

TWO NEW SPECIES OF *RENOCILA* FROM OFF THE TROPICAL AUSTRALIAN COASTS (ISOPODA: CYMOTHOIDAE), CRUSTACEAN PARASITES OF MARINE FISHES.

NIEL L. BRUCE

Queensland Museum

PO Box 300, South Brisbane, QLD 4101, Australia.

ABSTRACT

Two new species of *Renocila* are described: *Renocila quadrata* sp. nov. from the Chesterfield Archipelago, Coral Sea and *Renocila curtippinnata* sp. nov. from Ashmore Reef, Timor Sea, north-western Australia. *Renocila quadrata* occurs on the fish hosts *Chaetodon kleini*, *Zanclus canescens* and *Zembrasoma veliferum*; *R. curtippinnata* is recorded from *Scorpaenodes kelloggi*. A *Nerocila* sp. is also recorded along with further distributional records of Anilocrinae from the Northern Territory and Gulf of Carpentaria.

KEYWORDS: Isopoda, Cymothoidae, Taxonomy, Indo-Pacific, new species.

INTRODUCTION

The genus *Renocila* has received substantial recent attention, the Caribbean species being documented by Williams and Williams (1980), and species from the Indo-Pacific being documented by Bruce (1987b), Bruce and Harrison-Nelson (1988) and Williams and Williams (1987).

Bruce (1987a) recorded three species from Australian waters. The two species described here are from localities remote from the Australian mainland, and are known from a limited number of localities. Both species were collected from coral reefs. Additional material of the family Anilocrinae, from the Northern Territory and Gulf of Carpentaria is also recorded.

Host names were confirmed and brought up to date by Mr R. McKay and Mr J. Johnson of the Queensland Museum fish section, and therefore may not correspond to the name recorded on the specimen labels.

Abbreviations used in the text: QM, Queensland Museum, Brisbane; NTM, Northern Territory Museum, Darwin.

SYSTEMATICS

Genus *Renocila* Miers

Renocila Miers, 1880: 464; Bruce 1987b:167 (synonymy).

Remarks. Bruce (1987b) offered a revised diagnosis of the genus. The two species described here differ slightly from the revised diagnosis. While both new species are very different from each other, the adult females of both species lack folds on the endopod of pleopod 5 with only the male of *R. curtippinnata* having a small fold present. This character, an important and diagnostic character for the Anilocrinae, is weakly expressed in *Renocila*, and can apparently be lost altogether. The anterior part of the cephalon, the rostrum, is usually folded back in *Renocila* but *Renocila quadrata* has a short triangular rostral point folding posteriorly between the antennule bases, the only species in which such a point is formed. This fold is not comparable to the prominent and narrow backward fold present in *Anilocra*. *Renocila curtippinnata* entirely lacks a rostral fold.

Another character considered diagnostic of the genus, is the posterolateral margins of

