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Source: *Crustaceana*, Vol. 42, No. 3 (May, 1982), pp. 288-294
Published by: Brill
Stable URL: http://www.jstor.org/stable/20103727
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Crustaceana 42 (3) 1982, E. J. Brill, Leiden

A NEW SPECIES OF *ROBERTSONIA* (COPEPODA, HARPACTICOIDA) FROM PORT CURTIS, QUEENSLAND

BY

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INTRODUCTION

Studies on zooplankton from the Port Curtis region of the central Queensland coast (23°51′S 151°15′E) have shown the presence of two species of *Robertsonia*. One of these species, *R. propinqua* (T. Scott), has previously been reported from several localities in Southern Australia (Hamond, 1973) and appears to be circumglobal in distribution. The other species is new to science and is described below.

Only three species of *Robertsonia* from Australian waters have previously been recorded in the literature (Hamond, 1973) these being *R. monardi* (Klie) from Western Australia (by Nicholls (1945) as *R. paramonardi* sp. nov.), *R. barnesi* Hamond (female only) from Green Island in northeastern Queensland, and *R. propinqua* from localities in South Australia.

METHODS

Prosome length was measured from the posterior margin of the rostrum to the posterodorsal border of the last metasomal segment, total length to the tip of the caudal furca. Specimens were dissected and examined variously in glycerol and in lactic acid with chlorazol black stain. Specimens used for drawings of urosomal spination were first prepared in hot KOH to remove internal tissue. Drawings and measurements were made using a Wild M20 microscope with drawing-tube attachment. Nomenclature used follows that of Coull (1977). For clarity, secondary plumes are not figured on natatory and furcal setae.

Robertsonia curtisii sp. nov. (figs. 1-2)

Material examined. — Holotype, female, collected Calliope River estuary near Rocky Point, May 1980; Queensland Museum, reg. no. W.9102.

Allotype, male, collected May 1980 in Calliope River estuary near Rocky Point. This was the only ♂ collected, the appendages of which were dissected from the body and are now lodged on a microslide in the Queensland Museum, reg. no. W.9103.

Paratypes, 20 ♀♀ (reg. no. W.9104) collected variously in the Calliope River estuary and Auckland Creek, June 1979 and April to July 1980.

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Description of female (figs. 1A-P). — Total length (including furcal rami) 0.6 mm; prosome length 0.33 mm, width 0.22 mm (average of 20 individuals). Ratio prosome/urosome 1.2; ratio prosome width/length 0.68.

General body form (fig. 1A, B) similar to other congenors (e.g., see Hamond, 1973), widest at posterior cephalothorax region, tapering to anal segment. Rostrum large, antero-ventrally directed, broadly triangular with rounded proximal borders obscuring bases of antennules. Division between cephalothorax and metasome distinct, 3 free thoracic segments in metasome. Urosome segments all heavily adorned with comb-like rows of spines as figured (fig. 1A-E); several rows of combs on lateral surfaces of each segment, the most posterior in each case being the longest; rows of fine denticules dorsally on each segment as figured (fig. 1E). Posterior margins of urosomal segments 3 to 5 each with hirsute fringe. Rows of large spines ventrally (largest towards midline) on pre-anal and anal segments, and on ventromedial border of furcal rami. Genital region as shown (fig. 1C), second segment (genital) fused with third urosomal segment ventrally, weakly separated by transverse suture dorsally. Pre-anal segment produced posterodorsally into supra-anal plate reaching bases of furcal rami. Visible portions of furcal rami ca. 2 × broader than long, inter-ramal space a narrow notch, each ramus with 2 outer spines, 2 long bi-plumose setae and three smaller simple setae.

Antenna 1, 5-segmented (generic character) (fig. 1F), first 3 segments forming expanded basal region; large aesthetasc terminally on segment 3; other setation of segments 1-5 respectively 1, 7, 11, 1, 13, all simple except one large unilaterally spinulose seta arising anteromedially on terminal segment.

