# Two new palaemonid shrimps (Crustacea: Decapoda) from the Australian North West Shelf

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Two palaemonid shrimps, from about 80 and 50 m on the Australian North West Shelf, are described and illustrated. A new genus, *Carinopontonia*, is designated for the single incomplete specimen of *C. paucipes* sp. nov. The new genus is most closely related to the genus *Dasycaris* Kemp, 1922. A single specimen of a second shrimp can be referred to *Apopontonia* Bruce, 1977, but to neither of the known species, and it is now described as *A. tridentata* sp. nov.

KEYWORDS: Taxonomy, Crustacea, Palacmonidae, Carinopontonia gen. nov., C. paucipes sp. nov., Apopontonia tridentata sp. nov., Australian North-West Shelf, Timor Sea.

### Introduction

During the years 1982–83 the Fisheries Research Division of the Australian Commonwealth Scientific and Industrial Research Organisation carried out a survey of the crustacean resources and benthic fauna of the Australian North West Shelf. Material was collected by prawn trawl, beam trawl, epibenthic sledge and grab and resulted in a vast collection of crustacean specimens. This material was sorted to 'species' level and provided the two individual specimens of palaemonid shrimps reported on in this paper.

One unfortunately incomplete specimen could not be placed in any of the described genera and a new genus is now erected for its accommodation. The second specimen could be referred to a known genus, but not to either of the two species at present referred to the genus *Apopontonia* Bruce, 1977, *A. falcirostris* Bruce, 1977 and *A. dubia* Bruce, 1981. It is now described as a third species, *A. tridentata* sp. nov.

### Carinopontonia gen. nov.

Diagnosis. Body of slender subcylindrical form, carapace smooth, with well developed, compressed, toothless rostrum, postrostral carina extending almost whole length of carapace, supraorbital spines absent, hepatic spine and antennal spine well developed, orbit feebly developed, inferior orbital angle distinct, anterolateral angle of branchiostegite not produced or emarginate; abdominal segments smooth, third feebly posterodorsally produced, anterior pleura rounded, fourth and fifth posteriorly produced, angular not acute; telson with two pairs of dorsal spines, three pairs of posterior spines; eyes well developed, cornea very oblique, conoidally produced; antennule with acute stylocerite and normal statocyst, upper flagellum feebly biramous; antenna with laterally dentate basicerite, scaphocerite well developed, mandible robust, without palp, molar and incisor processes normal; maxillula with

bilobed palp, laciniae slender; maxilla with normal palp, bilobed endite, broad scaphognathite; first maxilliped with slender palp, broad basal endite, reduced coxal endite, well developed exopod with broad caridean lobe, bilobed epipod; second maxilliped normal, with exopod, epipod small, without podobranch; third maxilliped normal, exopod well developed, coxa with oval lateral plate, without epipod, with small arthrobranch, fourth thoracic sternite without slender median process, first periopods slender, chela with slender, simple fingers, second to fifth pereiopods unknown, uropods normal, protopodite unarmed, exopod with lateral margin entire with small distal tooth with mobile spine medially.

Type species. Carinopontonia paucipes sp. nov.

Etymology. From Latin, carina, a keel, and Pontonia, a generic name first used by Latreille (1829). Gender feminine.

Systematic position of the genus Carinopontonia

The lack of many of the pereiopods of the single specimen available hinders the full assessment of the relationship of *Carinopontonia* to other genera. However, the mouthparts show the closest resemblance to those of *Dasycaris* Kemp, 1922. The mouthparts of *D. ceratophthalma* Holthuis, 1952 and *D. zanzibarica* Bruce, 1973, show no significant differences from those of *C. paucipes* and share the following significant features—mandible without palp, stout molar and normal incisor processes; maxilla with distinct basal endite, (simple in *Dasycaris*, bilobed in *Carinopontonia*), broad scaphognathite; well developed flagella on all maxillipedal exopods, broad caridean lobe on first maxilliped, with bilobed epipod, small subrectanguler epipod without podobranch on second maxilliped and large coxal plate with rudimentary or small arthrobranch on third maxilliped. The resemblance to *Dasycaris* is also illustrated by the robust hepatic and antennal spines and a lack of supraorbital spines. The first pereiopod is also essentially similar.

