

*ACCALATHURA* (CRUSTACEA: ISOPODA: PARANTHURIDAE) FROM NORTHERN AUSTRALIA AND ADJACENT SEAS

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**Abstract**

Poore, G.C.B. and Lew Ton, H.M., 1990. *Accalathura* (Crustacea: Isopoda: Paranthuridae) from northern Australia and adjacent seas. *Memoirs of the Museum of Victoria* 50(2): 379–402.

Eleven new species of *Accalathura* Barnard from reef and shelf environments in northern Australia and the Coral Sea are figured and described. Most are typical of the genus in the possession of narrow uropodal exopods: (*A. avena*, *A. eulalia*, *A. poa*, *A. spathia*, *A. themeda*, *A. triodea*, *A. vulpia* and *A. zoisia*); but three differ from all others in having a very broad exopod: (*A. dimeria*, *A. oryza* and *A. sehima*). *Accalathura barnardi* (Nierstrasz) from Indonesia is redescribed and a key to the species from the region is presented. Species from the Indian Ocean, which have often been misidentified, are discussed.

**Introduction**

The tropical anthuridean isopod fauna of Australia is dominated by species of the anthurid genus *Amakusanthura* Nunomura (Poore and Lew Ton, 1988) and the paranthurid genus *Accalathura* Barnard. In this contribution new species of *Accalathura* from this region are described. The genus has been recorded several times from the Indian Ocean and south-east Asia. These records are reviewed.

The genus is distinguished from all other paranthurids by the possession of a multiarticulate flagellum on both pairs of antennae. Most species are inhabitants of soft sandy or muddy sublittoral substrates but some are recorded from coral debris. The genus includes the longest anthuridean known, *A. gigantissima* Kussakin from the Southern Ocean (Poore, 1981; Wägele, 1985). Tropical species, in contrast, are of a size more typical of anthurideans generally.

*Indo-west-Pacific species of Accalathura*

These new species bring to 22 the number of species of *Accalathura* described. Two, possibly four, are known from the West Atlantic, one from the North Pacific, two from southern Australia, and one from Antarctic seas (Poore, 1980, 1981).

Seven species of *Accalathura* have been described or recorded from the Indian Ocean and south-east Asia but a review of published descriptions and figures suggests that some are misidentifications. A complete re-examination

of all the material is beyond the scope of this paper.

The most widely reported Indian Ocean species is *A. borradailei* (Stebbing, 1904) originally described from the Maldives. It has a rounded telson and a relatively broad uropodal exopod. Records from India (Chilton, 1924; Pillai, 1966) fit this description but those from east Africa (Monod, 1972a, b) are of another species with an acute telson and narrow exopod. *Accalathura laevitelson* (Kensley, 1975), described from a manca, is similar in all critical characters and may be an appropriate name for this east African species. These records may be of the same species which Kensley (1980, 1988) reported from the same area and from Aldabra Atoll and which he referred to *A. sladeni* (Stebbing, 1910).

*Accalathura sladeni* was described from Cargados Carajos, north of Mauritius, and although it is similar to the material figured by Monod and Kensley (1980) there are subtle differences. In particular, the appendix masculina of *A. sladeni* is simple while that of Kensley's male has a bifid apex. It seems, therefore, that at least two similar species from the Indian Ocean have been referred to *A. sladeni* and that both are different from *A. borradailei*. The name *A. sladeni* was also used by Hale (1937) for an *Accalathura* from South Australia but this material has subsequently been described as *A. bassi* Poore, 1981. A species similar to the African one, with a bifid appendix masculina, was recorded from sou-

thern Western Australia by Thomson (1951) as *A. gigas* which it is not (Poore, 1981).

The types of three Indonesian species from the "Siboga" collections (*Katanthura barnardi* Nierstrasz, 1941, *Metanthura indica* Nierstrasz, 1941 and *M. normani* Nierstrasz, 1941) were examined by GCBP in Amsterdam in 1981. All have been placed in *Accalathura* (Poore, 1980). The types are not available for detailed illustration and only *A. barnardi* is re-illustrated in this contribution from new material. *Accalathura indica* is similar to *A. sladeni* in the possession of a digitiform palmar lobe on pereopod 1 (not triangular as figured by Nierstrasz). Kensley (1977, 1982) recorded this species from east Africa but his illustrations suggest the same species as that he called *A. sladeni* in 1980. *Accalathura normani* (Nierstrasz, 1941), described from a male, is not sufficiently well described to be easily recognised.

In summary, *A. borradailei* is definitely recorded from the Maldives and India, *A. sladeni* from Cargados Carajos, and *A. barnardi*, *A. indica* and *A. normani* from Indonesia. There is certainly at least one other species from East Africa and Aldabra Atoll (variously reported as *A. borradailei*, *A. sladeni*, and *A. indica*) which may be the same as *A. laevitelson* described from that area. The identity of a Western Australian species is also still enigmatic.

#### *Species from Australia and adjacent seas*

Many species of *Accalathura* are superficially quite similar which accounts for the misidentification of several species from the Indian Ocean. But in this contribution a new group of species is reported (*A. dimeria*, *A. oryza*, *A. sehimia*) in which a very broad uropodal exopod is held erect over the telson; in all other species the exopod is linear. *Accalathura dimeria* differs from the other two in having a rounded telsonic apex and tapering propodus on pereopod 2. *A. oryza* is much smaller than *A. sehimia* and differs in pereopod 2 and uropodal endopod.

The remaining species are very similar and are not easily grouped on morphological criteria. One group of species is those in which the palmar lobe of the propodus of pereopod 1 is well defined: *A. avena*, *A. indica*, *A. poa*, *A. triodea* and *A. vulpia*. In the remaining species the palmar lobe is poorly defined.

Two species (*A. avena* and *A. vulpia*) differ from the others in having the uropodal exopod moderately broad (2.4 to 3 times as long as broad) and not reaching the end of the peduncle. In most species the uropodal exopod is about 4

times as long as wide and exceeds the peduncle.

The telson is usually about 2.5 times as long as wide but in three species (*A. themeda*, *A. poa* and *A. zoisia*) it is much narrower, about 3 times as long as wide. The apex is typically acute but *A. vulpia* differs from the others in having a rounded apex, similar in some ways to the three species of the broad-exopod group in which the telson apex is very obtusely angled.

Several species are dorsally and dorsolaterally pigmented from the head to telson: *A. avena*, *A. dimeria*, *A. eulalia*, *A. poa* and *A. themeda*. Preserved material of the other species is not pigmented but the possibility of pigment having been lost cannot be discounted.

Similarities between species are not discussed further in this paper.

#### *Methods*

In this contribution the new species, *Accalathura themeda*, is figured and described in detail first. Except for the three species with broad uropodal exopods, there are only minor differences between this species and the rest in the shape and setation of the antennae, mouthparts, posterior pereopods, and pleopods. For these conservative characters *A. themeda* may be taken as typical of the genus (Figs 1–3). Other species have been dissected and examined in detail but only the most species-diagnostic features are figured: tailfan, telson, uropods and first, second and fourth pereopods. All limbs are from the left side and only distal articles are drawn. Illustrations are somewhat simplified. For pereopod 1, setae and the bases of the palmar spines are shown; the spines on and near the palmar lobe are drawn at a higher magnification; and the lateral setal row is not figured. On other parts only the bases of many setae are figured and long setae, e.g., on the telson and uropod have been truncated. The written diagnoses are similarly abbreviated to concentrate on important characters. When known, male characters are described.

In figures the following abbreviations are used: A1, A2, antennae 1, 2; MD, mandible; MDp, mandibular palp; MX, maxilla; MP, maxilliped; P1–P7, pereopods 1–7; PL1–PL5, pleopods 1–5; T, telson; UN, UX, uropodal endopod and exopod; AM, appendix masculina. Figures marked a or unmarked are of the holotype; those marked b are from a male paratype.

Following a pattern established earlier, the new species are named for genera of Australian plants; this time all are genera of grasses.



Material is lodged in the Museum of Victoria, Melbourne (NMV), Australian Museum, Sydney (AM), Queensland Museum, Brisbane (QM), Northern Territory Museum and Art Gallery, Darwin (NTM), Zoological Museum, Amsterdam (ZMA), and Zoological Museum, Copenhagen (ZMC).

**Accalathura** Barnard

*Type species. Calathura crenulata* Richardson, 1905.

*Remarks.* Poore (1980, 1981) provided a synonymy, diagnosis and description of this easily recognised genus. The diagnosis must now be expanded to accommodate variability in the

uropod. The endopod may well exceed the telson not barely exceed as previously stated) and the exopod may be broad (not always narrow). The multiarticulate antennal flagella are unique within the Anthuridea and are a probable synapomorphy.

In males of *Accalathura*, as in many other anthuridean genera, the pleon, uropods and telson are more elongate than in females and juveniles. The antenna 1 flagellum consists of two types of articles; proximal, discoid articles which bear dense whorls of aesthetascs, and distal cylindrical articles which do not. Pereopod 1 is more elongate and densely setose, but pereopods 2 and 3 may also be modified with strong teeth.