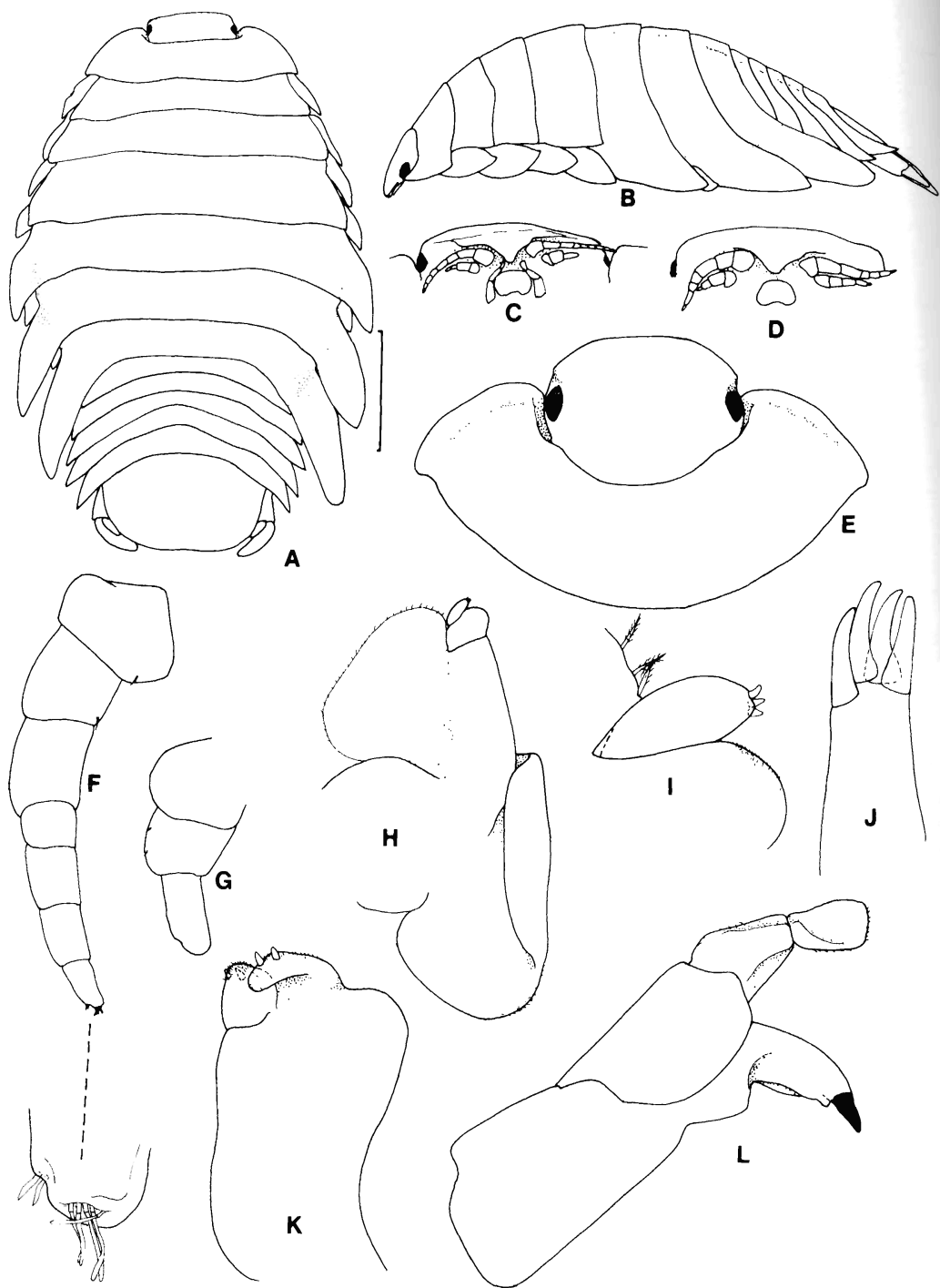


Fig. 1. *Renocila quadrata* sp. nov. **A-C,E** holotype, **D**, female 24.0m, remainder female 21.0mm. **A**, dorsal view; **B**, lateral view; **C**, frons; **D**, frons; **E**, cephalon, peronite 1, dorsal view; **F**, antennule; **G**, antenna; **H**, maxilliped; **I**, maxilliped palp article 3; **J**, maxillule apex; **K**, maxilla; **L**, mandible. Scale line represents 5.0mm.

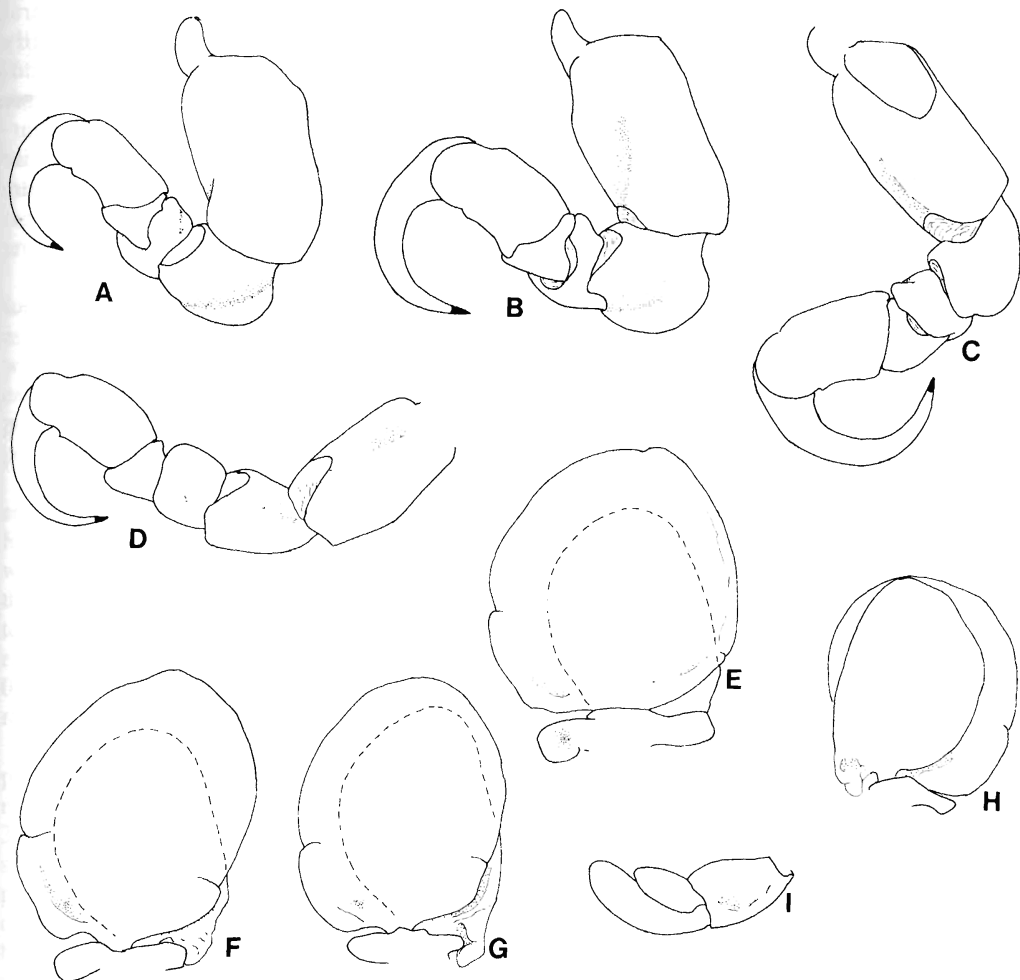


Fig. 2. *Renocila quadrata* sp. nov. All figs of female paratype 21.0mm. **A-D**, pereopods 1,2,6,7 respectively; **E-H**, pleopods 1-3,5 respectively; **I**, uropod.

pereonites 6 and 7 being posteriorly produced. This character is weakly expressed in *R. curtipinata* although it is still present. The posterolateral margins of all *Renocila* show some bilateral compression (i.e. they are flattened) and are never bluntly rounded as in *Anilocra*.

These two species again demonstrate the difficulty in providing restrictive diagnoses to cymothoid genera.

***Renocila quadrata* sp. nov.**

(Figs 1-3)

Type material. HOLOTYPE - Female (22.0mm, ovig.), Long Island, Chesterfield Reefs, 19°52.3'S, 158°19.2'E, 20 August 1988, eastern

side of lagoon, 7m depth, coll. P. Doherty (QM W17077). PARATYPES - 3 females (21.0mm ovig, 24.0, 19.0mm non-ovig, male (11.0mm), same data as holotype (QM W17076, 19.0mm female NTM CR008094).

