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*MOOLAPHEONOIDES UTMAS*, NEW SPECIES, FROM CORAL REEFS  
IN THE MADANG LAGOON, PAPUA NEW GUINEA  
(AMPHIPODA, CYPROIDEIDAE)

*James Darwin Thomas*

ABSTRACT

*Moolapheonoides utmas*, new species, is described from coral reefs at Madang, Papua New Guinea. *M. utmas* differs from other species in the genus by the large tooth-cusp projecting posteroventrally on article 2 of pereopod 7 and the lower dorsal crest of the urosome. It shares an unusual dorsolateral bulbous projection of pereonite segments 3 and 4 with other cyproideid species *Hoplopohoenoides obessa* Shoemaker from Florida, and *Narapheonoides mullaya* Barnard from Australia. Identification keys for the genus *Moolapheonoides* are presented and relationships to other genera in the family are discussed.

*Moolapheonoides utmas* is the fifth species to be described in a genus now ranging from southern Australia, now through New Guinea, to Madagascar. A new diagnosis of the genus is provided, with a list of species, and a new key. The numbers in brackets following the distribution of each species are biogeographic numbers cited in Barnard and Barnard (1983; and Barnard and Karaman, 1991). The nomenclature of Watling (1979) is used for spine/setae distinctions.

SYSTEMATICS

Cyproideidae

*Moolapheonoides* J. L. Barnard

*Moolapheonoides* J. L. Barnard, 1974b: 5 (*Moolapheonoides kadee* J. L. Barnard, 1974b, original designation).

*Diagnosis*.—Mandible with 3-articulate palp. Palp of maxilla 1 uniaarticulate. Gnathopod 1 small, scarcely subchelate, carpal lobe reaching the 0.2 mark along propodus, propodus rectangular, not tapering. Gnathopod 2 small, weakly carpocheilate, palm moderately developed, oblique. Article 2 of pereopod 5 rectilinear, of pereopods 6-7 expanded. Urosomite 1 elongate, dorsally keeled; urosomite 3 unvaulted. Telson elongate, almost reaching apex of peduncle on uropod 3.

*Description*.—Antenna 1 thick, uncuspidate. Mandibular molar large, tritulative. Lower lip ordinary. Inner plate of maxilla 1 thickly rectangular, outer plate with 9-10 main setae. Maxillipeds ordinary. Pleonite 3 unproduced posterodorsally. Outer rami of uropods 2-3 shortened.

*Species*.—

- M. angustipes* Ledoyer, 1982: 108–109, fig. 35; Madagascar [698];
- M. cocoo* J. L. Barnard, 1974: 8–9, fig. 4; Victoria [782];
- M. kadee* J. L. Barnard, 1974: 6–8, figs. 2–3; South Australia [785];
- M. poontee* J. L. Barnard, 1974: 9–11, figs. 4–5; Victoria [782];
- M. utmas* Thomas, herein, Madang, Papua New Guinea [597].

*Distribution.*— Marine, southern Australia, New Guinea, Madagascar, sublittoral, 4 species.

#### KEY TO THE SPECIES OF *MOOLAPHEONOIDES*

1. Article 3 of pereopods 5–7 elongate (longer than article 4) ..... 2  
    Article 3 of pereopods 5–7 not elongate (shorter than article 4) ..... 3
2. Article 2 of pereopod 7 with large subacute tooth-cusp projecting posteroventrally,  
    pereonites 3–4 greatly expanded dorsolaterally ..... *M. utmas*  
    Article 2 of pereopod 7 lacking large subacute tooth-cusp, pereonites 3–4 not  
    expanded dorsolaterally ..... *M. coccoo*
3. Gnathopod 2 with posterior seta on article 6 (besides defining setae of palm) ..... *M. poontee*  
    Gnathopod 2 lacking posterior setae on article 6 (besides defining setae of palm) ..... 4
4. Article 2 of pereopod 6 slender and not lobate, dorsal carina of urosomite 1 sharply  
    angular posteriorly, gnathopod 2 lacking posterior seta on article 6 ..... *M. angustipes*  
    Article 2 of pereopod 6 broad and lobate, dorsal carina of urosomite 1 rounded, sloping  
    posteriorly, gnathopod 2 with posterior seta on article 6 ..... *M. kadee*

*Figures.*—Illustrations are noted by the following conventions: Upper case letters denote the structures; G = gnathopod; P = pereopod; A = antenna(e); B = body; H = head; M = mandible; PL = pleopod; U = upper lip; W = epimera; X = maxilla; XP = maxilliped; Z = coxal gill. Lower case letters and numbers to the right of upper case letters refer to a particular feature or number of the appendage: a = anterior; d = dorsal; m = medial. Letters to the right of upper case letters refer to specimens noted in the manuscript.