Antenna 2 (fig. 1G) with allobasis having stout curved spinulose spine arising medially from convex margin, four small stout setae proximal to base of spine. Three-segmented exopod arising opposite base of spine, proximal segment with one lateral, distal with 1 lateral and 3 terminal bipinnate setae; middle segment small, without setae; terminal segment of endopod ca. 2.2 times as long as broad, highly ornate: inner (medial) margin with fringe of ca. 9 stout setae from proximal border to base of first of 2 large spines disto-medially; terminal region expanded, with 3 long setae (multi-articulated at midlength), 3 smaller simple setae, ca. 5 short spines around bases of disto-medial spines, fringe of fine setae leading to disto-leading tooth.

Mandibles and maxillae 1 and 2 as figured (fig. 1H-J). Endopod of mandible and basis of maxilla 1 have a distal comb of setae, similar comb on coxa-basis of mandible. The four distal bipinnate setae on endopod of maxilla 1 are shorter than length of segment. Maxilliped (fig. 1K) with basis and endopod segments of similar length; basis with 1 medial and 2 terminal bipinnate setae, 3 comb rows of spinules on surface in distal half; endopod with two simple setae and numerous combs of small spinules on surface.

First leg (P1) (fig. 1L) with both rami three-segmented. Endopod characteristic; proximal segment Ri1 very elongate, longer than exopod (ca.

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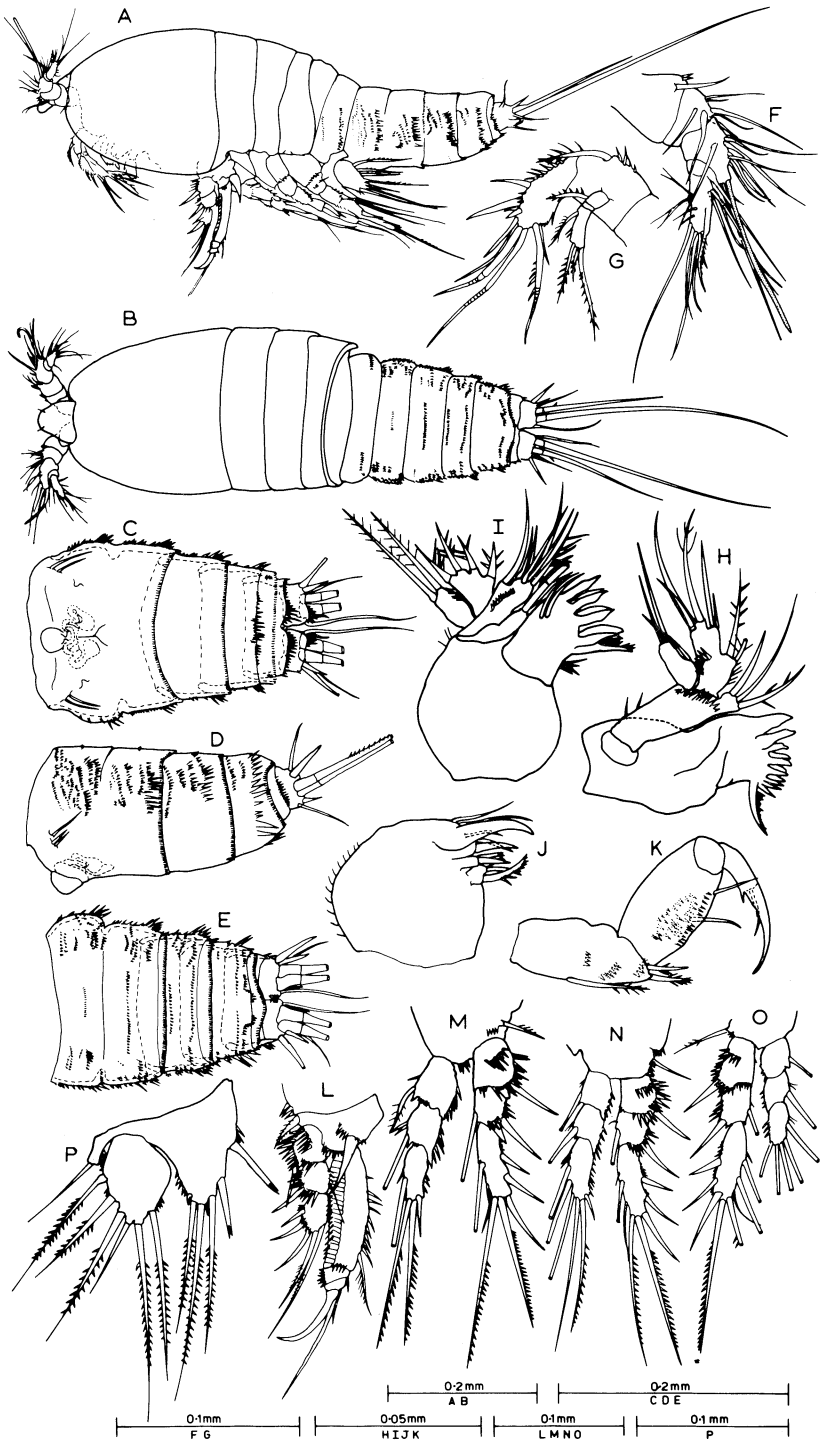