Hosts. Specimens were directly collected from hosts after being collected by microspear. No record was kept of position on the host nor of which isopods came off which hosts. Nonetheless the host identifications are not in doubt as the specimens were individually collected. Hosts are: *Zebrosoma veliferum* (Bloch), *Zanclus canescens* (L.) (Acanthuridae) (the name *Z. cornutus* (L.) has been widely used, but *Z. canescens* has page priority (Heemstra and Smith 1986)); *Chaetodon kleinii* Bloch (Chaetodontidae); identified by P. Doherty.

Description. Female. Body about 1.5 times as long as wide; widest at pereonite 5. Cephalon not anteriorly narrow, anterior margin quadrate in dorsal view; antero-ventral margin with short acute point. Eyes occupying about 0.2 width of cephalon. Pereonites 1-4 with posterolateral angles

weakly produced, 5-7 with posterolateral angles posteriorly produced and laterally flexed. Coxae of pereonites 2 and 3 extending to posterior of segment; coxae 2-4 longer than wide. Pereonite 7 posterolateral margins extending to about posterior of pleonite 5. Pleonites 2-5 with lateral margins acute.

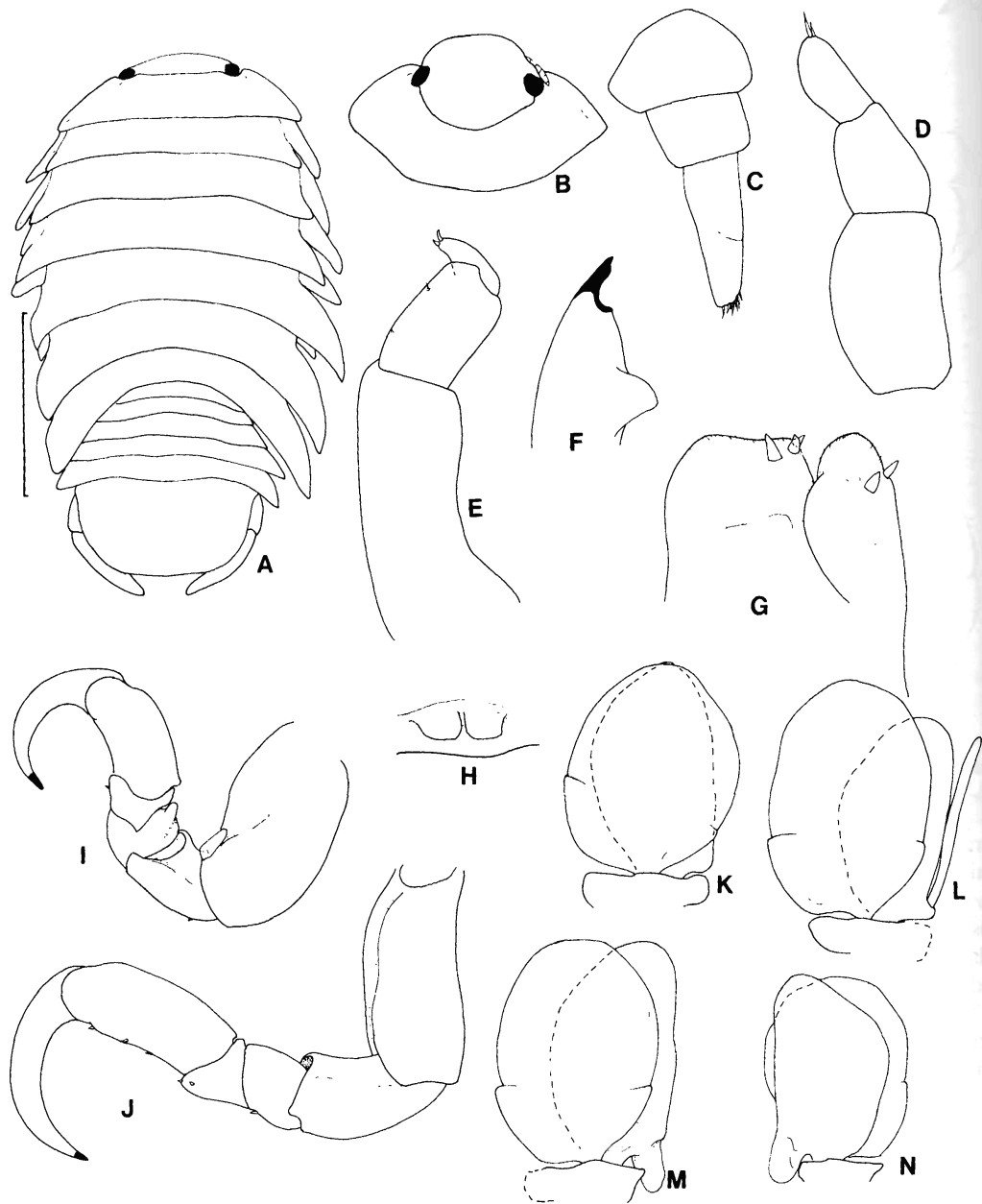


Fig. 3. *Renocila quadrata* sp. nov. All figs of male paratype 11.0mm. A, dorsal view; B, cephalon, pereonite 4 in dorsal view; C, antenna; D, mandible; E, maxilliped; F, mandible apex; G, maxilla apex; H, penes; I, pereopod 1; J, pereopod 7; K-N, pleopods 1-3,5 respectively. Scale line represents 4.0mm.

Antennule distinctly longer than antenna, not expanded or flattened; with 7 articles; articles 1-3 larger than 4-7, article 4 shorter than 3 or 5. Antenna composed of 3 articles.

Mandible palp article 3 broad, terminally truncate, without setae. Maxillule with 4 weakly curved spines. Maxilla with 2 spines each on medial and lateral lobe. Maxilliped terminal article with 3 short weakly recurved spines.