Carinopontonia differs significantly from Dasycaris species in the abdominal pleura and the form of the rostrum and postrostral armament. Dasycaris species have a styliform rostrum, not exceeding the antennular peduncle, generally with large acute teeth over the orbital area and a large epigastric tooth, although these may be much reduced in large D. zanzibarica females. The abdominal pleura in Dasycaris species are generally provided with conspicuously acute posteroventral teeth. These are most conspicuous in the males and may be present on all pleura. In D. zanzibarica females they are small and occur only on fourth and fifth pleura and may become obsolete in some large specimens, but in D. symbiotes and D. ceratophthalmus the third to fifth and second to fifth pleura are acutely pointed respectively.

## Carinopontonia paucipes new species

(Figs 1-3)

Material examined: 19, stn. B6, FRV Soela, cruise 0283, 19°04·4′S, 118°47·55′E, 83 m, epibenthic sledge, 27 April 1983, coll. T. Ward.

Description—A small slenderly built shrimp of subcylindrical body form.

Carapace subcylindrical, smooth, glabrous; rostrum well developed, subequal to postorbital carapace length, slender, about 5·0 times longer than deep, acute, straight, horizontal, with lateral carinae distinct, dorsal carina well developed, deepest over orbital region, margin feebly convex, unarmed, with indications of six minute denticulations, non-setose, continuous with postrostral carina extending along almost whole carapace length; ventral margin straight, unarmed, non-setose, epigastric and

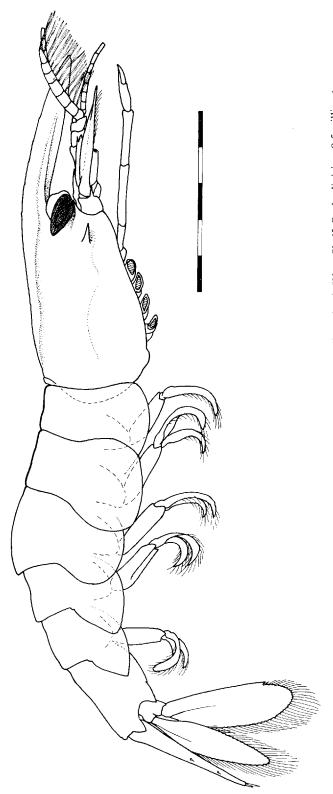


Fig. 1. Carinopontonia paucipes gen. nov., sp. nov., holotype female, Australian North West Shelf. Scale division 0.5 millimeters.

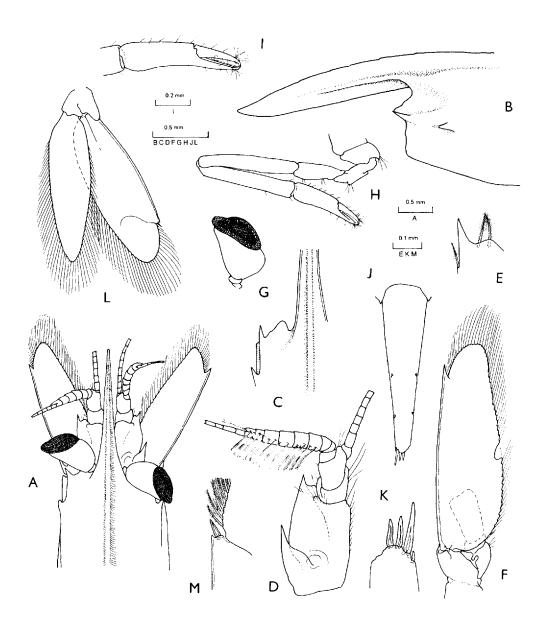


Fig. 2. Carinopontonia paucipes gen. nov., sp. nov., holotype female. A, anterior carapace, rostrum, antennal peduncles and eyes, dorsal. B, anterior carpace and rostrum, lateral. C, orbital region, dorsal. D, antennule. E, same, proximal segment, distolateral angle. F, antenna. G, eye, dorsal. H, first pereiopod. I, same, chela. J, telson. K, same, posterior spines.

