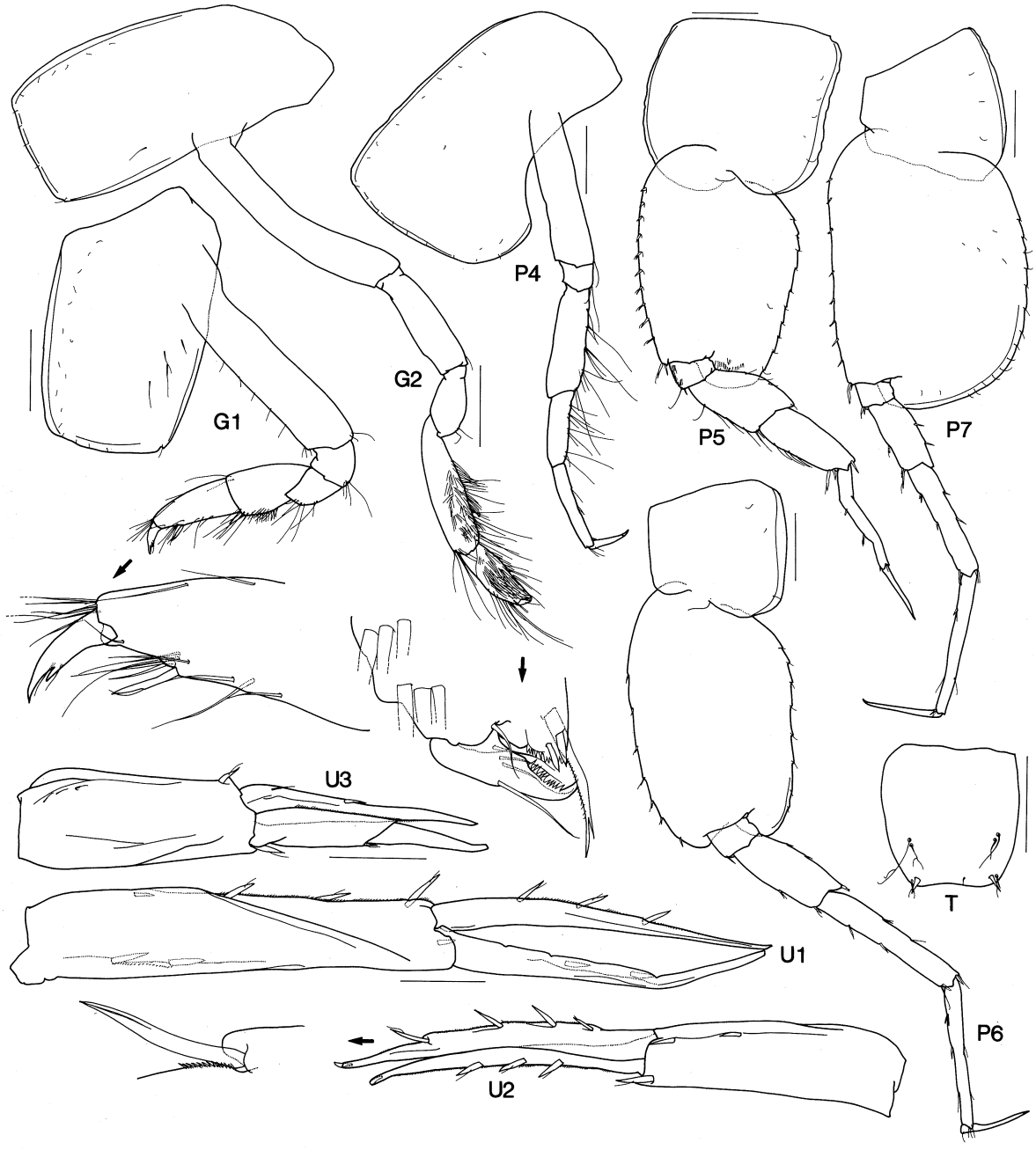

Fig. 14. *Rhinolabia jebbi* n.sp., holotype female, 5.2 mm, AM P41577, east of Planet Rock, Astrolabe Bay, Papua New Guinea. Scales for U1-3, T represent 0.1 mm, remainder represent 0.2 mm.

setae; propodus with 2 robust setae, 1 slender seta and 2 distal locking setae along anterior margin, with 1 slender seta on posterior margin; dactylus long, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner produced, narrowly rounded. *Urosomites*: 1 to 3 dorsally smooth; urosomite 3 without small dorsolateral robust seta. *Uropod 1*: without fine setae; peduncle with 3 dorsolateral, 1 apicolateral, 2 dorsomedial and 1 apicomedial robust setae; rami subequal in length; outer ramus with 3 lateral robust setae; inner ramus with 2 lateral robust setae. *Uropod 2*: without fine setae; peduncle with 1 apicolateral, 1

dorsomedial and 1 apicomedial robust setae; rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 4 dorsal robust setae, with moderate constriction. *Uropod 3*: peduncle long, length 2.5 × breadth, without dorsolateral flange, with 1 apicomedial robust seta, without midlateral robust or slender setae, with 1 distoventral robust seta, without plumose setae in female; rami lanceolate, subequal in length; outer ramus 2-articulate, article 2 long, article 1 with 1 lateral robust seta; inner ramus with 1 medial robust seta; plumose setae absent in female. *Telson*: as long as broad, entire, without dorsal robust setae, distal margin truncated, without marginal penicillate setae, with 2 simple slender marginal setae and 2 marginal robust setae.

Etymology. After Matthew Jebb who enthusiastically supported this project and made it possible to set the deep-water traps.

Remarks. *Rhinolabia jebbi* is easily distinguished from other species by its hemispherical upper lip and extremely acute palm on gnathopod 1. *Rhinolabia jebbi* is a deep-water scavenger.

Distribution. Astrolabe Bay, northern Papua New Guinea, in about 500 m depth.

Rhinolabia paeowai n.sp.

Figs 15, 16

Type material. HOLOTYPE, female, 3.0 mm, non-setose oostegites, AM P41579; paratype, male, 2.1 mm, AM P41580, face of outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea, 5°08.59'S 145°49.65'E, baited trap, 340 m, J.K. Lowry & J. Mizeu, 26–27 January, 1990, stn JKL/PNG-83; PARATYPE, female, 3.1 mm, AM P41581, same locality, 390 m, stn JKL/PNG-84.

Diagnosis. Lateral cephalic lobe large, narrow, subacute. Upper lip produced, subacute. Gnathopod 1: palm acute. Telson with 2 marginal robust setae.

Description. Holotype female, 3.0 mm; paratype male, 2.1 mm. *Head and body*: without setae; colour light lemon-yellow. *Head*: exposed, deeper than long; lateral cephalic lobe large, narrow, subacute; rostrum absent; eyes oval, brown (fading to yellow in alcohol), not enlarged in reproductive male. *Antenna 1*: medium length, 0.23 × body, peduncular article 1 short, length 1.1 (male 0.9) × breadth; peduncular article 2 short, 0.3 × article 1; peduncular article 3 short, 0.26 × article 1 (male short, 0.06 × article 1), accessory flagellum long, 0.7 × primary flagellum, 5-articulate, article 1 long, 2.1 × article 2, not forming cap; flagellum 6-articulate (male 6), callynophore weak 2-field in female (strong 2-field in male), without posterodistal slender or robust setae, calceoli absent. *Antenna 2*: subequal in length to antenna 1 (same in male); peduncle with brush setae in female and male, female weakly geniculate between peduncular articles 3–4, article 3 short, 0.4 × article 4, peduncular articles 4 and 5 not enlarged in male or female; flagellum 6-articulate (male 5), calceoli absent.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome straight, upper lip produced, subacute. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a cuspidate peg; accessory setal row without distal setal tuft, left row with 3, right with 4 short, slender, simple setae, without intermediate setae; molar setose with vestigigal distal triturating patch; mandibular palp attached midway, article 1 short, length 1.2 × breadth; article 2 elongate, slender, length 4.9 × breadth, 1.7 × article 3, with 3 (male 3) A2-setae on lateral surface; article 3 slender, blade-like, long, length 4 × breadth, without A3- or B3-setae, with 4 (male 5-6) distal D3-setae on posterior margin, and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate with 11 setal-teeth in 6/5 arrangement; outer row with ST1–ST3 large, stout, weakly cuspidate, ST4 large, stout, 2-cuspidate, ST5 large, stout, 3-cuspidate, ST6 large, broad (badly worn), ST7 symmetrical, slightly displaced from ST6, large, broad, ?1-cuspidate; inner row with STA large, slightly displaced from STB–STD, apically bifurcate, STB large, broad, apically bifurcate (tip broken), STC large, broad, apically bifurcate, STD long, slender, apically bifurcate; palp large, 2-articulate, with serrate apical margin, flag seta absent, distomedial margin serrate. *Maxilla 2*: inner plate narrow, outer plate broad, subequal in length. *Maxilliped*: inner plate large, subrectangular, with 2 apical nodular setae, oblique setal row reduced with 3 pappose setae; outer plate small, subovate, without subapical notch, without apical slender or robust setae, without medial robust setae, submarginal setae absent; palp large, 4-articulate, article 2 broad, length 2.5 × breadth, 1.6 × article 3, article 3 short, slender, length 1.9 × breadth, dactylus well developed, with 2 subterminal setae, unguis present.

Gnathopod 1: subchelate; coxa large, as long as coxa 2, anterior margin straight, posterior margin straight; basis long, slender, length 4.3 × breadth, anterior margin smooth, with simple setae; ischium short, length 1.2 × breadth; merus, posterior margin with patch of short setae; carpus subrectangular, short, length 1.8 × breadth, subequal in length to propodus, with patch of very fine setae near posterior margin; propodus large, subrectangular, length 2.1 × breadth, margins subparallel, posterior margin smooth, straight, without robust or slender setae, palm acute, margin convex, posterodistal corner with 2 medial robust setae; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3 × breadth; carpus very long, length 4.4 × breadth, posterior margin straight; propodus subrectangular, long, length 2.2 × breadth, palm slightly obtuse, with straight,

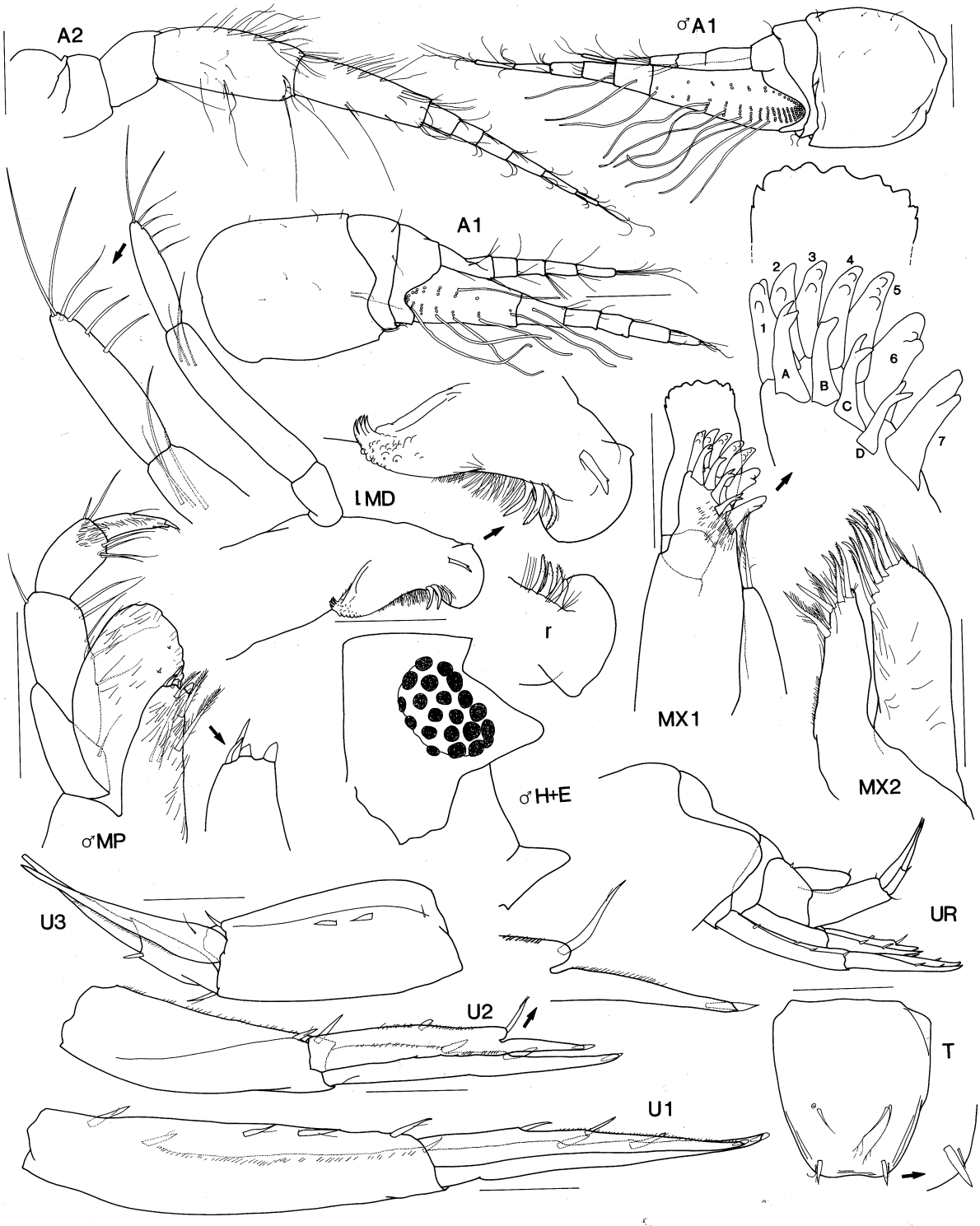

Fig. 15. *Rhinolabia paeowai* n.sp., holotype female, 3.0 mm, AM P41579; male head, A1, MP, paratype male, 2.1 mm, AM P41580, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

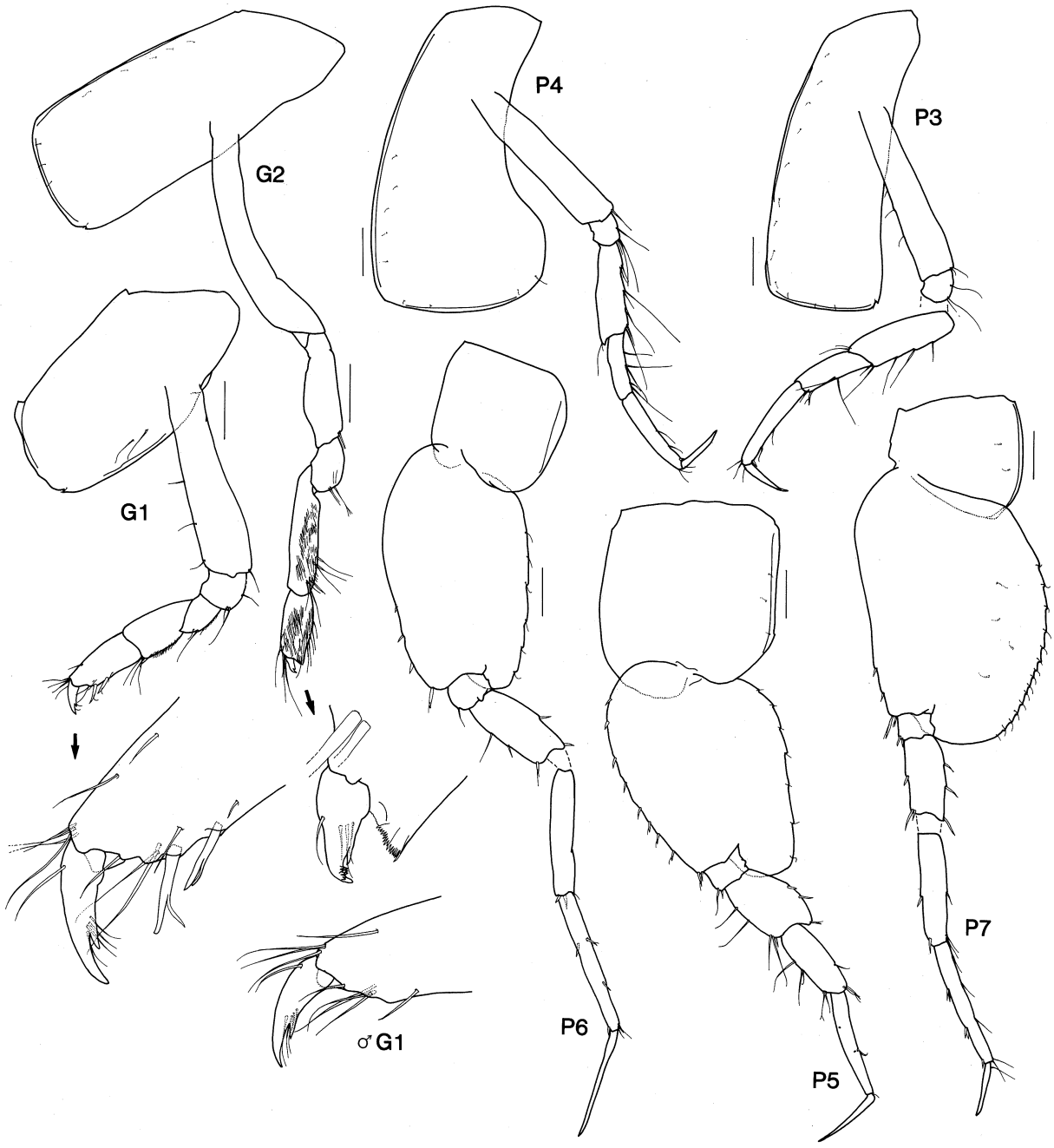

Fig. 16. *Rhinolabia paeowai* n.sp., holotype female, 3.0 mm, AM P41579; paratype male, 2.1 mm, AM P41580; UR: paratype female, 3.1 mm, AM P41581, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

serrate margin, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; male and female merus-carpus without plumose setae; propodus with 2 setae and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior and posterior margins subparallel; male and female merus-carpus without plumose setae; propodus with 2 setae and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa bilobate, anterior lobe slightly produced ventrally; basis expanded with posterior margin minutely crenate; merus slightly expanded

posteriorly; propodus with 1 robust seta and 1 distal locking seta along anterior margin and 1 robust seta along posterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus not expanded posteriorly; propodus with 1 robust seta and 1 distal locking seta along anterior margin and 2 robust setae and 1 distal seta along posterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly with 3 robust setae; propodus with 4 robust setae and 1 distal locking seta along anterior margin and 2 slender setae and 2 distal slender setae along posterior margin; dactylus long, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner rounded. *Epimeron 3*: posteroventral corner produced, narrowly rounded. *Urosomites*: dorsally smooth; urosomite 3 with small dorsolateral robust seta. *Uropod 1*: without fine setae; peduncle with 3 dorsolateral, 1 apicolateral, 1 dorsomedial and 1 apicomedial robust setae, without robust setae along distal margin; rami subequal in length; outer ramus with 2 robust setae; inner ramus with 2 robust setae. *Uropod 2*: without fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae, without robust setae along distal margin; rami subequal in length; outer ramus with 2 dorsal robust setae; inner ramus with 2 dorsal robust setae, with moderate constriction. *Uropod 3*: peduncle long, length 2.1 × breadth, without dorsolateral flange, with 2 dorsolateral and 1 apicolateral robust setae, without midlateral robust or slender setae, with 1 distoventral robust seta, without plumose setae; rami lanceolate, subequal in length; outer ramus 2-articulate, article 2 long, article 1 with 1 lateral robust seta; inner ramus without robust setae; plumose setae absent in male and female. *Telson*: length 1.1 × breadth, entire, without dorsal robust setae, distal margin truncated, without marginal penicillate setae, with 2 simple slender marginal and 2 robust marginal setae.

Etymology. Named for one of the islands of the outer barrier reef of Madang Lagoon.

Remarks. *Rhinolabia paeowai* is distinguished from other *Rhinolabia* species in the Madang area by its large, narrow, subacute lateral cephalic lobe and strongly produced upper lip. It is a scavenger which appears to be most common on the deep slopes of the outer barrier reef.

Distribution. Astrolabe Bay, northern Papua New Guinea in 340 to 390 m depth.

Riwo n.gen.

Diagnosis. Antenna 1: callynophore weak in female and male; calceoli present in male. Antenna 2: flagellum short in female and male; calceoli present in male. Epistome and upper lip separate. Mouthpart bundle subquadrate. Mandible: lacinia mobilis absent; molar a setose flap; palp article 3 with D3-setae strongly gaped along the posterior margin. Maxilla 1: inner plate with 1 simple apical seta; outer plate with 10 setal-teeth, ST7 symmetrical, slightly displaced from ST6. Gnathopod 1 simple. Uropod 2: inner ramus not incised. Uropod 3: inner ramus shorter than outer; outer ramus 2-articulate. Telson short, notched.

Type species. *Riwo mizeui* n.sp.

Etymology. Named for Riwo, Madang Lagoon.

Remarks. Few lysianassid taxa have the combination of a setose molar, a simple first gnathopod and a notched telson *Phoxostoma* K.H. Barnard, 1925 and some conicostomatins do, but they all have subconical mouthpart bundles. *Concarnes* Barnard & Karaman, 1991 and *Socarnoides* Stebbing, 1888, do, but *Concarnes* has a long second antenna in the male, no apical conate setae on maxilla 1 palp, a well developed constriction on the outer ramus of uropod 2 and plumose setae on the male uropod 3 rami. *Socarnoides* has a subconical mouthpart bundle, a conicostomatin maxilliped and peduncular flange on uropod 3. Species of *Parawaldeckia* often have a strongly notched telson in the male, but these males also develop the full array of secondary sexual characters.

Riwo appears to be closely related to the poorly known genus *Socarnella* Walker, 1904. The mouthparts, uropods and telson are similar. However, in *Socarnella* the mandibular palp article 3 is more falcate; the outer plate of maxilla 1 has 11 setal-teeth, STA to STD are longer and more slender and the palp has no terminal conate setae; the maxilliped outer plate has no medial robust setae; the posterior margin of the propodus on gnathopod 1 is serrate; and the outer ramus of uropod 3 is 1-articulate. Both taxa have the same apically notched telson, an unusual synapomorphy.

Distribution. *Riwo* is known only from the north coast of Papua New Guinea in 3 to 17 m depth.

Riwo mizeui n.sp.

Figs 17–19

Type material. HOLOTYPE, female, 3.3 mm, AM P41582; PARATYPE, male, 2.4 mm, AM P41583; 50 PARATYPES, AM P41584; 10 PARATYPES, AM P41585; 10 PARATYPES, BMNH 1995.625-634; 10 PARATYPES, USNM 274113; Wongad Natun reef, Madang Lagoon, Papua New Guinea, 5°08.31'S

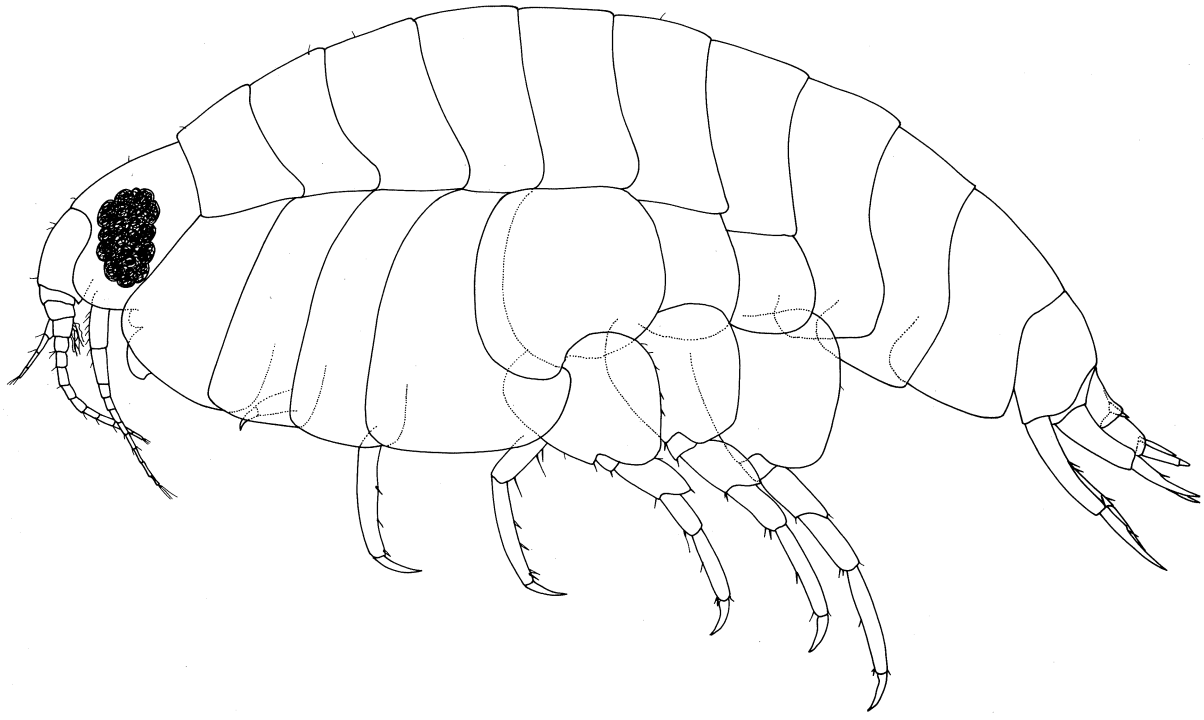

Fig. 17. *Riwo mizeui* n.sp., holotype female, 3.3 mm, AM P41582, Wongad Natun reef, Madang Lagoon, Papua New Guinea.

145°49.36'E, baited trap on bottom of *Acropora*, branching soft corals and *Porites*, 4 m, J.K. Lowry & J.K. Elliott, 30–31 January 1990, stn JKL/PNG-105.

Additional material examined. AM P41638 to P41645, P41729 from stations: JKL/PNG-86 (1), JKL/PNG-106 (3), JKL/PNG-107 (2), JKL/PNG-110 (1), JKL/PNG-114 (1 juvenile), JKL/PNG-115 (1) juvenile, JKL/PNG-119 (1 juvenile), JKL/PNG-120 (1 juvenile), JKL/PNG-161 (1).

Description. Holotype female, 3.3 mm; paratype male, 2.4 mm. *Head and body*: colour whitish with small black chromatophores covering peraeon, coxae and epimera, but concentrated anteriorly on peraeon segments to give a striped effect; without setae. *Head*: deeper than long; lateral cephalic lobe large, broadly rounded; rostrum small; eyes oval, black, enlarged in reproductive male. *Antenna 1*: medium length, about 0.3 × body; peduncular article 1 short, length 1.3 × breadth; peduncular article 2 short, 0.25 × article 1; peduncular article 3 short, 0.18 × article 1; accessory flagellum long, 0.5 × primary flagellum, 4-articulate, article 1 long, 1.5 × article 2 (same in male), not forming cap; flagellum 9-articulate (male 8), callynophore weak 1-field in female (weak 2-field in male), without posterodistal slender or robust setae, without flagellar robust setae, calceoli absent in female (present in adult male). *Antenna 2*: subequal in length to antenna 1 (same in male); peduncle with brush setae in female and male, female strongly geniculate between peduncular articles 3–4, article 3 long, 0.6 × article 4, peduncular articles 4 and 5 not enlarged in male or female; flagellum 9-articulate (male 7), calceoli absent in female (present in reproductive male).