**Key to species of *Accalathura* from northern Australia and adjacent seas**

- 1. Uropodal exopod not more than twice as long as broad, with a well-developed dorsal lobe, not reaching to end of peduncle; pereopod 1 with palmar lobe defined by a right angle . . . . . 2
- Uropodal exopod more than 2.4 times as long as broad, without a dorsal lobe, reaching to end of peduncle or not; pereopod 1 with palmar lobe defined by a right angle or obtuse angle . . . . . 4
- 2. Uropodal endopod exceeding end of telson; apex of telson obtusely angled . . . . . 3
- Uropodal endopod reaching as far as telson; apex of telson rounded . . . . . *A. dimeria*
- 3. Pereopod 2 propodus oval (twice as long as wide); uropodal endopod with gently convex inner margin . . . . . *A. oryza*
- Pereopod 2 propodus linear (3 times as long as wide); uropodal endopod with strongly convex inner margin . . . . . *A. sehima*
- 4. Pereopod 1 propodal palmar lobe right-angled . . . . . 5
- Pereopod 1 propodal palmar lobe obtusely-angled . . . . . 9
- 5. Uropodal exopod not reaching to end of peduncle; peduncle inner distal angle half as long as endopod . . . . . *A. avena*
- Uropodal exopod reaching beyond or as far as end of peduncle; peduncle inner distal angle less than half as long as endopod . . . . . 6
- 6. Uropodal exopod 2.4 times as long as wide; endopod as long as wide; apex of telson rounded . . . . . *A. vulpia*
- Uropodal exopod about 4 times as long as wide; endopod longer than wide; apex of telson acute . . . . . 7
- 7. Pereopod 1 palmar lobe broadly triangular, near midpoint of overall length of propodus; uropodal endopod parallel-sided, with broadly angled apex . . . . . *A. triodea*
- Pereopod 1 palmar lobe digitiform, about one-third along length of propodus; uropodal endopod tapering, elongate, triangular . . . . . 8
- 8. Uropodal exopod 4.5 times as long as wide; peduncle with acute inner angle, one-third as long as endopod . . . . . *A. poa*
- Uropodal exopod 3.7 times as long as wide; peduncle with blunt inner angle, one-tenth as long as endopod . . . . . *A. indica*
- 9. Telson tapering from near base; uropodal endopod with 2 setae on inner margin . . . . . *A. themeda*
- Telson widest near midpoint; uropodal endopod with 3 or more setae on inner margin . . . . . 10

10. Telson apex acute ..... 11  
 — Telson apex rounded ..... 12  
 11. Uropodal endopod apex acute; pereopod 2 propodus 2.4 times as long as wide ..... *A. eulalia*  
 — Uropodal endopod apex rounded; pereopod 2 propodus 2.0 times as long as wide ..... *A. barnardi*  
 12. Uropodal endopod more than twice as long as wide; male appendix masculina with 2 distal fingers; male pereopod 2 propodus with slightly convex palm ..... *A. spathia*  
 — Uropodal endopod less than twice as long as wide; male appendix masculina with 3 distal fingers; male pereopod 2 propodus with strong proximal palmar lobe ..... *A. zoisia*

*Accalathura themedra* sp. nov.

Figures 1–3

*Material examined.* 1 male, 1 female, 44 juveniles; 5–14 mm.

*Holotype.* Coral Sea (French Territory), Chesterfield Reefs, Long Is. (19°52'S, 158°19'E), seaward edge, 12 m, N.L. Bruce, 5 May 1979, QM W8130 with 2 slides, juvenile, 11.4 mm.

*Paratypes.* Type locality, QM W8121(1 specimen), W8126(2), W8128(2), NMV J10125(8). Chesterfield Reefs, Long Is., seaward edge, 15 m, N.L. Bruce, 6 May 1979, QM W15989(1). Bennett Is.: inner reef edge, 12 m, N.L. Bruce, 6 May 1979, QM W8104(3); lagoon, rearward edge, 1 m, N.L. Bruce, 7 May 1979, W8124(4); N end of lagoon, 1 m, N.L. Bruce, 8 May 1979, W8101(2 juveniles, 1 female). Cay N of Long Is., seaward slopes, 15 m, N.L. Bruce, 8 May 1979, QM W8102(1).

Australian Coral Sea Territory, Magdalaine Cay (16°37'S, 150°17'E): beach rock, N.L. Bruce, 26 Apr 1979, QM W8098(2); dead coral, 10 m, N.L. Bruce, 27 Apr 1979, W8122(1). Mellish Reef (17°25'S, 155°50'E): reef edge-drop off, 13 m, N.L. Bruce, 2 May 1979, QM W8097(2); back reef bommie, 10 m, N.L. Bruce, 1 May 1979, W8123(1); lagoon, 10 m, N.L. Bruce, 1 May 1979, W8125(3); back reef edge, 20 m, N.L. Bruce, 1 May 1979, W8127(1). Marion Reef (19°10'S, 152°17'E), lagoon pinnae, 2 m, N.L. Bruce, 13 May 1979, QM W8120(2). Marion Reef, Brodie Cay, reef front, 15–20 m, N.L. Bruce, 12 May 1979, QM W8096 with 1 slide (1 male, 12.4 mm), NMV J10124(2).

*Other material.* Qld. Yonge Reef (14°37'S, 15°38'E), 2 m, P. Hutchings and P. Weate, 19 Jan 1975 (stn 75 Liz S-3), AM P26036(1). Lizard Island (14°40'S, 145°28'E), B. Kensley, Jan 1982, NMV J12853(2).

*Diagnosis.* Dorsally pigmented. Telson tapering from near base to an acute apex, 3.0 times as long as wide. Uropodal peduncle reaching 85% of length of telson, distally defined by acute angles; endopod distally rounded, exceeding telson by half its length; exopod tapering from base, 4.3 times as long as basal width, reaching just beyond peduncle. Pereopod 1 propodus

with proximal palmar lobe separated from palm by rounded angle of 130°. Pereopod 2 propodus 2.7 times as long as wide, with convex palm bearing 8 spines on distal two-thirds. Pereopod 4 carpus and propodus with 5 and 6 spines respectively; propodus 4.5 times as long as wide.

*Description.* Head, pereon and pleon with persistent dorsal and dorsolateral pigment pattern. Ratio of dorsal lengths of head, pereonites 1–7, pleon, telson – 0.6 : 1.0 : 1.1 : 1.1 : 1.0 : 1.0 : 1.1 : 0.4 : 0.7 : 0.8.

Head with short rostrum; eyes pigmented. Articulations of pereopods marked by groups of long setae. Pleonites free, 1–5 of equal length, pleonite 6 longer and fused to telson but with a well marked transverse ridge dorsally between the two.

Antenna 1, 2.3 times as long as head; peduncle with second article shortest, flagellum longer than peduncle, of basal article plus 17 isometric articles of which 4 to 14 each bears 1 aesthetasc. Antenna 2, 3.5 times as long as head; flagellum shorter than peduncle, of 27 setose articles.

Mouthparts produced well forward beyond eyelobes. Mandibular palp with 3 articles, first short with 1 seta, second with 3 setae, third falcate with longitudinal row of 16 even setae plus 1 longer seta. Maxilla 1 a finely serrate spine. Maxilliped with small epipod, coxa and basis fused to head, endite a broad blade with subterminal seta; palp with articles 1 and 2 fused (together with 5 ventral setae), articles 3–5 fused (together with 1 dorsal and 14 apical setae).

Pereopod 1 with basis and ischium of equal lengths, merus completely enclosing carpus; propodus with proximal palmar lobe separated from palm by rounded angle of c. 130°, palm with a mesial row of c. 30 setae, a lateral row of c. 60 serrate spines of various lengths, lateral face with row of 15 setae. Pereopod 2 with setose margins on basis and ischium; propodus 2.7 times on long as greatest width, palm convex,

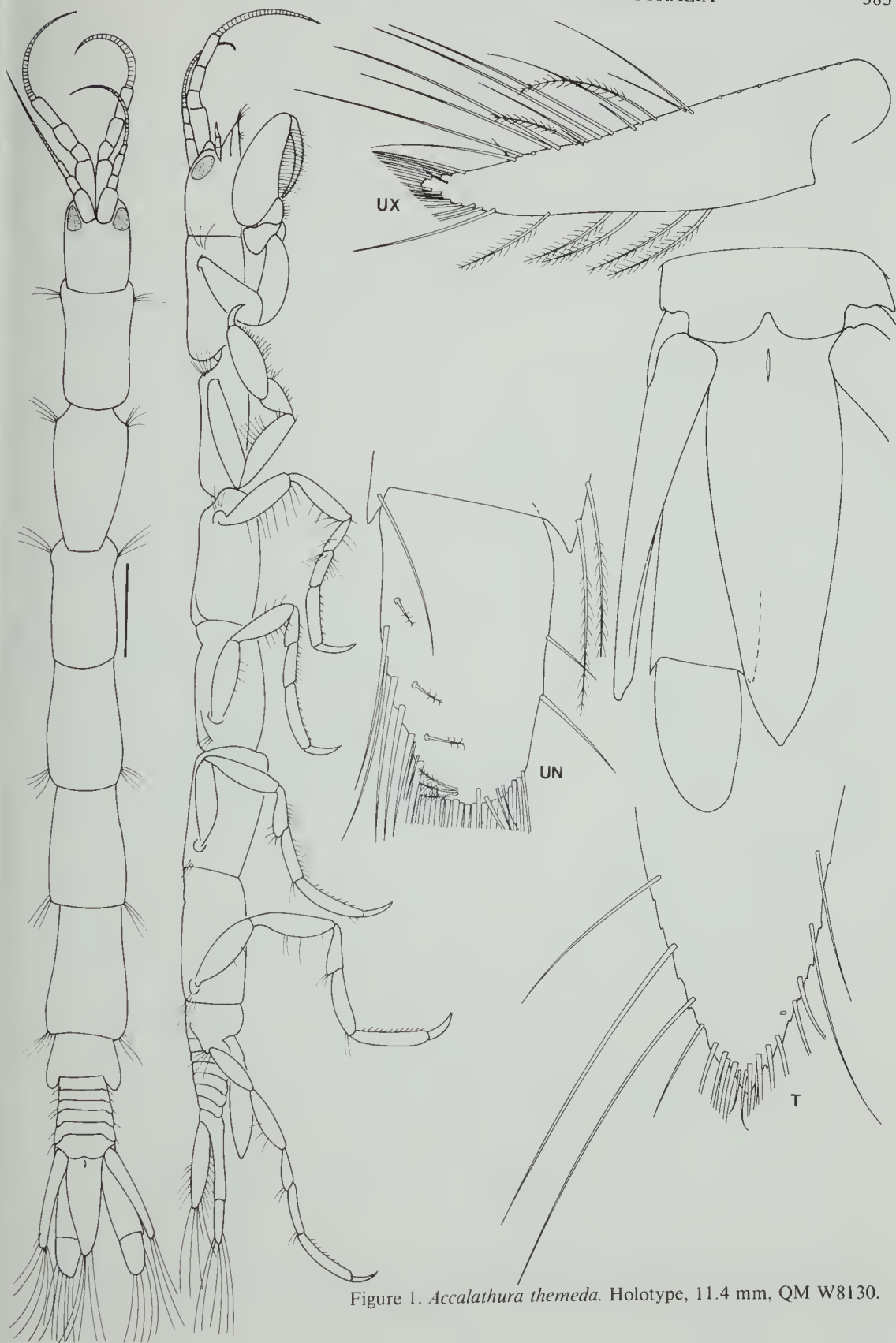


Figure 1. *Accalathura themedata*. Holotype, 11.4 mm, QM W8130.