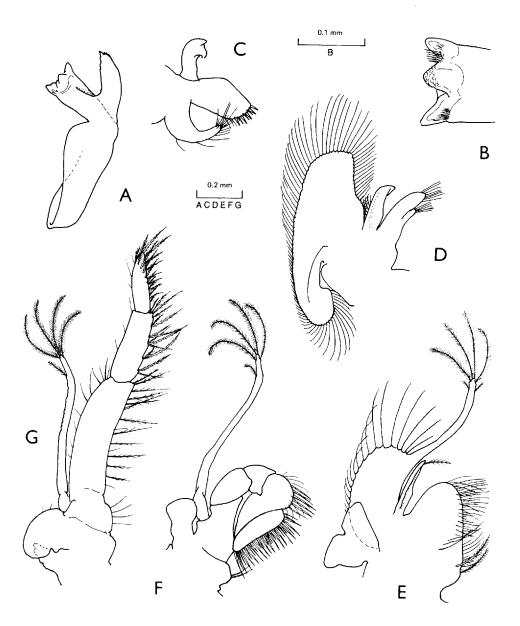


Fig. 3. Carinopontonia paucipes gen. nov., sp. nov., holotype female. A, mandible. B, same, molar process. C, maxillula. D, maxilla. E, first maxilliped. F, second maxilliped. G, third maxilliped.

supraorbital spines absent, orbit moderately developed posteriorly, inferior orbital angle well developed, broadly rounded, antennal spine well developed, large, acute, marginal, upturned, extending almost to level of anterior border of inferior orbital angle, hepatic spine well developed, subequal to antennal, at slightly lower and distinctly posterior level, anterolateral angle of branchiostegite bluntly obtuse, posteroventral margin with small protuberance.

Abdominal segments, smooth, glabrous; third slightly produced posteriorly in dorsal midline, sixth segment about 1.4 times longer than deep, 1.6 times longer than fifth, posterolateral angle well developed, broad, acute, posteroventral angle larger; pleura of first three segments not enlarged, broadly rounded; fourth and fifth pleura posteriorly produced, angular, blunt. Telson about 1.5 times sixth segment length, about 3.75 times longer than anterior width, sides straight, convergent, with two pairs of minute dorsal spines at 0.5 and 0.75 of telson length, posterior margin rounded, without median point, about 0.33 of anterior width, lateral spines small, subequal to dorsal spine length, intermediate spines robust, about 0.1 of telson length, submedian spines robust, about 0.6 of intermediate spine length, non-setulose.

Antennule short, robust, peduncle extending to about 0.6 of rostral length; proximal segment of peduncle broad, about 1.4 times longer than central width, medial border straight, setose, with acute ventral tooth, lateral margin feebly convex, with well developed broad distolateral lobe with large acute lateral tooth; stylocerite well developed, distally slender and acute, reaching to about 0.5 of segment length; statocyst normal with oval statolith; intermediate segment short and broad, very obliquely articulated with distal segment, with narrow lateral lobe; distal segment about 1.6 times longer than wide, 0.5 of proximal segment length; upper flagellum biramous, five proximal segments of rami fused, short free ramus of 1 or 2 partly fused segments, about 13 groups of aesthetases, longer free ramus filiform, broken; lower flagellum filiform, broken.

Antenna with stout basicerite, with strong acute lateral tooth; ischiocerite and merocerite normal; carpocerite short and stout, about 1.8 times longer than distal width, reaching to about 0.3 of scaphocerite length; flagella lacking; scaphocerite well developed, broad, widest proximally, lateral margin feebly convex with acute distolateral tooth far exceeded by rounded anterior lobe of lamina.