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome concave, upper lip produced, rounded. *Mandible*: incisors symmetrical, large, with slightly convex margins; laciniae mobilis absent; accessory setal row without distal setal tuft, left and right rows each with 3 long, slender, multiserrate robust setae, without intermediate setae; molar a small, smooth setose flap; mandibular palp attached proximally, article 1 short, length 1.5 × breadth; article 2 elongate, slender, length 5 × breadth, 1.8 × article 3, with 3 posterodistal A2-setae; article 3 slender, blade-like, long, length 3.6 × breadth, without A3- or B3-setae, with 1 proximal and 2 distal D3-setae on posterior margin, and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 1 simple apical seta; outer plate with 10 setal-teeth in modified 6/5 arrangement; outer row with ST1–ST3 large, stout, weakly cuspidate, ST4 large, stout, 3-cuspidate, ST5 absent, ST6 large, broad, 8-cuspidate distally, ST7 symmetrical, slightly displaced from ST6, large, broad, 9-cuspidate distally; inner row with STA large, slightly displaced from STB–STD, 2-cuspidate, STB–STD large, broad, 2-cuspidate; palp large, 2-articulate, with 3 short terminal conate setae and serrate apical margin, without subterminal setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilla 2*: inner and outer plates broad, subequal in length. *Maxilliped*: inner

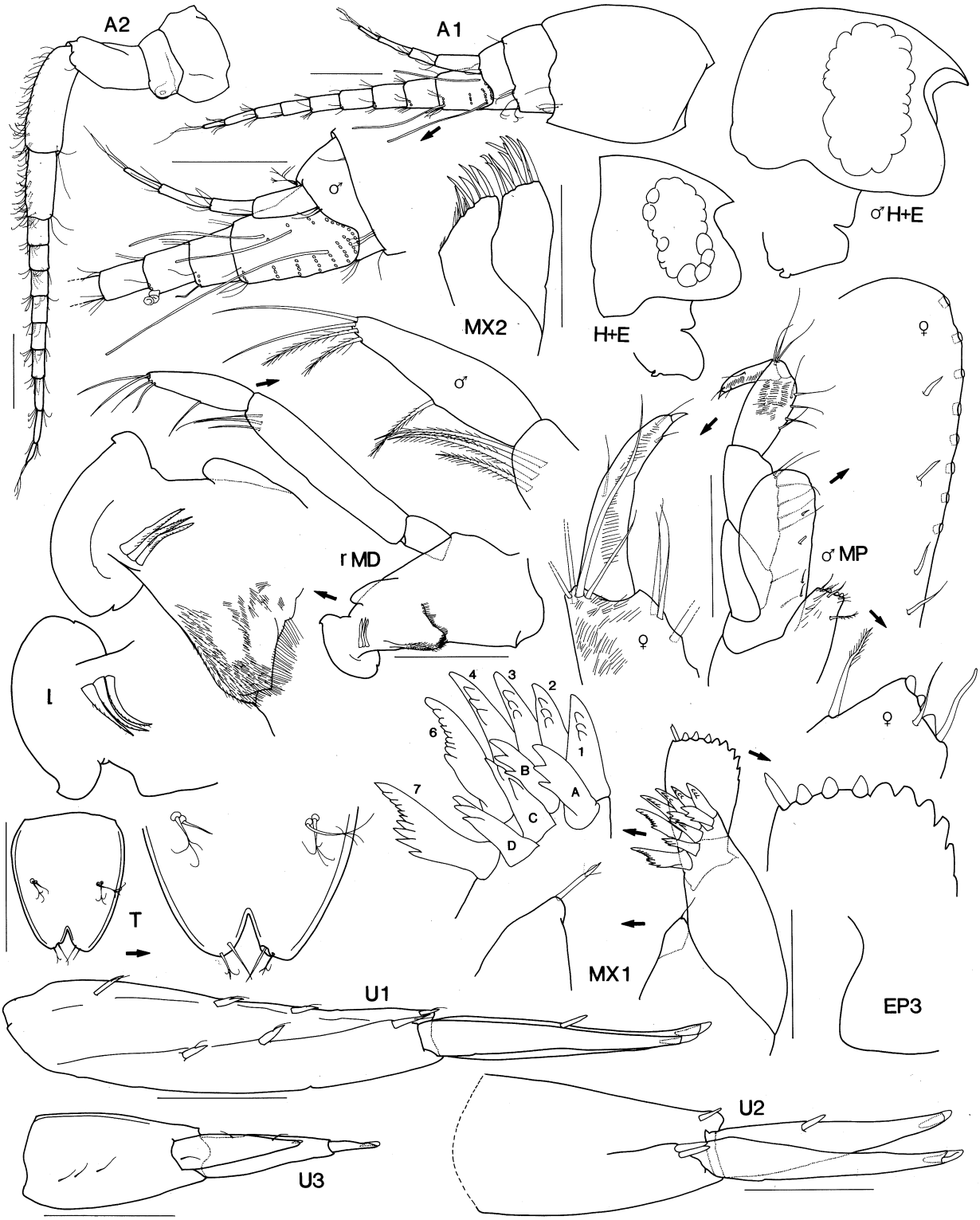

Fig. 18. *Riwo mizeui* n.sp., holotype female, 3.3 mm, AM P41582; paratype male, 2.4 mm, AM P41583, Wongad Natun reef, Madang Lagoon, Papua New Guinea.

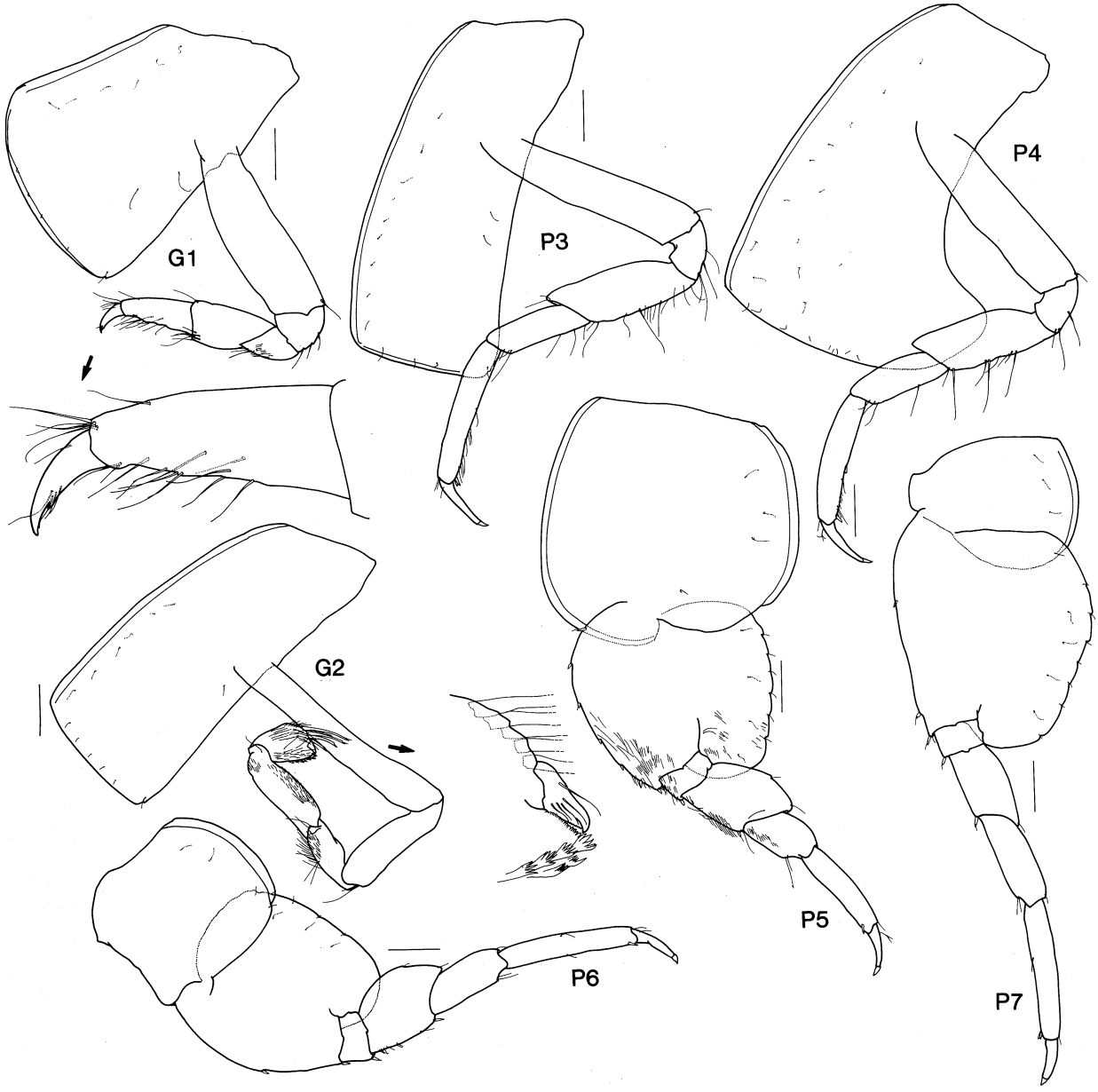

Fig. 19. *Riwo mizeui* n.sp., holotype female, 3.3 mm, AM P41582, Wongad Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

plate large, subrectangular, with 3 apical nodular setae, oblique setal row reduced with 1 pappose seta; outer plate small, subovate, without apical slender or robust setae, medial robust setae vestigial, submarginal setae short, simple; palp large, 4-articulate, article 2 broad, length 2.2 × breadth, 1.2 × article 3, article 3 long, slender, length 2.1 × breadth, dactylus well developed, with 2 subterminal setae, unguis present.

Gnathopod 1: simple; coxa large, as long as coxa 2, anterior margin slightly concave, anteroventral corner rounded, posterior margin straight; basis long, slender, length 3.3 × breadth, anterior margin smooth, without setae; ischium short, length 1.1 × breadth; merus, posterior margin with patch of short setae and a few simple slender setae; carpus subrectangular, short, length 1.9 × breadth, subequal in length to propodus, without denticulate patch near posterodistal margin; propodus small, subrectangular, length 2.2 × breadth, tapering distally, posterior margin smooth, straight, with few slender setae, without denticulate patch near posterior margin, palm absent; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.5 × breadth; carpus long, length 3.5 × breadth, posterior

margin straight; propodus subrectangular, short, length 1.6 × breadth, palm slightly obtuse, with straight, serrate margin, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus weakly expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 9 slender setae and 2 distal locking setae along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin rounded, posterior margin sloping anteriorly; merus weakly expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 8 slender setae and 1 distal locking seta along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin minutely crenate; merus distally expanded, margin sloping proximally, straight distally with 2 setae; propodus with 1 slender seta and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin, without anteroventral lobe; merus expanded posteriorly with rounded posterior margin; propodus with 1 slender seta and 2 distal locking setae along anterior margin; dactylus short, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly, without robust setae; propodus with 1 slender seta and 2 distal locking setae along anterior margin; dactylus short, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 7, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner rounded. *Epimeron 3*: posteroventral corner subquadrate. *Urosomites*: 1 to 3 dorsally smooth. *Uropod 1*: without long fine setae; peduncle with 3 dorsolateral, 1 apicolateral, 2 dorsomedial and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 1 lateral robust seta; inner ramus without robust setae. *Uropod 2*: without fine setae; peduncle with 1 apicolateral and 2 apicomedial robust setae; rami subequal in length, outer ramus with 1 dorsal robust seta; inner ramus without robust setae, without constriction. *Uropod 3*: peduncle long, length 2 × breadth, without dorsolateral flange, without dorsal robust setae, midlateral robust or slender setae, distoventral robust setae or plumose setae; rami lanceolate, inner ramus reduced, about 0.6 × outer ramus; outer ramus 2-articulate, article 2 short; rami without robust setae, plumose setae absent in male and female. *Telson*: length 1.2 × breadth, notched (18%), without dorsal robust setae, with 1 marginal penicillate seta and 1 marginal simple seta on each lobe, without marginal robust setae.

Etymology. Named for John Mizeu, laboratory manager at the Christensen Research Institute and dive partner during the summer of 1990.

Remarks. *Riwo mizeui* is a scavenger living on hard coral bottoms. The black-speckled chromatophore pattern of this species is similar to patterns in scavenging isopod species of the *Cirolana parva* complex. These scavengers also live in hard coral habitats and the speckling may be an adaptive camouflage against predation. An interesting fact about *Riwo* is that it goes onto bait, yet the mouthpart morphology is very similar to that of taxa such as *Parawaldeckia, Lysianassa, Shoemakerella* and *Arugella* Pirlot, 1936, which have never been taken in traps.

Habitat and distribution. *Riwo mizeui* lives mainly on living coral bottoms in 3 to 51 m depth. It is known only from the Madang Lagoon on the north coast of Papua New Guinea.

Tryphosella Bonnier

Tryphosella Bonnier, 1893: 170.–Barnard & Karaman, 1991: 536.

Diagnosis. Mandible: molar with reduced column, proximally setose, with distal triturating surface. Maxilla 1: ST7 slightly displaced from ST6, broad and fully cuspidate down medial margin; STA–STD large, fully cuspidate down medial margin. Gnathopod 1 subchelate; coxa 1 reduced, tapering; propodus and carpus long, rectangular, usually subequal in length.

Remarks. *Tryphosella* belongs in the tryphosine group of the Lysianassidae. This group of about 50 genera is distinguished from other lysianassids by having a modified triturating molar, ST7 slightly displaced from ST6 and a subchelate first gnathopod. Within the group *Tryphosella* is distinguished from other tryphosine genera, except *Cedrosella* Barnard & Karaman, 1987 and *Thrombasia* J.L. Barnard, 1966, by the reduced, tapering first coxa and a proximally setose, distally triturating molar. *Cedrosella* differs from *Tryphosella* in the morphology of the setal-teeth on maxilla 1 outer plate and in having a shortened carpus on gnathopod 1. *Thrombasia* differs from *Tryphosella* in the morphology of the setal-teeth on maxilla 1 outer plate and the telson which is only cleft about halfway. *Galathella* Barnard & Karaman, 1987, also appears to be related to *Tryphosella*, but setal-tooth 7 is strongly displaced down the outer plate of maxilla 1. *Tryphosa* Boeck, 1871, has the same type of setal-teeth on maxilla 1, but it has a fully triturating non-columnar molar, a fully developed first coxa and a shortened carpus on gnathopod 1.

Barnard & Karaman (1991) recognised 54 species of *Tryphosella*. The only key to the genus (J.L. Barnard, 1962) confounds *Tryphosa, Tryphosella* and *Tmetonyx* Stebbing, 1906. *Tryphosella* is possibly the largest lysianassoid genus. It is in critical need of a thorough revision.

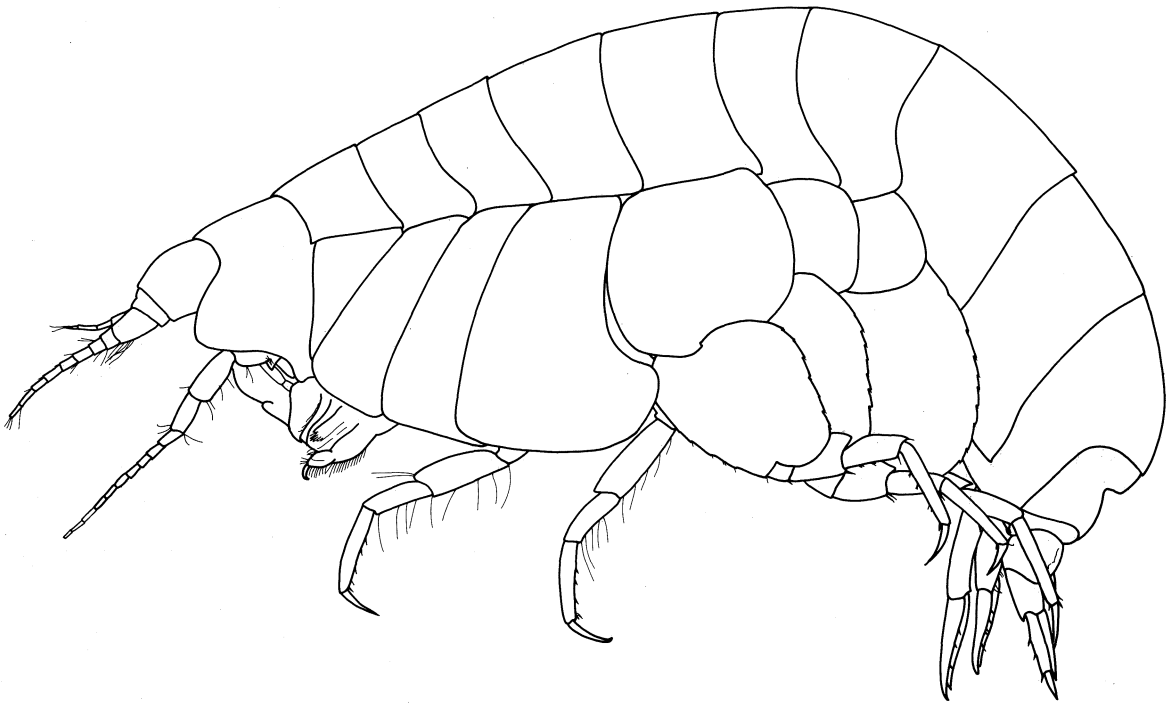

Fig. 20. *Tryphosella astrolabensis* n.sp., paratype female, 5.0 mm, AM P41588, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea.

Tryphosella astrolabensis n.sp.

Figs 20–22

Type material. HOLOTYPE, female, ovigerous (4 eggs), 5.5 mm, AM P41586; PARATYPE, male, 4 mm, AM P41587; 16 PARATYPES, AM P41588; face of outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea, 5°08.59'S 145°49.65'E, baited trap, 390 m, J.K. Lowry & J. Mizeu, 26–27 January 1990, stn JKL/PNG-84. 23 PARATYPES, AM P41591, same locality, 440 m, stn JKL/PNG-85. 1 PARATYPE, male, 5.5 mm, AM P41589; 106 PARATYPES, AM P41590; east from Planet Rock, Astrolabe Bay, Papua New Guinea, 5°15.48'S 145°49.14'E, baited trap on silty mud bottom, about 500 m, J.K. Lowry, S.J. Keable, M.H.P. Jebb & A.A. Myers, 15–16 March 1991, stn JKL/PNG-231. 10 PARATYPES, BMNH 1995.635-644, same locality, stn JKL/PNG-233. 8 PARATYPES, USNM 274114, same locality, stn JKL/PNG-234.

Additional material examined. AM P41646 to P41650, P41754 from stations: JKL/PNG-79 (1), JKL/PNG-82 (2), JKL/PNG-83 (11), JKL/PNG-229 (13), JKL/PNG-232(2), JKL/PNG-236 (13).

Diagnosis. Lateral cephalic lobe large, broadly rounded. Eye weakly lageniform. Epistome: slightly produced, rounded. Maxilliped: outer plate with 3 apical robust setae. Epimeron 3: posteroventral corner with weak spine. Urosomite 1 dorsally rounded, with anterodorsal notch.

Description. Holotype female, 5.5 mm; paratype male, 5.5 mm. *Head and body*: colour whitish; without setae. *Head*: exposed, deeper than long; lateral cephalic lobe large, broadly rounded; rostrum absent; eyes weakly lageniform, red (fading in alcohol), enlarged in reproductive male. *Antenna 1*: medium length, 0.2 × body, peduncular article 1 short, length 1.2 × breadth; peduncular article 2 short, 0.22 × article 1; peduncular article 3 short, 0.15 × article 1; accessory flagellum medium length, 0.46 × primary flagellum, 5-articulate, article 1 long, 1.6 × article 2, not forming cap; flagellum 11-articulate (male 13), callynophore strong 2-field in female and male, with 1 small posterodistal robust seta, with 1 robust seta on article 3, calceoli absent in female (present in adult male). *Antenna 2*: subequal in length to antenna 1 (same in male), female strongly geniculate between peduncular articles 3–4, article 3 short, 0.5 × article 4 (same in male); peduncle without brush setae in female (weak in male); peduncular articles 4 and 5 not enlarged in male or female; flagellum 9+-articulate (male 20), calceoli absent in female (present in adult male).

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome produced, rounded, upper lip not produced, straight. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a stemmed distally serrate blade; accessory setal row without distal setal tuft, left and right rows each with 3 long, slender, multiserrate robust setae, with "bottle-

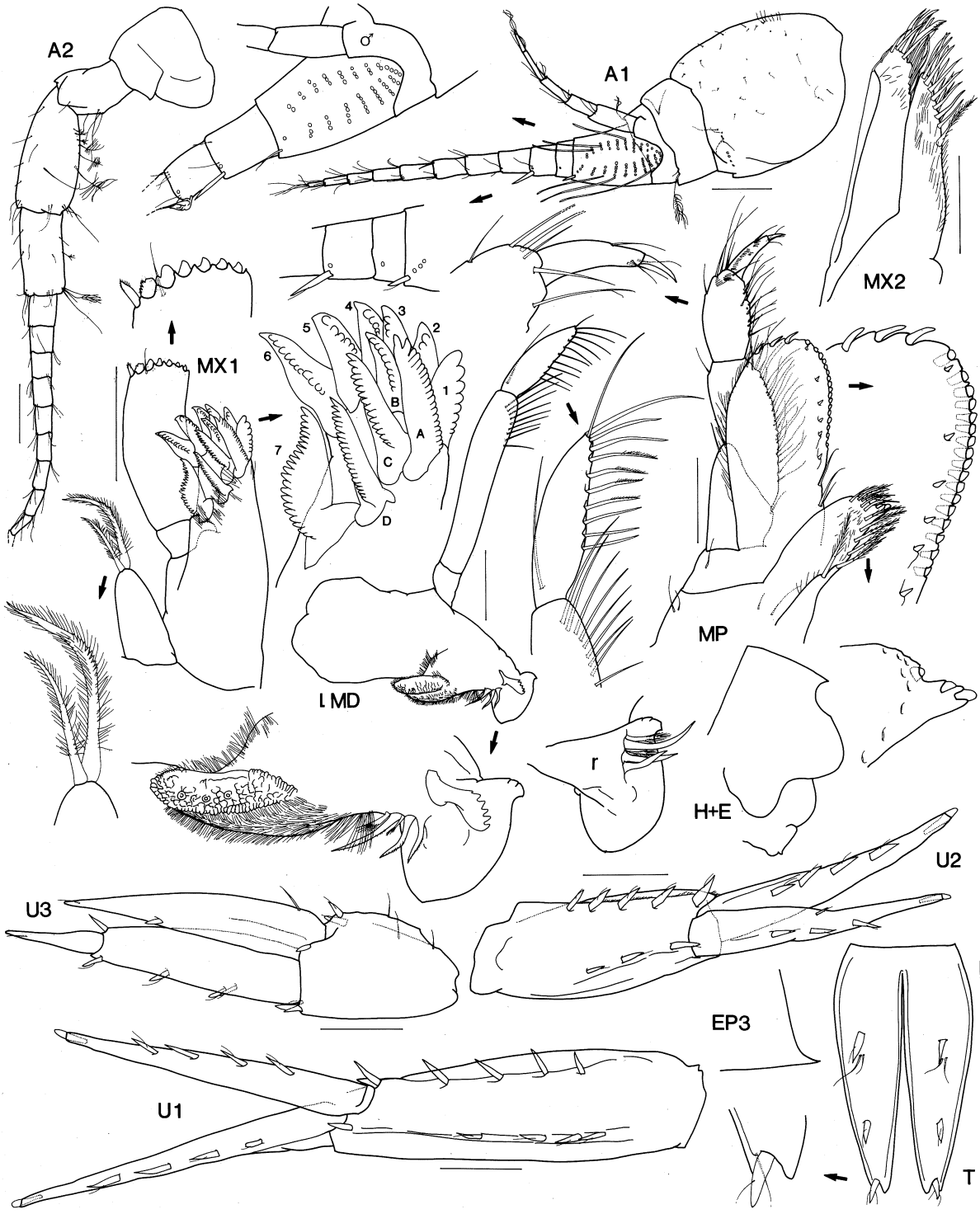

Fig. 21. *Tryphosella astrolabensis* n.sp., holotype female, 5.5 mm, AM P41586, paratype male, 4.0 mm, AM P41587, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

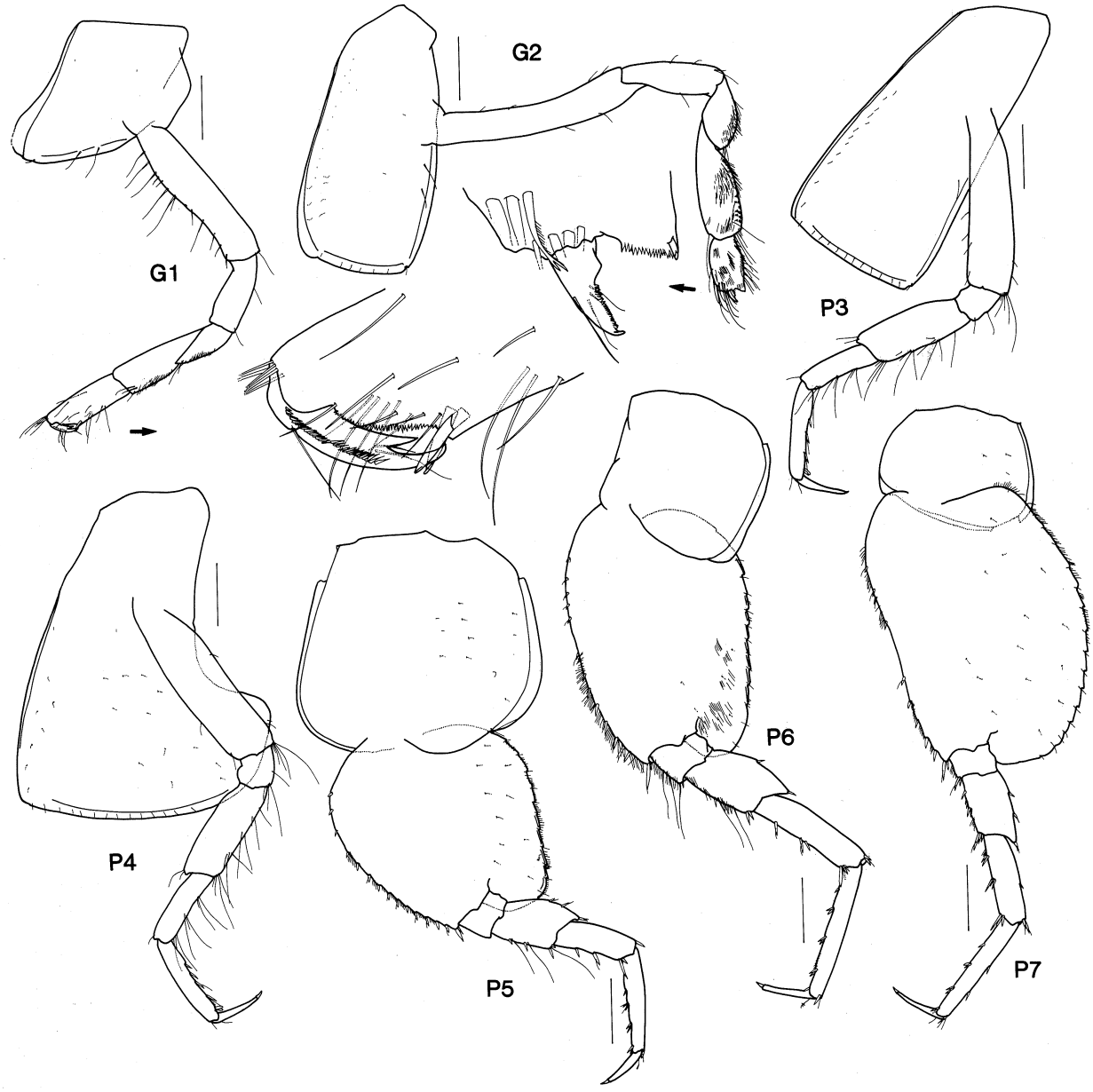

Fig. 22. *Tryphosella astrolabensis* n.sp., holotype female, 5.5 mm, AM P41586, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

brush" intermediate setae; molar proximally setose, distally triturating; mandibular palp attached midway, article 1 short, length 1.5 × breadth; article 2 elongate, slender, length 5.7 × breadth, 1.8 × article 3, with 9 (male 12) posterodistal A2-setae, article 3 falcate, long, length 3.4 × breadth, without B3-setae, with 1 (male 1) A3-seta, with 9 (male 13) D3-setae along most of posterior margin, and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae, outer seta with denticulate row; outer plate with 11 setal-teeth in 6/5 arrangement; outer row with ST1 large, stout, multicuspidate, ST2–ST3 weakly cuspidate, ST4 large, stout, 5-cuspidate, ST5 large, stout, 6-cuspidate, ST6 large, stout, multicuspidate, ST7 symmetrical, slightly displaced from ST6, large, broad, with convex multicuspidate medial margin; inner row with STA large, very broad, slightly displaced from STB–STD, multicuspidate along entire medial margin, STB–STD long, broad, multicuspidate along entire medial margin; palp large, 2-articulate, with 6 short terminal conate setae, with 1 subterminal seta, flag seta present on distolateral corner, distomedial margin smooth. *Maxilla 2*: inner plate narrow, outer plate broad, subequal in length *Maxilliped*: inner plate large, subrectangular,

with 3 apical nodular setae, oblique setal row strong with 9 pappose setae; outer plate medium size, subovate, without apical setae, with 3 apical robust setae, medial robust setae small, submarginal setae short, simple; palp large, 4-articulate, article 2 slender, length 2.6 × breadth, 1.6 × article 3, article 3 short, broad, length 1.9 × breadth, dactylus well developed, with 3 subterminal setae, unguis present.