Pereopod 1 ischium with posterior margin formed into carinate lobe; dactylus about as long as combined lengths of carpus and propodus, without nodules. Pereopods 2 and 3 similar to 1, carina on ischium more strongly developed on pereopod 2. Pereopods 4-7 without carina; pereopod 7 not much longer than pereopod 6.

Pleopods all laminar, all without folds; endopods of pleopods 2-5 with simple (i.e. unfolded) proximomedial lobe. Pleopods 1 and 2 with endopod two-thirds as wide as, and about three-quarters as long as exopod. Uropods extending beyond posterior margin of pleotelson; endopod slightly shorter than peduncle and about 0.6 length of exopod; apices of both rami narrowly rounded.

Male. Body about 1.6 times as long as wide; posterolateral margin of pereonites 5-7 produced, more acute than in female. Mandible palp article 3 more slender than the female, with 2 apical setae. Pereopods without carina on ischium; pereopod 7 with small spines on posterior margin of merus, carpus and propodus. Pleopods with both rami subequal in length; pleopod 2 with appendix masculina as long as endopod. Paired pappus on sternite 7.

Colour. In alcohol dark brown, appearing almost black; life colour not recorded.

Size. Females 19.0-24.0mm, male, 11.0mm.

Remarks. This large species is easily separated from all other species by the quadrate head shape, cephalon not being anteriorly narrowed, having a small triangular rostral point, and a prominent curved carina on the ischium of pereopods 1-3.

Renocila ovata Miers (see Bruce, 1987b) is similar, but has a narrower cephalon and has the antennule flattened and expanded.

***Renocila curtippinata* sp. nov.**
(Figs 4-6)

Type Material. HOLOTYPE.- Female (10.5mm, ovig), Ashmore Reef, Timor Sea, 12°14.4'S, 122°58.9'E 22 Jul 1986, depth 10-12m, with mixed crinoids, H.L. Stn. 86-46, coll.

L. Vail (NTM Cr007907). PARATYPES.- Female (10mm, non-ovig), Timor Sea, 12°58'S, 132°10.0'E, 18 October 1981, depth 27m, no host data, coll. H. Larson (NTM Cr000738). 2 females (8.0mm ovig, 8.8mm non-ovig), Ashmore Reef, Timor Sea, 12°14.40'S, 122°59.02'E, 28 July 1986, depth 7-9m, from *Scorpaenodes kelloggi*, coll. H.K. Larson (NTM Cr004469). Female (8.7mm, ovig), male (5.0mm), Ashmore Reef, 12°14'S, 122°59'E, 13 September 1987, 3-6m, rotenone, coll. H.K. Larson (NTM 006679). Female (7.5mm), male (3.5mm), Ashmore Reef, 12°11'S, 122°59'E, 24 September 1987, 19-20m, rotenone, coll. B.C. Russell and H.K. Larson (NTM Cr006678).

Hosts. Most specimens were collected at rotenone stations and had already detached from their host. The only record is that of *Scorpaenodes kelloggii* (Jenkins), identified by the Northern Territory Museum fish section.

Description. Female. Body about 1.8-2.0 times as long as wide; widest at pereonite 5. Cephalon narrowed in front of eyes, anterior margin smoothly rounded; ventral margin not posteriorly produced. Eyes conspicuous, occupying about 0.28 width of cephalon. Pereonites 1-4 with posterolateral angles not produced; 5-7 with posterolateral angles flattened, weakly produced. Coxae of pereonites 2 and 3 extending just posterior to pereonite, coxae 4-7 about twice as long as wide. Posterolateral margins of pereonite 7 extending to posterior of pleonite 1. Pleonites becoming progressively narrower towards posterior; medial portion of pleonite 5 posteriorly produced; lateral margins of pleonites 1-5 acute.

Antennule distinctly larger than antenna, not expanded or flattened; with 8 articles; articles 1-3 longer than 5-8, article 4 shorter than 3 or 5. Antenna very short, composed of 5 articles, article 5 about 3 times longer than wide.

Mandible palp article 3 broad, not apically narrowed, with 4 terminal setae. Maxilla presenting trilobed appearance, with single spine each on medial and lateral lobe. Maxillule with 4 curved terminal spines. Maxilliped terminal article with 2 terminal spines.

Pereopod without carinae or processes, dactyls without nodules. Pereopod 1 dactylus about 1.3 times as long as propodus; pereopod 2 larger than pereopod 1, dactylus about 2.2 times as long as propodus; pereopod 3 similar to pereopod 2. Pereopods 5-7 short, but more slender than 1-3; pereopod 6 with single spine on carpus posterior margin, 3 spines on palm of propodus, proximal

2 being minute; pereopod 7 with 1 spine at posterodistal angle of merus, 3 spines at posterodistal angle of carpus and 4 spines on propodus palm, a fifth spine at distal extremity of propodus.

Pleopods all lamellar, all without folding on endopods. Pleopod 2 with short appendix masculina. Proximomedial lobe present on endopods of pleopods 3-5 also without folding.