#### *Moolapheonoides utmas* new species (Figs. 1–3)

*Etymology.*—“Utmas”, pidgin English for sea louse, Riwo district, Madang region.

*Diagnosis.*—Lateral cephalic lobe broad, nearly truncate at an oblique angle, ventral margin of head even; eye large; accessory flagellum short, unartiuculate; apex of palp on maxilla 1 with 3 heavy setae and long distolateral extension; apical part of medial margin of outer plate on maxilliped minutely crenulate; article 2 of gnathopod 1 without setae, article 6 with only one posterior spine-seta (besides defining setae); palm of gnathopod 2 oblique, crenulate, and with 2 humps, dactyl with only one tooth and 5 small simple setae, propodus with 1 posterior spine-seta (except defining spine-setae), article 3 of pereopods 5–7 elongate, of pereopods 3–4 not elongate or weakly so on pereopod 4, article 2 of pereopods 6–7 diverse, of pereopod 6 subrectangular and weakly lobate posteroventrally, of pereopod 7 broadened, broadly extended below, with subacute posteroventral additional extension, without lateral ridges; pleonite 3 with small mid-dorsal tooth; dorsal keel of pleonite 4 high and weakly undulate but not strongly convex; telson with single sublateral seta apically on each side.

*Description.*—Head slightly telescoped into pereonite 1, pereonite 2 taller than 1, with bulbous anterodorsal margin containing shiny ochraceous material (possibly thickened and pigmented chitin, hard and sclerotized), pereonites 4 and 5 with similar bulbous projections posterolaterally just above coxal line; pereonite 6 telescoped into pereonite 5; coxa 4 with nipple-like anteroventral point and several apparent stridulation ridges on medial surface near point; coxa 5 not bilobed; oostegites on coxae 2–5, weakly claviform