Gnathopod 1: subchelate; coxa reduced, tapering, anterior margin concave, anteroventral corner produced, rounded, posterior margin distally angled towards anterior margin; basis long, slender, length 4.5 × breadth, anterior margin smooth, with simple setae; ischium long, length 2.6 × breadth; merus, posterior margin with patch of short setae; carpus subrectangular, long, length 3.4 × breadth, longer than (1.3 ×) propodus, with patch of very fine setae near posterior margin; propodus large, subrectangular, length 2.9 × breadth, margins subparallel, posterior margin smooth, straight, without setae, without denticulate patch near posterior margin, palm acute, margin straight, serrate, posterodistal corner with 1 medial and 1 lateral robust setae; dactylus complex, with large subterminal spine and row of 29 medial robust setae. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 2.9 × breadth; carpus long, length 3.1 × breadth, posterior margin broadly lobate; propodus subquadrate, short, length 1.8 × breadth, palm transverse, with straight, serrate margin, posterodistal corner with 1 medial robust seta; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus not expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 3 robust setae and 2 distal locking setae along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; merus not expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 4 robust setae and 2 distal locking setae along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa bilobate, posterior lobe slightly produced ventrally; basis expanded with posterior margin minutely crenate; merus slightly expanded posteriorly; propodus with 5 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus slightly expanded and rounded posteroproximally, straight posterodistally with 2 robust setae; propodus with 7 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin straight; merus anterior and posterior margins subparallel; propodus with 5 robust setae and 2 distal locking setae along anterior margin, with 2 robust setae and 1 distal seta along posterior margin; dactylus long, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 7, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 1*: anteroventral corner rounded. *Epimeron 3*: posteroventral corner produced into weak spine. *Urosomites*: urosomite 1 with anterodorsal notch; urosomite 3, small dorsolateral robust seta not known. *Uropod 1*: without fine setae; peduncle with 4 dorsolateral, 1 apicolateral, 4 dorsomedial and 1 apicomedial robust setae, without robust setae along distal margin; outer ramus slightly longer than inner ramus; outer and inner rami each with 4 dorsal robust setae. *Uropod 2*: without fine setae; peduncle with 4 dorsolateral, 1 apicolateral, 2 dorsomedial and 1 apicomedial robust setae, without robust setae along distal margin; outer ramus slightly longer than inner ramus; outer ramus with 4 dorsal robust setae; inner ramus with 3 dorsal robust setae, without constriction. *Uropod 3*: peduncle short, length 1.5 × breadth, with 2 apicolateral and 1 apicomedial robust setae, without midlateral robust or slender setae, with 3 distoventral robust setae; rami lanceolate, inner ramus reduced, about 0.8 × outer ramus; outer ramus 2-articulate, article 2 short, article 1 with 4 lateral and 1 medial robust setae; inner ramus with 1 medial robust seta; plumose setae absent in female, present in mature male. *Telson*: length 1.8 × breadth, deeply cleft (91%), with 2 dorsal robust setae on each lobe, distal margins incised, with 1 marginal simple seta and 1 marginal robust seta on each lobe.

Etymology. This species is named for Astrolabe Bay, where it was first discovered.

Remarks. *Tryphosella astrolabensis* is remarkably similar to the type species *T. sarsi* Bonnier, 1893, from the Skagerrak, southern Norway. The main differences are: *T. sarsi* has a weaker female callynophore; does not have calceoli; does not have robust setae on the flagellum of antenna 1; has only 1 apical robust seta on the outer plate of the maxilliped; has a shorter ischium on gnathopod 1; has a less well developed notch on urosomite 1; and has several plumose setae on the rami of uropod 3 in the male.

Tryphosella ama Lowry & Stoddart, 1994, also has an elongate ischium on gnathopod 1, but it can be distinguished from *T. astrolabensis* by its poorly developed apical robust setae on the outer plate of the maxilliped, its rounded posteroventral corner on epimeron 3 and its constricted inner ramus on uropod 2.

Tryphosella mucronatus (Pirlot, 1936) from the Banda Sea also has an elongate ischium on gnathopod 1, but is easily distinguished from both of these species by the "photophore-like" organ on the basis of peraeopod 5. *Tryphosella oupi* Lowry & Stoddart (1994) from New Caledonia and the three known Australian species, *T. camelus* (Stebbing, 1910), *T. miersi* (Stebbing, 1888) and *T. orana* J.L. Barnard (1972), all have a short ischium on the first gnathopod and a narrowly rounded posteroventral corner on epimeron 3.

Tryphosella astrolabensis has only been taken in traps. It occurs outside the lagoon on the face of the

barrier reef and into Astrolabe Bay.

Distribution. *Tryphosella astrolabensis* is known only from outside the barrier reef of the Madang Lagoon and northern Astrolabe Bay, northern Papua New Guinea in depths from 90 m to 500 m.

Tryphosella wongada n.sp.

Figs 23, 24

Type material. HOLOTYPE, female, ovigerous (2 eggs), 3.8 mm, AM P41592; PARATYPE, male, 3.0 mm, AM P41593; 50 PARATYPES, AM P41594; top of outer barrier near back edge, directly east of Wongad, patchy hard and soft corals, about 50% cover, large pieces of unconsolidated rubble, *Halimeda* flake sediment, baited trap, 6 m, J.K. Lowry & S.J. Keable, 12–13 March 1991, stn JKL/PNG-201. 60 PARATYPES, AM P41595, top of Padoz Natun reef, Madang Lagoon, Papua New Guinea, 5°09.60'S 145°48.77'E, baited trap sitting among *Porites* and *Acropora* plates, 2 m, J.K. Lowry & S.J. Keable, 17–18 March 1991, stn JKL/PNG-245. 21 PARATYPES, BMNH 1995.645-654, same locality, hard rubble near *Acropora* plates, 1.5 m, stn JKL/PNG-242. 21 PARATYPES, USNM 274115, same locality, rubble depression near large soft coral plates and *Acropora* plates, 2 m, stn JKL/PNG-244.

Additional material examined. AM P41651 to P41660, P41732 to P41753 from stations: JDT/PNG-11 (1), JKL/PNG-104 (2), JKL/PNG-105 (2), JKL/PNG-106 (8), JKL/PNG-107 (1), JKL/PNG-113 (1), JKL/PNG-114 (1), JKL/PNG-115 (6), JKL/PNG-191 (29), JKL/PNG-192 (23), JKL/PNG-193 (67), JKL/PNG-194 (84), JKL/PNG-195 (60), JKL/PNG-196 (185), JKL/PNG-197 (7), JKL/PNG-198 (23), JKL/PNG-199 (32), JKL/PNG-200 (10), JKL/PNG-201 (4), JKL/PNG-202 (55), JKL/PNG-203 (12), JKL/PNG-204 (17), JKL/PNG-205 (4), JKL/PNG-241 (133), JKL/PNG-242 (6), JKL/PNG-243 (7), JKL/PNG-244 (8), JKL/PNG-245 (9), JKL/PNG-246 (14), JKL/PNG-248 (2).

Diagnosis. Lateral cephalic lobe large, broadly rounded. Eye weakly lageniform. Epistome: produced, rounded. Maxilliped: outer plate with 1 apical robust seta. Epimeron 3: posteroventral corner subacutely produced. Urosomite 1 dorsally rounded, with anterodorsal notch.

Description. Holotype female, 3.8 mm; paratype male, 3.0 mm. *Head and body*: colour whitish; without setae. *Head*: exposed, deeper than long; lateral cephalic lobe large, broadly rounded; rostrum absent; eyes weakly lageniform, red (fading in alcohol), enlarged in adult male. *Antenna 1*: medium length, 0.2 × body, peduncular article 1 short, length 1.2 × breadth; peduncular article 2 short, 0.33 × article 1; peduncular article 3 short, 0.15 × article 1; accessory flagellum medium length, 0.44 × primary flagellum, 3-articulate, article 1 long, 1.2 × article 2 (male, long, 1.7 × article 2), not forming cap; flagellum 8-articulate (male 9), callynophore weak 2-field in female (strong 2-field in male), with 1 small posterodistal robust seta, with 1 robust seta on article 2; calceoli absent in female, present in adult male. *Antenna 2*: subequal in length to antenna 1 (same in male), female strongly geniculate between peduncular articles 3–4, article 3 short, 0.5 × article 4 (male strongly geniculate between peduncular articles 3–4, article 3 short, 0.6 × article 4); peduncle without brush setae in female, weak in male; peduncular article 1 not greatly enlarged; peduncular articles 4 and 5 not enlarged in male or female; flagellum 7-articulate (male 13), calceoli absent in female (present in adult male).

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: separate, epistome produced, rounded, upper lip not produced, straight. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a stemmed distally serrate blade; accessory setal row without distal setal tuft, left and right rows each with 3 long, slender, "bushy" robust setae, with "bottle-brush" intermediate setae; molar proximally setose, distally triturating; mandibular palp attached midway, article 1 short, length 1.2 × breadth; article 2 elongate, slender, length 4.6 × breadth, 2 × article 3, with 5 (male 9) posterodistal A2-setae, article 3 falcate, long, length 3.2 × breadth, without B3-setae, with 1 (male 1) A3-seta, with 7 (male 10) D3-setae along most of posterior margin, and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae, outer pappose seta with denticulate row; outer plate with 11 setal-teeth in 6/5 arrangement; outer row with ST1 large, stout, multicuspidate, ST2–ST3 weakly cuspidate, ST4 large, stout, 5-cuspidate, ST5 large, stout, 7-cuspidate, ST6 large, stout, multicuspidate, ST7 symmetrical, slightly displaced from ST6, large, broad, with convex multicuspidate medial margin; inner row with STA large, very broad, slightly displaced from STB–STD, multicuspidate along entire medial margin, STB–STD long, broad, multicuspidate along entire medial margin; palp large, 2-articulate, with 5 short terminal setae, with 1 subterminal seta, flag seta present on distolateral corner, distomedial margin smooth. *Maxilla 2*: inner plate narrow, outer plate broad, inner plate 0.8 × length outer plate. *Maxilliped*: inner plate large, subrectangular, with 3 apical nodular setae, oblique setal row strong with 7 pappose setae; outer plate medium size, subovate, without apical slender setae, with 1 apical robust seta, medial robust setae small, submarginal setae short, simple; palp large, 4-articulate, article 2 slender, length 2.7 × breadth, 1.6 × article 3, article 3 short, broad, length 2 × breadth, dactylus well developed, with 3 subterminal setae, unguis present.

Gnathopod 1: subchelate; coxa reduced, tapering, anterior margin concave, anteroventral corner produced, rounded, posterior margin distally angled towards anterior margin; basis long, slender, length 4.5 × breadth, anterior margin smooth, with simple setae; ischium long, length 2.1 × breadth; merus, posterior margin with patch of short setae; carpus subrectangular, long, length 2.8 × breadth, longer than (1.2 ×) propodus, with patch of very fine setae near posterior margin; propodus large, subrectangular, length 2.4 × breadth, margins subparallel, posterior margin smooth, straight, with setae, with very fine setae near posterior margin, palm acute, margin

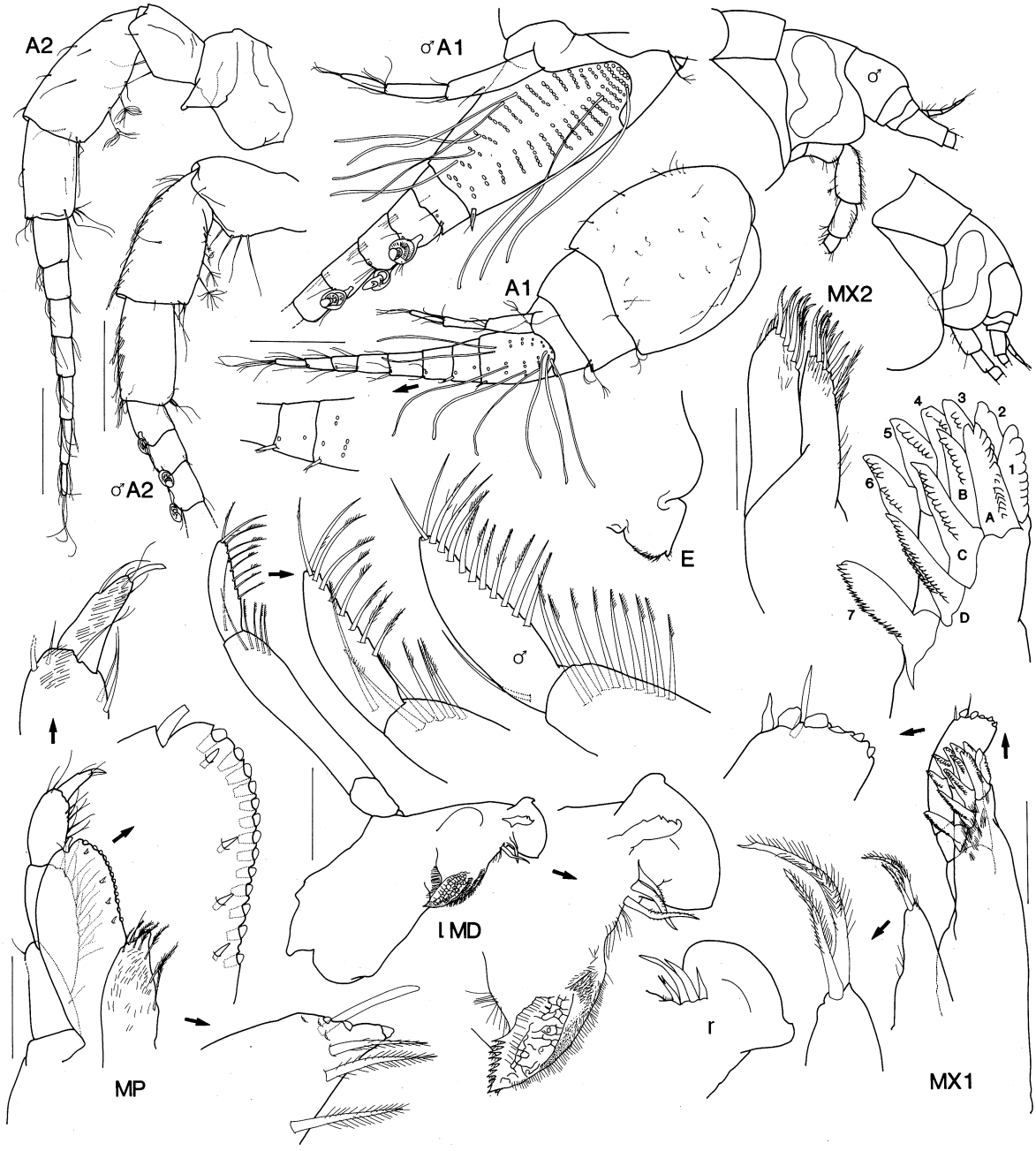

Fig. 23. *Tryphosella wongada* n.sp., holotype female, 3.8 mm, AM P41592; paratype male, 3.0 mm, AM P41593, top of outer barrier directly east of Wongad, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

straight, serrate, posterodistal corner with 1 medial and 1 lateral robust setae; dactylus complex, with large subterminal spine and row of 26 medial robust setae. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.2 × breadth; carpus long, length 3.3 × breadth, posterior margin broadly lobate; propodus subquadrate, short, length 1.5 × breadth, palm transverse, with straight, serrate margin, posterodistal corner with 1 medial robust seta; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus weakly expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 3 robust setae and 2 distal locking setae along posterior margin; dactylus long, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded,

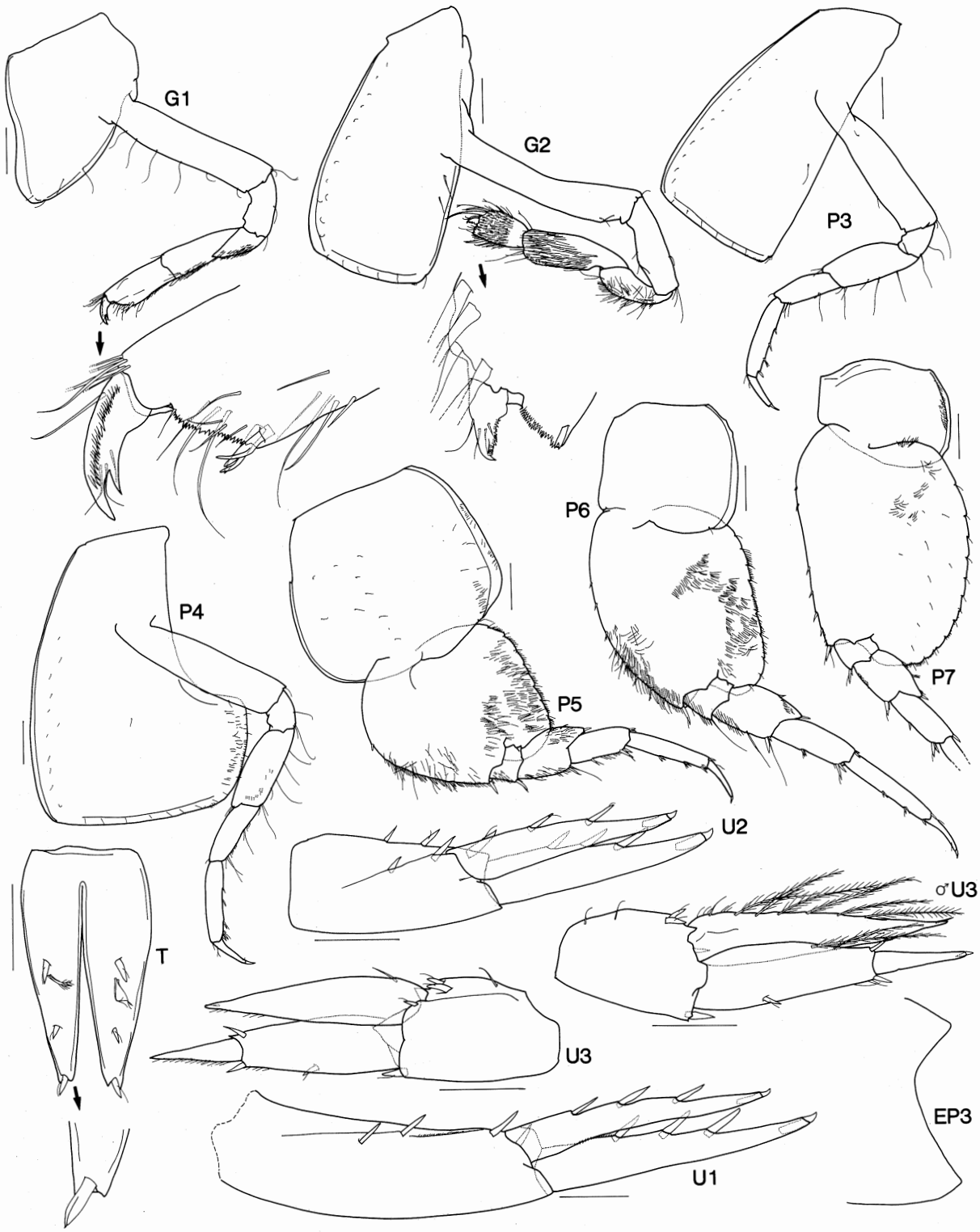

Fig. 24. *Tryphosella wongada* n.sp., holotype female, 3.8 mm, AM P41592, paratype male, 3.0 mm, AM P41593, top of outer barrier directly east of Wongad, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

posterior margin slightly sloping anteriorly; merus weakly expanded anteriorly, male and female merus-carpus without plumose setae; propodus with 3 robust setae and 2 distal locking setae along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa bilobate, posterior lobe slightly produced ventrally; basis expanded with posterior margin minutely crenate; merus slightly expanded posteriorly; propodus with 4 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus slightly expanded and rounded posteroproximally, straight posterodistally with 2 robust setae; propodus with 4 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin straight; merus anterior and posterior margins subparallel; propodus and dactylus not known.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 7, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner subacutely produced. *Urosomites*: urosomite 1 with anterodorsal notch; urosomite 3, small dorsolateral robust seta not known. *Uropod 1*: without fine setae; peduncle with 2 dorsolateral, 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer and inner rami each with 3 dorsal robust setae. *Uropod 2*: without fine setae; peduncle with 2 dorsolateral, 1 apicolateral, 1 dorsomedial and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 3 dorsal robust setae; inner ramus with 2 dorsal robust setae, without constriction. *Uropod 3*: peduncle short, length 1.7 × breadth, with 2 apicolateral and 1 apicomedial robust setae, without midlateral slender or robust setae, with 1 distoventral robust seta, without plumose setae; rami lanceolate, inner ramus reduced, about 0.8 × outer ramus; outer ramus 2-articulate, article 2 short, article 1 with 2 lateral and 1 medial robust setae; inner ramus without robust setae; plumose setae present in male only. *Telson*: length 1.8 × breadth, deeply cleft (84%), with 2 dorsal robust setae on each lobe, distal margins incised, without marginal penicillate or simple setae, with 1 marginal robust seta on each lobe.

Etymology. This species is named for Wongad, where it was first discovered.

Remarks. *Tryphosella wongada* and *T. astrolabensis* are very closely related species. Morphologically *T. wongada* differs from *T. astrolabensis* in the number of setae on the articles of the mandibular palp, the number of setae on the inner plate and the number of apical robust setae on the outer plate of the maxilliped, the shape of epimeron 3 and uropods 1 to 3 have fewer robust setae. Adults of *T. wongada* are only half the size of *T. astrolabensis*.

Tryphosella wongada also has an elongate ischium on gnathopod 1. It differs from *T. ama* in having one well developed apical robust seta on the outer plate of the maxilliped and a subacutely produced posteroventral corner on epimeron 3.

Ecologically *T. wongada* is confined to shallow water in the Madang Lagoon whereas *T. astrolabensis* only occurs in deep water outside the lagoon. Both species have only been taken in traps.

Distribution. *Tryphosella wongada* is known only from the greater Madang Lagoon (in 1 to 17 m depth) on the north coast of Papua New Guinea.

Opisidae n.fam.

Diagnosis. *Head* deeper than long, lateral cephalic lobe large, broad, ventrolateral flap present. Antenna 1: callynophore present in female and male; calceoli present or absent in female and male. Antenna 2: peduncular article 1 not greatly enlarged; peduncular article 3 without distal hook. *Mouthpart bundle*: subquadrate or subconical. *Epistome* and *upper lip* fused or separate. *Mandible*: incisors asymmetrical; left lacinia mobilis usually absent, occasionally a stemmed blade; accessory setal row well developed, without distal setal tuft, with accessory setae, with or without intermediate setae; molar absent; palp with A2-setae only. *Maxilla 1*: outer plate setal-teeth in an 8/3 crown arrangement (sometimes modified), palp large, 2-articulate. *Maxilla 2*: without oblique setal row. *Maxilliped*: outer plate without apical slender setae, usually without robust setae, occasionally vestigial robust setae present, medial setae vestigial or absent; palp small, 3- or 4-articulate, dactylus usually absent, occasionally present, then unguis absent. *Gnathopod 1* chelate, occasionally subchelate, coxa reduced, posterior margin of propodus smooth, occasionally minutely serrate, dactylus simple, usually strongly curved. *Gnathopod 2*: coxa large; posterodistal corner of propodus with robust setae, occasionally absent. *Peraeopods 3–5* simple, without distal spurs. *Peraeopod 4*: coxa with large posteroventral lobe. *Peraeopods 5* and *6*: basis expanded, usually strongly crenate. *Gills*: from gnathopod 2 to peraeopod 6 or 7, not pleated. *Uropod 2*: inner ramus without constriction. *Urosomite 3* without small dorsolateral robust seta. *Uropod 3*: peduncle without dorsolateral flange, outer ramus 1- or 2-articulate, if 2-articulate then article 2 short. *Telson* entire to deeply cleft.

Type genus. *Opisa* Boeck, 1876.

Generic composition. The family contains 4 genera: *Normanion* Bonnier, 1893; *Opisa* Boeck, 1876; *Podoprionella* Sars, 1895; and *Podoprionides* Walker, 1906.

Remarks. The 8/3 crown arrangement of maxilla 1 outer plate setal-teeth may be derived from a simple 7/4 arrangement (Fig. 25a) in which eleven distal setal-teeth on the outer plate of maxilla 1 occur in two rows, an apical row of seven setal-teeth (known as ST1 to ST7) and a subapical row of four setal-teeth (known as STA to STD). In the 8/3 crown arrangement (Fig. 25b) the outer row (containing STA and ST1 to ST7) is curved around the distal margin of the plate and the inner row (containing STB to STD) extends down the medial face of the plate. Within some genera of the Opisidae individual setal-teeth may be absent.

Distribution. Cosmopolitan.

Key to Genera of Opisidae

1. Gnathopod 1 chelate or subchelate; uropod 3 peduncle equal to or shorter than rami 2

—— Gnathopod 1 subchelate; uropod 3, peduncle longer than rami ..... *Normanion*

2. Mandible, molar absent; maxillipedal palp 3-articulate; peraeopods 5–7 strongly serrate 3

—— Mandible, molar present, a large setose flap; maxillipedal palp 4-articulate; peraeopods 5–7 minutely serrate ..... *Opisa*

3. Uropod 3, peduncle with large distoventral spur, outer ramus 1-articulate; telson entire ..... *Podoprionella*

—— Uropod 3, peduncle without distoventral spur, outer ramus 2-articulate; telson deeply cleft ..... *Podoprionides*

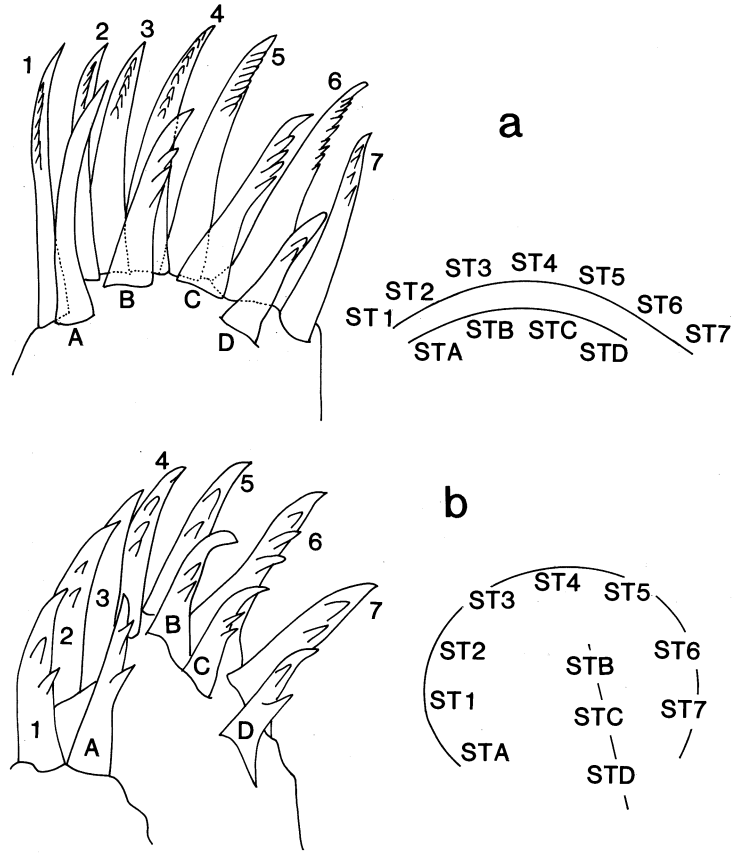

Fig. 25. Setal-teeth of maxilla 1 outer plate: a: simple 7/4 arrangement; b: 8/3 crown arrangement.

Normanion Bonnier

Normania Boeck, 1871: 119 (homonym).
Normanion Bonnier, 1893: 167.–Barnard & Karaman, 1991: 504.