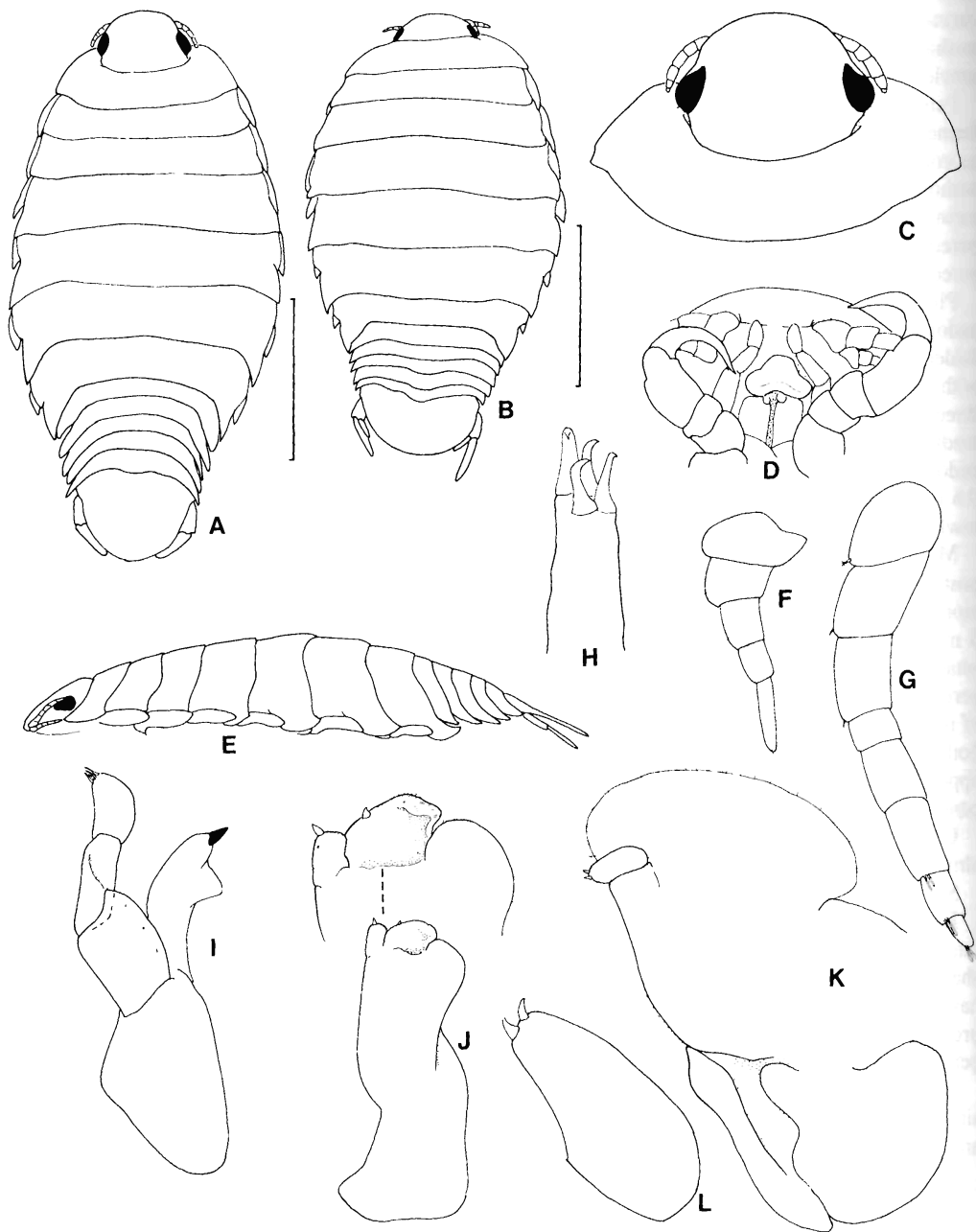


Fig. 4. *Renocila curtippinata* sp. nov. A, C-E, holotype; remainder female 8.0mm (NTM Cr 4469) except where indicated. A, dorsal view; B, dorsal view, female 8.8mm (NTM Cr 4469); C, cephalon, pereonite 1, dorsal view; D, frons; E, lateral view; F, antenna; G, antennule; H, maxillule apex; I, mandible; J, maxilla; K, maxilliped; L, maxilliped palp article 3. Scale lines represent 3.0mm.

Uropod with endopod subequal in length to peduncle and about 0.6 times as long as exopod; apices bluntly rounded.

Male. Body 2.5 times as long as wide. Mouthparts not examined. Other appendages generally similar to those of female but exopod of uropod more than twice (2.2 as measured) as long as endopod; pleopod 5 endopod with single small fold.

Colour. All specimens yellow in alcohol; posterior margins of all pereonites and pleonites 4, 5 and pleotelson with dark brown band; ante-

rior margins of cephalon and pereonite 1 and lateral margins of uropods also with dark band.

Size. Ovigerous females 8.0-10.5mm, non-ovigerous females 8.8-5.0.

Remarks. This species closely resembles a small undescribed species, known only from Motupore Is., Papua New Guinea (Williams and Williams, pers. comm.). The two species are readily separated, *R. curtippinnata* having a shorter uropodal exopod, both uropod rami being bluntly rounded (acute exopod apex in *R. loriae*) and the posterior margins of pleo-