Fig. 1. *Robertsonia curtisii* sp. nov., female. A, lateral view; B, dorsal view; C, urosome, ventral view; D, urosome, lateral view; E, urosome, dorsal view; F, first antenna; G, second antenna; H, mandible; I, maxilla 1; J, maxilla 2; K, maxilliped; L, P1; M, P2; N, P3; O, P4; P, P5.

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1.25 ×), complex flattened region on lateral surface; Ri2 and Ri3 both very short, together being ca. one-sixth overall length of Ri; spination as figured. Exopod segments subequal; Re1 with large outer spine and several combs of spinules but no inner seta; Re2 with inner seta and outer spine, Re3 with no inner, 2 terminal and 3 outer spines (setal formula therefore 0:1:0,2,3).

Legs 2-4 heavily spined as figured (fig. 1M-O). Setal formula:

P2		P3		P4	
exop.	endop.	exop.	endop.	exop.	endop.
0:1:2,2,3	1:1:1,2,1	0:1:2,2,3	1:1:3,2,1	0:1:3,2,3	1:1:2,2,1

It is notable that Re1 has no inner seta on these legs. In each leg the Re3 setal count given includes a "dwarf" seta on the medial surface, and does not include an additional fine hair which does not appear to break the appendage cuticle. Other setation as figured. P2 Re1 has a rounded thumb-like spine on the distolateral margin. A stout spine replaces this process in Re2. Other setation as figured. Leg 5 rami of similar length (fig. 1P). Re with 3 outer, 2 terminal, 1 inner setae; outermost terminal seta simple, innermost longest, other setae bipinnate; small spinules proximal to inner seta. Ri (basiendopod) with 5 setae, the two medial being short, simple and with cleft tips; remaining setae bipinnate, similar to those of Re, innermost of the two apical setae is longest.

All legs have aesthetasc-like processes on them, the numbers differing between legs and between individuals; these processes may be extraneous epizoic forms, e.g., filamentous bacteria. On the holotype they were distributed as follows:

P.1 Basipod (4), Ri 2-3(2), Re1 (1), Re3 (2)
P.2 Basipod (1), Ri2 (2), Ri3 (3), Re1 (1), Re3 (2)
P.3 Basipod (1), Re2 (4), Re3 (1)
P.4 Re1 (2), Re2 (1), Re3 (3)
P.5 Re (3).

Description of male (figs. 2A-I). — Based on the single individual captured. Total length 0.55 mm; prosome length 0.3 mm, width 0.19 mm, ratio prosome width/length 0.62; ratio prosome/urosome 1.2.

Body form (fig. 2A, B) generally similar to female but smaller. Abdominal segments with numerous rows of spinules on lateral and ventral surfaces as figured (fig. 2C, D), less ornate dorsally than female.

Antenna 1 (fig. 2E) prominently geniculate; seven-segmented with large aesthetasc on 4th segment, setal formula being ca. 1, 6, 2, 6 + 1 aesthete, 1, 1, 4. All setae simple except one large curved spinulose seta on segment 4.

P1 (fig. 2F) with large basal spine near endopod, curving laterally. Basis with large ventro-medially directed and distally truncated chitinous process of characteristic shape.