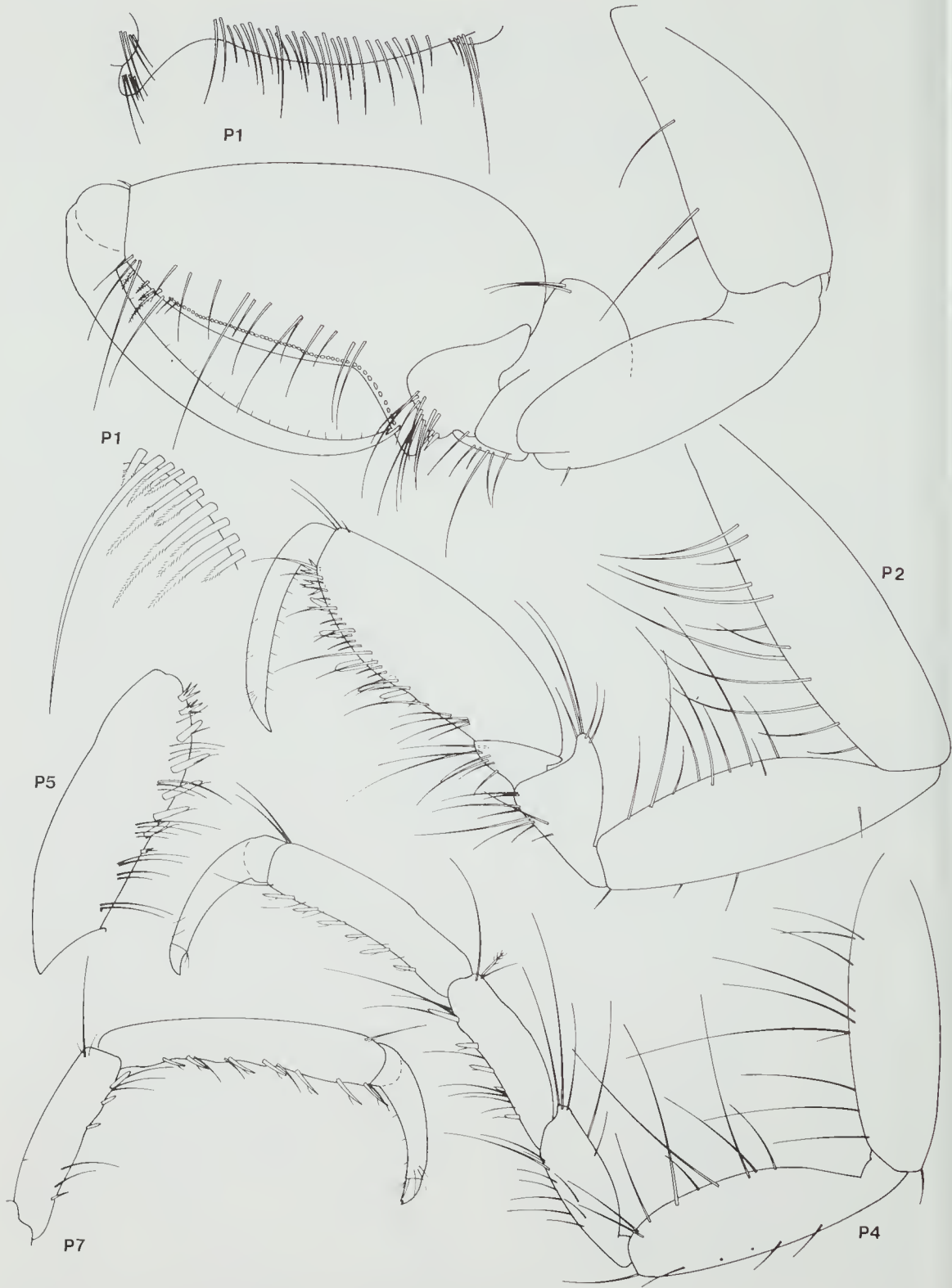


Figure 2. *Accalathura themedra*. Holotype, 11.4 mm, QM W8130.



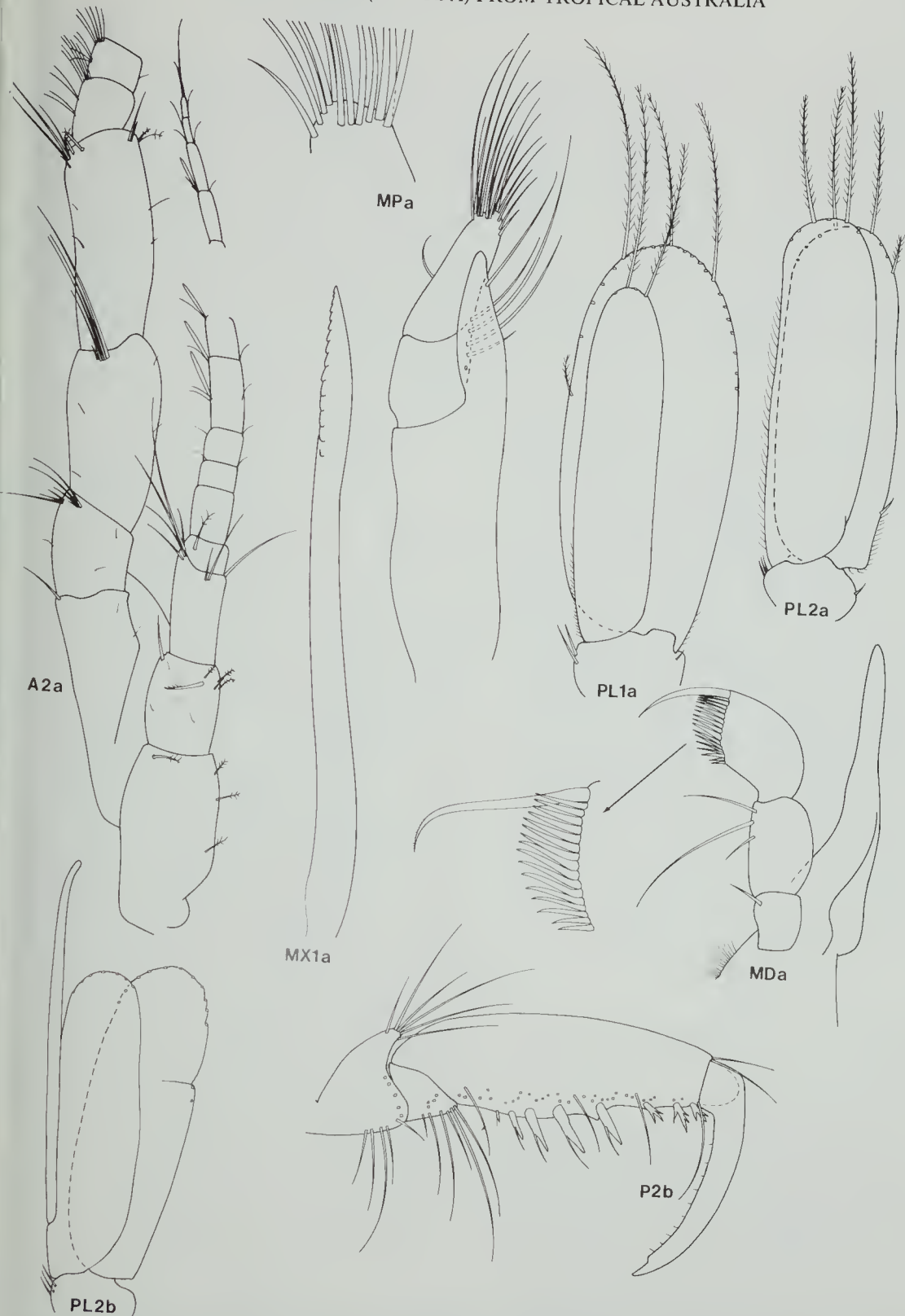


Figure 3. *Accalathura themeda*. a, holotype, 11.4 mm, QM W8130. Antenna 1 peduncle, 6 basal and 4 terminal flagellar articles; antenna 2 peduncle and 2 flagellar articles; maxilliped with detail of mesial apex. b, paratype male, 12.4 mm, QM W8096.

with lateral and mesial setae and 8 submarginal spines (distal ones complex) on mesial face. Pereopod 3 similar to 2, propodus more elongate. Pereopods 4–7 becoming longer posteriorly; basis, ischium and merus setose; carpus 3–4 times as long as wide (narrower posteriorly), with 4–5 marginal spines; propodus 4–5 times as long as wide, with 6–7 marginal spines; dactylus about half length of propodus.

Pleopod 1 exopod, 2.2 times as long as broad, with 23 marginal plumose setae; endopod shorter, with 4 terminal plumose setae. Pleopods 2–5 shorter than pleopod 1, similar, with rami similar, endopod with 5 setae, exopod with 9–12 setae.

Uropodal peduncle reaching 85% of length of telson, distally defined by acute angles surrounding endopod; endopod distally rounded, exceeding telson by half its length, with 2 mesial setae and dense setation distally and laterodistally, and with 3 separate brush-setae plus group of 3 brush-setae dorsally; exopod reaching just beyond peduncle, tapering from base, 4.3 times as long as basal width, marginally setose, mostly simple setae dorsally, plumose ventrally. Telson tapering from near base to an acute apex, 3.0 times as long as wide, apex with c. 18 long submarginal setae plus pair of small setae at apex.

Male. Pereon, pleon and pereopods more elongate than juvenile. Antenna 1 flagellum with 23 articles each with ring of numerous aesthetascs, plus 6 narrow terminal articles without aesthetascs. Pereopod 1 propodus densely setose mesially. Pereopod 2 propodus narrower distally than in juvenile, with marginal row of 8 spines.

*Distribution.* Coral Sea and northern Great Barrier Reef; coral rubble at 1–20 m depth.

#### *Accalathura avena* sp. nov.

##### Figure 4

*Material examined.* 10 juveniles, 12.0–28.7 mm.