Diagnosis. Mouthpart bundle subquadrate. Mandible: molar present; lacinia mobilis absent; mandibular palp attached midway to slightly proximal. Maxillipedal palp 3-articulate or with vestigial fourth article. Gnathopod 1 subchelate. Peraeopods 5–7, basis with smooth posterior margin. Uropod 3: peduncle longer than rami, without distoventral spur; outer ramus 1-articulate. Telson entire.

Type species. *Opis quadrimana* Bate & Westwood, 1868, monotypy.

Species composition. *Normanion* contains six species: *N. abyssi* Chevreux, 1903; *N. amblyops* Sars, 1895; *N. chevreuxi* Diviacco & Vader, 1988; *N. quadrimanus* (Bate & Westwood, 1868); *N. ruffoi* Diviacco & Vader, 1988; and *N. sarsi* Stebbing, 1906.

Remarks. *Normanion* differs from other opisid genera in having a very long peduncle and a 1-articulate outer ramus on uropod 3. *Normanion* and *Opisa* both have a large setose flap molar and posterodistal robust setae on the propodus of gnathopod 1. *Normanion* and *Podoprionella* both have a 3-articulate maxillipedal palp and an entire telson. *Normanion* and *Podoprionides* both have a 3-articulate maxillipedal palp.

Distribution. *Normanion* is known from the boreal and warm temperate North Atlantic Ocean in 20 to 2368 m depth.

Opisa Boeck

Opis Krøyer, 1842: 149 (homonym).
Opisa Boeck, 1876: 190.–Bousfield, 1987: 5.–Barnard & Karaman, 1991: 506.

Type species. *Opis eschrichtii* Krøyer, 1842, monotypy.

Diagnosis. Mouthpart bundle subquadrate. Mandible: molar present; lacinia mobilis present; mandibular palp attached midway. Maxillipedal palp 4-articulate. Gnathopod 1 chelate. Peraeopods 5–7, basis with minutely serrate posterior margin. Uropod 3: peduncle shorter than rami, without distoventral spur; outer ramus 2-articulate, article 2 short. Telson cleft.

Species composition. *Opisa* contains three species: *O. eschrichtii* (Krøyer, 1842); *O. odontochela* Bousfield, 1987; and *O. tridentata* Hurley, 1963.

Remarks. *Opisa* may be the most primitive opisid genus. It is the only genus with a lacinia mobilis, well developed A2-setae and D3-setae on the mandibular palp and a 4-articulate maxillipedal palp. It also has calceoli on the antennae, separate epistome and upper lip and a molar. *Opisa* and *Normanion* both have a large setose flap molar and posterodistal robust setae on the propodus of gnathopod 1. *Opisa, Podoprionides* and some *Podoprionella* have chelate first gnathopods, and *Opisa* and *Podoprionides* both have entire telsons.

Distribution. *Opisa* is known from the North Polar Sea, boreal Atlantic and Pacific south to California in 30 to 432 m depth.

Podoprionella Sars

Podoprionella Sars, 1895: 687.–Barnard & Karaman, 1991: 518.

Type species. *Podoprionella* Sars, 1895, monotypy.

Diagnosis. Mouthpart bundle subconical. Mandible: molar absent; lacinia mobilis absent; mandibular palp attached proximally. Maxillipedal palp 3-articulate. Gnathopod 1 chelate or subchelate. Peraeopods 5–7, basis with strongly serrate posterior margin. Uropod 3: peduncle shorter than rami, with distoventral spur; outer ramus 1-articulate. Telson entire or incised.

Species composition. *Podoprionella* contains three species: *P. dagadugaban* n.sp.; *P. fissicaudata* Ledoyer, 1977; and *P. norvegica* Sars, 1895.

Remarks. *Podoprionella* is closely related to *Podoprionides*. The main differences between these genera are: *Podoprionella* has a weakly developed accessory setal row, no distoventral spur on the peduncle of uropod 3, a 1-articulate outer ramus on uropod 3 and an entire or incised telson.

Distribution. North-east North Atlantic Ocean; Mediterranean Sea; Bismarck Sea, north-west South Pacific Ocean in 12 to 180 m depth.

Podoprionides Walker

Podoprionides Walker, 1906: 457.–Barnard & Karaman, 1991: 519.

Type species. *Podoprionides incerta* Walker, 1906, monotypy.

Diagnosis. Mouthpart bundle subconical. Mandible: molar absent; lacinia mobilis absent; mandibular palp attached extremely proximally. Maxillipedal palp 3-articulate. Gnathopod 1 chelate. Peraeopods 5–7, basis with strongly serrate posterior margin. Uropod 3: peduncle shorter than rami, without distoventral spur;

outer ramus 2-articulate, article 2 elongate. Telson cleft.

Species composition. *Podoprionides* contains one species: *P. incerta* Walker, 1906.

Remarks. See *Podoprionella*.

Distribution. Eastern Antarctica, Southern Ocean, depths uncertain.

Podoprionella Sars

Key to Species of *Podoprionella*

1. Gnathopod 1 chelate 2
—— Gnathopod 1 subchelate ..... *P. dagadugaban*
2. Mandibular palp, articles 2 and 3 subequal ..... *P. fissicaudata*
—— Mandibular palp, article 2 much longer than article 3 ..... *P. norvegica*

Podoprionella dagadugaban n.sp.

Figs 26–28

Type material. HOLOTYPE, female, 2.9 AM P41757, east side of Padoz Natun reef, Madang Lagoon, Papua New Guinea, 5°09.60'S 145°48.77'E, baited trap sitting among solid coral cover, over thin sediment and *Millipora* crust, 12 m, J.K. Lowry & S.J. Keable, 17–18 March, 1991, stn JKL/PNG-248.

Diagnosis. Maxilla 1: outer plate setal-teeth with cusps on both margins. Gnathopod 1 subchelate. Uropod 3: inner ramus vestigial. Telson entire.

Description. Holotype female, 3 mm; male not known. *Head and body*: without setae, colour not known. *Head*: exposed, deeper than long; lateral cephalic lobe large, broad, distally truncated; rostrum small; eyes oval. *Antenna 1*: short, 0.15 × body; peduncular article 1 short, length 1.1 × breadth; peduncular article 2 long, 0.5 × article 1; peduncular article 3 long, 0.22 × article 1; accessory flagellum medium length, 0.39 × primary flagellum, 2-articulate, article 1 long, 1.5 × article 2, not forming cap; flagellum 5-articulate, callynophore weak 1-field in female, without posterodistal robust or slender setae, without flagellar robust setae, calceoli absent in female. *Antenna 2*: slightly longer than antenna 1; peduncle without brush setae in female, peduncular article 1 not greatly enlarged, female weakly geniculate between peduncular articles 3–4, article 3 short, 0.37 × article 4, peduncular articles 4 and 5 not enlarged in female; flagellum 4-articulate, calceoli absent in female.

Mouthpart bundle: subconical. *Epistome* and *upper lip*: fused, slightly convex. *Mandible*: incisors symmetrical, large, with straight margins; laciniae mobilis absent; accessory setal row without distal setal tuft, left and right rows each with 2 short, slender, simple robust setae without intermediate setae; molar absent; mandibular palp attached extremely proximally; article 1 short, length 1.2 × breadth; article 2 elongate, slender, length 6 × breadth, 2.8 × article 3, with 2 posterodistal A2-setae, without D2-setae; article 3 tapering distally, short, length 2.8 × breadth, without A3-, B3- or D3-setae, with 1 apical E3-seta. *Maxilla 1*: inner plate not known, possibly absent; outer plate narrow with 7 setal-teeth in modified 8/3 crown arrangement; setal-teeth in outer row, cusps where present, in 2 rows, with ST1–ST3 large, stout, multicuspidate, ST4 large, stout, with 2 lateral and 4 medial cusps, ST5 large, slender, with 3 lateral and 4 medial cusps, ST6 large, slender, with 4 lateral and 3 medial cusps, ST7 absent; inner row with STA large, slender, without cusps, STB–STD absent; palp large, 2-articulate, with smooth apical margin, without subterminal setae, flag seta absent, distomedial margin smooth. *Maxilla 2*: inner plate broad, outer plate narrow, inner plate 0.74 × length outer plate. *Maxilliped*: inner plate large, subrectangular, without nodular setae, without distal robust setae on lateral face, oblique setal row absent; outer plate large, subovate, without apical slender or robust setae, medial robust setae vestigial, submarginal setae long, simple; palp small, 3-articulate, article 2 broad, length 1.6 × breadth, 1.3 × article 3, article 3 short, slender, length 2.2 × breadth, dactylus absent.

Peraeonites: 1 to 7 dorsally smooth. *Gnathopod 1*: subchelate; coxa reduced, anterior margin slightly convex, anteroventral corner rounded, posterior margin slightly convex; basis long, slender, length 4.7 × breadth, anterior margin smooth, with simple setae; ischium long, length 1.7 × breadth; merus, posterior margin with a few simple setae; carpus wedge-shaped, produced anteriorly, short, length 1 × breadth, subequal in length to propodus, propodus large, subquadrate, length 0.7 ×

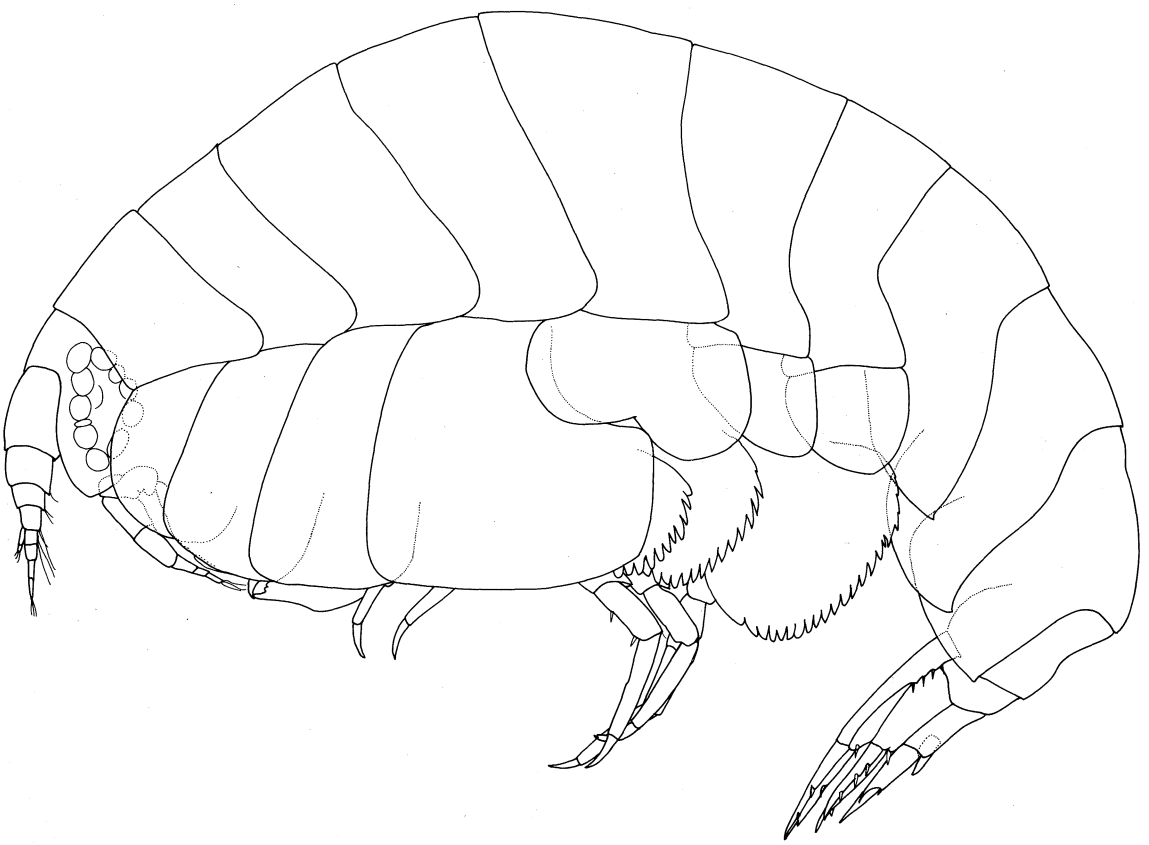

Fig. 26. *Podoprionella dagadugaban* n.sp., holotype female, 2.9 mm, AM P41757, Padoz Natun reef, Madang Lagoon, Papua New Guinea.

breadth, margins subparallel, posterior margin smooth, convex, without robust or slender setae, palm slightly obtuse, margin straight, castellate, posterodistal corner with produced spine; dactylus simple, with many subterminal spines. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.5 × breadth; carpus very long, length 5.2 × breadth, posterior margin straight; propodus subrectangular, long, length 2.5 × breadth, palm slightly obtuse, with convex, serrate margin, posterodistal corner with 1 medial and 1 lateral robust seta; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; merus not expanded anteriorly, female merus-carpus without plumose setae, male not known; propodus with 1 seta along posterior margin; dactylus short, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior and posterior margins subparallel; merus not expanded anteriorly, female merus-carpus without plumose setae, male not known; propodus with 1 seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin strongly serrate; merus slightly expanded posteriorly; propodus with 1 robust seta along anterior margin; dactylus short, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded, posterior margin with many fine, deep serrations, without anteroventral lobe; merus slightly expanded posteriorly; propodus posterior margin without robust setae; dactylus short, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin almost straight, with many fine, deep serrations, posteroventral corner rounded, posteroventral margin rounded; merus slightly expanded posteriorly, with 1 robust seta; propodus with 1 robust seta and 1 distal locking seta along anterior margin and 1 seta along posterior margin; dactylus short, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner weakly notched. *Urosomites*: 1 to 3 dorsally smooth; urosomite 3 without small dorsolateral robust seta. *Uropod 1*: without fine setae; peduncle with 4 dorsolateral, 1 apicolateral, 1 dorsomedial and 1 apicomedial robust setae; rami subequal in length; outer ramus with 2 lateral and 2 medial robust setae; inner ramus with 3 lateral robust setae. *Uropod 2*: without fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly shorter than inner ramus; outer ramus with 3 lateral robust setae in weak acclivities; inner ramus with 1 medial and 2

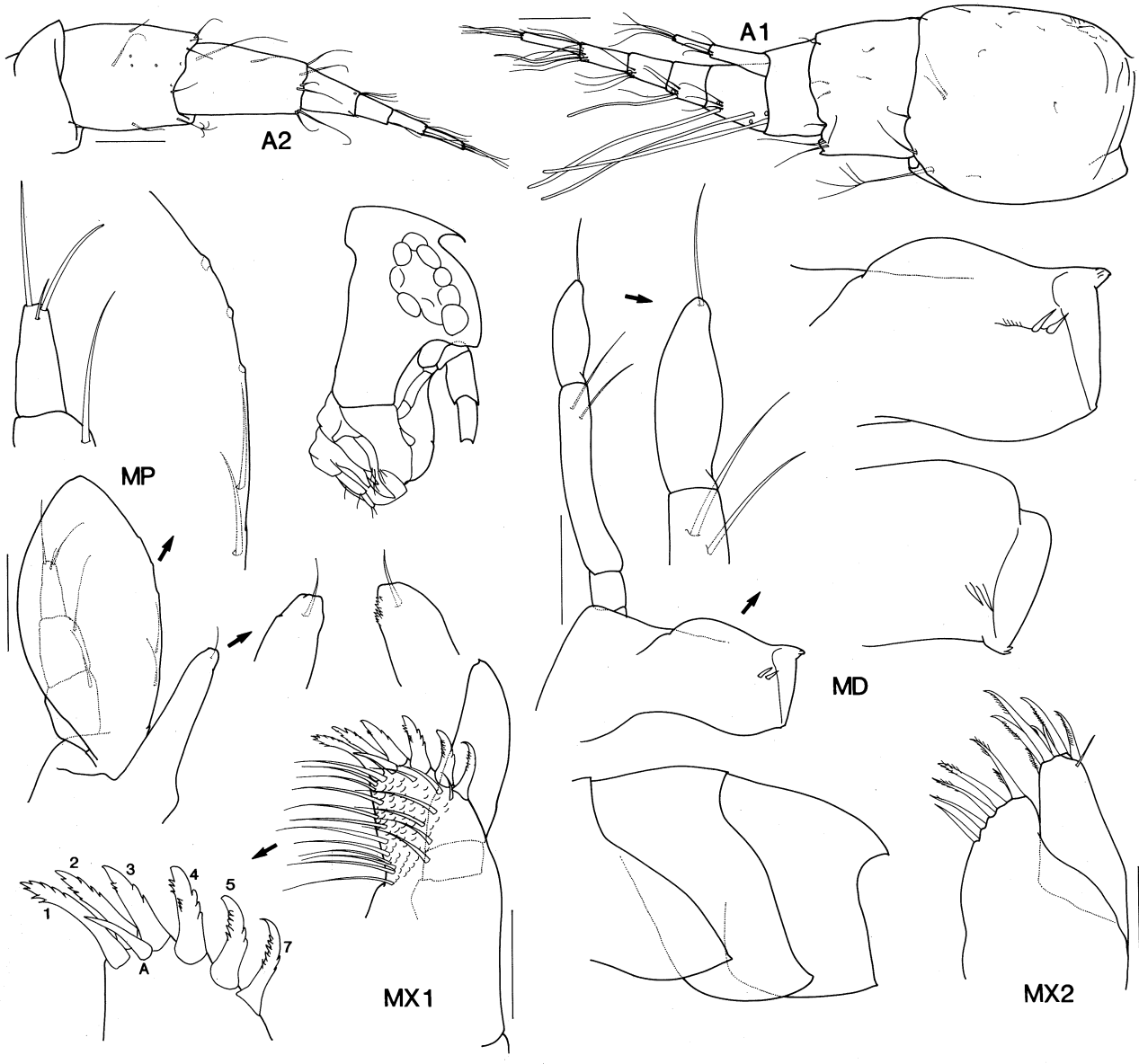

Fig. 27. *Podoprionella dagadugaban* n.sp., holotype female, 2.9 mm, AM P41757, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

lateral robust setae, without constriction. *Uropod 3*: peduncle short, length 1.8 × breadth, without dorsal robust setae, midlateral robust or slender setae, with large distoventral spine, without plumose setae; rami lanceolate, inner ramus reduced, about 0.1 × outer ramus; outer ramus 1-articulate; rami without robust setae, plumose setae absent in female. *Telson*: length 1.1 × breadth, entire, without dorsal robust setae, with sparse dorsal slender setae, distal margin rounded, with 2 simple submarginal setae, without marginal penicillate or robust setae.

Etymology. Named for Dagadugaban reef near Wongad in Madang Lagoon.

Remarks. *Podoprionella dagadugaban* differs from *P. norvegica* and *P. fissicaudata* in having only 2 robust setae in the mandibular accessory setal row, gnathopod 1 subchelate with a castellate transverse palm, uropod 3 inner ramus vestigial and distal margins of the telson regularly shaped. *Podoprionella dagadugaban* differs further from *P. fissicaudata* in having mandibular palp article 2 much longer than article 3.

Podoprionella dagadugaban was taken in a baited trap on a hard coral bottom at Padoz Natun reef. The mouthparts and gnathopods indicate that this species is not a scavenger. It is possible that *P. dagadugaban*, like its close relatives in the genera *Normanion* and *Opisa*, is an ectoparasite of fish and was attracted to the strong

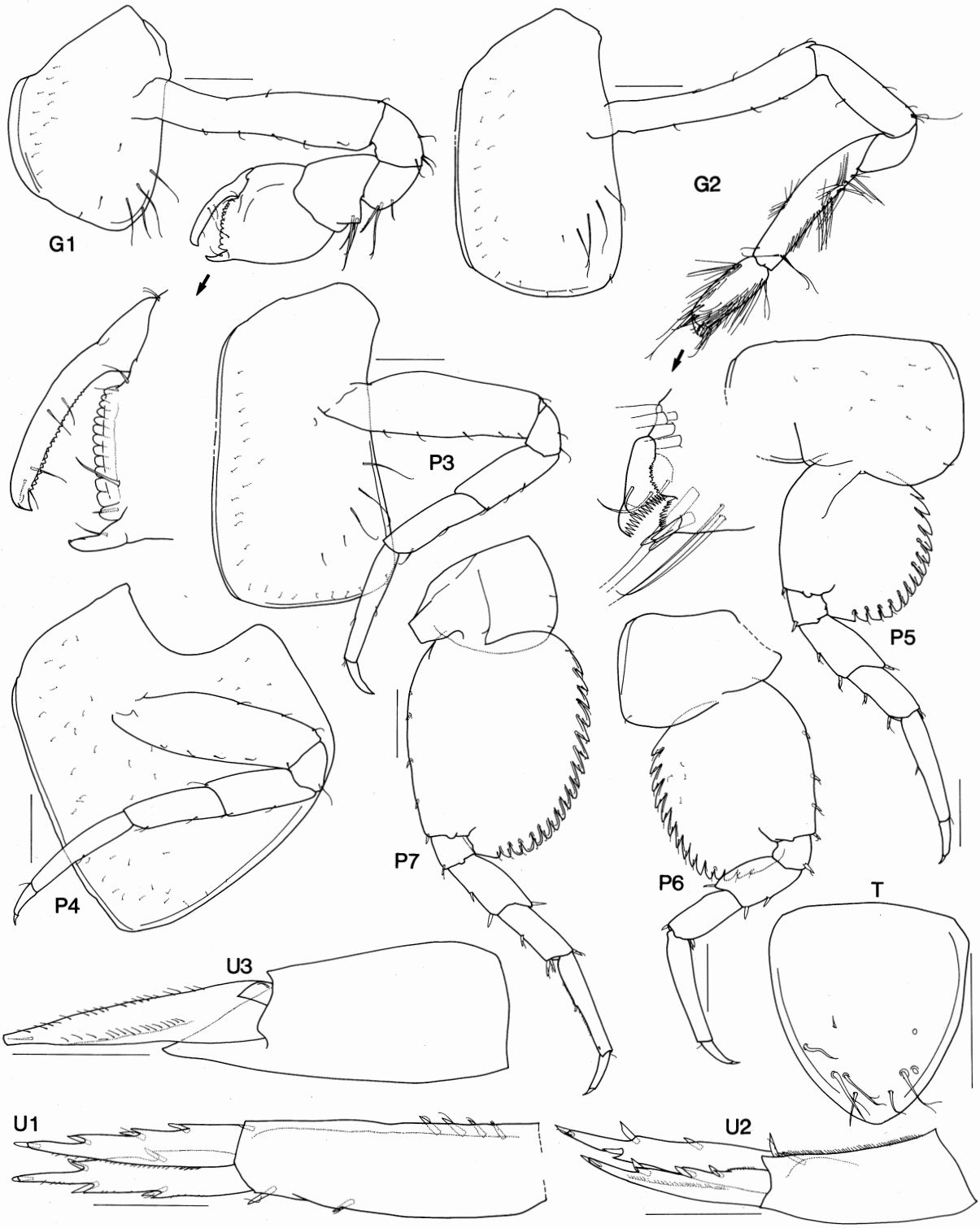

Fig. 28. *Podoprionella dagadugaban* n.sp., holotype female, 2.9 mm, AM P41757, Padoz Natun reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

smell of fish emanating from the trap. Lowry (personal observation) has collected known parasitic copepods, *Caligus kuroshio*, from traps baited with fish. These free-swimming stages of males, females and juveniles were probably seeking a potential fish host.

Distribution. *Podoprionella dagadugaban* is known only from the Madang Lagoon, northern Papua New Guinea in 12 m depth.

Uristidae

Ichnopus Costa

Ichnopus Costa, 1853: 169.–Lowry & Stoddart, 1992: 191.

Ichnopus malpatun Lowry & Stoddart

Ichnopus malpatun Lowry & Stoddart, 1992: 210, figs 15, 16.–Lowry & Stoddart, 1994: 163.

Remarks. This species was recently described by Lowry & Stoddart, 1992. Although it may be a common species off the face of the outer barrier it is currently known from only one specimen.

Distribution. Off Madang Lagoon, northern Papua New Guinea; New Caledonia; in 95 to 165 m depth.

Nagada n.gen

Diagnosis. Antenna 1: peduncle without strong posterodistal spine; callynophore without posterodistal slender or robust setae. Epistome and upper lip fused, not strongly produced. Mandible: left lacinia mobilis a cuspidate peg; molar a setose tongue; mandibular palp with slender, subrectangular third article. Maxilla 2: inner plate shorter than outer. Gnathopod 1 simple, ischium and carpus short to long, dactylus with or without cuticular spines on posterior margin. Gnathopod 2 to peraeopod 6 with non-pleated gills, peraeopod 7 without gill. Telson entire.

Type species. *Nagada uwedoae* n.sp.

Variation. Epistome and upper lip produced or not. Gnathopod 1 ischium about as long as broad or 2.5 times as long as broad. Propodus with or without posterior cuticular spines. Long or short peraeopods 6 and 7.

Etymology. Named for Nagada Harbour in the Madang Lagoon.

Species composition. *Nagada* contains three species: *N. garagassi* n.sp., *N. papua* n.sp. and *N. uwedoae* n.sp.

Remarks. *Nagada* is closely related to *Ichnopus*. Both occur in the warm water Indo-West Pacific region. They have similar molars and first gnathopods. The cuticular spines on the propodus and the long ischium in *N. uwedoae* are character states shared with the *Ichnopus spinicornis* group. Another infrequent character state shared by both genera is two nodular setae on the inner plate of the maxilliped. *Nagada* differs from *Ichnopus* in the well developed lacinia mobilis, the long second article on the outer ramus of uropod 3 and the entire telson.

Nagada is even more closely related to *Gippsia* Lowry & Stoddart (1995). Both genera have: large swollen 2-field callynophore in the male; maxilliped inner plate with 2 nodular setae; gnathopod 1 simple; epistome and upper lip fused; uropod 3 outer ramus with long article 2; and entire telson. *Nagada* differs from *Gippsia* in the distinctively cusped setal-teeth on the inner row of maxilla 1 outer plate and in the plates of maxilla 2, in which the inner plate is shorter than the outer in *Nagada* and longer than the outer in *Gippsia*.

Species of *Nagada* are known only from baited trap samples.

Distribution. Currently recorded only from the north coast of Papua New Guinea.

Key to Species of *Nagada*

1. Gnathopod 1 ischium length about 2.5 × breadth; dactylus with 2 subterminal spines, medial robust setae and cuticular spines along posterior margin; uropod 3 peduncle short, length less than 2 × breadth ..... *Nagada uwedoae*

—— Gnathopod 1 ischium length less than 2 × breadth; dactylus with subterminal spine, without medial robust setae or cuticular spines along posterior margin; uropod 3 peduncle long, length at least 2 × breadth 2

2. Upper lip/epistome straight with small, central notch; uropod 2 inner ramus without constriction ..... *N. garagassi*

—— Upper lip/epistome with large, central bulge; uropod 2 inner ramus with weak constriction ..... *N. papua*

Nagada garagassi n.sp.

Figs 29, 30

Type material. HOLOTYPE, female, 5 mm, non-setose oostegites, AM P41596; PARATYPE, male, 3 mm, AM P41597; 13 PARATYPES, AM P41598; east from Planet Rock, Astrolabe Bay, Papua New Guinea, 5°15.48'S 145°49.14'E, baited trap on silty mud bottom, about 500 m, J.K. Lowry & S.J. Keable, M.H.P. Jebb & A.A. Myers, 15–16 March 1991, stn JKL/PNG-231.

Diagnosis. Epistome and upper lip straight with a median notch. Gnathopod 1 ischium twice as long as broad, propodus without posterior cuticular spines. Peraeopods 6 and 7 significantly longer than peraeopod 5. Uropod 3 peduncle twice as long as broad.