Eye well developed with clongate, oval, conoidally produced, very oblique, well pigmented cornea, without accessory pigment spot; stalk tapering and slightly compressed distally, swollen proximally, about 1.5 times longer than proximal width.

Epistome normal, lateral horns absent.

Mandible (left) with moderately robust corpus, without palp; molar process stout, distally expanded, truncate with two large blunt teeth, tuberculate process and small groups of setae; incisor process tapering, obliquely truncate distally, with large acute inner tooth and three small outer teeth, medial margin with three small denticles. Maxillula with bilobed palp, upper lobe smaller than non-setose lower lobe; upper lacinia not expanded, distally oblique with five simple spines and sparse setae; lower lacinia slender, sparsely setose. Maxilla with slender, tapering palp, lateral margin with short plumose setae proximally; basal endite well developed, bilobed, upper lobe much larger, longer and broader than lower, with eight short simple setae on rounded distal margin, lower lobe half length of upper, with six distal setae; coxal endite obsolete, medial margin feebly convex; scaphognathite, 2-5 times longer than wide, posterior lobe small and narrow, 0-4 of scaphocerite length, 2-0 times longer than proximal width, anterior lobe 1-2 times longer than broad, distomedially angular with sinuous medial

margin. First maxilliped with slender palp with single subterminal seta; basal endite rounded, sparsely setose medially, setae slender, feebly setulose, with long strong coarsely setulose setae proximally; coxal endite obsolete, small, rounded medially, nonsetose; exopod well developed, caridean lobe broad, flagellum slender, with four long plumose terminal setae, epipod triangular, feebly bilobed. Second maxilliped of normal form, endopod with dactylar segment 2.8 times longer than broad, with numerous, long strongly serrulate spines medially; carpal segment distomedially enlarged, rounded. with long serrulate spines; exopod with slender flagellum, with four long plumose distal setae, epipod small, subrectangular, feebly bilobed, without podobranch. Third maxilliped with endoped reaching to distal margin of basicerite: ischiomerus almost fully fused to basis, ischiomeral portion about 3.1 times longer than broad, feebly bowed, slightly tapering distally, medial margin sparsely setose with long, feebly setulose setae, lateral margin unarmed; penultimate segment about 0.66 of ischiomeral length, 2.8 times longer than proximal width, slightly tapered distally with about six groups of setulose setae medially; distal segment about 0.45 of ischiomeral length, about 3.5 times longer than proximal width, with numerous serrulate, coarsely setulose spiniform setae medially; basis with medial margin convex, sparsely setose; exopod flagellum slender, exceeding ischiomerus, with four long plumose terminal setae; coxa robust, broad, without medial process, with large oval lateral plate, with rudimentary arthrobranch, without epipod.

Thoracic sternites narrow, fourth sternite without slender median process.

First pereiopods reaching almost to tip of rostrum, exceeding carpocerite by 0.75 of carpus; palm of chela subcylindrical, slightly tapering distally, about 2.75 times longer than proximal width, smooth, sparsely setose, fingers slender, tapering to small acute hooked tips, cutting edges slightly lateral, entire, dactylus about 4.0 times longer than proximal depth, fixed finger similar; carpus about 1.4 times chela length, subcylindrical, unarmed; merus subequal to carpus length, obliquely articulated with basis; basis subequal to ischial length, with low ventral carina; coxa stout, with small, setose, medial process.

Second to fifth pairs of pleopods missing.

Pleopods normal, endopods of second to fifth with appendix interna.

Uropod with protopodite as long as wide, posterolateral lobe bluntly rounded distally; exopod 0.95 times telson length, about 3.0 times longer than broad, lateral margin feebly convex, non-setose, with very small distolateral tooth, with larger mobile spine medially; endoped about 0.9 of exopod length, about 3.5 times longer than broad.