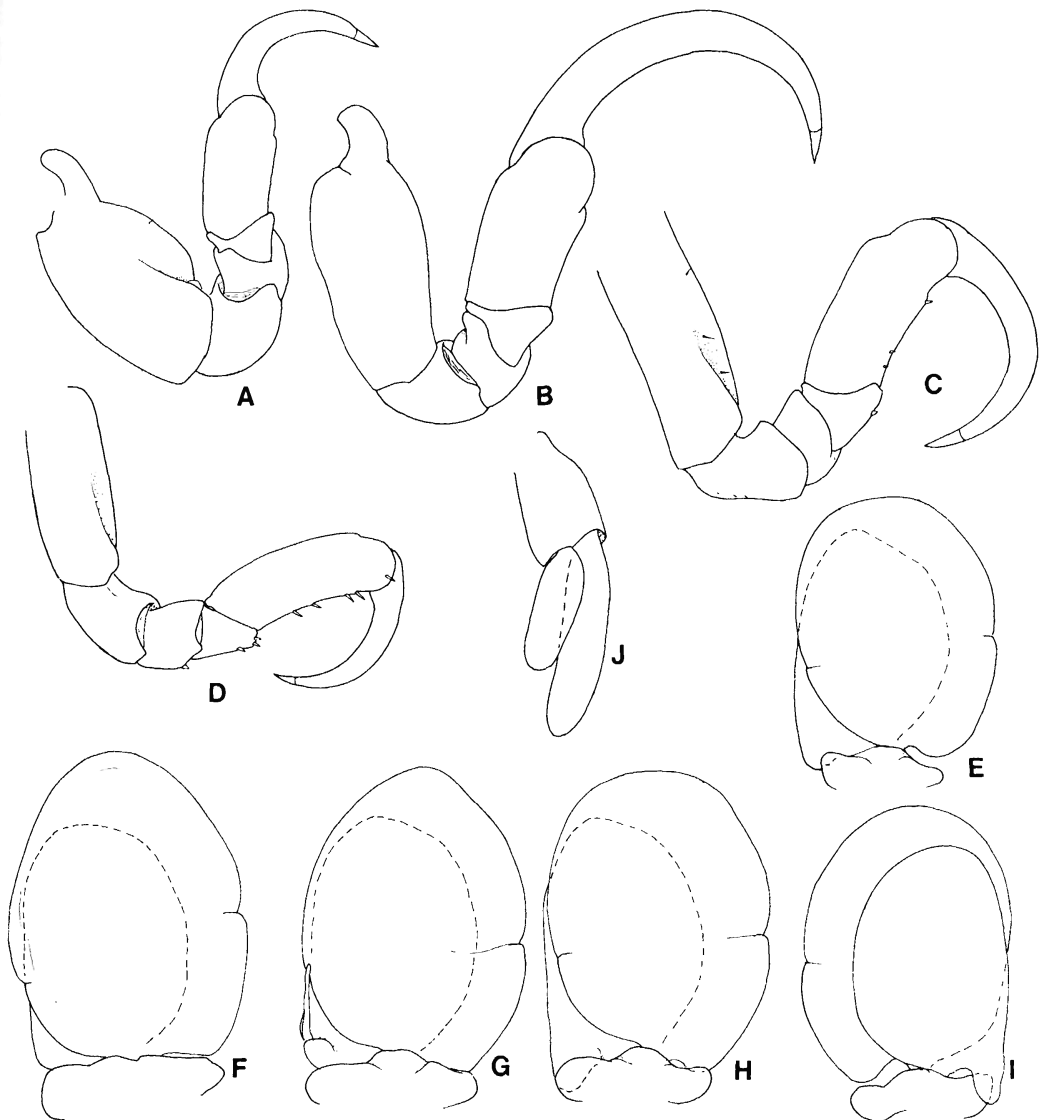


Fig. 5. *Renocila curtippinnata* sp. nov. All figs of female paratype 8.0mm (NTM Cr 4469). A-D, pereopods 1, 2, 6, 7 respectively; E-I, pleopods 1-5 respectively; J, uropod.

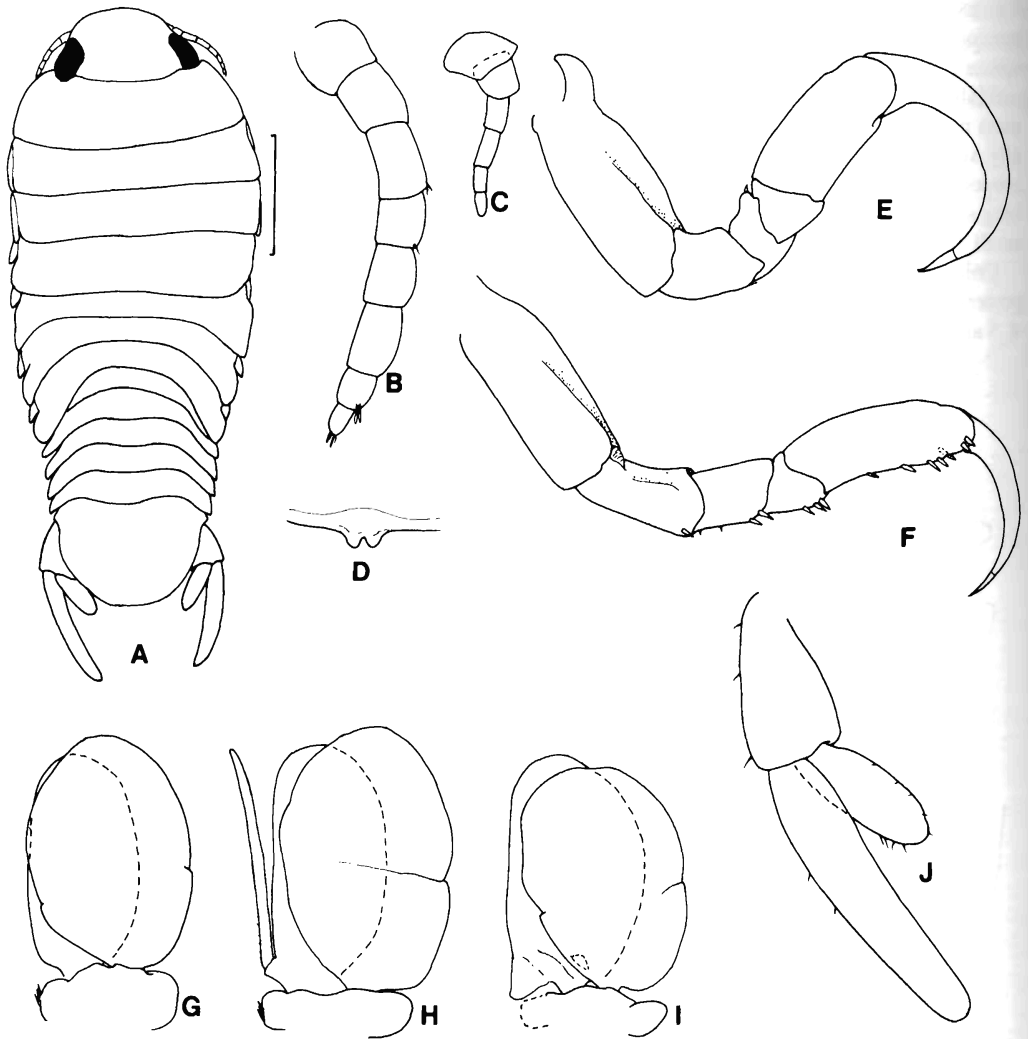


Fig. 6. *Renocila curtippinnata* sp. nov. All figs of male paratype 5.0mm (NTM Cr 6679). A, dorsal view; B, antennule; C, antenna; D, penes; E, pereopod I; F, pereopod 7; G-I, pleopods 1, 2 and 5, respectively; J, uropod. Scale line represents 1.0mm.

nites 3-5 being without an acute dorsomedial process.