Description. Holotype female, 5 mm; paratype male, 3 mm. *Head and body*: head yellow, mouthpart bundle bright orange, antennae, body and peraeopods translucent yellow; without setae. *Head*: deeper than long; lateral cephalic lobe large, broadly rounded; rostrum absent; eyes oval, light brown, enlarged in reproductive male. *Antenna 1*: medium length, 0.2 × body; peduncular article 1 short, length 1.1 × breadth; peduncular article 2 short, 0.2 × article 1; accessory flagellum long, 0.8 × primary flagellum, 5-articulate, article 1 long, 1.8 × article 2, not forming cap; flagellum 7-articulate (male 7), callynophore weak 2-field in female (strong 2-field in male), without posterodistal slender or robust setae, calceoli absent in female and male. *Antenna 2*: slightly longer than antenna 1 (same in male), peduncle with brush setae in female and male; female weakly geniculate between peduncular articles 3–4, article 3 short, 0.3 × article 4; peduncular articles 4 and 5 not enlarged in male or female; flagellum 6-articulate (male 6), calceoli absent.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: fused, with slight central notch. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a cuspidate peg; accessory setal row without distal setal tuft, left row with 3, right with 4, short, slender, simple robust setae, without intermediate setae; molar a strongly setose tongue; mandibular palp attached midway, article 1 short, length 1.2 × breadth; article 2 elongate, slender, length 6.2 × breadth, 1.8 × article 3, with 5 (male 2) posterodistal A2-setae; article 3 slender, distally truncate, long, length 5 × breadth, without A3- or B3-setae, with 8 (male 6) distal D3-setae on posterior margin, and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate extremely narrow with 11 setal-teeth in 7/4 crown arrangement; with ST1 large, broad, distally cuspidate, ST2–ST3 large, slender, weakly cuspidate, ST4–ST6 large, slender, 3-cuspidate, ST7 symmetrical, displaced down medial face, small, shorter than ST6, broad, 3-cuspidate distally with large proximal cusp; with STA large, slender, displaced from STB–STD, 4-cuspidate, proximal cusp large, elongate, STB long, slender, 2-cuspidate, STC short, slender, 2-cuspidate, proximal cusp long, STD short, slender, 4-cuspidate, proximal cusp long; palp large, 2-articulate, with 3 short terminal conate setae, without subterminal setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilliped*: inner plate small, subrectangular, with 2 apical nodular setae, oblique setal row reduced with 4 pappose setae; outer plate medium size, subovate, without apical slender or robust setae, medial robust setae and submarginal setae vestigial; palp large, 4-articulate, article 2 slender, length 3.6 × breadth, 2.4 × article 3; article 3 long, slender, length 1.8 × breadth; dactylus well developed, with 2 subterminal setae, unguis present.

Gnathopod 1: simple; coxa large, as long as coxa 2, anterior margin straight, posterior margin straight; basis long, slender, length 3 × breadth, anterior margin smooth, without setae; ischium long, length 2 × breadth; merus, posterior margin with group of long simple setae; carpus subrectangular, short, length 1.9 × breadth, shorter than (0.8 ×) propodus, without denticulate patch near posterodistal margin; propodus large, subtriangular, length 3 × breadth, tapering distally, posterior margin smooth, straight, with few setae, without denticulate patch near posterior margin, palm absent; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.4 × breadth; carpus very long, length 4.8 × breadth, posterior margin straight; propodus subrectangular, long, length 2.9 × breadth, palm transverse, with convex, serrate margin, posterodistal corner with 1 medial and 1 lateral robust setae; dactylus reaching corner of palm, posterior margin smooth.

Peraeopod 3: coxa large; male and female merus-carpus without plumose setae; propodus with 9 slender and 1 large distal locking seta setae along posterior margin; dactylus short, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; male and female merus-carpus without plumose setae; propodus with 7 slender setae and 1 large distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa bilobate, posterior lobe slightly produced ventrally; basis expanded with posterior margin minutely crenate; merus slightly expanded posteriorly; propodus with 4 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, strongly lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin, with anteroventral lobe; merus not expanded posteriorly; propodus with 6 robust setae and 2 distal locking setae along anterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin straight; merus not expanded posteriorly, with 2 robust setae; propodus with 6 robust setae and 2 locking setae along anterior margin and 1 robust seta along posterior margin; dactylus long, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills*

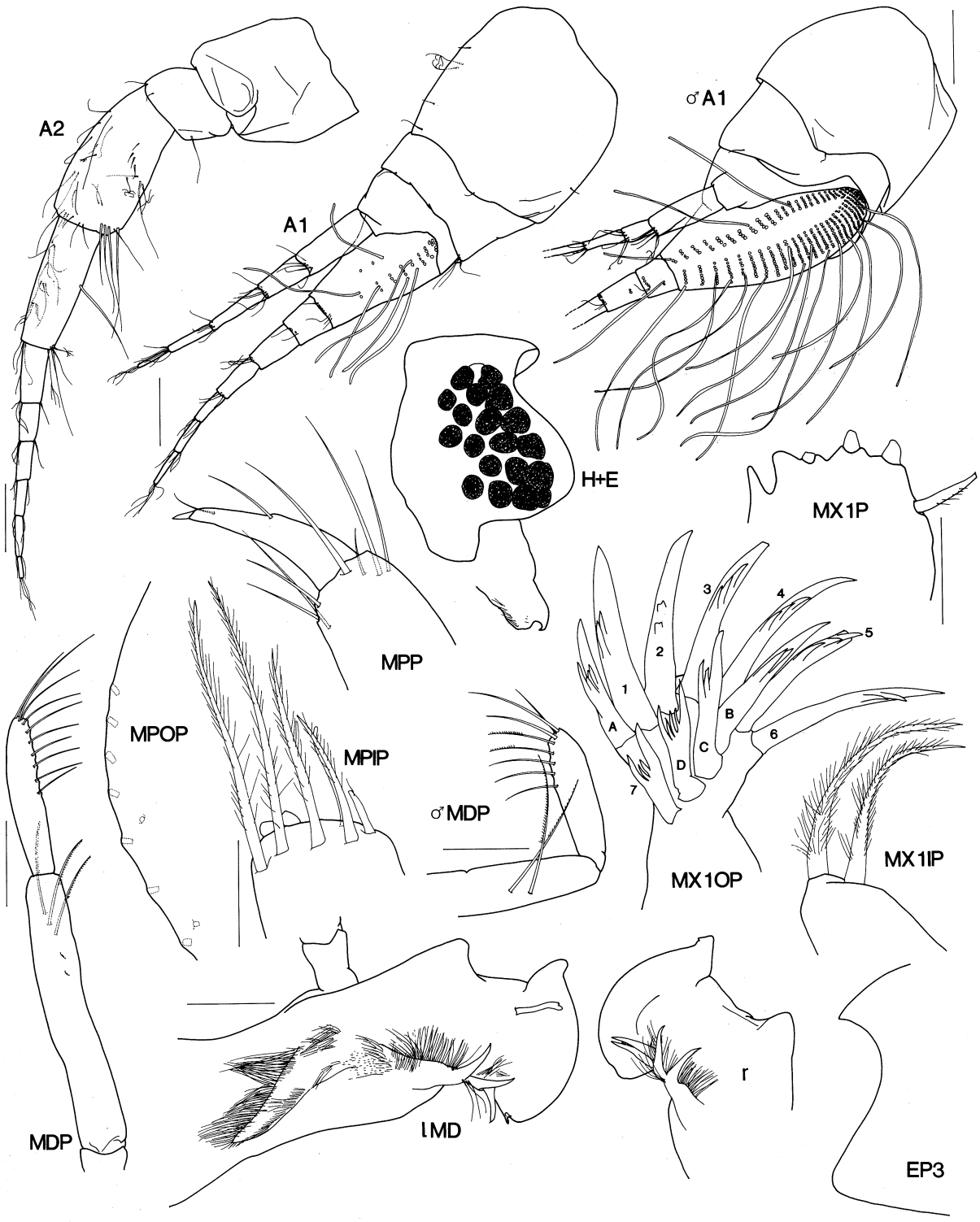

Fig. 29. *Nagada garagassi* n.sp., holotype female, 5 mm, AM P41596; paratype male, 3 mm, AM P41597, east of Planet Rock, Astrolabe Bay, Papua New Guinea. Scales for A1, 2 represent 0.1 mm, remainder represent 0.05 mm.

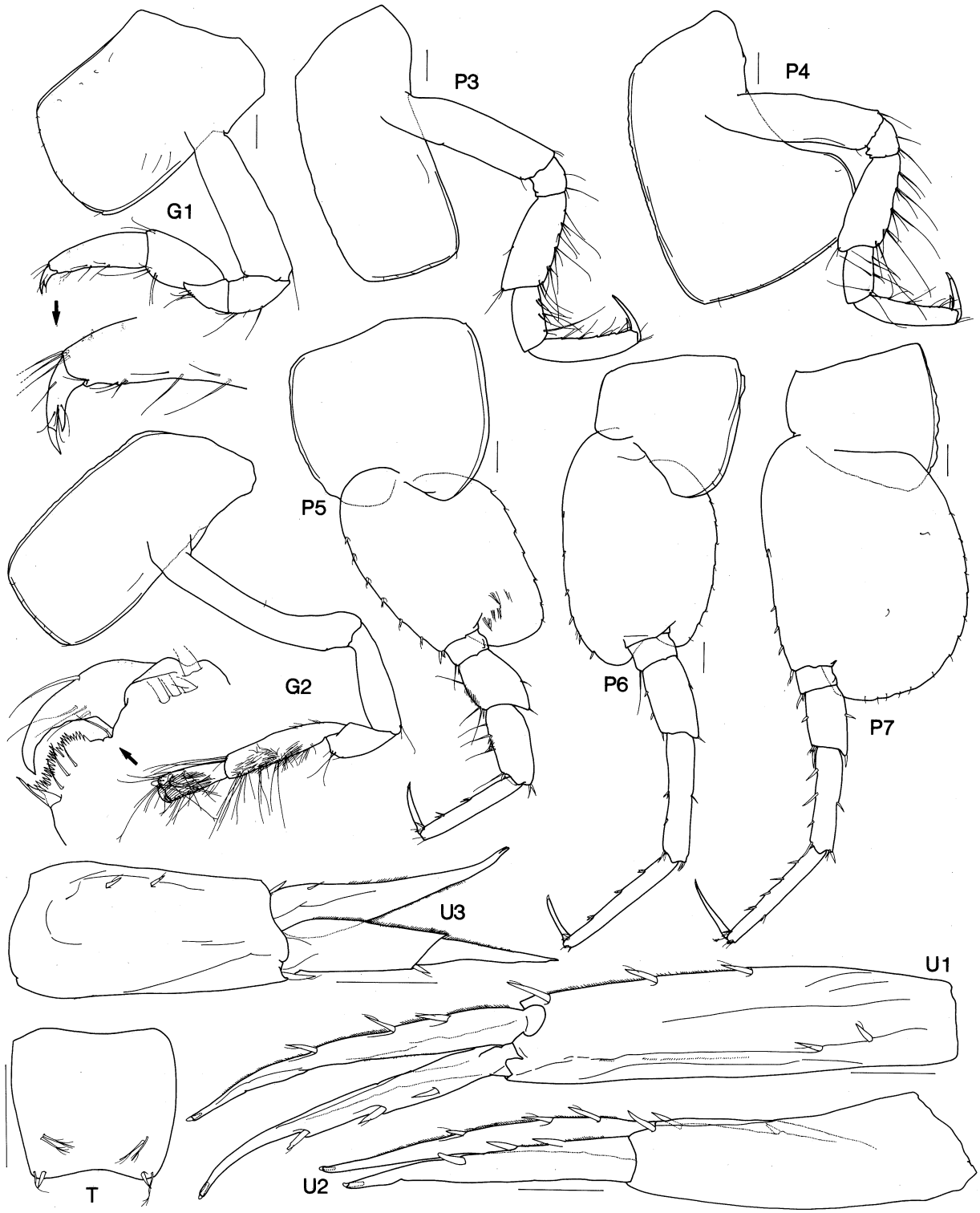

Fig. 30. *Nagada garagassi* n.sp., holotype female, 5 mm, AM P41596, east of Planet Rock, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

from gnathopod 2 to peraeopod 6, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner produced, narrowly rounded. *Urosomites*: 1 to 3 dorsally smooth. *Urosomite 3*: with small dorsolateral robust seta. *Uropod 1*: without fine setae; peduncle with 2 dorsolateral, 1 apicolateral and 2 dorsomedial robust setae; outer ramus slightly shorter than inner ramus; outer ramus with 3 lateral robust setae; inner ramus with 3 lateral robust setae. *Uropod 2*: without long fine setae; peduncle with 1 apicolateral, 1 dorsomedial and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 3 dorsal robust setae; inner ramus with 3 dorsal robust setae, without constriction. *Uropod 3*: peduncle long, length 2.1 × breadth, with 1 apicolateral, 2 dorsomedial and 1 apicomedial robust setae, without midlateral slender setae or robust setae, with 1 distoventral robust seta; rami lanceolate, subequal in length; outer ramus 2-articulate, article 2 long, article 1 with 1 lateral robust seta; inner ramus without robust setae; plumose setae absent in male and female. *Telson*: length 0.9 × breadth, emarginate, without dorsal robust setae, distal margin truncated, with 2 marginal penicillate setae and 2 marginal robust setae.

Etymology. Named for Garagassi Point at the eastern end of Astrolabe Bay, where Miklouchо-Maclay, the great Russian naturalist and humanitarian, made his first home in Papua New Guinea.

Remarks. *Nagada garagassi* is the sister taxon to *N. papua*. They are very closely related and differ mainly in the characters set out in the diagnosis.

Distribution. Astrolabe Bay, northern Papua New Guinea in 500 m depth.

Nagada papua n.sp.

Figs 31–33

Type material. HOLOTYPE, female, 3.8 mm, AM P41599; PARATYPE female, 4.2 mm, AM P41604; 8 PARATYPES, female, AM P41600; face of outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea, 5°08.59'S 145°49.65'E, baited trap, about 290 m, J.K. Lowry & J. Mizeu, 26–27 January 1990, stn JKL/PNG-82. PARATYPE male, 1.8 mm, AM P41601, 83 PARATYPES, AM P41602; 20 PARATYPES, AM P41603; 10 PARATYPES, BMNH 1995.582-591; 10 PARATYPES, USNM 274111; east of Planet Rock, Astrolabe Bay, Papua New Guinea, 5°15.48'S 145°49.14'E, baited trap on unknown bottom, 65 to 85 m, J.K. Lowry, S.J. Keable, M.H.P. Jebb & A.A. Myers, 15–16 March 1991, stn JKL/PNG-225.

Additional material examined. AM P41661 to P41663 from stations: JKL/PNG-81 (12), JKL/PNG-120 (7), JKL/PNG-121 (56), JKL/PNG-224 (29).

Diagnosis. Epistome and upper lip produced into rounded hump. Gnathopod 1 ischium about 1.4 times as long as broad, propodus without posterior cuticular spines. Peraeopods 6 and 7 significantly longer than peraeopod 5. Uropod 3 peduncle 3 times as long as deep.

Description. Holotype female, 3.8 mm; paratype female, 4.2 mm; paratype male, 1.8 mm. *Head and body*: without setae; colour of freshly preserved animals with translucent antennae, bodies and peraeopods; mouthpart bundle usually yellow, occasionally translucent; margins of peraeonites often yellow; guts vary depending on the food consumed, sometimes gut appears to be full of oil. *Head*: deeper than long; lateral cephalic lobe large, broadly rounded; rostrum absent; eyes oval, brown (fading to yellow in alcohol). *Antenna 1*: medium length, 0.2 × body, peduncular article 1 short, length 1 × breadth; peduncular article 2 short, 0.3 × article 1; accessory flagellum long, 0.7 × primary flagellum, 5-articulate, article 1 long, 1.5 × article 2, not forming cap; flagellum 7-articulate (male 6), callynophore weak 2-field in female (strong 2-field in male), without posterodistal slender or robust setae, calceoli absent in female and male. *Antenna 2*: length 1.3 × antenna 1; peduncle without brush setae in female and male, female weakly geniculate between peduncular articles 3–4, article 3 short, 0.5 × article 4, peduncular articles 4 and 5 not enlarged in female; flagellum 5-articulate (male 5), calceoli absent in female and male.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: fused, with midmedial bulge. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a cuspidate peg; accessory setal row without distal setal tuft, left row with 3, right with 4, short, slender, multiserrate robust setae, without intermediate setae; molar a strongly setose tongue; mandibular palp attached midway, article 1 short, length 1.5 × breadth; article 2 elongate, slender, length 5 × breadth, 1.5 × article 3, with 3 posterodistal A2-setae, article 3 slender, blade-like, long, length 4.3 × breadth, without A3- or B3-setae, with 4 distal D3-setae and 2 apical E3-setae. *Maxilla 1*: inner plate narrow with 2 pappose apical setae; outer plate extremely narrow with 11 setal-teeth in 7/4 crown arrangement; with ST1 large, broad, distally cuspidate, ST2–ST6 large, slender, multicuspidate, ST7 symmetrical, displaced down medial face, large, slender, multicuspidate distally; with STA large, displaced from STB–STD, 4-cuspidate, medial cusp large, elongate, STB long, slender, 2-cuspidate, STC–STD short, slender, 1-cuspidate; palp large, 2-articulate, with 3 short terminal conate setae, without subterminal setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilla 2*: inner and outer plates broad, inner plate 0.5 × length outer plate. *Maxilliped*: inner plate small, subrectangular, with 2 apical nodular setae, oblique setal row reduced with 4 pappose setae; outer plate medium size, subovate, without apical slender or robust setae, medial robust setae vestigial, submarginal setae vestigial; palp large, 4-articulate, article 2 broad, length 2.8 × breadth, 2.3 ×

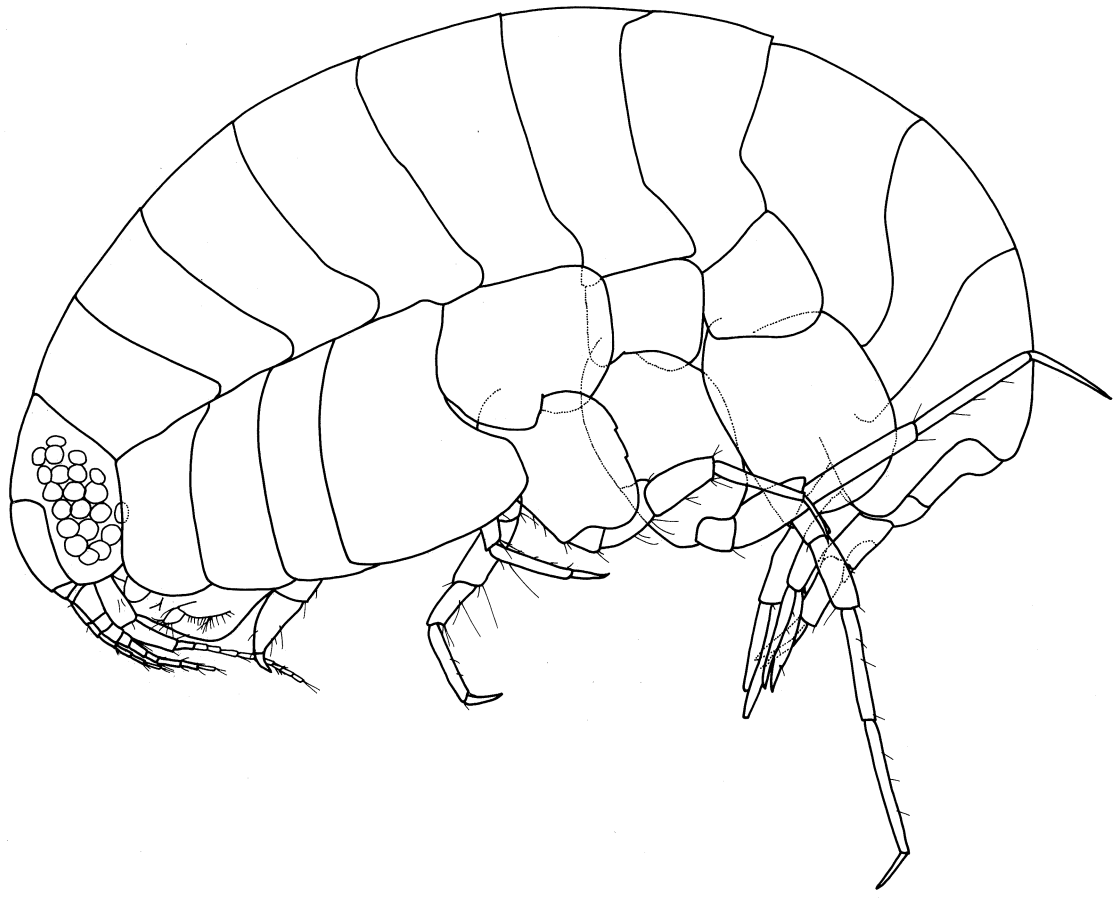

Fig. 31. *Nagada papua* n.sp., paratype female, 3.6 mm, AM P41600, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea.

article 3; article 3 long, slender, length 1.8 × breadth; dactylus well developed, with 2 subterminal setae, unguis present.

Gnathopod 1: simple; coxa large, as long as coxa 2, anterior margin straight, posterior margin straight; basis long, slender, length 3.4 × breadth, anterior margin smooth, without setae; ischium short, length 1.3 × breadth; merus, posterior margin with a few simple setae; carpus subrectangular, short, length 1.75 × breadth, subequal in length to propodus, without denticulate patch near posterodistal margin; propodus large, subtriangular, length 2 × breadth, tapering distally, posterior margin smooth, straight, with few setae, without denticulate patch near posterior margin, palm absent; dactylus simple, with subterminal spine. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 3.5 × breadth; carpus very long, length 4.6 × breadth, posterior margin straight; propodus subrectangular, long, length 2.1 × breadth, palm slightly obtuse, with straight, serrate margin, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; female merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; female merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin smooth; merus slightly expanded posteriorly; propodus with 2 robust setae and 1 distal locking seta along anterior margin; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus not expanded posteriorly; propodus with 1 robust seta along anterior margin; dactylus long, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin slightly rounded, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly with 2 robust setae; propodus with 4 robust setae and 1 distal locking seta along anterior margin, with 1 seta and 1 distal robust seta along posterior margin; dactylus long, slender.

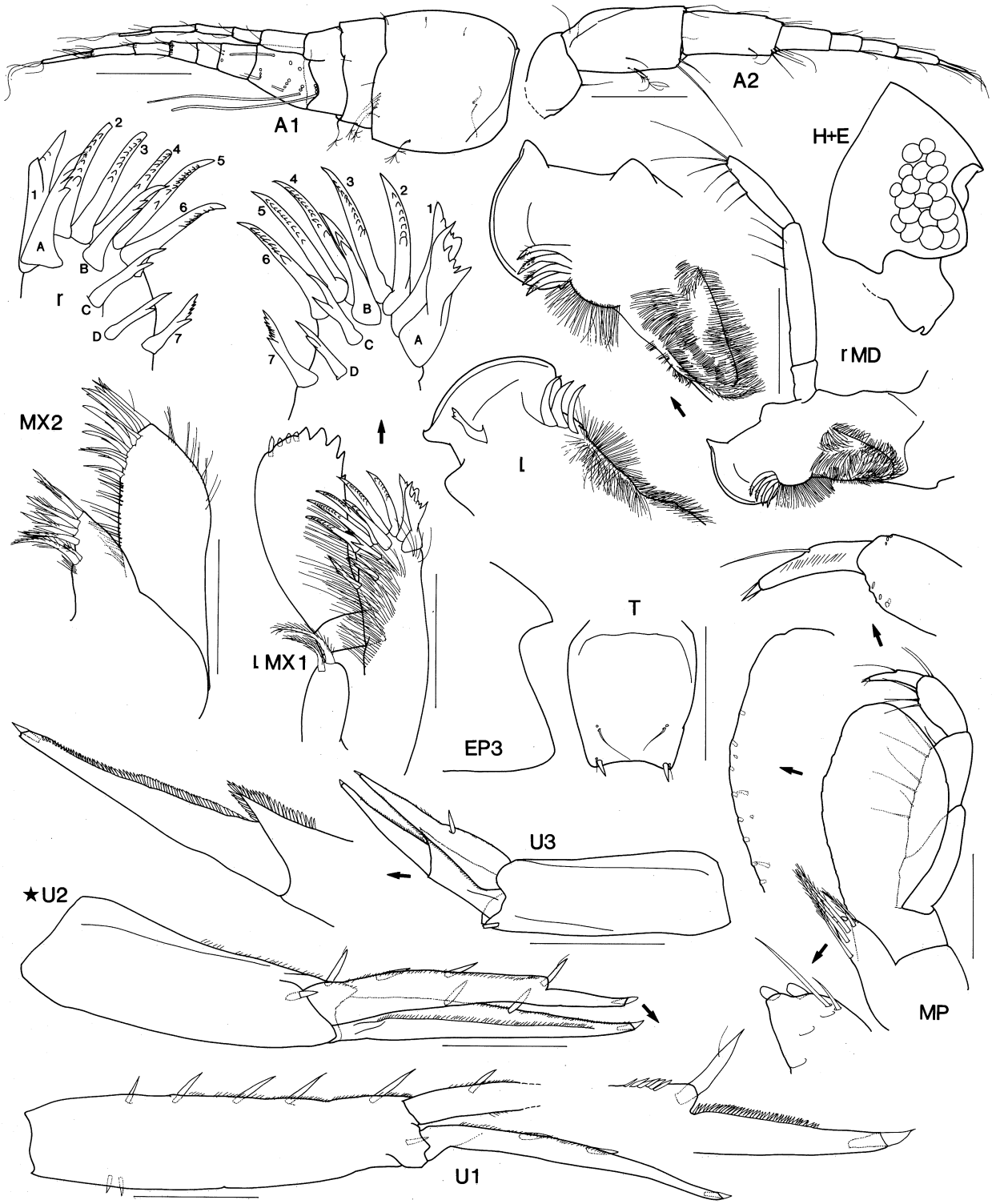

Fig. 32. *Nagada papua* n.sp., holotype female, 3.8 mm, AM P41599, U2 from paratype female, 4.2 mm, AM P41604: outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

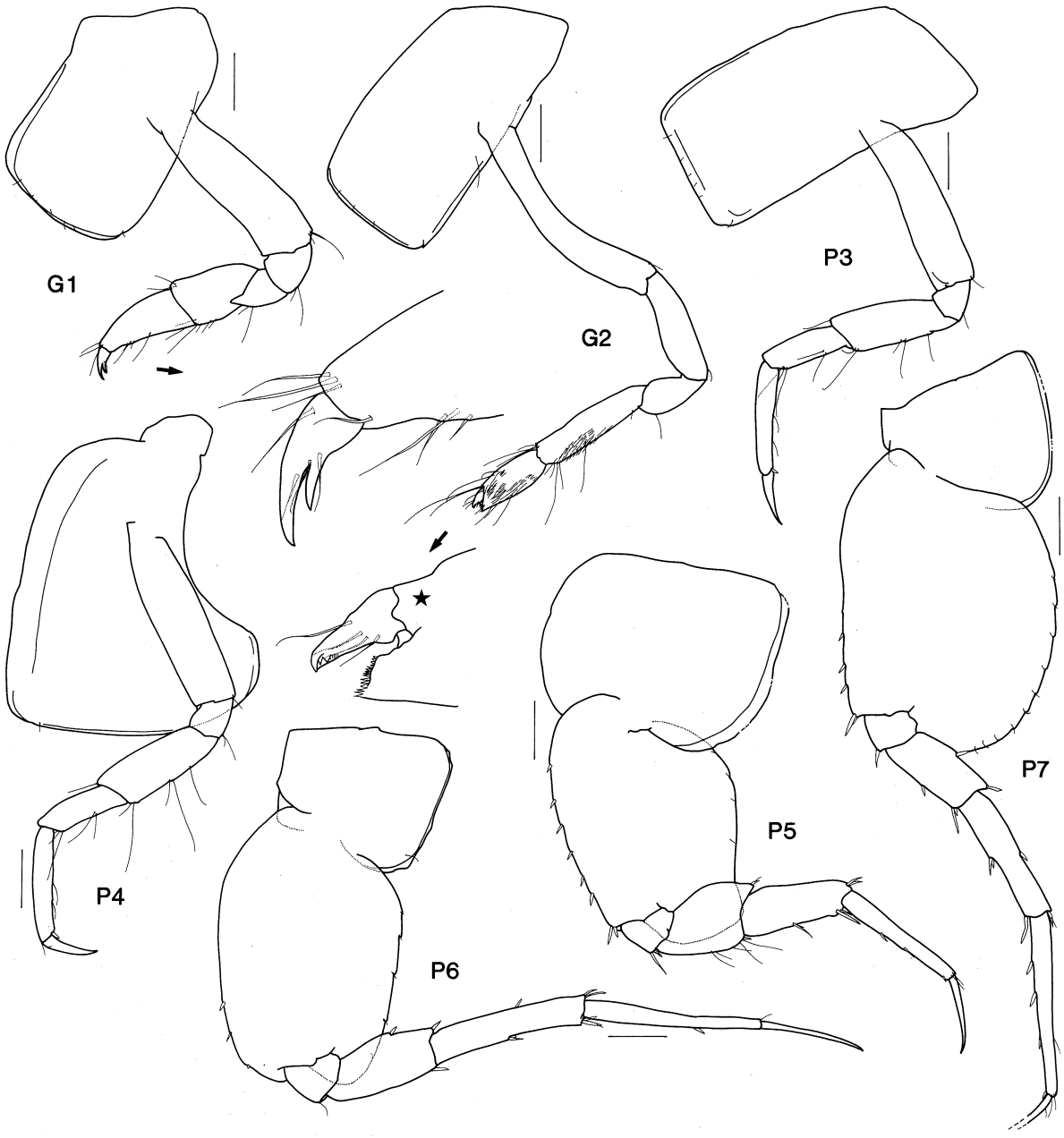

Fig. 33. *Nagada papua* n.sp., holotype female, 3.8 mm, AM P41599, G2 enlargement from paratype female, 4. 2 mm, AM P41604, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner narrowly rounded. *Urosomites*: 1 to 3 dorsally smooth; urosomite 3 with 1 small dorsolateral robust seta. *Uropod 1*: with long fine setae; peduncle with 4 dorsolateral, 1 apicolateral and 1 apicomedial robust setae; outer ramus damaged — in paratype female, rami subequal; outer ramus with 3 lateral robust setae; inner ramus with 2 lateral robust setae. *Uropod 2*: paratype female, without long fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae; rami subequal in length; outer ramus with 2 dorsal robust setae; inner ramus with 3 dorsal robust setae, with weak constriction. *Uropod 3*: peduncle long, length 3.1 × breadth, without dorsolateral flange, dorsal

robust setae, midlateral slender or robust setae, with 1 distoventral robust seta, without plumose setae; rami lanceolate, subequal in length; outer ramus 2-articulate, article 2 long; inner ramus with 1 robust seta; plumose setae absent in female and male. *Telson*: length 1.2 × breadth, entire, emarginate, without dorsal robust setae, distal margin truncate, with 2 marginal penicillate setae and 2 marginal robust setae.