*Type.* The only specimen is designated as holotype and is deposited in the collection of the Northern Territory Museum, catalogue number NTM Cr.005460.

Measurements. Total length (approx.), 11·5 mm; carapace and rostrum, 4·4 mm; postorbital carapace, 2·5 mm.

Colouration and host. No data.

Etymology. From Latin, paucis, few, and pes, foot.

Remarks. The lack of the second and ambulatory pereiopods impedes speculation on the possible host associations of Carinopontonia, particularly as the dactyls of the walking legs provide useful clues to both the systematic relationships and the host animals of commensal shrimps. The close relationship to the genus Dasycaris, and particularly the many similarities of the mouthparts, suggest that C. paucipes is involved in similar associations. D. symbiotes Kemp is associated with pennatulaceans of the genus Pteroides (Kemp, 1922) and D. zanzibarica is associated with anthpatharians of the genus Cirripathes (Bruce, 1973). The hosts of D. doederleini Balss

and *D. ceratophthalma* Holthuis have not been recorded. It would seem probable that *Carinopontonia paucipes* will prove to be associated with coelenterate host.

### Apopontonia tridentata sp. nov.

(Figs 4-7)

Material examined: 1 ovig. ♀, Stn.B15,FRV Soela, cruise 0483, 19°41·9′S, 17°57·15′E, 54 m, beam trawl, 3 September 1983, coll. T. Ward.

Descriptions. A small sized, robustly built shrimp of subcylindrical body form.

Rostrum reaching to about middle of distal segment of antennular peduncle, stout, suboval in section, with distinct ventral carina, tapering, distally acute with small acute distal subterminal tooth, giving rostrum distally bifid appearance, very broadly expanded laterally with large triangular, acute supraocular teeth, reaching to about level of distal stylocerite. Carapace smooth, glabrous; inferior orbital angle distinct, not produced, orbit well developed, deep; hepatic, supraorbital and hepatic spines absent, antennal spine well developed, submarginal, anterolateral margin of branchiostegite slightly produced, rounded.

Abdomen smooth, glabrous; third segment not posterodorsally produced, pleura of first to third segments broadly rounded, fourth posteriorly produced, blunt, fifth posteriorly produced, acute; sixth segment about 1·3 times length of fifth, 1·2 times longer than deep, posteroventral angle large, broadly acute, posterolateral angle acute. Telson about 1·8 times length of sixth abdominal segment, 2·2 times longer than anterior width, lateral margins feebly convex, convergent, posterior margin about 0·4 of anterior width, angular, with slender acute median process, dorsally setose, with two pairs of large subequal dorsal spines at 0·22 and 0·58 of length, remote from margins; posterior margin with lateral spines about 0·75 of dorsal spine length, intermediate spines slender, 1·6 times dorsal spine length, 0·22 of telson length, submedian spines slender, setulose, about 1·25 times dorsal spine length.

Antennule small; proximal segment of peduncle broad, about 2·3 times longer than broad, distolateral margin produced, with acute distolateral tooth, medial margin with acute tooth ventrally, statocyst normally developed, with circular statolith, stylocerite broad, acute, reaching to about 0·5 of segment length; intermediate and distal segments short and stout, obliquely articulated, together about 0·6 of proximal segment length; upper flagellum feebly developed, biramous, with three proximal segments fused, stout, short ramus of two segments only, with about five groups of aesthetases, longer ramus slender, with 14 segments; lower flagellum slender, short, with 16 segments.

Antenna with basicerite robust, laterally unarmed; carpocerite, stout, about 2·2 times longer than broad, slightly exceeding half scaphocerite length, scaphocerite well developed, distally exceeding antennular peduncle, about 2·1 times longer than broad, broadest at about mid-length, medial margin broadly convex, lateral margin thick, straight, with small stout distolateral tooth slightly exceeding anterior margin of lamella; flagellum short, about 2·0 times postorbital carapace length.

Eye with well developed hemispherical cornea, without accessory pigment spot, transverse; peduncle about as long as wide.