Holotype, Qld, N of Magnetic Is. (19°08'S, 146°50'E), 7 m, P. Arnold, 25 Aug 1976, NMV J10101 with 1 slide, juvenile, 28.7 mm.

Paratypes, Qld (all collected by P. Arnold in Townsville region). Bowling Green Bay, muddy sand, 17 m, 7 Aug 1975, NMV J10103 (1 specimen); mud, 13 m, 9 Dec 1975, NMV J10107(1); sand, 18 m, 16 Apr 1975, NMV J10105(1); mud, 14 m, 17 Jun 1975, NMV J10106(1). Halifax Bay, 15 m, 24 May 1976, NMV J10102(1); muddy sand, 13 m, 24 Feb 1971, AM P39440(1), NMV J10108(1), QM W15990(1). Cleveland Bay, mud, 3 m, 4 Jun 1974 NMV J10104(1).

*Diagnosis.* Dorsally pigmented. Telson widest two-thirds along, tapering to a broadly acute

apex, 2.5 times as long as wide. Uropodal peduncle reaching 95% of length of telson, mediolaterally defined by a broad triangular lobe half as long as endopod; endopod distally tapering, 1.5 times as long as wide, exceeding telson by one-third of its length; exopod widest at midpoint 3.0 times as long as wide, not reaching base of endopod. Pereopod 1 propodus with strong proximal palmar lobe, separated from palm by right angle. Pereopod 2 propodus 2.7 times as long as wide, distally narrower, with convex palm bearing 8 spines. Pereopod 4 carpus and propodus with 5 and 4 spines respectively, 3.8 times as long as wide.

*Distribution.* Queensland (type locality only), shallow shelf near Townsville, 7–18 m.

#### *Accalathura barnardi* (Nierstrasz)

##### Figure 5

*Katanthura barnardi* Nierstrasz, 1941: 243–247, figs 1–13.

*Accalathura barnardi*.—Poore, 1980: 59.

*Material examined.* 1 male, 1 female, 1 juvenile; 11.7–15.1 mm.

Holotype, Indonesia, Solo Strait, 113 m, M. Weber, 8 Feb 1900 ("Siboga" Expedition stn 305), ZMA Is.100.620, female, 14 mm.

Other material, Indonesia, S of Bali (8°46'S, 115°15'E), coral sand, 19 m, 12 Sep 1951 ("Galathea" stn 483), ZMC (juvenile 15.1 mm, male 11.7 mm).

*Diagnosis.* Dorsal pigment possible. Telson widest at midpoint, lateral margins evenly curved to moderately acute apex, 2.5 times as long as wide. Uropodal peduncle reaching 90% of length of telson, distally defined by a broad triangular mesial projection; endopod distally rounded, exceeding telson by half its length; exopod tapering over most of its length, 4.0 times as long as wide, reaching just beyond peduncle. Pereopod 1 propodus with proximal palmar lobe separated from palm by an obtuse angle. Pereopod 2 propodus 2.1 times as long as wide, ovate, with 9 marginal spines. Pereopod 4 carpus and propodus with 6 and 8 spines respectively; propodus 3.5 times as long as wide.

Male. Pereopod 2 propodus palm irregular. Appendix masculina with elongate subapical blade.

*Distribution.* Indonesia, 19–113 m.

#### *Accalathura dimeria* sp. nov.

##### Figure 6

*Material examined.* 2 sub-males, 1 female, 2 juveniles; 10.3–13.7 mm.



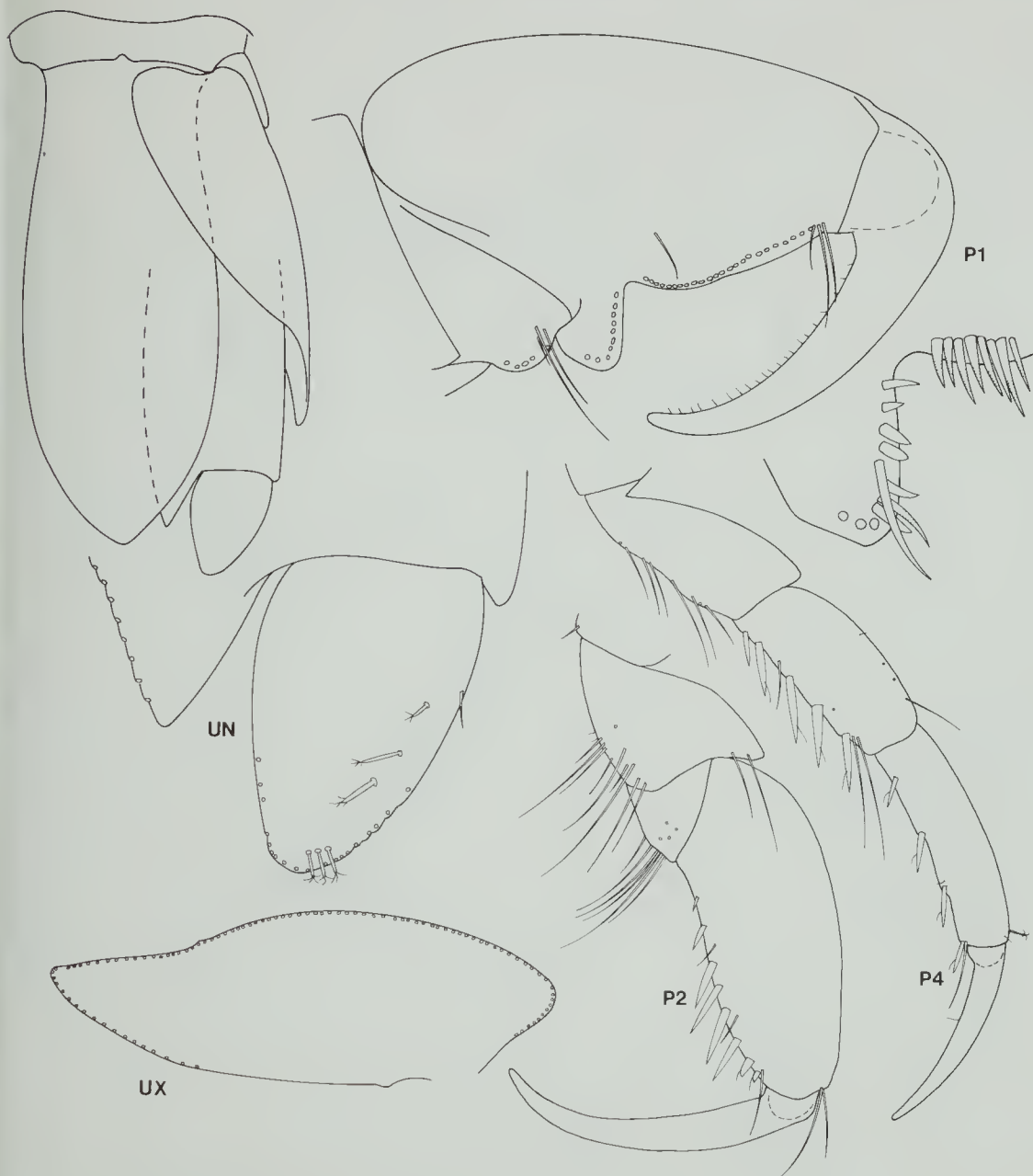


Figure 4. *Accalathura avena*. Holotype, 28.7 mm, NMV J10101.

Holotype. Qld, Halifax Bay (19°05'S, 146°43'E), 10 m, P. Arnold, 24 Aug 1976 (TBS stn), NMV J10109(juvenile, 11.6 mm).

Paratypes. Qld, Halifax Bay, 3–13 m, coarse silt to very fine sand, P. Arnold, various dates (TBS stns), NMV J10110 with 2 slides (1 specimen), J10111(1), J10112(1 sub-male), J10113(1 sub-male), QM W15991(1).

*Diagnosis.* Dorsally pigmented. Telson almost

parallel-sided for much of length, tapering to a broadly rounded apex, 2.4 times as long as wide. Uropodal peduncle reaching about two-thirds of length of telson, distally defined by acute angle mesially and broad lobe laterally; endopod narrow, apically subacute, reaching to end of telson; exopod strongly dorsally lobed, about 1.5 times as long as greatest width, ventral lobe reaching three-quarters along peduncle. Pereo-