P2 Ri modified as in other species of the genus (fig. 2G, H). Ri2 with single sparsely plumose seta arising midway on medial border, distal border equally

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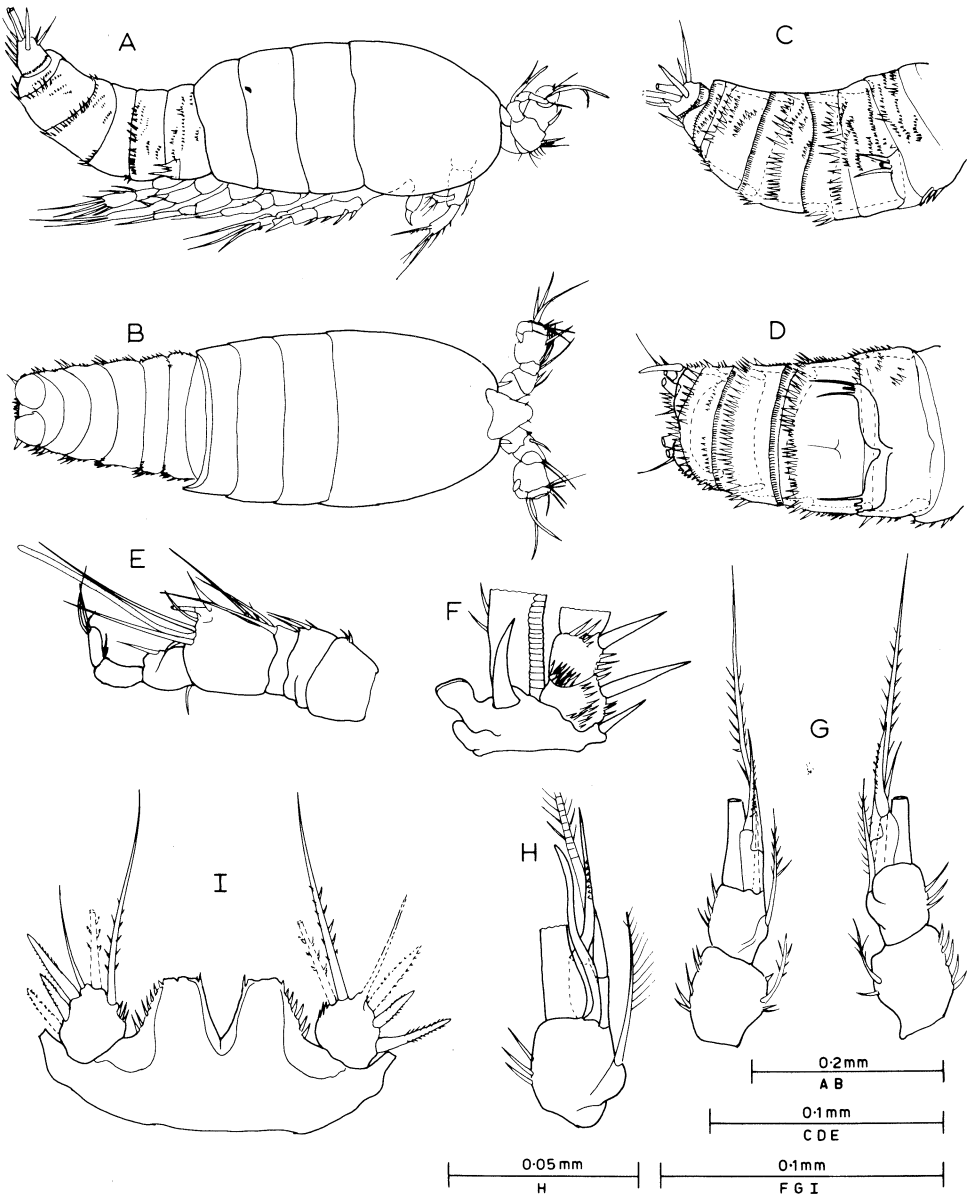

Fig. 2. *Robertsonia curtisii* sp. nov., male. A, lateral view; B, dorsal view; C, urosome, lateral view; D, urosome, ventral view; E, antennule; F, P1 basal region; G, P2 endopod from both aspects; H, detail of terminal portion of P2 endopod; I, P5 (damaged).

occupied by large outer spine (which was broken in the present specimen) and reduced Ri3; simple seta arises near base of Ri3 and extends beyond segment. Ri3 bears two unequal setae, a large bipinnate seta arises at approximately midlength of segment, smaller pinnate seta arises terminally.