Epistome unarmed.

Mandible (left) moderately robust, without palp; molar process stout, obliquely truncate distally with large blunt knobs and acute teeth, incisor process with small acute teeth distally, central tooth smaller than outer teeth. Maxillula with bilobed palp, upper lobe small, lower lobe larger with small hooked seta ventrally; upper lacinia normal with 8 stout simple spines distally, with numerous short serrulate setae; lower

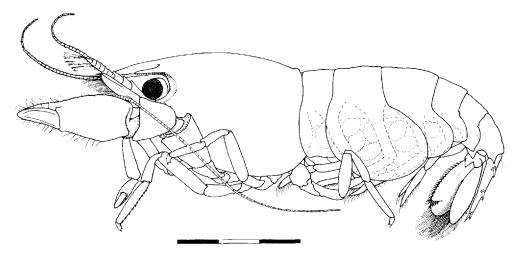


Fig. 4. Apopontonia tridentata sp. nov., ovigerous female, Australian North West Shelf. Scale division in millimeters.

lacinia slender, tapering, with numerous longer serrulate setae distally. Maxilla with broad palp, tapering distally, with short plumose setae proximolaterally; basal endite well developed, deeply bilobed, lobes with about 18 simple setae distally; coxal endite obsolete; scaphognathite damaged, posterior lobe lost, broad anterior lobe tapered distally, medially angulate. First maxilliped with flattened, simple, sparsely setose palp, basal endite large, broad, densely fringed with finely setulose setae medially; coxal endite distinct, convex, with two long setulose and several short setae; exopod with elongated caridean lobe, flagellum slender with plumose terminal setae; epipod deeply bilobed. Second maxilliped with endopod normal, dactylar segment narrow, densely spinulose, propodal segment with distornedial region broad with numerous spines, basis medially excavate, flagellum slender, with plumose terminal setae, coxa angularly produced medially, feebly setose, with triangular epipod laterally, without podobranch. Third maxilliped with endopod moderately robust, extending distally to about middle of intermediate segment of antennular peduncle; ischiomerus and basis fused, antepenultimate segment feebly bowed, about 3.3 times longer than broad. subuniform, sparsely setose medially, with groups of setae laterally; penultimate segment about 0.75 of antepenultimate segment length, about 4.5 times longer than broad, subuniform, with numerous long simple setae medially and groups of long setae laterally; terminal segment about 0.5 of penultimate segment length, tapering distally. with groups of serrulate spines medially and long setae laterally; exopod with slender flagellum, not exceeding distal margin of ischiomerus, with plumose terminal setae: coxa with rounded setose medial process, large oval lateral plate with setose margin. without epipod or arthobranch.

Fourth thoracic sternite without median process, posterior sternites narrow, unarmed.

First percioped moderately robust, extending anteriorly to exceed scaphocerite by chela; chela with palm subcylindrical, slightly compressed, about 1.5 times longer than deep, with two rows of short serrulate cleaning setae proximoventrally; fingers slender with small hooked tips, cutting edges laminar distally, entire, dactylus about 4.0 times