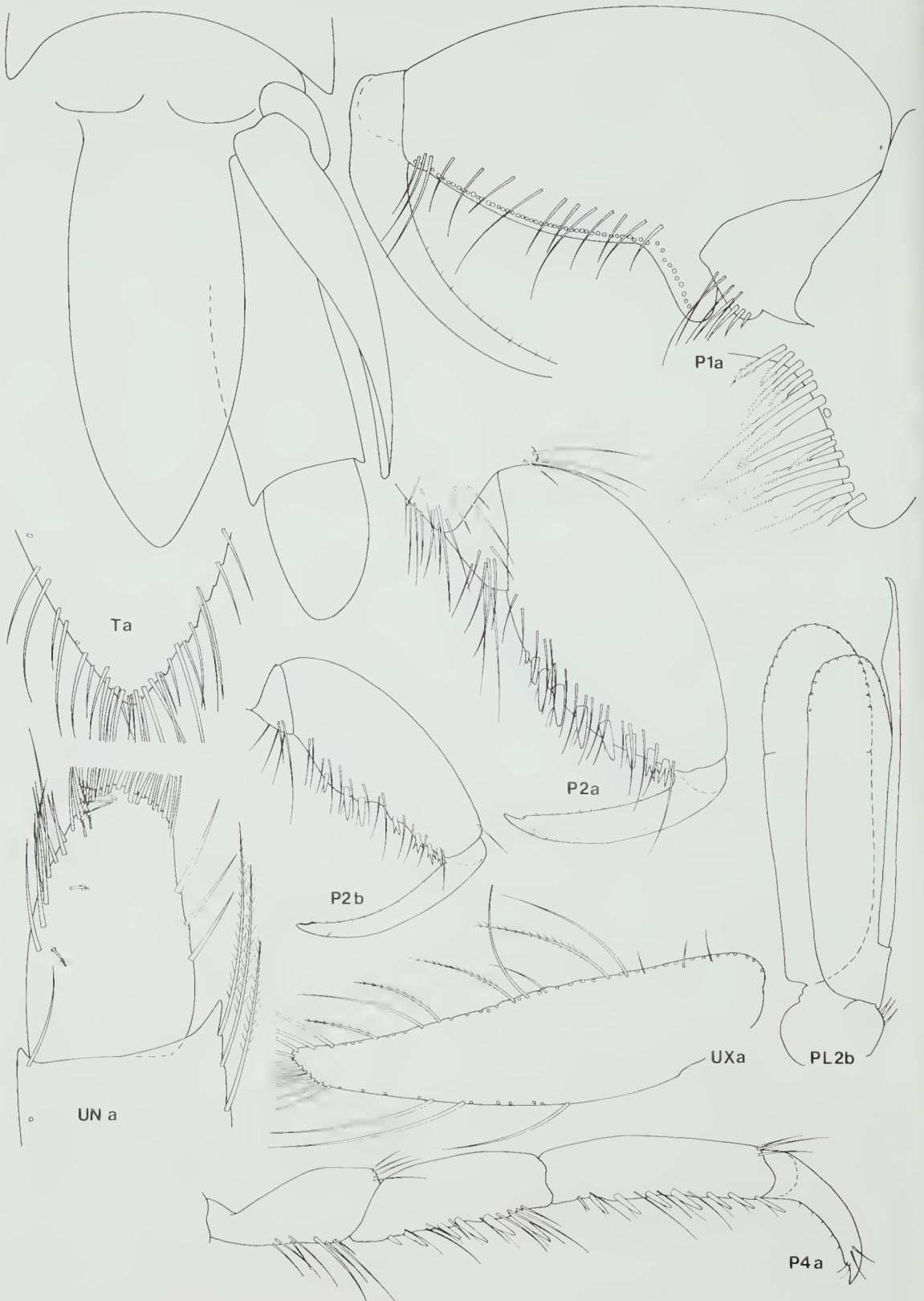


Figure 5. *Accalathura barnardi*. a, juvenile, 15.1 mm, ZMC. b, male, 11.7 mm, ZMC.

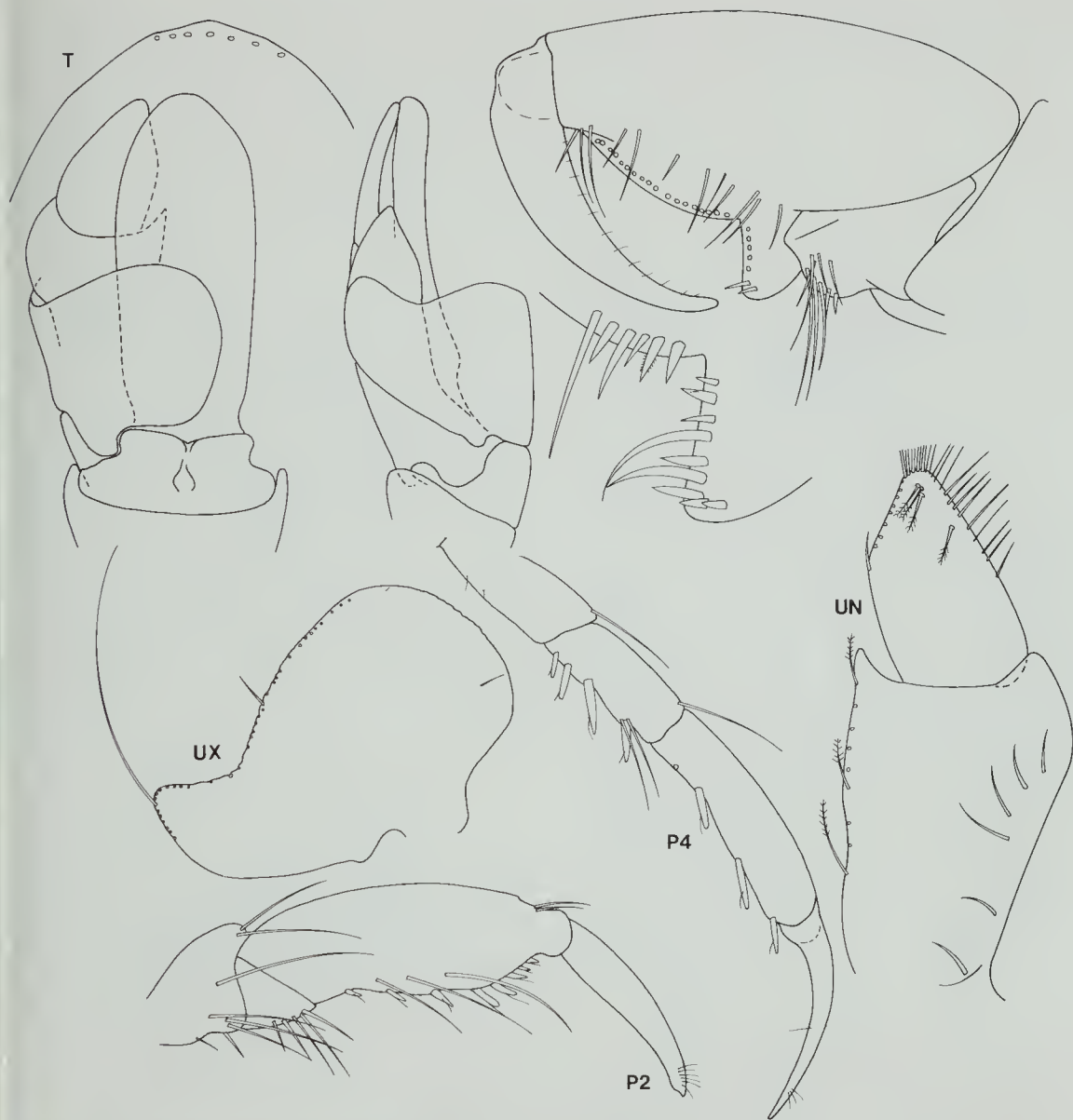


Figure 6. *Accalathura dimeria*. Holotype, 11.6 mm, NMV J10109.

pod 1 propodus with proximal palmar lobe separated from palm by acute angle. Pereopod 2 propodus 3.0 times as long as wide, abruptly tapering distally, with 8 spines on convex margin. Pereopod 4 carpus and propodus each with 4 spines; propodus 4.0 times as long as wide.

*Distribution.* Queensland, Halifax Bay only, 3–13 m.

#### *Accalathura eulalia* sp. nov.

##### Figure 7

*Material examined.* 5 juveniles, 1 manca, 6.8–11.0 mm.

*Holotype.* NT, S side of New Year Is. (10°54'S, 132°02'E), hydroids and small yellow tunicates, 14 m, G.C.B. Poore on "Alegrias", 14 Oct 1982 (stn NT-22), NMV J10114 with 1 slide, juvenile, 11.0 mm.



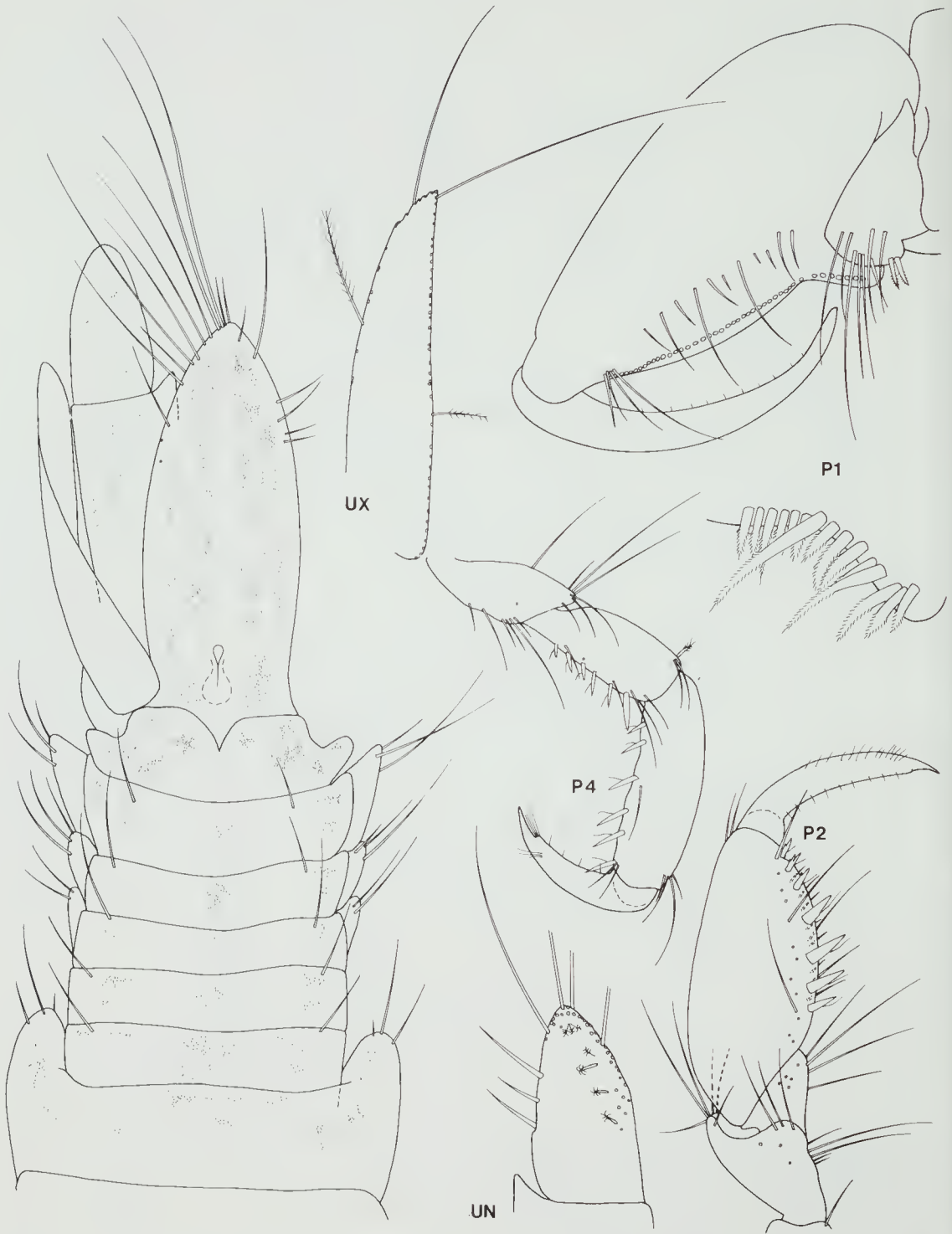


Figure 7. *Accalathura eulalia*. Holotype, 11.0 mm, NMV J10114.