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P3 and P4 similar to those of female.

P5 damaged in this specimen (fig. 2I). Re apparently with three short stout lateral spines having weakly plumose margins, single seta terminally and two long bipinnate setae distomedially. Basiendopod in this specimen damaged, the two stout spines found in related species being apparently broken off.

P6 with simple base bearing three simple setae.

Ecological notes. — Females have been taken at stations within the estuarine zones of both the Calliope River and Auckland Creek which open into Port Curtis; none have been taken in the more marine waters of the Port itself. Ambient salinities ranged between 33.0-34.5 ppt. and temperatures between 20.1 and 26.1°C. Specimens were taken in June, 1979 and April to July, 1980 with most consistent occurrences being in the lower regions of both estuaries in June.

Hamond (pers. comm.) has examined a male and a female of this species which were collected by Dr. F. Roubal from among algae on the lower shore near Arrawarra Headland in northern New South Wales.

DISCUSSION

Reviews of this genus, with keys to the known species, have been provided by Nicholls (1941), Lang (1948) and Hamond (1973). Attempts to place the present species in these keys bring it closest to *R. angolensis* (Monard) and *R. propinqua* (T. Scott). On the basis of the key characters used, the new species is, however, clearly separable from both those species.

R. curtisii differs notably from *R. angolensis* in having 6 major setae, not 4, on P3 Ri3; it also differs in proportions of the P1 rami and endopod segments, and in details of maxilliped structure, male P5 proportions and setation. *R. angolensis* has not been reported from Australia. The other species *R. propinqua*, is known from Australia, including the type locality of the present species, and is superficially similar to *R. curtisii*, e.g., in the heavily ornamented urosomal region. The two are readily separated by setation of the swimming legs P2 to P4, Re1 of those appendages in *R. curtisii* lacking the large inner seta which two Australian congenors (*R. propinqua* and *R. barnesi*) have.

Other differences between *R. curtisii* and Australian *R. propinqua* include: increased secondary spination of antenna 2 in *R. curtisii*; row of spines present on face of mandibular coxa-basis (absent in *R. propinqua*); seven terminal setae plus a row of spinules on mandibular endopod (8 terminal setae, no spinules); maxilla 1 with the four endopod spines shorter than the endopod segment (longer) and basis with 7 setae (5); endopod and basis of the maxilliped are of similar length (endopod longer), 3 setae on endopod (2), surface of endopod with numerous spinules (absent); P1 Ri2 and 3 relatively very short (longer). Ri1 longer than entire Re (shorter); chitinous knob at base of male P1 truncated di-

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stally (elongate, cylindrical); female P5 without row of spines on basiendopod (present), other apparent differences in number and location of spinules on margins of both rami and in secondary ornamentation of the bifid medial spines on the basiendite, these being naked in *R. curtisii* (plumose); male P5 with two short stout lateral spines (3); the first three of these differences may be more apparent than real, for on re-examination of his *R. propinqua* material Hamond (pers. comm.) has found features which were overlooked in his earlier (1973) redescription of the species.

R. curtisii may be readily placed in Hamond's (1973: 434) key by extending the final couplet to separate this species from *R. angolensis* on the basis of the number of setae on the terminal endopod segment of the third leg. We are grateful to Dr. R. Hamond (Melbourne University) for his comments on the manuscript, many of which we adopted.

ACKNOWLEDGEMENTS

The study from which this paper arises is largely funded by a special grant from the Queensland Electricity Generating Board, to whom the authors are most grateful. Facilities were provided by the University of Queensland.

ZUSAMMENFASSUNG

Weibchen und ein einzelnes Männchen von *Robertsonia curtisii* sp. nov. werden aus der Gegend von Port Curtis von der Küste von Zentral-Queensland beschrieben. In Australien gibt es damit vier Arten dieser Gattung. Anatomische Besonderheiten werden diskutiert, in denen sich die neue Art von allen anderen der Gattung unterscheidet; die auffälligsten davon sind die Borstenformeln der Beine 2-4 und die Proportionen der Segmente und Äste der ersten Beine.

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Received for publication 6 January 1981.

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