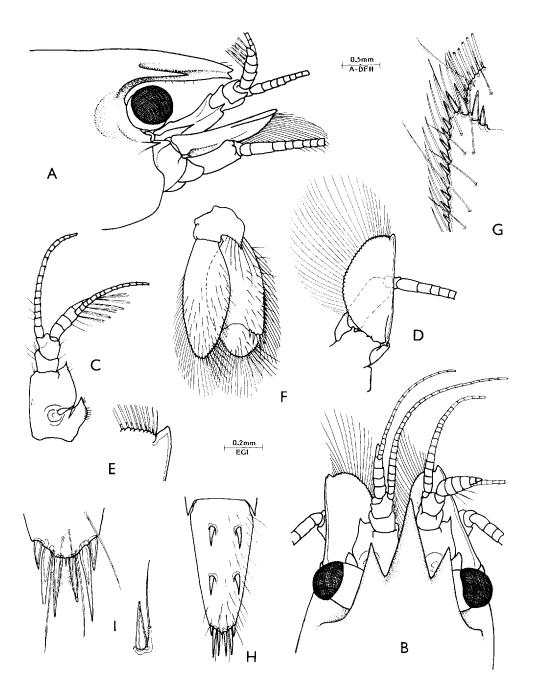


Fig. 5. Apopontonia tridentata sp. nov., ovigerous female. A, anterior carapace, rostrum and antennal peduncles, lateral. B, same, dorsal. C, antennule. D, antenna. E, scaphocerite, distolateral tooth. F, uropod. G, same, distolateral exopod. H, telson. I, same, posterior spines; inset, dorsal spine.

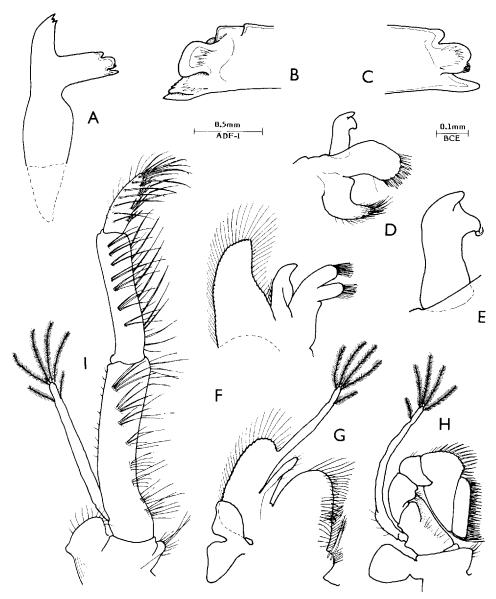


Fig. 6. Apopontonia tridentata sp. nov., ovigerous female. A, mandible. B, C, molar process. D, maxillula. E, same, palp. F, maxilla. G, first maxilliped. H, second maxilliped. I, third maxilliped.

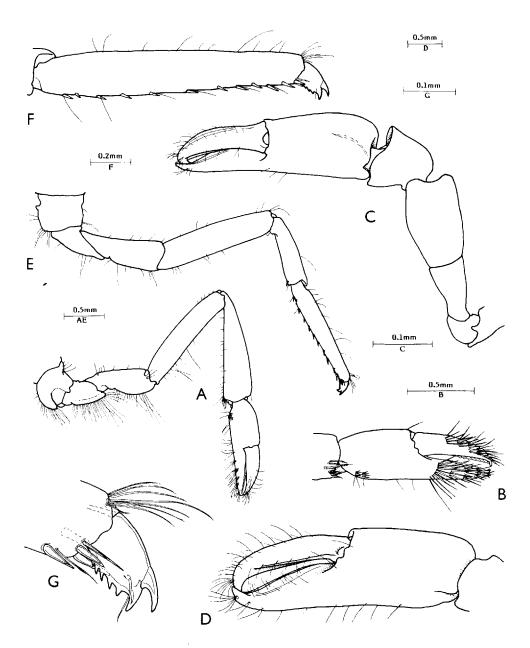


FIG. 7. Apopontonia tridentata sp. nov., ovigerous female. A, first pereiopod. B, same, chela. C, second pereiopod. D, same, chela. E, third pereiopod. F, same, propod and dactyl. G, same, dactyl.

longer than proximal depth, about 1·1 times palm length, with about 5 transverse rows of short simple setae dorsolaterally, fixed finger similar, with transverse rows of more numerous, longer setae; carpus about 1·2 times chela length, 4·0 times longer than distal width, slender proximally, with serrulate cleaning setae distoventrally; merus subequal to carpus length, uniform, about 5·0 time longer than central width, slightly bowed; ischium about 0·85 of merus length, 3·0 times longer than distal width, ventrally setose, tapered proximally; basis obliquely articulated with ischium, about 0·6 of ischium, ventral margin carinate, densely setose; coxa robust, with small distoventral process, densely setose.