Paratypes. NT. NW end of McCluer Is. (11°02'S, 132°58'E), brown algae on bommies, 8 m, G.C.B. Poore, 16 Oct 1982 (stn NT-32), NMV J10116(1 specimen); S end of McCluer Is. (11°06'S, 133°00'E), *Acropora* base, 8 m, P. Horner, 17 Oct 1982 (stn NT-59), NTM Cr006787(1); same locality, on *Seriotopora histrix*, J.K. Lowry (stn NT-61), NMV J10115(1).

Other material. NT, East Point, Darwin (12°25'S, 130°48.4'E), 22 Dec 1982, NTM Cr006788(1); Cootamundra Shoal (10°50.12'S, 129°13.09'E), 22 m, "Sirius" expedition station 2.8, 7 May 1982, NMT Cr000394(1).

**Diagnosis.** Dorsally pigmented. Telson lanceolate, margins evenly curved and tapering to an acute apex, 2.5 times as long as wide. Uropodal peduncle reaching 85% of length of telson, distally defined by an acute angle internally; endopod tapering distally, exceeding telson by half its length; exopod tapering from base, 4.3 times as long as wide, reaching beyond end of peduncle. Pereopod 1 propodus with proximal palmar lobe separated from palm by broad angle of 130°. Pereopod 2 propodus 2.3 times as long as wide, ovate, with 7 spines on convex palm. Pereopod 4 carpus and propodus each with 6 marginal spines; propodus 3.2 times as long as wide.

**Distribution.** Northern Territory, on various substrates, 8–14 m.

#### *Accalathura oryza* sp. nov.

##### Figure 8

**Material examined.** 2 juveniles, 2 manca, 4.3–11.2 mm.

Holotype. Qld, Lizard Island (14°40'S, 145°28'E), lagoon shallows off Mangrove Beach, 1.5 m, C. Short, 30 Sep 1978, AM P29792, juvenile, 11.2 mm.

Paratype. Qld, Lizard Island, lagoon at S end, 3 m, A. Jones and C. Short, 10 Oct 1978, AM P29663 (1 specimen).

Other material. Qld, Britomart Reef lagoon (18°17'S, 146°38'E), 9 m, G.C.B. Poore and H.M. Lew Ton, NMV J12852(2).

**Diagnosis.** Not pigmented. Telson widest at midpoint, tapering to broadly angular, almost truncate apex, 2.4 times as long as wide. Uropodal peduncle reaching 70% of length of telson, distally defined by acute angle mesially and strongly produced lateral ridge; endopod strongly tapering, inner margin straight, exceeding telson by one-quarter its length; exopod strongly dorsally lobed, 1.8 times as long as wide, ventral lobe reaching about three-quarters along peduncle, dorsal lobe a flattened semicircle. Pereopod 1 propodus with proximal palmar lobe separated from palm by an acute angle. Pereopod 2 2.0 times as long as wide, ovate, with

9 spines on evenly convex margin. Pereopod 4 carpus and propodus each with 4 spines; propodus 4.0 times as long as wide.

**Distribution.** Queensland, northern Great Barrier Reef, coral lagoons.

#### *Accalathura poa* sp. nov.

##### Figure 9

**Material examined.** 1 female, 2 juveniles; 6.4–14.1 mm.

Holotype. Qld, Heron Island (23°27'S, 151°55'E), lagoon, in dead base of bommie, L. Thompson, 17 Oct 1979, QM W8762, ovigerous female, 14.1 mm.

Paratypes. Qld, Heron Island, reef flat, dead coral, 10 Apr 1976, NMV J10123(1 specimen); Heron Island, N.L. Bruce, 3 Jan 1979, QM W8113(1).

**Diagnosis.** Dorsally pigmented. Telson widest at midpoint, tapering to broadly-acute apex, 2.8 times as long as wide. Uropodal peduncle reaching 90% of length of telson, distally defined by strong mesial triangular projection; endopod distally tapering, exceeding telson by one-quarter its length; exopod tapering over distal half, 3.7 times as long as greatest width, reaching just beyond peduncle. Pereopod 1 propodus with proximal palmar lobe well defined and separated from palm by rounded right-angle. Pereopod 2 propodus 3.3 times as long as wide, elongate-ovate, with 7 marginal spines on mostly-straight palm. Pereopod 4 carpus and propodus with 4 and 7 spines; propodus 4.7 times as long as wide.

**Distribution.** Queensland, southern Great Barrier Reef (Heron Island, type locality only.)

#### *Accalathura sehma* sp. nov.

##### Figure 10

**Material examined.** 2 juveniles; 16.3–20.8 mm.

Holotype. WA, North-west Shelf between Port Hedland and Dampier (20°17'S, 116°38'E), very coarse sandy shell with crinoids, 42 m, epibenthic sled, G.C.B. Poore and H.M. Lew Ton on FRV "Soela", 10 Jun 1983 (stn NWA-43), NMV J10117, juvenile, 20.8 mm.

Paratype. WA, North-west Shelf between Port Hedland and Dampier (19°05'S, 117°26'E), 122 m, G.C.B. Poore and H.M. Lew Ton on FRV "Soela" (stn NWA-52), NMV J10118(1 specimen).

**Diagnosis.** Not pigmented. Telson widest at midpoint, tapering to broadly angular apex, 2.4 times as long as wide. Uropodal peduncle reaching 75% of length of telson, distally defined by acute angle mesially and strongly produced lateral ridge; endopod tapering over distal half,



Figure 8. *Accalathura oryza*. Holotype, 11.2 mm, AM P29792.





Figure 9. *Accalathura poa*. Holotype, 14.1 mm, QM W8762.



Figure 10. *Accalathura sehima*. Holotype, 20.8 mm, NMV J10117.

inner margin curved, exceeding telson by about one-quarter its length; exopod strongly dorsally lobed, 1.7 times as long as wide, ventral lobe reaching about three-quarters along peduncle, dorsal lobe semicircular. Pereopod 1 propodus with proximal palmar lobe separated from palm by an acute angle. Pereopod 2 propodus 3.2 times as long as wide, elongate, with 7 spines on mostly-straight palm. Pereopod 4 carpus and propodus each with 4 spines; propodus 5 times as long as wide.

*Distribution.* North-west Shelf, coarse sediments, 42–122 m.

***Accalathura spathia* sp. nov.**

Figure 11

*Material examined.* 2 males, 2 juveniles, 17.1–21.6 mm.

*Holotype.* WA, North-west Shelf between Port Hedland and Dampier (18°50.5'S, 117°39.8'E), shell, mud, rock, 178–182 m, epibenthic sled, G.C.B. Poore and H.M. Lew Ton on FRV "Soela", 6 Jun 1983 (stn NWA-29), NMV J10119 with 1 slide, juvenile, 21.6 mm.

*Paratypes.* WA. Type locality, NMV J10120(1 male), J10121(1 juvenile), J10122 (1 male); North-west Shelf between Port Hedland and Dampier (18°41'S, 118°39'E), 134 m, epibenthic sled, G.C.B. Poore and H.M. Lew Ton on FRV "Soela", 4 Jun 1983 (stn NWA-21), NMV J12854(1 male, 1 juvenile).

*Diagnosis.* Not pigmented. Telson slightly wider at midpoint than at base, tapering to broadly-acute apex, 2.8 times as long as wide. Uropodal peduncle reaching 80% of length of telson, distally defined by a broad triangular projection mesially; endopod narrowly tapering, exceeding telson by half its length; exopod tapering from base, 4.5 times as long as greatest width, reaching beyond peduncle. Pereopod 1 propodus with proximal palmar lobe separated from palm by very shallow angle of 110°. Pereopod 2 2.2 times as long as wide, ovate, with 10 spines on convex palm. Pereopod 4 carpus and propodus with 7 and 9 spines respectively; propodus 4 times as long as wide.

Male. Appendix masculina shorter than the pleopodal rami and has a sub-bifid apex.

*Distribution.* North-west Shelf, 134–182 m.

***Accalathura triodea* sp. nov.**

Figure 12

*Material examined.* 1 male, 4 females, 7 juveniles, 9.0–16.2 mm.

*Holotype.* WA, NW of Bluff Point (27°18'S, 112°16'E), 97 m, 9 Oct 1963 (CSIRO stn 204), WAM 61-80, juvenile, 16.2 mm.

*Paratypes.* WA. Type locality, WAM 285-89(1 specimen), WAM 286-89(1 male). North-west Shelf between Port Hedland and Dampier (20°29'S, 117°20'E), 30 m, epibenthic sled, G.C.B. Poore and H.M. Lew Ton on FRV "Soela", 11 Jun 1983 (stn NWA-51), NMV J14499(1).

*Other material.* WA. North-west Shelf between Port Hedland and Dampier (19°25'S to 20°29'S, 116°38'E to 118°59'E), 30–48 m, CSIRO Division of Fisheries, 1983 (stns NWA-43, 180, 191, 271, 343), NMV J14498(1), J14500(1), J14601(1), J14602(3), J14603(2).

*Diagnosis.* Not pigmented. Telson tapering from near midpoint to an acute apex, 2.4 times as long as wide. Uropodal peduncle reaching 80% of length of telson, distally differentiated by an acute angle on inside; endopod of even width over proximal two-thirds, broadly angled apically, exceeding telson by one-fifth its length; exopod tapering to an oblique apex, 4.0 times as long as wide, reaching beyond peduncle. Pereopod 1 propodus broad (1.7 times greatest width), with proximal palmar lobe separated from palm by sharp right angle. Pereopod 2 2.7 times as long as wide, subrectangular, with 7 spines on straight palm. Pereopod 4 carpus and propodus with 4 and 5 spines respectively; propodus 3 times as long as wide.

Male. Appendix masculina reaching beyond endopod, ending with oblique blade. *Distribution.* Western Australia, shelf, 30–97 m.