Etymology. Named for Papua, the name given to the people of Papua New Guinea by early Portuguese sailors.

Remarks. *Nagada papua* is the sister taxon to *N. uwedoae*. They are very closely related and differ mainly in the characters set out in the diagnosis.

Nagada papua was found only on the face of the outer barrier.

Distribution. Known only from the Madang area, north coast of Papua New Guinea in 50 to 290 m.

Nagada uwedoae n.sp.

Figs 34–36

Type material. HOLOTYPE, female, 3.6 mm, AM P41605; 108 PARATYPES, AM P41606; face of outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea, 5°08.59'S 145°49.65'E, baited trap, about 290 m, J.K. Lowry & J. Mizeu, 26–27 January 1990, stn JKL/PNG-82. 79 PARATYPES, AM P41609, same locality, 340 m, stn JKL/PNG-83. 60 paratypes, USNM 274112, same locality, about 390 m, stn JKL/PNG-84. 33 paratypes, BMNH 1995.592-624, same locality, about 440 m, stn JKL/PNG-85. 1 PARATYPE, male, 2.1 mm, AM P41607; 288 PARATYPES, AM P41608; east of Planet Rock, Astrolabe Bay, Papua New Guinea, 5°15.48'S 145°49.14'E, baited trap on silty mud bottom, about 500 m, J.K. Lowry, S.J. Keable, M.H.P. Jebb & A.A. Myers, 15–16 March 1991, stn JKL/PNG-231.

Additional material examined. AM P41664 to P41673, P41704 to P41728, P41801, P41802 from stations: JKL/PNG-115 (1), JKL/PNG-116 (9), JKL/PNG-117 (1), JKL/PNG-118 (16), JKL/PNG-119 (22), JKL/PNG-120 (25), JKL/PNG-121 (33), JKL/PNG-128 (1), JKL/PNG-144 (1), JKL/PNG-145 (2), JKL/PNG-146 (9), JKL/PNG-147 (7), JKL/PNG-148 (4), JKL/PNG-149 (12), JKL/PNG-150 (31), JKL/PNG-166 (1), JKL/PNG-167 (5), JKL/PNG-168 (1), JKL/PNG-170 (62), JKL/PNG-171 (25), JKL/PNG-172 (27), JKL/PNG-173 (9), JKL/PNG-174 (3), JKL/PNG-175 (11), JKL/PNG-176 (9), JKL/PNG-177 (2), JKL/PNG-179 (14), JKL/PNG-180 (10), JKL/PNG-229 (37), JKL/PNG-232 (8), JKL/PNG-233 (54), JKL/PNG-234 (13), JKL/PNG-248 (1), JKL/PNG-249 (1), JKL/PNG-250 (7), JKL/PNG-251 (1), JKL/PNG-252 (3).

Diagnosis. Epistome and upper lip fused, slightly angled. Gnathopod 1 ischium long, 2.5 times as long as broad, propodus with about 18 posterior cuticular spines. Peraeopods 6 and 7 not much longer than peraeopod 5. Uropod 3 peduncle twice as long as broad.

Description. Holotype female, 3.6 mm; paratype male, 2.1 mm. *Head and body*: without setae; colour of freshly preserved animals: mouthpart bundle usually yellow, margins of peraeonites tan, some with completely orange bodies with oil droplets. *Head*: exposed, deeper than long; lateral cephalic lobe large, broadly rounded; rostrum absent; eyes oval, brown (fading to yellow in alcohol), enlarged in adult male. *Antenna 1*: short, 0.14 × body, peduncular article 1 short, length 1.1 × breadth; accessory flagellum long, 0.5 × primary flagellum, 3-articulate, article 1 long, about 1.6 × article 2, not forming cap; flagellum 7-articulate (male 6), callynophore weak 2-field in female (strong 2-field in male), without posterodistal slender or robust setae, calceoli absent in female and male. *Antenna 2*: subequal in length to antenna 1 (same in male); peduncle without brush setae in female or male, female weakly geniculate between peduncular articles 3–4, article 3 short, 0.5 × article 4, peduncular articles 4 and 5 not enlarged in male or female; flagellum 6-articulate (male 5), calceoli absent in female and male.

Mouthpart bundle: subquadrate. *Epistome* and *upper lip*: fused, with slight proximal indentation. *Mandible*: incisors symmetrical, large, with slightly convex margins; left lacinia mobilis present, a cuspidate peg; accessory setal row without distal setal tuft, left row with 3, right with 4 short, slender, simple robust setae, without intermediate setae; molar a strongly setose tongue; mandibular palp attached midway, article 1 short, length 0.9 × breadth; article 2 elongate, slender, length 5.6 × breadth, 1.7 × article 3, with 3-4 (male 3) posterodistal A2-setae; article 3 slender, blade-like, long, length 3.8 × breadth, without A3- or B3-setae, with 2 (male 3) distal D3-setae and 2 apical E3-setae. *Maxilla 1*: inner plate broad, short, with 2 apical pappose setae; outer plate extremely narrow with 11 setal-teeth in 7/4 crown arrangement; with ST1 large, broad, distally cuspidate, ST2–ST6 large, slender, multicuspidate, ST7 symmetrical, displaced down medial face, small, shorter than ST6, broad, 5-cuspidate distally with large proximal tooth; with STA large, slender, displaced from STB–STD, 3-cuspidate, proximal cusp elongate, STB–STD long, slender, 1-cuspidate; palp large, 2-articulate, with 3 short conate setae, without subterminal slender setae, flag seta present on distolateral corner, distomedial margin serrate. *Maxilla 2*: inner and outer plates broad, inner plate 0.5 × length outer plate. *Maxilliped*: inner plate small, subrectangular, with 2 apical nodular setae, oblique setal row reduced with 4 pappose setae; outer plate medium size, subovate, without subapical notch, without apical slender or robust setae, medial robust setae vestigial, submarginal setae vestigial; palp large, 4-articulate, article 2 broad, length 2.3 × breadth, 1.7 × article 3; article 3 short, slender, length 2.2 × breadth; dactylus well developed, with 2 subterminal setae, unguis present.

Gnathopod 1: simple; coxa large, as long as coxa 2, anterior margin straight, posterior margin straight; basis long, slender, length 3.3 × breadth, anterior margin smooth, without setae; ischium long, length 2.75 × breadth; merus, posterior margin with patch of short

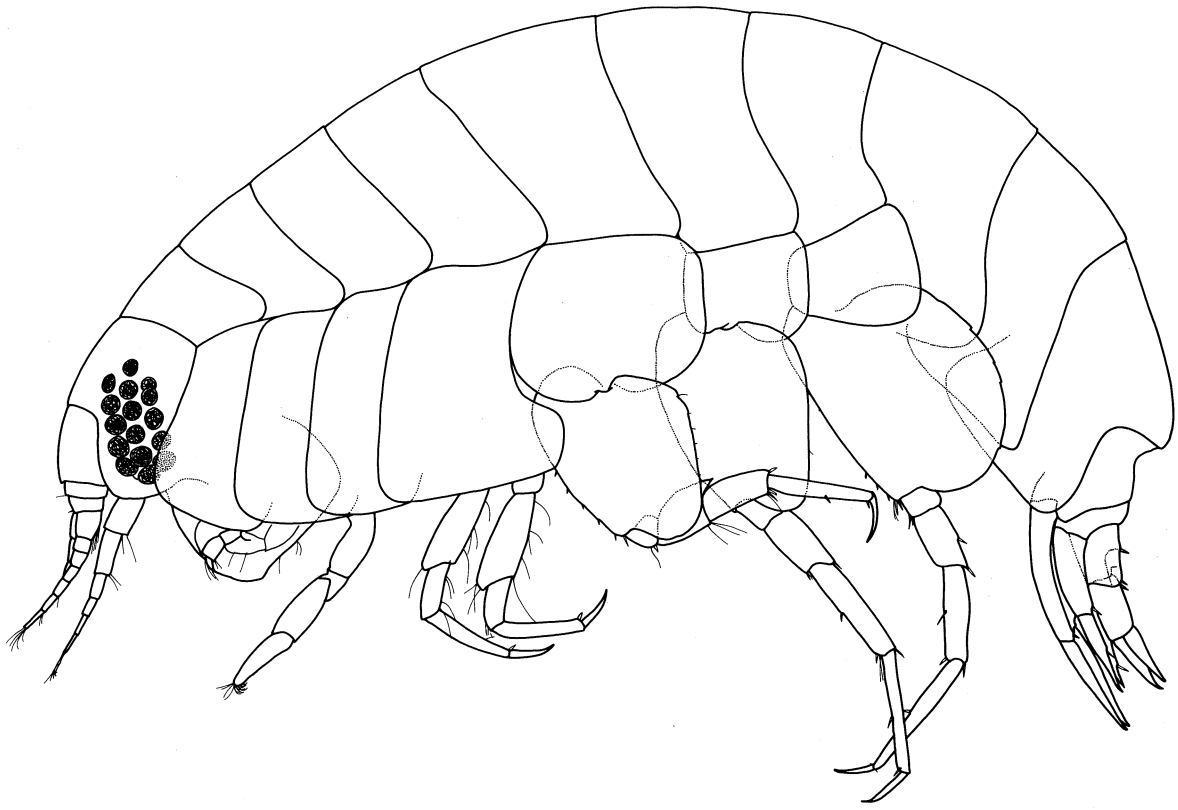

Fig. 34. *Nagada uwedoae* n.sp., paratype female, 3.1 mm, AM P41606, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea.

setae; carpus subrectangular, long, length 2.4 × breadth, longer than (1.25 ×) propodus, without denticulate patch near posterodistal margin; propodus large, subtriangular, length 2.4 × breadth, tapering distally, posterior margin smooth, straight, with few simple setae, without denticulate patch near posterior margin, palm absent; dactylus complex, with 2 large subterminal spines, row of 4 medial robust setae and row of 17 short cuticular spines along posterior margin. *Gnathopod 2*: minutely subchelate; coxa large, subequal in size to coxa 3; ischium long, length 4 × breadth; carpus very long, length 4.8 × breadth, posterior margin straight; propodus subrectangular, long, length 2.1 × breadth, palm slightly obtuse, with straight, serrate margin, posterodistal corner without robust setae; dactylus reaching corner of palm, posterior margin serrate.

Peraeopod 3: coxa large; female and male merus-carpus without plumose setae; propodus with 2 slender setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 4*: coxa deeper than wide, with large posteroventral lobe, anterior margin slightly rounded, posterior margin slightly sloping anteriorly; female and male merus-carpus without plumose setae; propodus with 2 setae and 1 distal locking seta along posterior margin; dactylus short, slender. *Peraeopod 5*: coxa equilobate; basis expanded with posterior margin smooth; merus slightly expanded posteriorly; propodus with 1 robust seta and 1 distal locking seta along anterior margin; dactylus short, slender. *Peraeopod 6*: coxa small, slightly lobate posteriorly; basis expanded posteriorly with minutely crenate posterior margin; merus not expanded posteriorly; propodus with 1 distal locking seta along anterior margin; dactylus short, slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin almost straight, minutely crenate, posteroventral corner rounded, posteroventral margin rounded; merus not expanded posteriorly with 2 robust setae; propodus with 1 robust seta along anterior margin and 1 robust seta along posterior margin; dactylus short, slender.

Oostegites from gnathopod 2 to peraeopod 5. *Gills* from gnathopod 2 to peraeopod 6, not pleated.

Epimeron 1: anteroventral corner rounded. *Epimeron 3*: posteroventral corner narrowly rounded. *Urosomites*: 1 to 3 dorsally smooth; urosomite 3 with 1 small dorsolateral robust seta. *Uropod 1*: without long fine setae; peduncle with 2 dorsolateral, 1 apicolateral and 3 dorsomedial robust setae; rami subequal in length; outer ramus with 2 lateral robust setae; inner ramus with 2 medial robust setae. *Uropod 2*: without long fine setae; peduncle with 1 apicolateral and 1 apicomedial robust setae, without robust setae along distal margin; outer ramus slightly longer than inner ramus; outer ramus

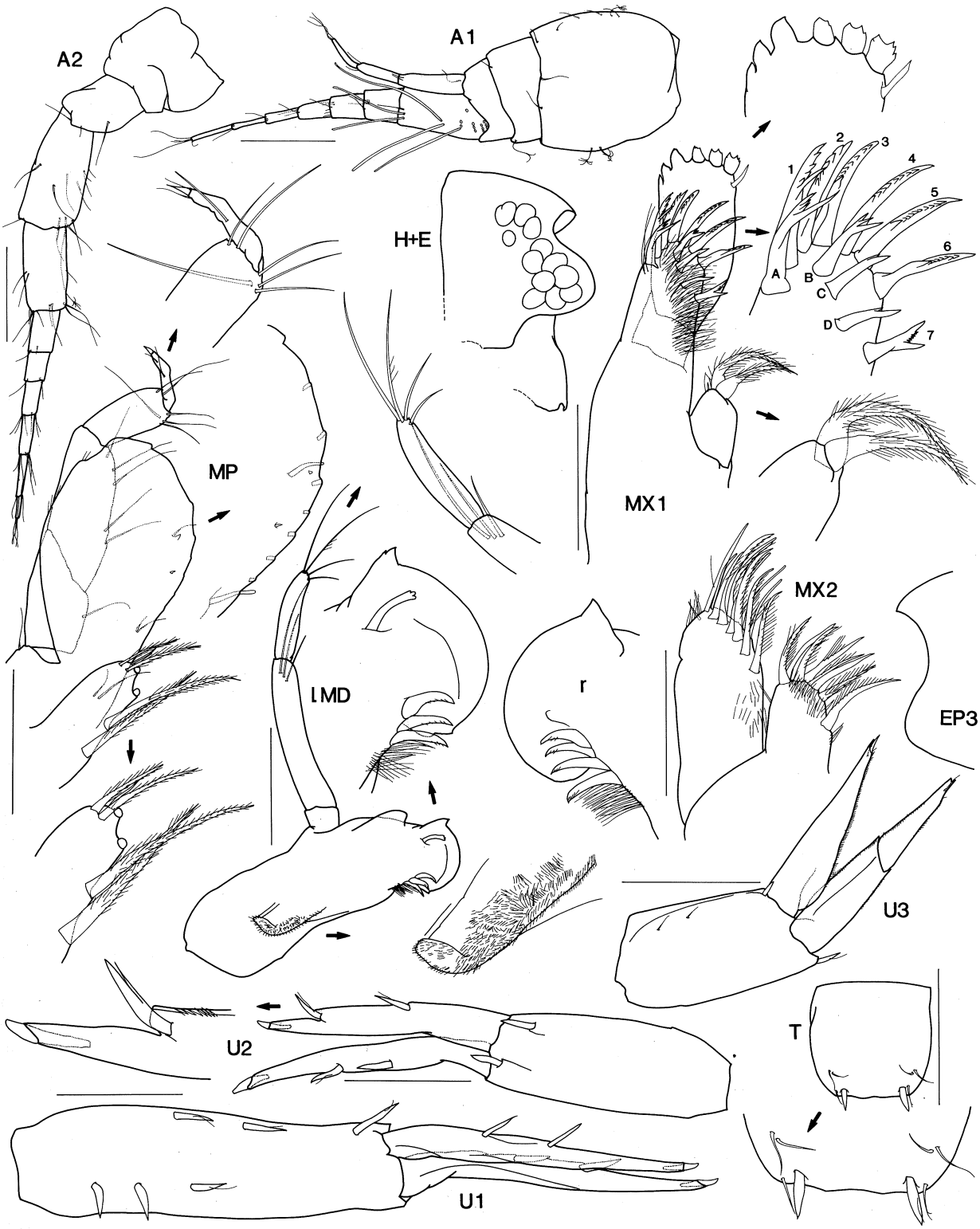

Fig. 35. *Nagada uwedoae* n.sp., holotype female, 3.6 mm, AM P41605, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

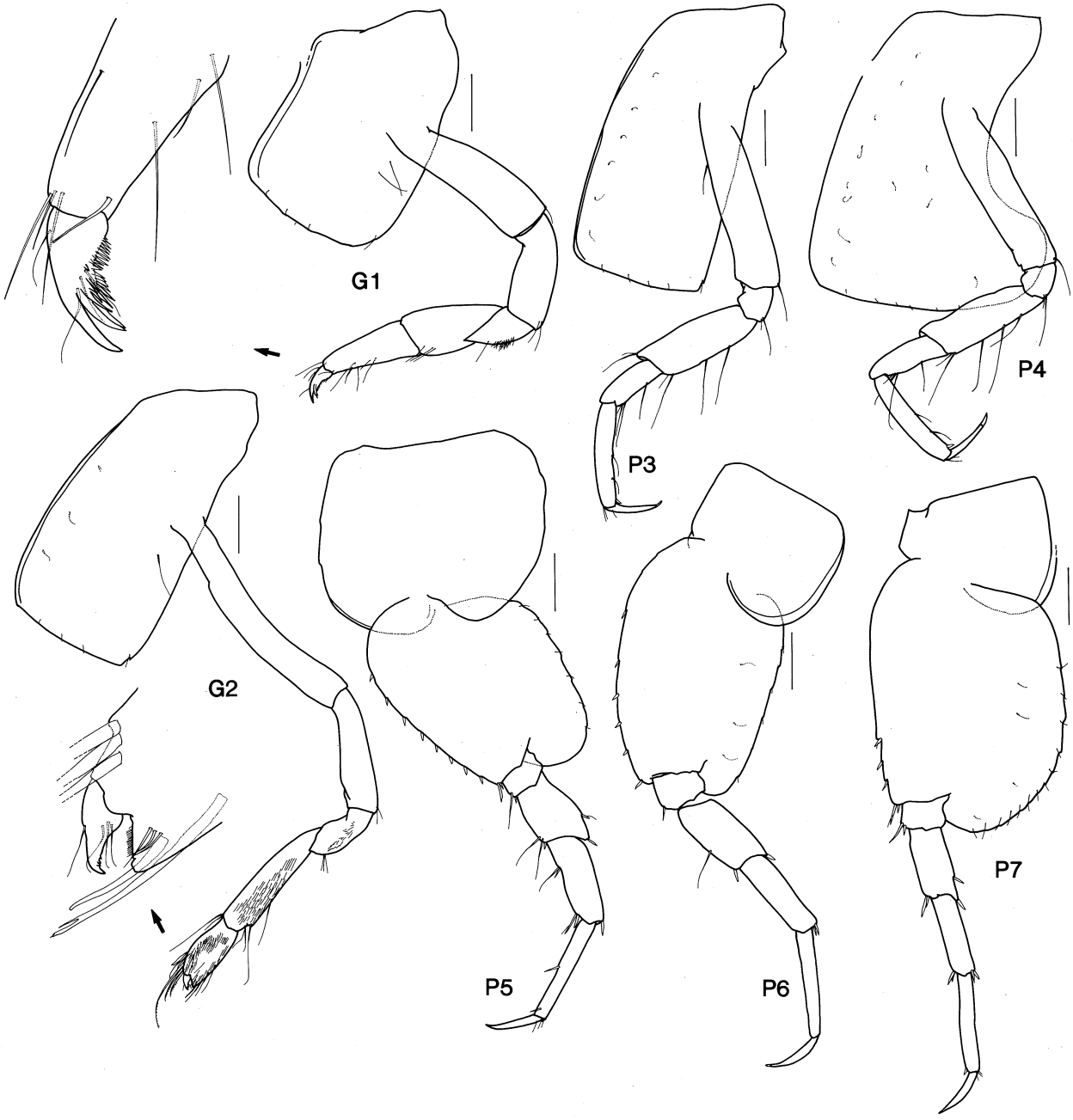

Fig. 36. *Nagada uwedoae* n.sp., holotype female, 3.6 mm, AM P41605, outer barrier between Dam Awan (Rasch Passage) and Wongad, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

with 2 dorsal robust setae; inner ramus with 2 dorsal robust setae, with weak constriction. *Uropod 3*: peduncle short, length 2 × breadth, without dorsolateral flange, with 1 dorsolateral robust seta, without midlateral robust or slender setae, with 1 distoventral robust seta, without plumose setae; rami lanceolate, subequal in length; outer ramus 2-articulate, article 2 long; rami without robust setae, plumose setae absent in female and male. *Telson*: length 1 × breadth, entire, without dorsal robust setae, distal margin truncate, without marginal penicillate setae, with 2 simple marginal setae and 2 marginal robust setae.

Etymology. Named for Rosella Uwedo, station manager, Christensen Research Institute, good friend and invaluable guide during the first season in Papua New Guinea.

Remarks. *Nagada uwedoae* is the sister taxon to *N. papua*. They are very closely related and differ mainly in the characters set out in the diagnosis. The similarity between the first gnathopods of *N. uwedoae* and those of the *Ichnopus spinicornis* group is striking, in particular the cuticular spines on the propodus and the long ischium.

Nagada uwedoae is a common species which occurs on soft bottoms in the lagoon and out into Astrolabe Bay.

Distribution. Known from Madang Lagoon and Astrolabe Bay, north coast of Papua New Guinea, in 15 to 500 m depth.

Wandinidae

Pseudocyphocaris Ledoyer

Pseudocyphocaris Ledoyer, 1986: 802.–Lowry & Stoddart, 1990: 164.–Barnard & Karaman, 1991: 523.

Pseudocyphocaris gosema Lowry & Stoddart

Pseudocyphocaris gosema Lowry & Stoddart, 1990: 164, figs 4, 5, 8C.

Material examined. 2 specimens, AM P41610, stn JDT/PNG-76.

Remarks. Although rare, the new material of *P. gosema* from Tab and *P. lobata* from Wongad confirms that two separate species are living among coral rubble in the Madang Lagoon.

Distribution. Known only from northern Papua New Guinea.

Pseudocyphocaris lobata Lowry & Stoddart

Pseudocyphocaris lobata Lowry & Stoddart, 1990: 167, figs 6, 7, 8B.

Material examined. 1 specimen, AM P41611, stn JDT/PNG-81. Two specimens, AM P41612, stn JDT/PNG-85.

Distribution. Known only from northern Papua New Guinea.

Stegocephaloidea

Stegocephalidae

Andaniotes Stebbing

Andaniotes Stebbing, 1897: 30.–Barnard & Karaman, 1991: 678.
Metandania Stephensen, 1925: 136.
Glorandaniotes Ledoyer, 1986: 957.–Barnard & Karaman, 1991: 679.

Species composition. *Andaniotes* contains 7 species: *A. bagabag* n. sp.; *A. corpulentus* (Thomson, 1882); *A. fissicaudata* (Ledoyer, 1986); *A. ingens* Chevreux, 1906; *A. karkar* n.sp.; *A. linearis* K.H. Barnard, 1932; and *A. wallaroo* J.L. Barnard, 1972.

Remarks. Barnard & Karaman (1991) could find no reason to maintain *Glorandaniotes* as a separate genus. We implement their suggestion that *G. fissicaudata* Ledoyer (1986) should be included in *Andaniotes* and give a key to all species.

Key to Species of *Andaniotes*

1. Urosomites 2 & 3 coalesced 2

—— Urosomites 2 & 3 not coalesced 4

2. Uropod 3 outer ramus 1-articulate ..... *A. wallaroo*

—— Uropod 3 outer ramus 2-articulate 3

3. Female pleonite 3 dorsodistally truncate; gnathopod 2 propodus with 2 serrate robust setae on posterior margin; peraeopod 7 posteroventral lobe of merus extending beyond carpus ..... *A. karkar*

—— Female pleonite 3 dorsodistally rounded; gnathopod 2 propodus with 4 serrate robust setae on posterior margin; peraeopod 7 posteroventral lobe of merus not reaching end of carpus ..... *A. bagabag*

4. Uropod 3 outer ramus 1-articulate ..... *A. ingens*

—— Uropod 3 outer ramus 2-articulate 5

5. Peraeopod 6 basis subrectangular, length about 3 × breadth, posterior margin straight or slightly concave ..... *A. linearis*

—— Peraeopod 6 basis subovate, length about 1.5 × breadth, posterior margin slightly convex 6

6. Maxilla 1 palp reduced, not reaching end of outer plate ..... *A. corpulentus*

—— Maxilla 1 palp well developed, exceeding length of outer plate ..... *A. fissicaudata*

Andaniotes bagabag n.sp.

Figs 37–39

Type material. HOLOTYPE, female, 3.6 mm, AM P41613; 2 PARATYPES, juveniles, AM P41614, east of Planet Rock, Astrolabe Bay, Papua New Guinea, 5°15.48'S 145°49.14'E, baited trap on unknown bottom, about 385 m, J.K. Lowry, S.J. Keable, M.H.P. Jebb & A.A. Myers, 15–16 March 1991, stn JKL/PNG-229.

Diagnosis. Mandible not shortened; lacinia mobilis a stemmed blade. Maxilla 1: palp small, 2-articulate. Gnathopod 2: propodus with 4 serrate robust setae. Pleonite 3 not truncate in female. Oostegites: 3 pairs. Uropod 3: outer ramus 2-articulate.

Description. Holotype female, 3.6 mm. *Head*: exposed, much deeper than long, extending below insertion of antenna 2; lateral cephalic lobe small, subquadrate; rostrum small; eyes inconspicuous, oval. *Antenna 1*: medium length, 0.23 × body; peduncular article 1 short, length 0.9 × breadth; peduncular article 2 short, 0.3 × article 1; peduncular article 3 short, 0.2 × article 1; accessory flagellum very short 0.22 × primary flagellum, 2-articulate, article 1 long, 9.5 × article 2, with 1 long serrate distal robust seta; flagellum 4-articulate, callynophore weak 2-field, articles 1–2 each with 1 large, serrate robust seta, calceoli absent. *Antenna 2*: slightly longer than antenna 1, peduncle without brush setae, peduncle weakly geniculate, article 3 short, 0.4 × article 4, flagellum 5-articulate, calceoli absent.