Second pereiopods, left only preserved; short and robust, exceeding basicerite by carpus and chela. Chela with palm subcylindrical, moderately compressed, feebly tuberculate dorsally, feebly setose, about 1.6 times longer than deep; dactyl almost subequal to palm length, slender, about 5.0 times longer than proximal depth, with strongly hooked acute tip, cutting edge lateral, entire, unarmed; fixed finger similar, about 2.5 times longer than proximal width, feebly tuberculate dorsally; merus about 1.7 times longer than central width, widest centrally, about 0.8 of palm length, distodorsally excavate, unarmed, tapered proximally; ischium about 0.66 of merus length, 1.7 times longer than distal width, tapered proximally, unarmed; basis and coxa stout, without special features.

Ambulatory pereiopods moderately robust, third pereiopod exceeding carpocerite by half propod length, dactylus short and stout, compressed, unguis distinct, curved, about 2·0 times longer than basal width, corpus about 1·2 times longer than deep, with strong recurved distal accessory tooth, subequal to unguis, ventral margin convex, with six acute distally directed denticles, corpus with single lateral sensory seta; propod about 6·5 times longer than dactylus, 6·0 times longer than width, greatest width at 0·6 of length, slightly tapering distally, with pair of distoventral spines, with spiniform seta laterally, ventral margin with 11 spines, distal spines feebly separated into two rows, dorsal margin sparsely setose; carpus about 0·6 of propod length, 3·6 times longer than distal width, slightly tapered proximally, with distodorsal lobe and distoventral spine; merus about 1·8 times carpus length, 4·0 times longer than central width, unarmed; ischium about 0·66 of merus length, 2·7 times longer than distal width, tapered proximally, unarmed, obliquely articulated with basis; basis about 0·5 of merus length, unarmed; coxa stout, normal. Fourth and fifth pereiopods similar to third, more slender, more feebly spinulate.

Uropod with protopodite strongly acute posterolaterally, with long setae dorsally; exopod subequal to telson length, about 2·1 times longer than broad, dorsally setose, lateral border convex proximally, straight distally with about 14 distolateral spines, size increasing distally, with longest spines at distolateral edge of diaeresis, with long submarginal plumose setae; endopod subequal to exopod length, about 2·4 times longer than wide.

Ova few, normal size.

*Type*. The only specimen, an ovigerous female, is designated as the holotype and is deposited in the collections of the Northern Territory Museum, catalogue number NTN Cr.005459.

Measurements. Total length (approx.) 11·1 mm; carapace and rostrum, 4·6 mm; postorbital carapace, 3·3 mm; right chela 3·4 mm; length of ovum, 0·6 mm.

Colouration and Host. No data.

Etymology. From Latin tres, three, and dens, tooth.

Systematic position. The genus Apopontonia Bruce, 1977, contains only two previously described species, A. falcirostris Bruce, and A. dubia Bruce, 1981. A. dubia is without supraocular teeth and is thereby readily distinguished from both A. falcirostris and A. tridentata, which are closely related. A. tridentata is readily distinguished from A. falcirostris by the lack of a distinct dorsal rostral carina and acute dorsal rostal teeth. In A. falcirostris, the ventral rostral tooth is much larger and more recurved. In A. falcirostris the spinulate portion of the lateral margin of the exopod is much shorter and bears only about 7 spines and a small acute distolateral tooth is present. The dactyl of the ambulatory pereiopod in A. falcirostris has the distal accessory tooth larger than the unguis and the four small teeth along the ventral border are perpendicular to the margin with central pair enlarged.

Remarks. Although the host is unknown, the two other species of the genus are known to be associated with sponges, so that it is probable that A. tridentata will also be found to be a sponge associate in due course. A. falcirostris is known from only from the type specimen from Madagascar and from the southern Great Barrier Reef. A dubia is known only from southern Queensland, Australia and the southern Great Barrier Reef.

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