***Accalathura vulpia* sp. nov.**

Figure 13

*Material examined.* 1 male, 1 female, 11 juveniles, 3 manca; 3.2–9.7 mm.

*Holotype.* Qld, Lizard Island (14°40'S, 145°28'E), B. Kensley, Jan 1982 (stn BK-122), NMV J12845, female, 9.7 mm.

*Paratypes.* Qld. Type locality, NMV J12846 (2 specimens), QM W15992(1). Lizard Island, various localities, B. Kensley, Jan 1982, NMV J12847(6), J12489(2), AM P39392 with 1 slide(1 male).

*Other material.* Qld, Lizard Island, NMV J12848(2), AM P39393(1).

*Diagnosis.* Not pigmented. Telson with convex lateral margins and broadly rounded apex, 2.3 times as long as wide. Uropodal peduncle reaching 80% of length of telson, distally defined by short internal angle; endopod about as wide as long, exceeding telson by about one-fifth its length; exopod with sinuate dorsal margin, 2.4 times as long as wide, reaching to end of peduncle. Pereopod 1 propodus with proximal palmar lobe separated from curved palm by right angle. Pereopod 2 2.5 times as long as wide, elongate-ovate, with 7 spines on convex margin. Pereo-



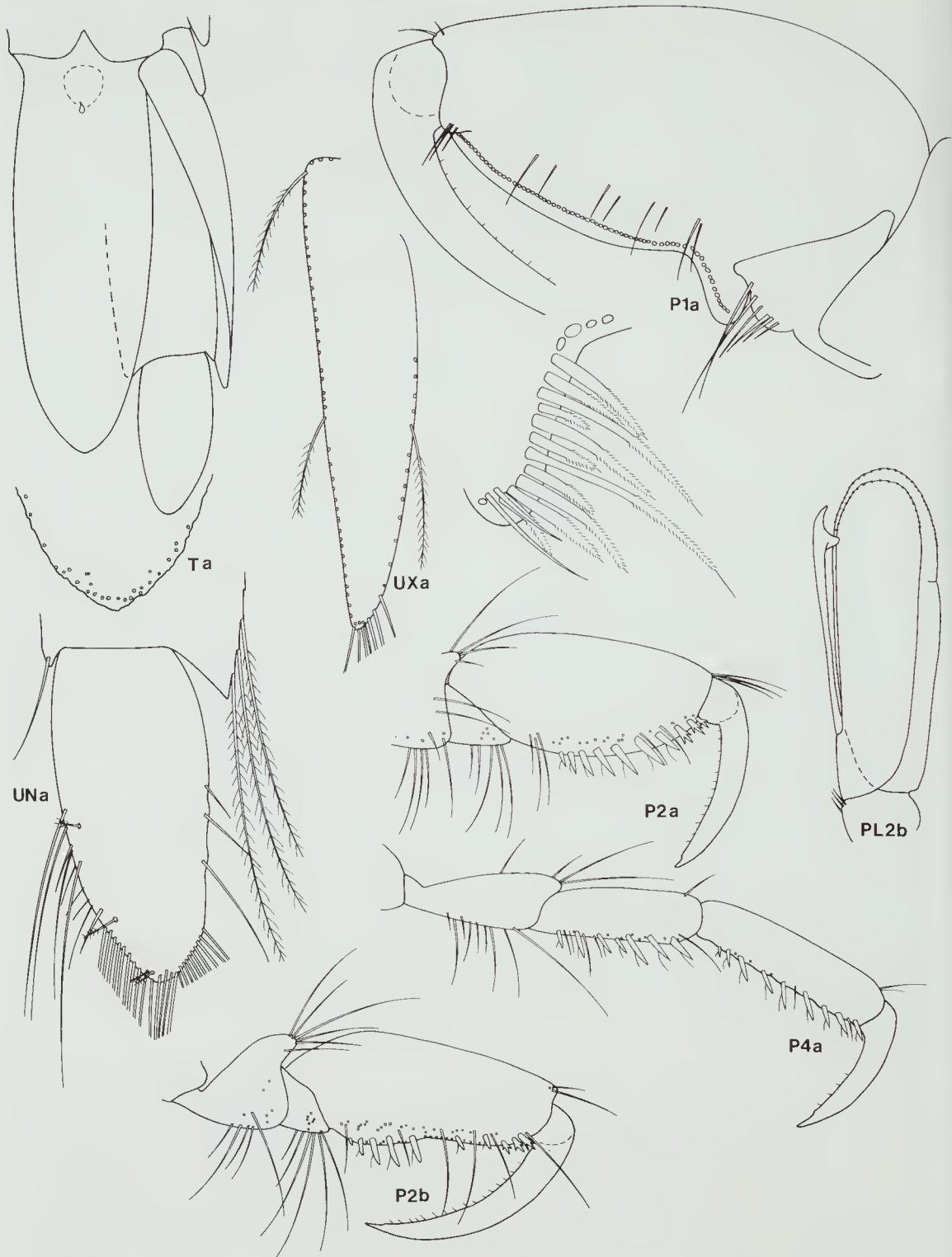


Figure 11. *Accalathura spathia*. a, holotype, 21.6 mm, NMV J10119. b, paratype male, 20.1 mm, NMV J10120.

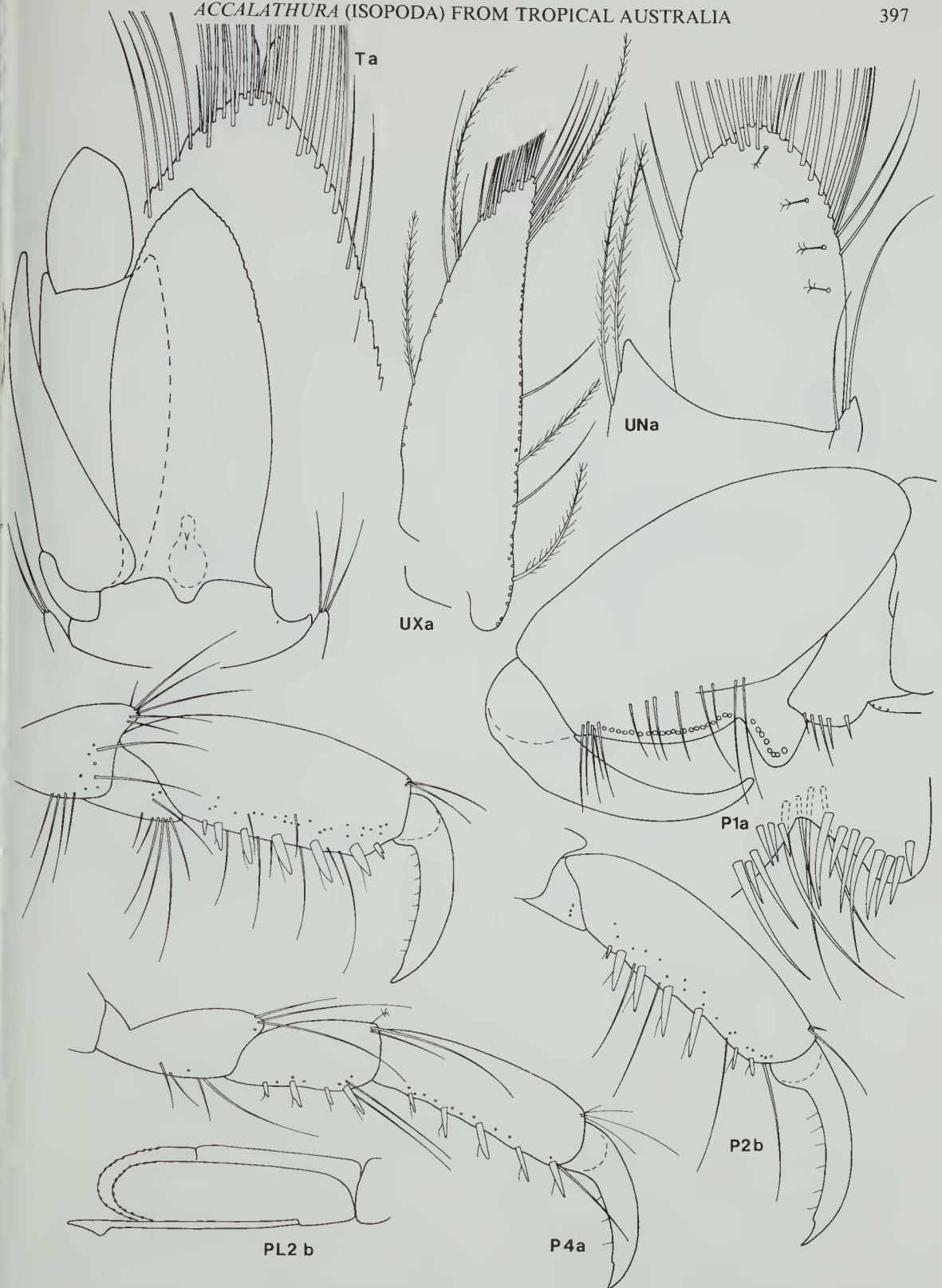


Figure 12. *Accalathura triodea*. a, holotype, 16.2 mm, WAM 61-80. b, paratype male, 12.2 mm, WAM 286-89.



Figure 13. *Accalathura vulpia*. Holotype, 9.7 mm, NMV J12845.

pod 4 carpus and propodus with 3 and 5 spines respectively; propodus 2.8 times as long as wide.

Male. Appendix masculina exceeding endopod by one-fifth its length, with simple apex.

*Distribution.* Queensland, Great Barrier Reef (Lizard Island only).

*Accalathura zoisia* sp. nov.

Figures 14, 15

*Material examined.* 1 male 29 mm, 1 juvenile 27 mm.