Mouthpart bundle: subconical. *Epistome* and *upper lip*: separate, epistome long, slightly convex. *Mandible*: incisors symmetrical, large, with straight margins; left lacinia mobilis present, a stemmed distally serrate blade; accessory setal row absent; molar absent; left and right mandible each with 1 long, slender, simple seta set in depression on lateral surface. *Maxilla 1*: inner plate broad with 7 apicomedial pappose setae; outer plate broad with 9 setal-teeth in modified 7/4 arrangement; outer row with ST1–ST5 long, slender, multicuspidate, ST6 apparently absent, ST7 long, slender, 5-cuspidate; inner row with STA–STC long, slender, weakly cuspidate, STD apparently absent; palp large, 1-articulate, with 5 long slender terminal setae. *Maxilla 2*: inner plate broad, oblique setal row with 10 large pappose setae, outer plate small, narrow, 0.54 × length of inner plate, with long, simple terminal robust setae. *Maxilliped*: inner plate large, broad, subrectangular, with 3 apical nodular setae, oblique setal row reduced with 4 simple setae; outer plate medium size, subovate, with long, slender medial setae and submarginal setae; palp large, 4-articulate; article 2 slender, length 2.2 × breadth, 1.2 × article 3; article 3 long, slender, length 3.4 × breadth; dactylus large, unguis absent.

Gnathopod 1: simple; coxa reduced, triangular, apically subacute; basis long, slender, length 4 × breadth, anterior margin smooth, with simple setae, posterior margin with few long setae; ischium short, length 1.3 × breadth; merus, posterior margin with distal group of plumose setae; carpus subrectangular, short, length 1.4 × breadth, shorter than (0.75 ×) propodus, with long plumose setae along posterior margin; propodus large, subrectangular, length 2.3 × breadth, margins slightly converging distally, posterior margin, with 5 robust setae and 5 plumose setae, palm absent, robust seta at base of dactylus; dactylus simple. *Gnathopod 2*: subchelate; coxa large, slender, subequal in size to coxa 3; ischium long, length 2.3 × breadth, with 2 long, posterodistal plumose setae; carpus long, length 2.1 × breadth, posterior margin slightly convex; propodus subrectangular, long, length 2.6 × breadth, palm extremely acute, with concave, smooth margin, posterodistal corner with 4 strongly serrate robust setae; dactylus reaching corner of palm, posterior margin minutely serrate.

Peraeopod 3: coxa large, slender; merus weakly expanded anterodistally; propodus without robust or slender setae; dactylus long, slender. *Peraeopod 4*: coxa with large posteroventral lobe, anterior margin straight, posterior margin merging into broadly rounded ventral margin; basis, anterior margin with 2 plumose distal setae, posterior margin with 2 groups of long simple setae; ischium, posterior margin with group of short, plumose setae; merus weakly expanded anterodistally; propodus without robust or slender setae; dactylus long, slender. *Peraeopod 5*: coxa small, anteriorly lobate; basis linear, not expanded posteriorly; merus slightly expanded

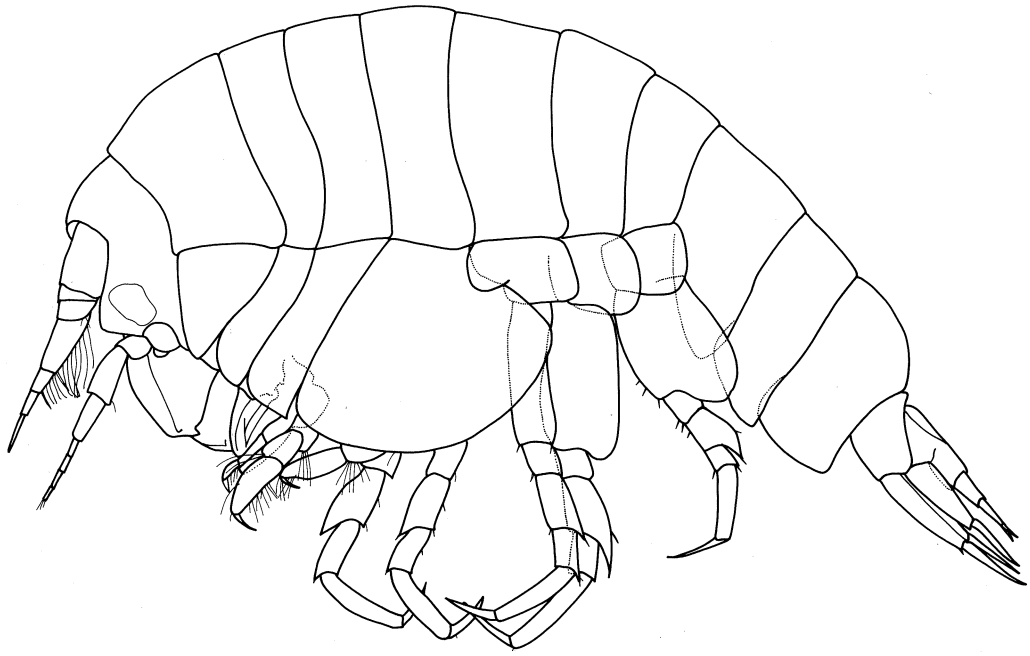

Fig. 37. *Andaniotes bagabag* n.sp., holotype female, 3.6 mm, AM P41613, east of Planet Rock, Astrolabe Bay, Papua New Guinea.

posterodistally; propodus without robust or slender setae, anterior margin minutely denticulate; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate; basis slightly expanded posteriorly, with smooth posterior margin, with small posteroventral lobe and with 3 long medial setae; merus slightly expanded and produced posterodistally, with rounded posterior margin; propodus with minutely denticulate anterior margin; dactylus long slender. *Peraeopod 7*: basis expanded posteriorly, posterior margin smooth, nearly straight, with posteroventral lobe and 1 small midmedial robust seta; merus expanded and produced posterodistally, with rounded posterior margin; propodus with minutely denticulate anterior margin; dactylus long slender.

Oostegites from peraeopods 3 to 5. *Gills* from gnathopod 2 to peraeopod 7, not pleated.

Pleonites 1 to 3 dorsally smooth. *Epimeron 3*: posteroventral corner narrowly rounded. *Urosomites*: urosomites dorsally smooth; urosomites 2–3 fused. *Uropod 1*: peduncle with 5 dorsolateral, 1 apicolateral, 1 dorsomedial and 1 apicomedial robust setae; outer ramus slightly longer than inner, outer ramus with 1 lateral robust seta; inner ramus without robust setae. *Uropod 2*: peduncle with 3 dorsolateral, 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 1 lateral robust seta; inner ramus without robust setae. *Uropod 3*: peduncle short, length 1.5 × depth, without robust setae; rami lanceolate, subequal in length; outer ramus without robust setae, 2-articulate, article 2 elongate; inner ramus without robust setae; plumose setae absent. *Telson*: as long as broad, tapering distally, moderately cleft (41%), without dorsal robust setae.

Etymology. Named for the island of Bagabag, which is near the type locality.

Remarks. See under *A. karkar*.

Distribution. Known only from Astrolabe Bay, northern Papua New Guinea in about 385 m depth.

Andaniotes karkar n.sp.

Figs 40, 41

Type material. HOLOTYPE, female, 3.7 mm, AM P41615; PARATYPE, ?male, 4.2 mm, AM P41616; 4 PARATYPES, AM P41619; off north-east face of Mizegwadan (Tripod) reef, Madang Lagoon, Papua New Guinea, 5°09.57'S 145°49.36'E, baited trap on muddy bottom, 34 m, J.K. Lowry & S.J. Keable, 5–6 March 1991, stn JKL/PNG-176. 1 PARATYPE, female, AM P41617, off Padoz Natun reef, Madang Lagoon, Papua New Guinea, 5°09.60'S 145°49.77'E, baited trap on soft mud, with small cones, burrows and *Ampelisca* tubes, 35 m, J.K. Lowry & S.J. Keable, 17–18 March 1991, stn JKL/PNG-254. 1 PARATYPE, female, AM P41618, same locality, stn JKL/PNG-256.

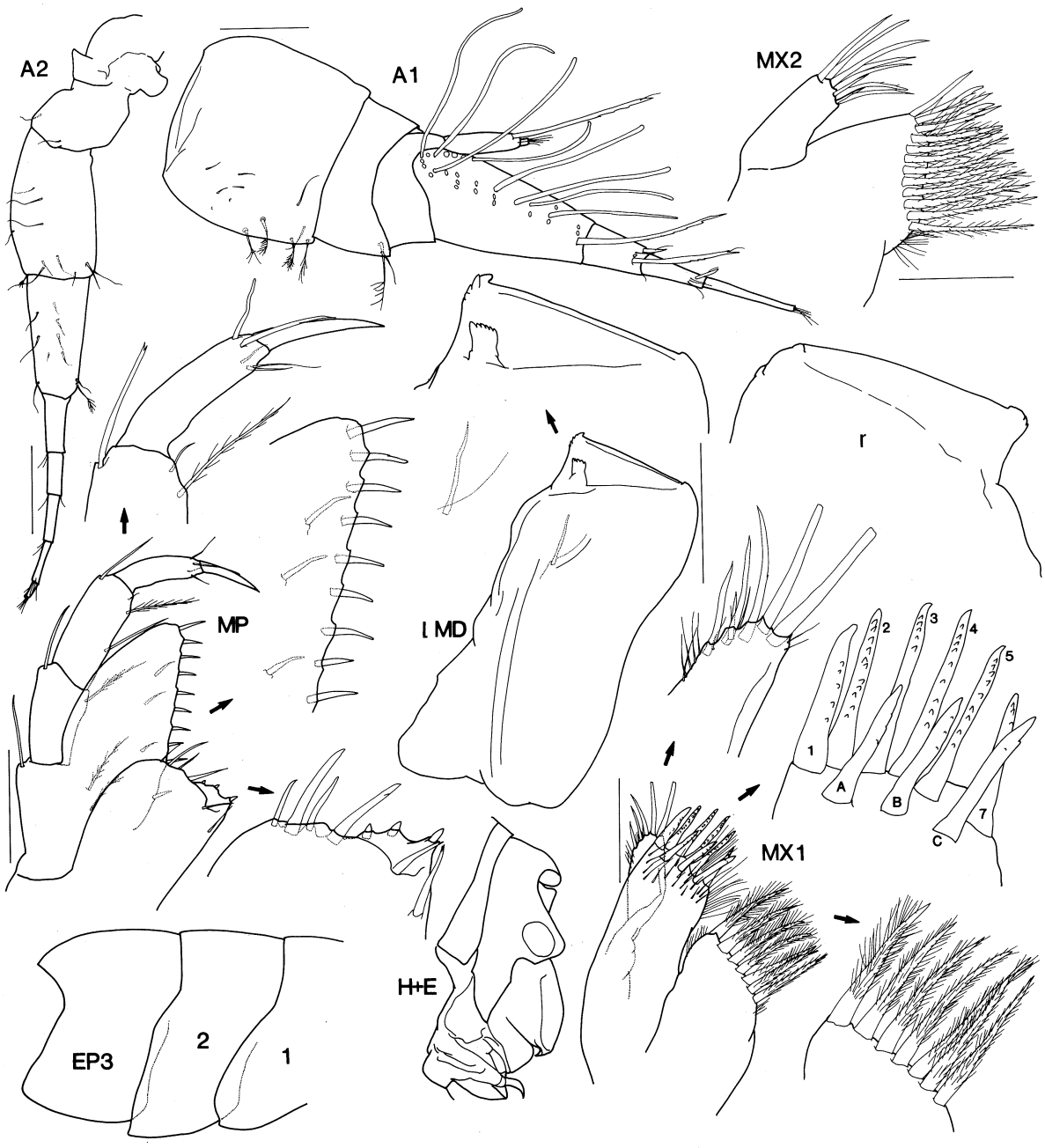

Fig. 38. *Andaniotes bagabag* n.sp., holotype female, 3.6 mm, AM P41613, east of Planet Rock, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

Diagnosis. Mandible not shortened; lacinia mobilis a stemmed blade. Maxilla 1: palp small, 2-articulate. Gnathopod 2: propodus with 2 serrate robust setae. Pleonite 3 truncate in female. Oostegites: 2 pairs. Uropod 3: outer ramus 2-articulate.

Description. Based on holotype female, 3.7 mm; paratype male 4.2 mm. *Head* including antennae and mouthparts like *A. bagabag*.

Gnathopod 1: simple; coxa reduced, triangular, apically subacute; basis long, slender, length 3.9 × breadth, anterior margin smooth, with few simple setae and 1 distal plumose seta, posterior margin with 6 long simple setae; ischium long, length 1.5 × breadth; merus, posterior margin with distal group of plumose setae; carpus subrectangular, short, length 1.3 × breadth, shorter than (0.8 ×) propodus, with long plumose setae along posterior margin; propodus large, subrectangular,

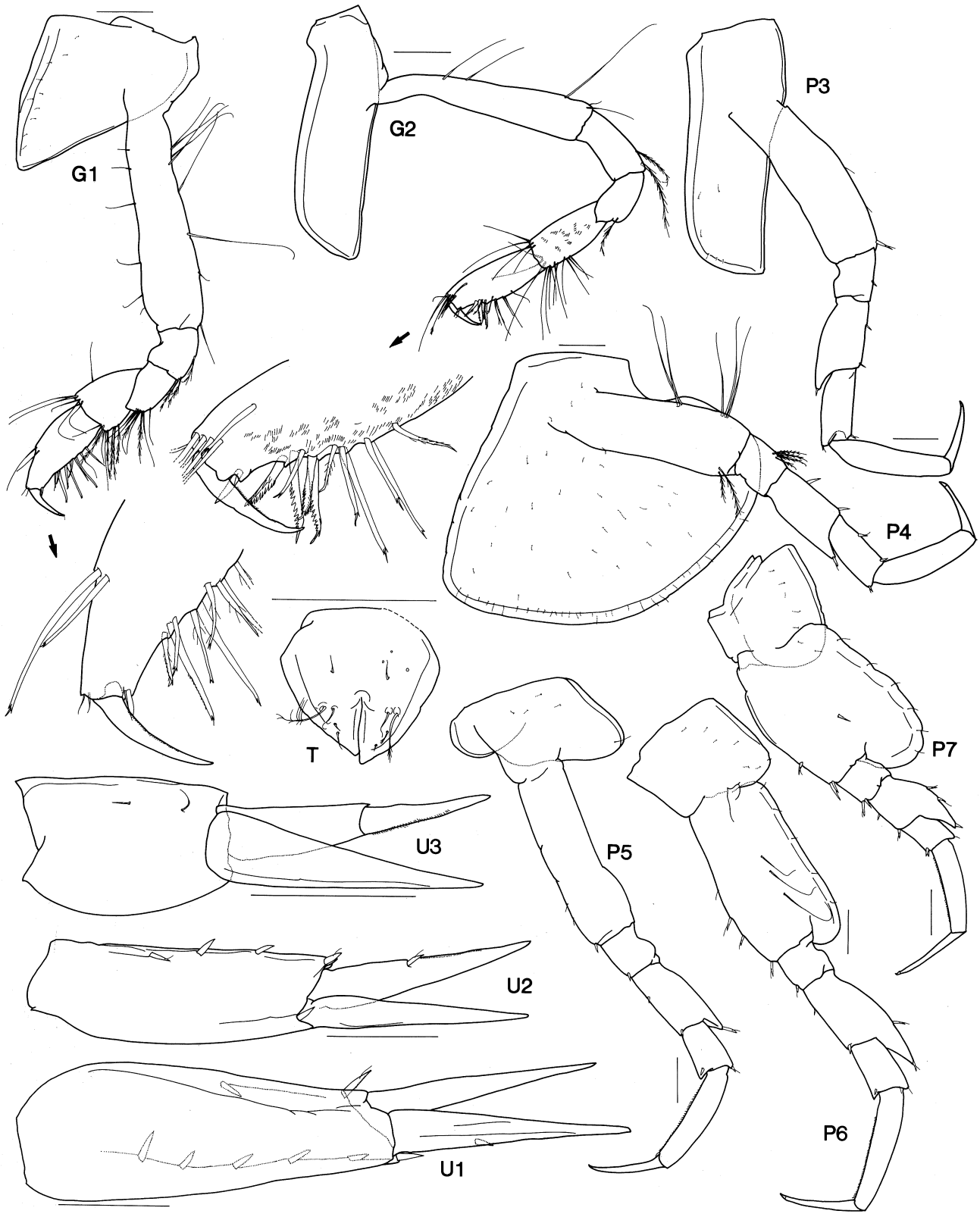

Fig. 39. *Andaniotes bagabag* n.sp., holotype female, 3.6 mm, AM P41613, east of Planet Rock, Astrolabe Bay, Papua New Guinea. Scales represent 0.1 mm.

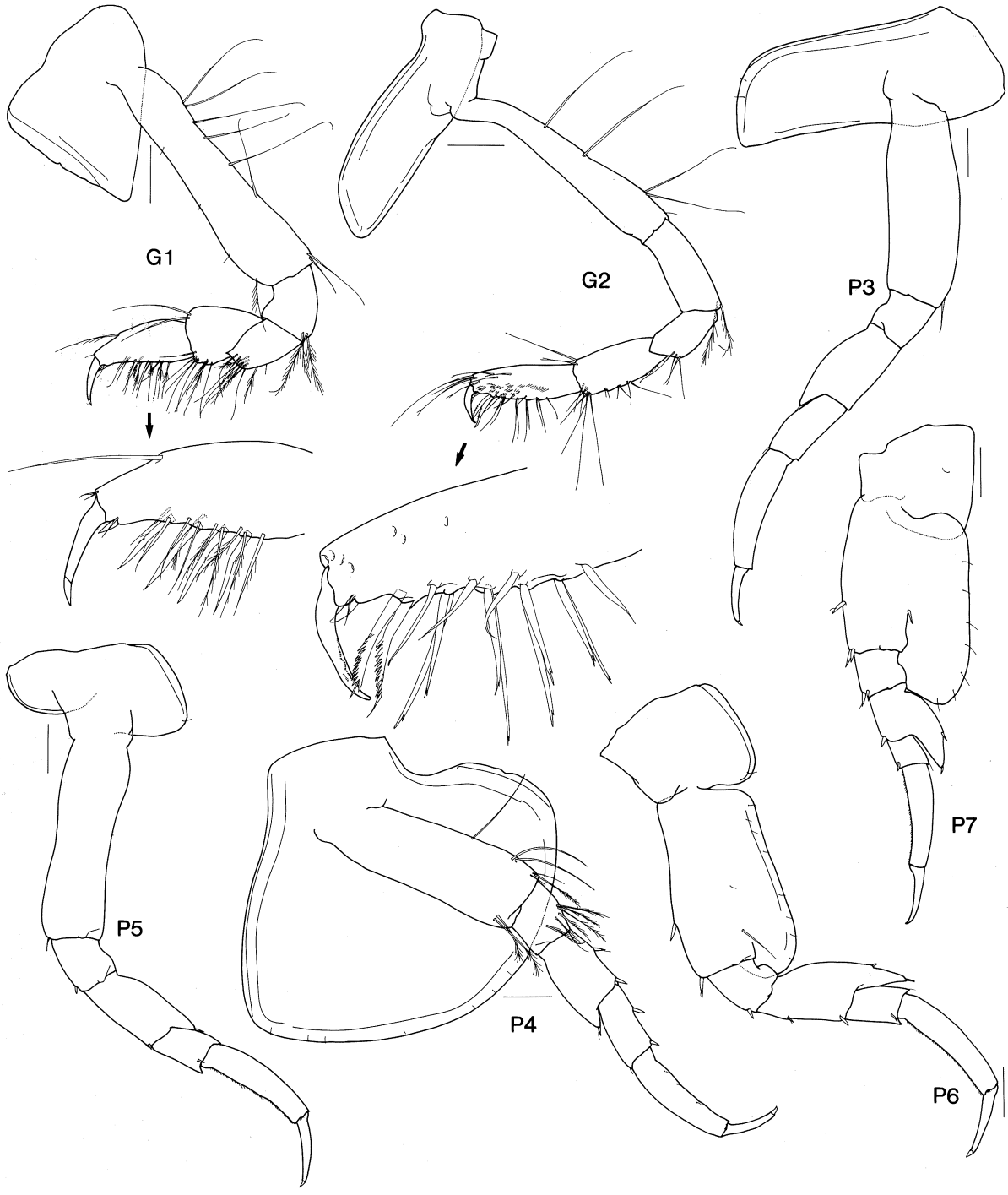

Fig. 40. *Andaniotes karkar* n.sp., holotype female, 3.7 mm, AM P41615, Mizegwadan reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

length 2.2 × breadth, margins converging distally, posterior margin smooth, with 4 robust setae and 9 plumose setae and a robust seta at base of dactylus; dactylus simple. *Gnathopod 2*: subchelate; coxa large, slender, subequal in size to coxa 3; ischium long, length 2.5 × breadth, with 2 long posterodistal plumose setae; carpus long, length 2 × breadth, posterior margin slightly convex; propodus subrectangular, long, length 2.9 × breadth, palm extremely acute, with concave, smooth margin, posterodistal corner with 2 strongly

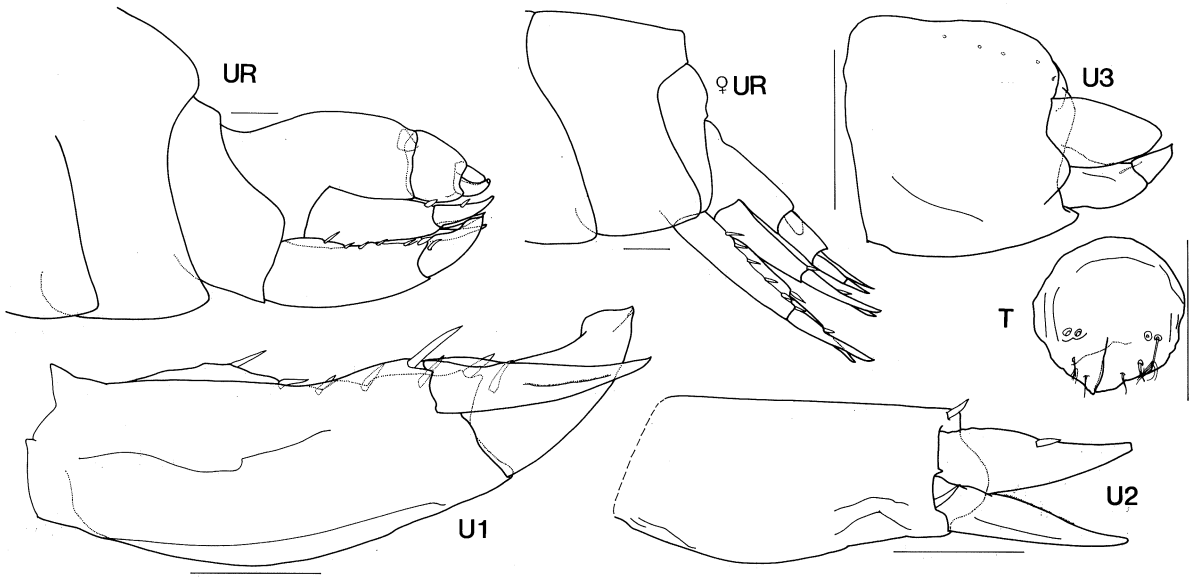

Fig. 41. *Andaniotes karkar* n.sp., paratype male, 4.2 mm, AM P41616; female UR: holotype female, 3.7 mm, AM P41615, Mizegwadan reef, Madang Lagoon, Papua New Guinea. Scales represent 0.1 mm.

serrate robust setae (same in male); dactylus reaching corner of palm, posterior margin minutely serrate.

Peraeopod 3: coxa large, slender; merus weakly expanded anterodistally; propodus without robust or slender setae; dactylus long, slender. *Peraeopod 4*: coxa with large posteroventral lobe, anterior margin straight, posterior margin merging into broadly rounded ventral margin; basis, anterior margin with 2 plumose distal setae, posterior margin with 3 long simple setae and 2 distal plumose setae; ischium, posterior margin with group of long plumose setae; merus weakly expanded anterodistally; propodus with 3 setae along posterior margin; dactylus long, slender. *Peraeopod 5*: coxa small, anteriorly lobate; basis linear, not expanded posteriorly; merus slightly expanded posterodistally; propodus without robust or slender setae; dactylus long, slender. *Peraeopod 6*: coxa small, not lobate; basis slightly expanded posteriorly with smooth posterior margin and small posteroventral lobe, with 1 medial seta; merus slightly expanded and produced posterodistally, with rounded posterior margin; propodus with minutely denticulate anterior margin; dactylus long slender. *Peraeopod 7*: basis expanded posteriorly, with posteroventral lobe and 1 small medial robust seta, posterior margin smooth, nearly straight, posteroventral corner rounded, posteroventral margin rounded; merus expanded and produced posterodistally, with rounded posterior margin; propodus with minutely denticulate anterior margin; dactylus long slender.

Oostegites on peraeopods 4–5. *Gills* from gnathopod 2 to peraeopod 7, not pleated.

Pleonite 3 truncated dorsodistally in female, rounded in male. *Epimeron 3*: posteroventral corner narrowly rounded *Urosomites*: urosomites dorsally smooth; urosomites 2–3 fused. *Uropod 1*: peduncle with 5 dorsolateral, 1 apicolateral and 1 apicomedial robust setae; outer ramus slightly longer than inner ramus; outer ramus with 1 lateral robust seta; inner ramus without robust setae (in male, outer ramus enlarged with hardened dorsodistal flange, rami without robust setae). *Uropod 2*: peduncle with 1 apicolateral and 1 apicomedial robust setae; rami subequal in length; outer ramus with 1 robust seta; inner ramus without robust setae (in male, peduncle and rami shorter than in female). *Uropod 3*: peduncle short, length 1.5 × depth (in male as long as deep), without robust setae; rami lanceolate (in male, short, stubby), subequal in length; outer ramus without robust setae, 2-articulate, article 2 elongate; inner ramus without robust setae; plumose setae absent in male and female. *Telson*: as long as broad, tapering distally, moderately cleft (39%), without dorsal robust setae.

Etymology. Named for the island of Karkar, which is near the type locality.

Remarks. The urosome and uropods of the male are broader, stockier and more robust than those of the female. The outer ramus of uropod 1 and the peduncle and rami of uropod 3 are particularly modified and similar to those of the male of *A. corpulentus* (Thomson, 1882) as described by Stebbing, 1897. The single male specimen of *A. karkar* is the same as the females in all other aspects and, although these animals are extremely rare in our collections, the male was taken in the same sample as the females.

Andaniotes karkar differs from *A. bagabag* in having only 2 serrate robust setae on the propodus of gnathopod

2; a truncate pleonite 3 in the female; and 2 (rather than 3) pairs of oostegites.

Andaniotes bagabag and *A. karkar* differ from all other species of *Andaniotes* in the shape of the peraeopod 7 basis. In addition *A. ingens* Chevreux, 1906 and *A. wallaroo* J.L. Barnard, 1972, have a 1-articulate outer ramus on uropod 3; *A. ingens* has a very short mandible, a reduced palp on maxilla 1 and a broadened and strongly setose gnathopod 1 basis; and *A. corpulentus, A. ingens, A. linearis* K.H. Barnard, 1932 and *A. wallaroo* all have a simple robust seta for the lacinia mobilis. In *A. fissicaudata* urosomites 2 and 3 are not fused.

Distribution. Known only from Madang Lagoon, northern Papua New Guinea in about 34 m depth.

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Table 1. Tropical Indo-West Pacific lysianassoid species. **1**, African Plate: western Indian Ocean; **2**, Arabian Plate: Red Sea, Gulf of Aden and Persian Gulf; **3**, Indo-Australian Plate: central Indian Ocean; **4**, Indo-Australian Plate: eastern Indian Ocean, northern Australia and the Coral Sea; **5**, Burma Plate; **6**, Eurasian Plate: south-east Asia; **7**, Philippine Plate; **8**, Mariana Plate; **9**, Caroline Plate; **10**, Bismarck Plate; **11**, Solomon Plate; **12**, Fijian Plate; **13**, Pacific Plate.

Notes: *i*, records from deep sea trenches marking the boundaries between two plates have been scored for both plates; *ii*, taxa occurring in the Red Sea have been scored for both the Arabian and African plates; *iii*, *Anonyx amaurus* Giles, 1888, is not a lysianassoid and has not been included in the table; *iv*, *Anonyx indicus* is not identifiable (Barnard & Karaman, 1991, suggest that it may be the same as *Orchomenella mannarensis* Rabindranath, 1971).