Distribution. Ashmore Reef, Timor Sea, W.A., to Arafura Sea, northeast of Darwin, N.T.

Etymology. The epithet is derived from the combination of the Latin words *curtus* (short) and *pinnus* (fin), attaching to the short projections of pereonites 6 and 7.

Nerocila sp.
(Fig. 7)

Material. Female (approx. 18mm, non-ovig), Arafura Sea, 10°18'S, 134°12'E, 19 April 1987, 64m depth, coll. W. Houston (NTM Cr005323).

Remarks. This single specimen, unfortunately damaged, lacking host data and also displaying bilateral asymmetry of appendages, cannot be assigned to any of the species recorded from Australia by Bruce (1987c). It shows some similarity to *Nerocila* sp. figured by Bruce (1987c) but has longer and more slender uropods. It is also superficially similar to *Nerocila phaiopleura* Bleeker but has a wider body, distinct posterolateral points on pereonites 5-7, and a longer pleonite 1. The pereopods of this species are of the form shown by the *Emphyllia* group of species (Bruce 1987c), and this character at once separates it from most other *Nerocila*. The antennules however do not conform to the diag-

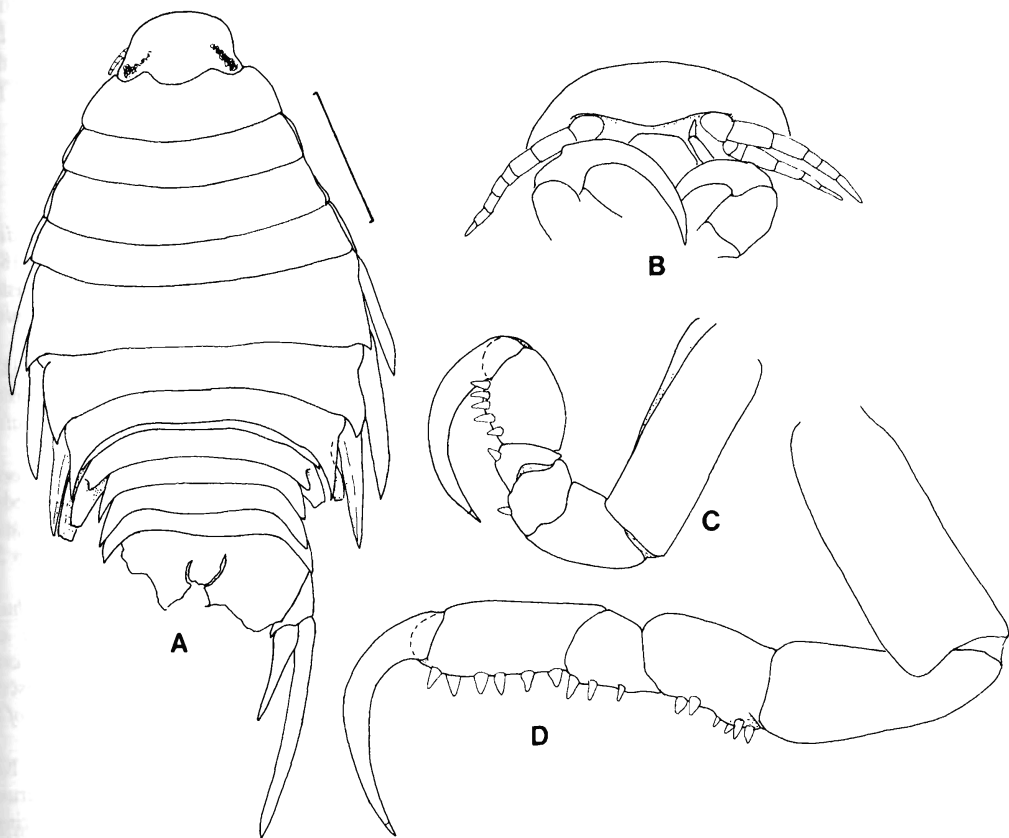


Fig. 7. *Nerocila* sp., A, dorsal view; B, frons; C, pereopod 6; D, pereopod 7. Scale line represents 4.0mm.

nosis for the *Emphyllia* group, emphasizing the vagueness of this subgroup of species within *Nerocila*.

This species is included here to draw attention to the presence of another undescribed *Nerocila* from Australia, and to avoid its confusion with *N. phaiopleura* and *Nerocila* sp. of Bruce (1987c).

NEW LOCALITY RECORDS

Anilocra caudata Bovallius

Anilocra caudata - Bruce 1987a: 97, figs 7, 8.

Material. Female (25.0mm, ovig), north of Danger Point, Port Essington, Cobourg Peninsula, N.T., 11°01'S, 132°21'E 4 March 1984, 17m, coll. N.T. Fisheries (NTM Cr002718).

Anilocra dimidiata Bleeker

Anilocra dimidiata - Bruce 1987a: 99, figs 9-11; Bruce and Harrison-Nelson 1988: 588.