Holotype. WA, Houtman Abrolhos Islands (28°49'S, 114°04'E), 8 km NW of Gun Island, 57-61



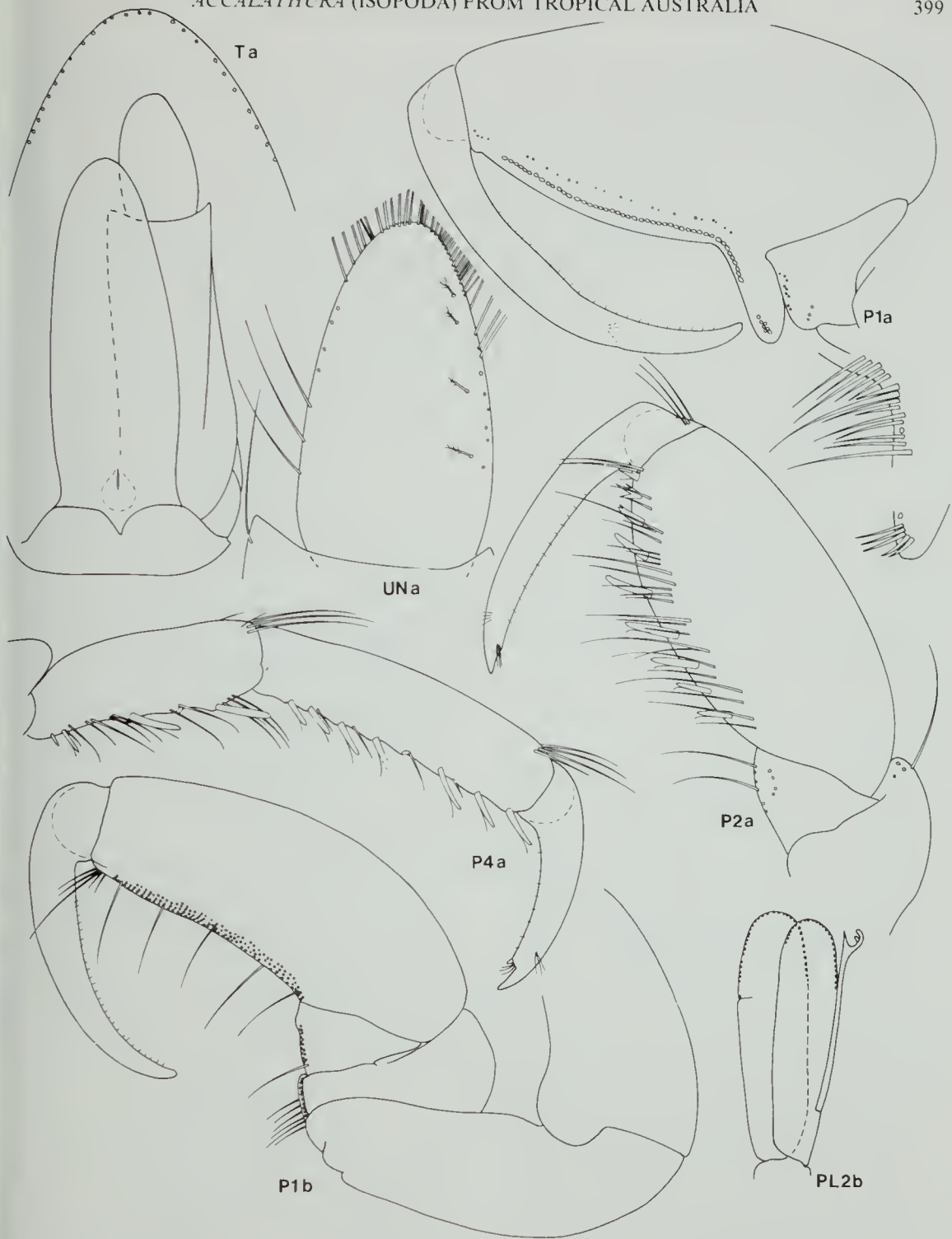


Figure 14. *Accalathura zoisia*. a, holotype, 27 mm, WAM 542-73. b, paratype male, 29 mm, WAM 550-73.

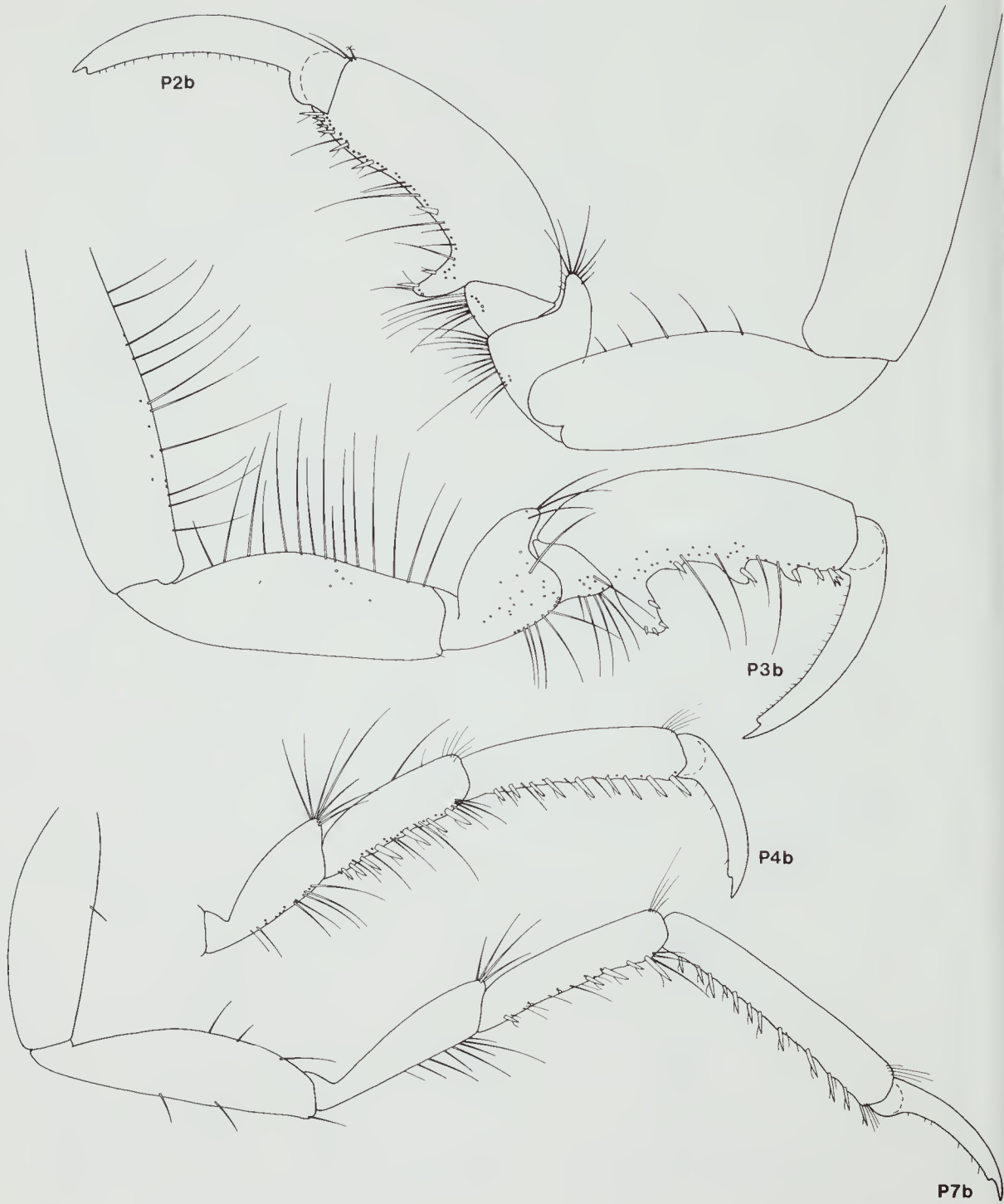


Figure 15. *Accalathura zoisia*. b, paratype male, 29 mm, WAM 550-73.

m, R.W. George on "Davena", 11 Nov 1951, WAM 542-73, juvenile, 27 mm.

Paratype. WA, NW of Bluff Point (27°18'S, 113°16'E), 97 m (CSIRO stn 204), 9 Oct 1963, WAM 550-73(1 male).

*Diagnosis.* Not pigmented. Telson bullet-shaped, tapering especially near apex to rounded-acute end, 3.0 times as long as wide. Uropodal peduncle reaching 95% length of telson, distally defined by broad internal angle; endopod long, distally rounded, exceeding telson by almost two-thirds its length; exopod presumed very narrow (lost). Pereopod 1 propodus with proximal palmar lobe separated from palm by rounded angle of 120°. Pereopod 2 propodus 2.3 times as long as wide, elongate-ovate, convex palm bearing 9 spines. Pereopod 4 carpus and propodus with 5 and 8 spines respectively; propodus 4 times as long as wide.

Male. Telson more tapering than in juvenile, uropodal endopod more elongate. Pereopod 1 propodus cylindrical, curved, with densely setose palm. Pereopod 2 propodus with strong proximal palmar lobe, with 9 marginal spines. Pereopod 3 propodus with strong proximal palmar lobe bearing 4 marginal spines, palm with 3 marginal projections and 5 spines. Pereopods 4-7 carpus and propodus each with several posterior setae. Appendix masculina shorter than endopod of pleopod 2, with complex 3-fingered apex.

*Distribution.* Central coast of Western Australia, shelf, 57-97 m.

*Remarks.* *Accalathura zoisia* is most notable for the complex secondary sexual characters of the male, especially of the anterior pereopods. A similar condition was noted in the holotype male of *A. normani* (ZMA Is.100.922) from the Flores Sea which possesses a pereopod 3 propodus with one strong spined palmar lobe. The appendix masculina of the latter is a lobed blade.

#### Acknowledgements

This contribution was made possible through a grant from the Australian Biological Resources Study. We are especially grateful to Graham Milledge who inked all the figures. For the loan of material we thank Peter Davie and Neil Bruce (Queensland Museum), Jim Lowry and Alan Jones (Australian Museum) and Jean Just (Zoological Museum, Copenhagen). Peter Arnold (James Cook University, Townsville) and David Holdich (Nottingham University) generously made available material from the Three Bays

Survey. Brian Kensley kindly donated material from Lizard Island. Sjouk Pinkster (Zoological Museum, Amsterdam) allowed GCBP to examine type material from the "Siboga" collections.

We acknowledge too the assistance provided by A.J. Bruce, Northern Territory Museum, Peter Stevens, CSIRO Division of Fisheries, and Paul Sammarco, Australian Institute of Marine Science, who enabled us to take part in collecting expeditions.

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