Records: 1—Andres, 1981. 2—J.L. Barnard, 1961. 3—J.L. Barnard, 1965. 4—J.L. Barnard, 1970. 5—J.L. Barnard & Ingram, 1990. 6—K.H. Barnard, 1937. 7—Birstein & Vinogradov, 1958. 8—Birstein & Vinogradov, 1960. 9—Birstein & Vinogradov, 1963. 10—Birstein & Vinogradov, 1964. 11—Bucklin *et al.*, 1987. 12—Dahl, 1959. 13—Echelman & Fishelson 1990a, 1990b. 14—Giles, 1890. 15—Greze, 1971. 16—Haswell, 1879. 17—Imbach, 1967. 18—Intes, 1978. 19—Kamenskaya, 1981. 20—Ledoyer, 1978a. 21—Ledoyer, 1979a. 22—Ledoyer, 1984. 23—Ledoyer, 1986 (including records in Ledoyer, 1967, 1968, 1972, 1978b, 1979b). 24—Lowry, 1984. 25—Lowry & Stoddart, 1983. 26—Lowry & Stoddart, 1989. 27—Lowry & Stoddart, 1990. 28—Lowry & Stoddart, 1992. 29—Lowry & Stoddart, 1993. 30—Lowry & Stoddart, 1994. 31—Lowry & Stoddart, this paper. 32—Lyons & Myers, 1991. 33—Miers, 1884. 34—Monod, 1937. 35—Myers, 1985. 36—Myers, 1986. 37—Myers, 1989. 38—Myers, 1990. 39—Nayar, 1959. 40—Nayar, 1966. 41—Pirlot, 1933. 42—Pirlot, 1936. 43—Rabindranath, 1971. 44—Rao, 1972. 45—Repelin, 1978. 46—Rudwick, 1951. 47—Ruffo, 1938. 48—Ruffo, 1969. 49—Russo, 1989. 50—Schellenberg, 1926a. 51—Schellenberg, 1938. 52—Sivaprakasam, 1968. 53—Spandl, 1924. 54—Stebbing, 1888. 55—Stebbing, 1897. 56—Stephensen, 1931. 57—Vinogradov, 1991. 58—Walker, 1904. 59—Walker, 1905. 60—Walker, 1909. 61—Walker & Scott, 1903. 62—Wilson *et al.*, 1985.

Tectonic Plates:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Amaryllis sp.	—	—	—	41	—	41	—	—	—	—	—	—	—
Amaryllis sp. (as *A. macrophthalma*)	20,23 60	—	—	—	—	—	—	—	—	—	—	—	—
Amaryllis sp.	15,32	6,15 32	—	—	—	—	—	—	—	—	—	—	—
Ambasiopsis brevipes Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Anonyx indicus Giles, 1890	—	—	14	—	—	—	—	—	—	—	—	—	—
Aristias coriolis L.&S., 1993	—	—	—	—	—	29	—	—	—	—	—	—	—
Aristias madagascarensis Ledoyer, 1972	23	—	—	—	—	—	—	—	—	—	—	—	—
Aristias stenopodus Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Aristias symbioticus K.H. Barnard, 1916	23,32	32	—	—	—	—	—	—	—	—	—	—	—
Aristias tropicus Schellenberg, 1938	—	—	—	—	—	—	—	—	—	51	—	—	—
Aristias thio L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Aristias uokonia L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Aristias verdensis L.&S., 1993	—	—	—	—	—	29	29	—	—	—	—	—	—
Aristias sp. K.H. Barnard, 1937	—	—	6	—	—	—	—	—	—	—	—	—	—
Aroui hamatopodus L.&S., 1989	—	—	—	26	—	—	—	—	—	—	—	—	—
Arugella heterodonta Pirlot, 1936	—	—	—	42	—	42	—	—	—	—	—	—	—
Arugella indica Rabindranath, 1971	—	—	43	—	—	—	—	—	—	—	—	—	—
Azotostoma fusta J.L. Barnard, 1965	23	—	—	—	—	—	—	—	—	—	—	—	3
Bathyamaryllis ouvea L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Bathyamaryllis perezii Pirlot, 1933	—	—	—	—	—	41	—	—	—	—	—	—	—
Bathycallisoma armata Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Bathycallisoma schellenbergi (B.&V., 1958)	—	—	—	8	—	—	—	—	—	—	—	—	8
Clepidecrella tropicalis L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Coriolisa novacaledonia L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Crybelocephalus barnardi B.&V., 1963	—	—	—	—	—	9	9	—	—	—	—	—	—
Crybelocephalus crassipes B.&V., 1960	—	—	—	—	—	—	—	—	—	—	—	—	8
Crybelocephalus megalurus Tattersall, 1906	—	—	—	—	—	—	7	—	—	—	—	—	—
Crybelocephalus obensis B.&V., 1964	10	—	—	—	—	—	—	—	—	—	—	—	—
Cyclocaris tahitensis Stebbing, 1888	—	—	—	—	—	—	—	—	—	—	—	—	30,54 62
Cyphocaris anonyx Boeck, 1871	6,10 50	—	10,50	10,50	10	9,10 41	9,41	7,8	—	8	8	—	7,8,45
Cyphocaris bellona L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—

Table 1. Continued.

Tectonic Plates:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Cyphocaris bouvieri Chevreux, 1916	10	—	—	—	—	—	—	—	—	—	—	—	—
Cyphocaris challengeri Stebbing, 1888	6,10 50,60	—	10,50	10	10	41	41	—	—	8	8	—	8
Cyphocaris cornuta Ledoyer, 1978	23	—	—	—	—	—	—	—	—	—	—	—	—
Cyphocaris faurei K.H. Barnard, 1916	2,6 10,23	—	10	—	2	10,41 29	—	—	—	8	—	—	8,45
Cyphocaris geyserensis Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Cyphocaris richardi Chevreux, 1905a	10	—	10	10	10	10	—	—	—	—	—	—	8,45
Douniaella longichelata Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Drummondia parviramus Lowry, 1984	—	—	—	24	—	—	—	—	—	—	—	—	—
Ensayara angustipes Ledoyer, 1978	20,23	—	—	—	—	—	—	—	—	—	—	—	—
Ensayara microphthalma Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Eucallisoma barnardi L.&S., 1993	—	—	—	—	—	29	—	—	—	—	—	—	—
Euonyx coecus Pirlot, 1933	—	—	—	—	—	41	—	—	—	—	—	—	—
Eurythenes gryllus (Lichtenstein, 1822)	6	—	—	18,30	—	29	—	—	—	8	8	—	8,11 30,62
Eurythenes obesus (Chevreux, 1905c)	10	—	10	10,50	—	10	—	—	—	—	—	—	—
Figorella corindon L.&S., 1993	—	—	—	—	—	29	—	—	—	—	—	—	—
Figorella tasmanica Lowry, 1984	—	—	—	30	—	—	—	—	—	—	—	—	—
Galathella latipes (Ledoyer, 1986)	23	—	—	—	—	—	—	—	—	—	—	—	—
Hippomedon bandae Pirlot, 1933	—	—	—	—	—	41	—	—	—	—	—	—	—
Hippomedon benthedii Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Hippomedon normalis K.H. Barnard, 1955	23	—	—	—	—	—	—	—	—	—	—	—	—
Hippomedon onconotus Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Hippomedon vao L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Hirondellea gigas (B.&V., 1955)	—	—	—	—	—	5,12	5,12 19	19	19	—	—	—	19
Ichnopus annasona L.&S., 1992	—	—	—	28,30	—	29	—	—	—	—	—	—	28
Ichnopus capricornus L.&S., 1992	—	—	—	28	—	—	—	—	—	—	—	—	—
Ichnopus comorensis L.&S., 1992	23,28	—	—	—	—	—	—	—	—	—	—	—	—
Ichnopus malpatun L.&S., 1992	—	—	—	28	—	—	—	—	—	28	—	—	—
Ichnopus pelagicus Schellenberg, 1926a	10,23	—	10	8,10 28,45 50	—	—	—	—	—	—	—	—	8,28
Ichnopus pseudoserricrus Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Ichnopus serricrus Walker, 1909	13,53 60	13,28 53	—	—	—	—	—	—	—	—	—	—	—
Ichnopus tenuicornis (Haswell, 1879)	—	—	—	16,28	—	—	—	—	—	—	—	—	—
Ichnopus teretis (Andres, 1981)	1	1	—	—	—	—	—	—	—	—	—	—	—
Ichnopus wardi L.&S., 1992	—	—	—	28	—	29,42	42	—	—	—	—	—	—
Ichnopus woodmasoni (Giles, 1890)	—	—	—	—	14	—	—	—	—	—	—	—	—
Ichnopus sp. Walker, 1904 (as *I. taurus*)	—	—	—	58	—	—	—	—	—	—	—	—	—
Kerguelenia koutoumo L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Kerguelenia lifou L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Kerguelenia macropoda Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Kerguelenia microphthalma Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Koroga megalops Holmes, 1908	6	—	10	10	—	10	—	—	—	—	—	—	—
Lepidepecreella pamanzi Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Lepidepecreella sarcelle L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Lepidepecreum madagascarensis Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Lepidepecreum sp. (as *L. foraminiferum*)	—	—	39	—	—	—	—	—	—	—	—	—	—
Lepidepecreum sp.	15	15	—	—	—	—	—	—	—	—	—	—	—
Lysianassa ceratina (Walker, 1889)	13,15 23,34 47,48 60	13,15 34,46 47,48 60	44	—	—	—	—	—	—	—	—	—	—
Lysianassa cinghalensis (Stebbing, 1897)	6,48 23,60	6,48	52,55 58,59	—	—	17	—	—	—	—	—	—	—
Lysianassa cinghalensis latipes Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Lysianassa coelochir (Walker, 1904)	—	6	58	—	—	—	—	—	—	—	—	—	—

Table 1. Continued.

Tectonic Plates:	1	2	3	4	5	6	7	8	9	10	11	12	13
Lysianassa kerakae Lyons & Myers, 1991	32	32	—	—	—	—	—	—	—	—	—	—	—
Lysianassa urodus (Walker & Scott, 1903)	61	—	—	—	—	—	—	—	—	—	—	—	—
Lysianassa variegata (Stimpson, 1855)	6,23	—	—	—	—	—	—	—	—	—	—	—	—
Lysianassa sp. (as *L. nasuta*)	23	—	—	—	—	—	—	—	—	—	—	—	—
Mesocyclocaris gracilis B.&V., 1964	—	—	10	—	—	—	—	—	—	—	—	—	—
Mesocyphocaris longicaudatus B.&V., 1960	—	—	10	—	—	—	—	—	—	—	—	—	8
Metacyphocaris helgae Tattersall, 1906	10	10	10	10,50	—	10	—	8	—	—	—	—	8,45
Microlysias xenokeras Stebbing, 1918 (as *M. indica*)	—	6	—	—	—	—	—	—	—	—	—	—	—
Nagada garagassi n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Nagada papua n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Nagada uwedoae n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Onesimoides abyssalis L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Onesimoides carinatus Stebbing, 1888	—	—	—	29,54	—	41	—	—	—	—	—	—	30
Onesimoides castellatus L.&S., 1993	—	—	—	—	—	29	29	—	—	—	—	—	—
Onesimoides chelatus Pirlot, 1933	—	—	—	—	—	41	—	—	—	—	—	—	—
Onesimoides mindoro L.&S., 1993	—	—	—	—	—	2,12	29	—	—	—	—	—	—
Onesimoides sp. (as *O. cavimanus*)	23	—	—	—	—	—	—	—	—	—	—	—	—
Orchomene plicata Schellenberg, 1925	23	—	—	—	—	—	—	—	—	—	—	—	—
Orchomene sp.	—	—	—	—	—	—	—	—	—	—	—	—	62
Orchomenella abyssorum (Stebbing, 1888)	10,30	—	—	—	—	—	—	—	—	—	—	—	—
Orchomenella affinis Holmes, 1908	—	—	52	—	—	—	—	—	—	—	—	—	—
Orchomenella distinctus B.&V., 1960	—	—	—	30	—	—	—	—	8	—	—	—	—
Orchomenella gerulicorbis (Shulenberger & Barnard, 1976)	—	—	—	—	—	—	—	—	—	—	—	—	30
Orchomenella mannarensis Rabindranath, 1971	—	—	43	—	—	—	—	—	—	—	—	—	—
Orchomenella sp. (as *O. nana*)	—	—	40,58	—	—	—	—	—	—	—	—	—	—
Orchomenella pelagica B.&V., 1960	—	—	—	8	—	—	—	—	—	—	—	—	8
Pachynus denticulatum Lowry, 1984	—	—	—	24	—	—	—	—	—	—	—	—	—
Paracallisoma alberti Chevreux, 1903	—	—	10	—	—	—	—	—	—	—	—	—	—
Paracallisoma sp.	—	—	—	—	—	—	—	—	—	—	—	—	62
Paracentromedon pacificus L.&S., 1993	—	—	—	—	—	29	—	—	—	—	—	—	—
Paracyphocaris brevicornis B.&V., 1955	—	—	—	—	—	—	—	—	—	—	8	—	—
Paracyphocaris distinctus B.&V., 1963	—	—	—	—	—	9	9	—	—	—	—	—	—
Paracyphocaris praedator Chevreux, 1905b	10	—	10	—	—	—	—	—	—	—	—	—	—
Paralysianopsis incerta (Ledoyer, 1986)	23	—	—	—	—	—	—	—	—	—	—	—	—
Paralysianopsis mauritiensis Ledoyer, 1978	20	—	—	—	—	—	—	—	—	—	—	—	—
Paralysianopsis mazamos n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Paralysianopsis padoz n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Parambasia forbesi Walker & Scott, 1903	61	—	—	—	—	—	—	—	—	—	—	—	—
Parawaldeckia lowryi Myers, 1985	—	—	—	35,36	—	—	—	—	—	31	—	—	—
Paronesimoides lignivorus Pirlot, 1933	—	—	—	—	—	2,41	—	—	—	—	—	—	—
Podoprionella dagadugaban n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Procyphocaris induratus (K.H. Barnard, 1926)	23	—	—	30	—	—	—	—	—	—	—	—	—
Pseudamaryllis andresi L.&S., 1993	—	—	—	—	—	29	—	—	—	—	—	—	—
Pseudamaryllis nonconstricta Andres, 1981	1,23	1	—	—	—	—	—	—	—	—	—	—	—
Pseudambasia acuticaudata (Ledoyer, 1984)	—	—	—	22	—	—	—	—	—	31	—	—	30
Pseudambasia indentata (Ledoyer, 1986) (as *Socarnoides indentatus*)	23	—	—	—	—	—	—	—	—	—	—	—	—
Pseudambasia nui (Myers, 1985)	—	—	—	35	—	—	—	—	—	—	—	—	37,38
Pseudambasia sp. (as *Lysianassa* sp.)	—	—	—	—	—	21	—	—	—	—	—	—	—
Pseudocyphocaris coxalis Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—
Pseudocyphocaris gosema L.&S., 1990	—	—	—	—	—	—	—	—	—	27,31	—	—	—
Pseudocyphocaris lobata L.&S., 1990	—	—	—	—	—	—	—	—	—	27,31	—	—	—
Rhinolabia elliotti n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Rhinolabia jebbi n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Rhinolabia paeowai n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Riwo mizeui n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Schisturella parachelata Ledoyer, 1986	23	—	—	—	—	—	—	—	—	—	—	—	—

Table 1. Continued.

Tectonic Plates:	1	2	3	4	5	6	7	8	9	10	11	12	13
Scolopostoma prionoplax Monod, 1937	23,34	6,34	—	—	—	—	—	—	—	—	—	—	—
Scolopostoma sp. (as *S. prionoplax*)	—	—	—	25	—	—	—	—	—	—	—	—	—
Scopelocheiropsis abyssalis Schellenberg, 1926b	—	—	10	—	—	—	—	—	—	—	—	—	—
Shoemakerella ewa (J.L. Barnard, 1970)	—	—	—	—	—	—	—	—	—	—	—	—	4,49
Shoemakerella sp. (as *Lysianassa ewa*)	20,23	—	—	—	—	—	—	—	—	—	—	—	—
Socarnella bonnieri Walker, 1904	—	—	52,58	—	—	—	—	—	—	—	—	—	—
Socarnes rurutu L.&S., 1994	—	—	—	—	—	—	—	—	—	—	—	—	30
Socarnes tiendi L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Socarnes tuscarora L.&S., 1994	—	—	—	—	—	—	30	—	—	—	—	—	30
Socarnes sp.	13	13	—	—	—	—	—	—	—	—	—	—	—
Socarnopsis allecta (Andres, 1981)	1	1	—	—	—	—	—	—	—	—	—	—	—
Socarnopsis dissimulantia (Imbach, 1967)	—	—	—	—	—	17	—	—	—	—	—	—	—
Socarnopsis honiara L.&S., 1994	—	—	—	—	—	—	—	—	—	—	—	—	30
Socarnopsis tandai L.&S., 1994	—	—	—	—	—	—	—	—	—	—	—	—	30
Socarnopsis sp. (as *Socarnes schmardae*)	—	—	58	—	—	—	—	—	—	—	—	—	—
Socarnopsis spp. (as *S. obesa*)	23	—	—	—	—	—	—	—	—	—	—	—	—
Stephonyx biscayensis (Chevreux, 1908)	2,23	—	—	—	—	—	—	—	—	—	—	—	—
Stephonyx sp.	—	—	—	30	—	—	—	—	—	—	—	—	—
Stomacontion capense K.H. Barnard, 1916	—	6	—	—	—	—	—	—	—	—	—	—	—
Thoriella islandica Stephensen, 1915	—	—	6	—	—	—	—	—	—	—	—	—	—
Trischizostoma crosnieri L.&S., 1993	—	—	—	—	—	29	—	—	—	—	—	—	—
Trischizostoma denticulatum Ledoyer, 1978	23	—	—	—	—	—	—	—	—	—	—	—	—
Trischizostoma richeri L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Trischizostoma tanjae Vinogradov, 1991	57	—	—	—	—	—	—	—	—	—	—	—	—
Tryphosa cucullata Walker, 1904	—	—	58	—	—	—	—	—	—	—	—	—	—
Tryphosella ama L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Tryphosella astrolabensis n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Tryphosella mucronatus (Pirlot, 1936)	—	—	—	—	—	—	42	—	—	—	—	—	—
Tryphosella oupi L.&S., 1994	—	—	—	30	—	—	—	—	—	—	—	—	—
Tryphosella wongada n.sp.	—	—	—	—	—	—	—	—	—	31	—	—	—
Vijaya tenuipes Walker, 1904	—	—	58	—	—	—	—	—	—	—	—	—	—
Waldeckia crenulata Pirlot, 1936	—	—	—	—	—	42	—	—	—	—	—	—	—
Waldeckia enoei Stephensen, 1931	—	—	—	42	—	42,56	—	—	—	—	—	—	—
Waldeckia nudum (Imbach, 1967) (as *Lepidepecreum nudum*)	—	—	—	—	—	17	—	—	—	—	—	—	—
Waldeckia sp. (as *W. kroyeri*)	—	—	—	33,42	—	42	42	—	—	—	—	—	—
Waldeckia sp. 1	—	—	—	—	—	—	—	—	—	—	—	—	30
Waldeckia sp. 2	—	—	—	30	—	—	—	—	—	—	—	—	—
Wandin griffini L.&S., 1990	—	—	—	27	—	—	—	—	—	—	—	—	—

Table 2. Tropical Indo-West Pacific lysianassoid genera. 1—African Plate: western Indian Ocean. 2—Arabian Plate: Red Sea, Gulf of Aden and Persian Gulf. 3—Indo-Australian Plate: central Indian Ocean. 4—Indo-Australian Plate: eastern Indian Ocean, northern Australia and the Coral Sea. 5—Burma Plate. 6—Eurasian Plate: south-east Asia. 7—Philippine Plate. 8—Mariana Plate. 9—Caroline Plate. 10—Bismark Plate. 11—Solomon Plate. 12—Fijian Plate. 13—Pacific Plate. × — records from the literature, including this paper; + — unpublished records.

Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13
Amaryllis Haswell, 1879	×	×	–	×	–	×	–	–	–	–	–	–	–
Ambasiopsis Ledoyer, 1986	×	–	–	–	–	–	–	–	–	–	–	–	–
Aristias Boeck, 1871	×	×	×	×	–	×	×	–	–	×	–	–	–
Aroui Chevreux, 1911	–	–	–	×	–	–	–	–	–	–	–	–	–
Arugella Pirlot, 1936	–	–	×	×	–	×	–	–	–	–	–	–	–
Azotostoma J.L. Barnard, 1965	×	–	–	+	–	–	–	–	–	–	–	–	×
Bathyamaryllis Pirlot, 1933	–	–	–	×	–	×	–	–	–	–	–	–	–
Bathycallisoma Dahl, 1959	×	–	–	×	–	–	–	–	–	–	–	–	×
Clepidecrella J.L. Barnard, 1962	–	–	–	×	–	–	–	–	–	–	–	–	–
Coriolisa Lowry & Stoddart, 1994	–	–	–	×	–	–	–	–	–	–	–	–	–
Crybelocephalus Tattersall, 1906	×	–	–	–	–	×	×	–	–	–	–	–	×
Cyclocaris Stebbing, 1888	–	–	–	–	–	–	–	–	–	–	–	–	×
Cyphocaris Boeck, 1871	×	–	×	×	×	×	×	×	–	×	×	–	×
Douniaella Ledoyer, 1986	×	–	–	–	–	–	–	–	–	–	–	–	–
Drummondia Lowry, 1984	–	–	–	×	–	–	–	–	–	–	–	–	–
Endevoura Chilton, 1921	–	–	–	+	–	–	–	–	–	–	–	–	–
Ensayara J.L. Barnard, 1964	×	–	–	–	–	–	–	–	–	–	–	–	–
Eucallisoma J.L. Barnard, 1961	–	–	–	–	–	×	–	–	–	–	–	–	–
Euonyx Norman, 1867	–	–	–	+	–	×	–	–	–	–	–	–	–
Eurythenes Smith, 1882	×	–	×	×	–	×	–	–	–	×	×	–	×
Figorella J.L. Barnard, 1961	–	–	–	×	–	×	–	–	–	–	–	–	–
Galathella Barnard & Karaman, 1987	×	–	–	–	–	–	–	–	–	–	–	–	–
Hippomedon Boeck, 1871	×	–	–	×	–	×	–	–	–	–	–	–	–
Hirondellea Chevreux, 1889	–	–	–	–	–	×	×	×	×	–	–	–	×
Ichnopus Costa, 1853	×	×	×	×	×	×	×	–	–	×	–	–	×
Kerguelenia Stebbing, 1888	×	–	–	×	–	–	–	–	–	–	–	–	–
Koroga Holmes, 1908	×	–	×	×	–	×	–	–	–	–	–	–	–
Lepidepecreella Schellenberg, 1926b	×	–	–	×	–	–	–	–	–	–	–	–	–
Lepidepecreum Bate & Westwood, 1868	×	×	×	+	–	–	–	–	–	–	–	–	–
Lysianassa Milne Edwards, 1830	×	×	×	–	–	×	–	–	–	–	–	–	–
Mesocyclocaris B. & V., 1964	–	–	×	–	–	–	–	–	–	–	–	–	–
Mesocyphocaris B. & V., 1960	–	–	×	–	–	–	–	–	–	–	–	–	×
Metacyphocaris Tattersall, 1906	×	×	×	×	–	×	–	×	–	–	–	–	×
Microlysias Stebbing, 1918	–	×	–	+	–	–	–	–	–	–	–	–	–
Nagada n.gen.	–	–	–	+	–	–	–	–	–	×	–	–	–
Onesimoides Stebbing, 1888	×	–	–	×	–	×	×	–	–	–	–	–	×
Orchomene Boeck, 1871	×	–	–	–	–	–	–	–	–	–	–	–	×
Orchomenella Sars, 1890	×	–	×	×	–	–	–	–	×	–	–	–	×
Pachynus Bulycheva, 1955	–	–	–	×	–	–	–	–	–	–	–	–	–
Paracallisoma Chevreux, 1903	–	–	×	–	–	–	–	–	–	–	–	–	×
Paracentromedon Chevreux & Fage, 1925	–	–	–	–	–	×	–	–	–	–	–	–	–
Paracyphocaris Chevreux, 1905	×	–	×	–	–	×	×	–	–	–	×	–	–
Paralysianopsis Schellenberg, 1931	×	–	–	+	–	+	–	–	–	×	–	–	–
Parambasia Walker & Scott, 1903	×	–	–	–	–	–	–	–	–	–	–	–	–
Parawaldeckia Stebbing, 1910	–	–	–	×	–	–	–	–	–	×	–	–	–

Table 2. Continued

Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13
Paronesimoides Pirlot, 1933	–	–	–	–	–	×	–	–	–	–	–	–	–
Podoprionella Sars, 1895	–	–	–	–	–	–	–	–	–	×	–	–	–
Procyphocaris J.L. Barnard, 1961	×	–	–	×	–	–	–	–	–	–	–	–	–
Pseudamaryllis Andres, 1981	×	×	–	–	–	×	–	–	–	–	–	–	–
Pseudambasia Stephensen, 1927	×	–	–	×	–	×	–	–	–	×	–	–	×
Pseudocyphocaris Ledoyer, 1986	×	–	–	–	–	–	–	–	–	×	–	–	–
Rhinolabia Ruffo, 1972	–	–	–	–	–	–	–	–	–	×	–	–	–
Riwo n.gen.	–	–	–	–	–	–	–	–	–	×	–	–	–
Schisturella Norman, 1900	×	–	–	–	–	–	–	–	–	–	–	–	–
Scolopostoma Lowry & Stoddart, 1983	×	×	–	×	–	+	–	–	–	–	–	–	–
Scopelocheiropsis Schellenberg, 1926b	–	–	×	–	–	–	–	–	–	–	–	–	–
Shoemakerella Pirlot, 1936	×	–	–	×	–	–	–	–	–	–	–	–	×
Socarnella Walker, 1904	–	–	×	–	–	–	–	–	–	–	–	–	–
Socarnes Boeck, 1871	×	×	–	×	–	×	–	–	–	–	–	–	×
Socarnopsis Chevreux, 1911	×	×	×	–	–	×	–	–	–	–	–	–	×
Stephonyx Lowry & Stoddart, 1989	×	–	–	×	–	–	–	–	–	–	–	–	–
Stomacontion Stebbing, 1899	–	×	–	–	–	–	–	–	–	–	–	–	–
Thoriella Stephensen, 1915	–	–	×	–	–	–	–	–	–	–	–	–	–
Trischizostoma Boeck, 1861	×	–	–	×	–	×	–	–	–	–	–	–	–
Tryphosa Boeck, 1871	–	–	×	–	–	–	–	–	–	–	–	–	–
Tryphosella Bonnier, 1893	–	–	–	×	–	–	×	–	–	×	–	–	–
Vijaya Walker, 1904	–	–	×	–	–	–	–	–	–	–	–	–	–
Waldeckia Chevreux, 1906	–	–	–	×	–	×	×	–	–	–	–	–	×
Wandin Lowry & Stoddart, 1990	–	–	–	×	–	–	–	–	–	–	–	–	–

Table 3. General distribution of shallow-water tropical Indo-West Pacific lysianassoid genera. *Anonyx, Orchomene* and *Tryphosa* are considered to be mis-identifications of genera which do not occur in the Indo-West Pacific.

Cosmopolitan	Post-Tethyan	Post-Gondwanan	Endemic
Aristias	*Aroui*	*Amaryllis*	*Arugella*
Ensayara	*Ichnopus*	*Azotostoma*	*Galathella*
Hippomedon	*Lysianassa*	*Drummondia*	*Nagada*
Kerguelenia	*Podoprionella*	*Endevoura*	*Riwo*
Lepidepecreum	*Rhinolabia*	*Microlysias*	*Socarnella*
Orchomenella	*Shoemakerella*	*Pachynus*	*Vijaya*
Tryphosella	*Socarnes*	*Paralysianopsis*	*Wandin*
Socarnopsis	*Parawaldeckia*		
	Pseudamaryllis		
	Pseudambasia		
	Pseudocyphocaris		
	Scolopostoma		
	Stomacontion		
	Waldeckia		

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