Material. Female (17.0mm, ovig), Fog Bay, N.T., 12°42'S, 130°11'E, 22 April 1987, depth 17-19m, coll. H.L. Larson (NTM Cr006041).

Nerocila lomatia Bruce

Nerocila lomatia Bruce 1987c: 371, Figs 10, 11.

Material. Female (16.0mm, ovig), Fog Bay, north of Bowra Shoals, N.T., 12°42'S, 130°11'E, 21 April 1987, from gills of a sardine, 20-21m, coll. H.K. Larson (NTM Cr006045).

Nerocila monodi Hale

Nerocila monodi - Bruce 1987c: 385, figs 20-22; Bruce and Harrison-Nelson 1988: 59, fig. 6I.

Material. 2 females (20.0, 22.0mm, non-ovig), north of Cape Wessel, N.T., 10°15'S, 136°40'E, 50m depth, on *Upeneus bensasi*, coll. N.T. Fisheries (NTM Cr004052). Female (22.0mm, ovig), off Cape Wessel, N.T.,

10°09.0'S, 136°45.5'E, 6 February 1986, 53.5m depth, coll. J. Baxter (NTM Cr003650). Female (17.0mm, non-ovig), Arafura Sea, 09°56'S, 136°55'E, 29 March 1987, 51m depth (NTM Cr00 5118).

Remarks. The host record of *Upeneus bensasi* (Temminck and Schlegel) is the first record of this family (Mullidae) acting as host to *N. monodi*. All specimens conform to the variation noted by Bruce (1987c) for Northern Territory specimens.

Norileca indica (Milne Edwards)

Norileca indica - Bruce 1990: 291, figs 28, 29.

Material. Male (15.5mm), 10°22'S, 136°31'E, 9 November 1986, 60m depth coll. W. Houston (NTM Cr0004446). Male (15.5mm), Arafura Sea, 10°21'S, 134°23'E, 11 June 1987, 59m depth, Taiwanese pair trawler "BYBE No.2" (NTM Cr005886). Female (21.0mm, non-ovig), 10°08.5'S, 136°45.5'E, 17 March 1985, 51-57m depth, coll. W. Houston (NTM Cr003263). Female (27.0mm, ovig), Arafura Sea, 10°20'S, 134°29'E, 11 June 1987, Taiwanese trawler "BYBE No.1", 59m depth, N.T. Fisheries Observers (NTM Cr005889). 6 females (ovig, 32.0, 25.0, non-ovig, 29.0, 26.0, 24.0, 24.0mm), 2 males (15.0, 13.5mm), Gulf of Carpentaria, 11°32.3'S, 140°42.9'E, 4 December 1990, gills of *Alepes apercna* (det. J. Johnson), depth not recorded, hosts coll. J. Johnson and S. Cook on R.V. *Southern Surveyor* (QM W17078).

Colour. Queensland Museum specimens were frozen when examined, and their colour should be close to that of live specimens: dorsally rich chesnut, paling to anterior of each pereonite; ventrally white; lateral margins of pereonites, pleonites and telson with white band.

Remarks. This species is common off the Northern Territory coast, but very few specimens have been collected with host data. The specimens from the Gulf of Carpentaria constitute a new host record, and apart from one record from *Herklotichthys* sp., all hosts are carangids. The host was identified as *Alepes apercna* of Grant (1987).

ACKNOWLEDGEMENTS

I thank Dr Nigel Preston (CSIRO) for donation of the Coral Sea specimens, Dr A.J. Bruce for

loan of material from the Northern Territory Museum and J. Johnson and R.J. McKay for confirming the fish names. I also thank the Queensland Museum for the provision of research facilities.

REFERENCES

- Bruce, N.L. 1987a. Australian *Pleopodias* Richardson, 1910, and *Anilocra* Leach, 1818 (Isopoda : Cymothoidae), crustacean parasites of marine fishes. *Records of the Australian Museum* **39**: 85-130.
- Bruce, N.L. 1987b. Australian *Renocila* Miers, 1888 (Isopoda : Cymothoidae), crustacean parasites of marine fishes. *Records of the Australian Museum* **39**: 169-182.
- Bruce, N.L. 1987c. Australian species of *Nerocila* Leach, 1818, and *Creniola* n. gen. (Isopoda : Cymothoidae), crustacean parasites of marine fishes. *Records of the Australian Museum* **39**: 355-412.
- Bruce, N.L. 1990. The genera *Catoessa*, *Eltusa*, *Enispa*, *Ichthyoxenus*, *Idusa*, *Livoneca* and *Norileca* n.gen. (Isopoda : Cymothoidae), crustacean parasites of marine fishes with description of eastern Australian species. *Records of the Australian Museum* **42**: 247-300.
- Bruce, N.L. and Harrison-Nelson, E., 1988. New records of fish parasitic marine isopod crustaceans (Cymothoidae, subfamily Anilocrinae) from the Indo-West Pacific. *Proceedings of the Biological Society of Washington* **101**: 585-602.
- Grant, E. 1987. *Fishes of Australia*. E.M. Grant Pty Ltd: Brisbane, pp 480.
- Heemstra, P.C. and Smith, M.M. 1986. Family No. 244: Zanclidae. In: M.M. Smith and P.C. Heemstra (eds) *Smith's Sea Fishes*. Macmillan South Africa: Johannesburg, pp 1047.
- Williams, E.H. and Williams, L.B., 1987. Three new species of *Renocila* (Crustacea : Isopoda : Cymothoidae) external parasites of coral reef fishes from the Ryukyu Islands of Japan. *Proceedings of the Biological Society of Washington* **100**: 417-432.
- Williams, L.B. and Williams, E.H., 1980. Four new species of *Renocila* (Isopoda : Cymothoidae), the first reported from the New World. *Proceedings of the Biological Society of Washington* **93**: 573-592.