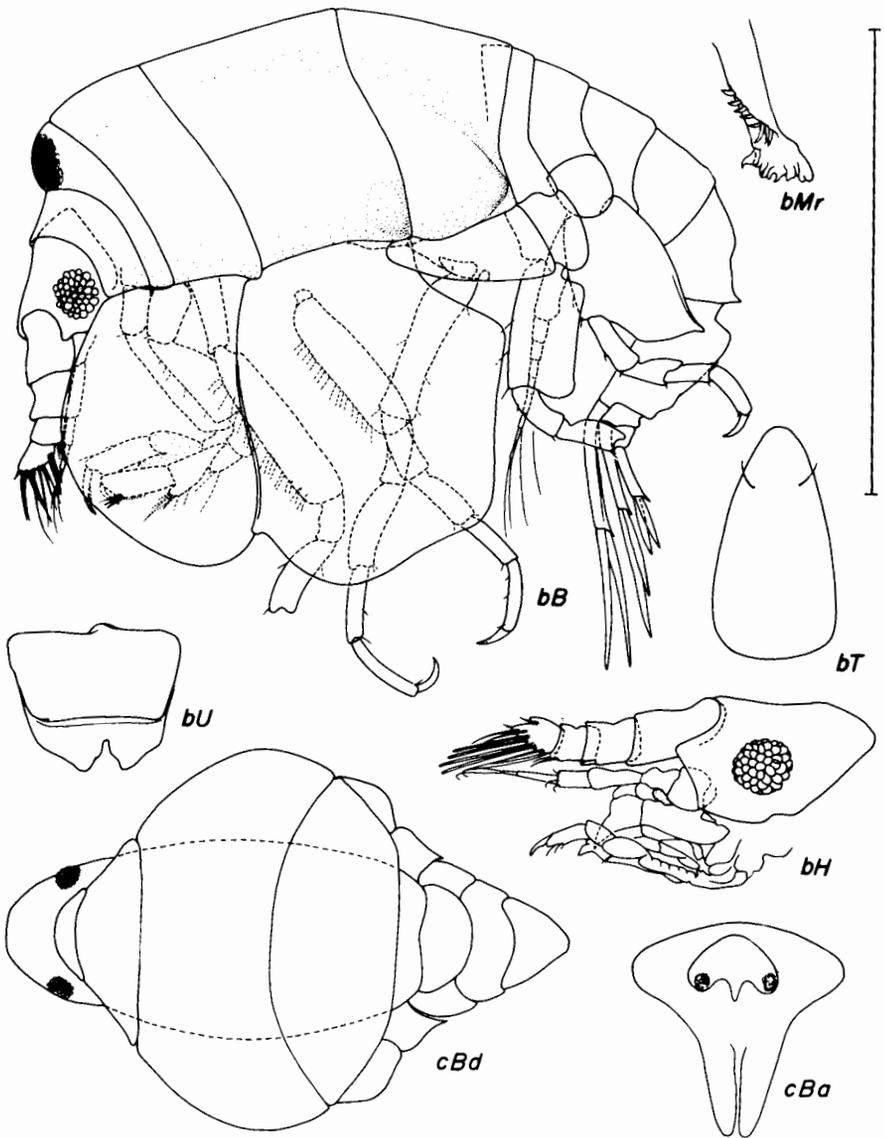


Figure 1. *Moolapheonoides utmas*, holotype, female “b”, 2.09 mm; paratype “c” = female “c”, 2.10mm. Capital letters in figures refer to parts; lower case letters to left of capital letters refer to specimens and to the right refer to adjectives as described below: A, antenna; B, body; C, coxa; D, dactyl; E, epimera; G, gnathopod; L, labium; M, mandible; O, oostegite; P, pereopod; PL, pleopod; T, telson; U, uropod; X, maxilla; Z, gill; XP, maxilliped; l, left; m, medial; r, right; s, setae removed.

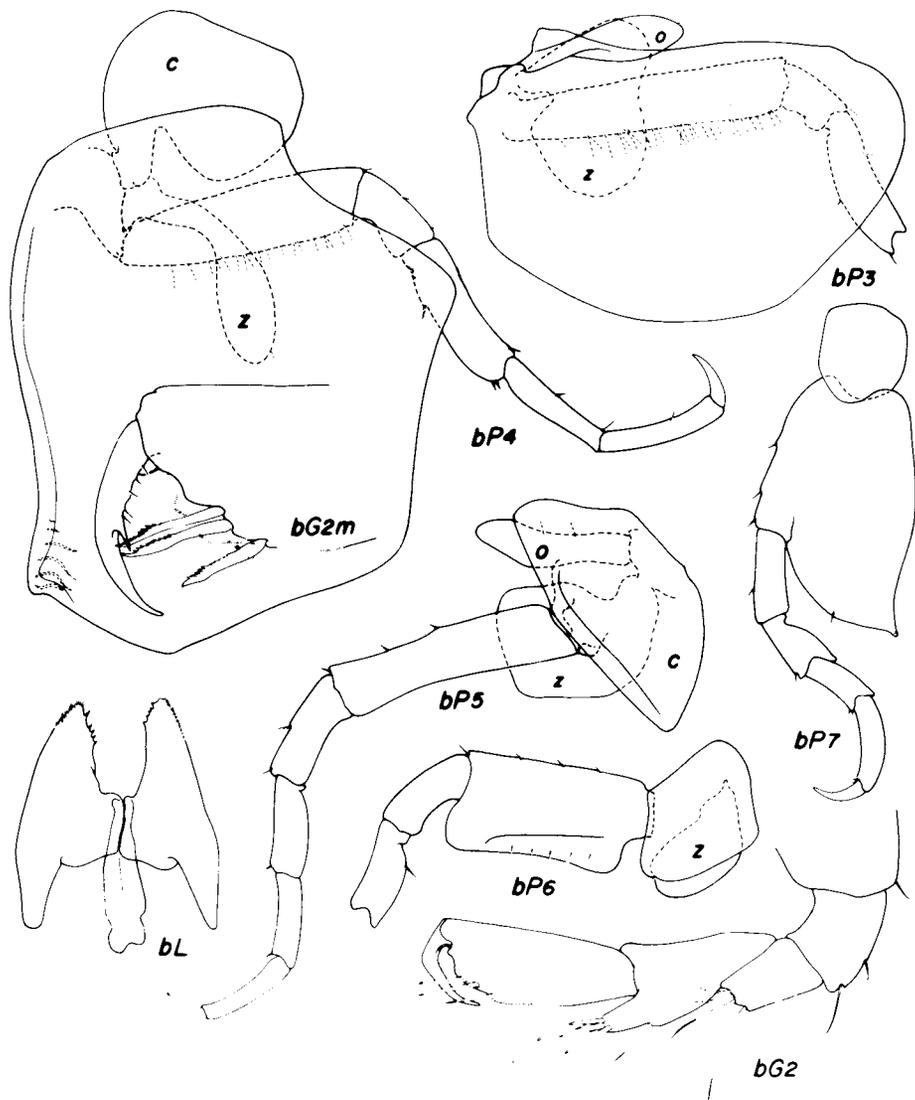


Figure 2. *Moolapheonoides utmas*, holotype, female "b", 2.09 mm.

and poorly setose (Fig. 2); gills on coxae 2-6, largest on coxa 4 (see shapes in illustrations). Other parts illustrated.

*Illustrations.*—In Figure 2 of gnathopod 2, distal part below base of article 2 from left view, upper part reversed to show medial view, gill as marked, with extra buttress between coxa and article 2.

*Holotype.*—USNM No. 239483, ovigerous female "b" 2.09 mm.

*Type locality.*—Papua New Guinea, Madang, Tab Anchorage, 2 February 90, Tripod Reef, 50 m south of marker, 3-4 m depth, formalin-seawater wash of *Acropora* coral rubble; collected by J. D. Thomas, JDT-PNG 32e.

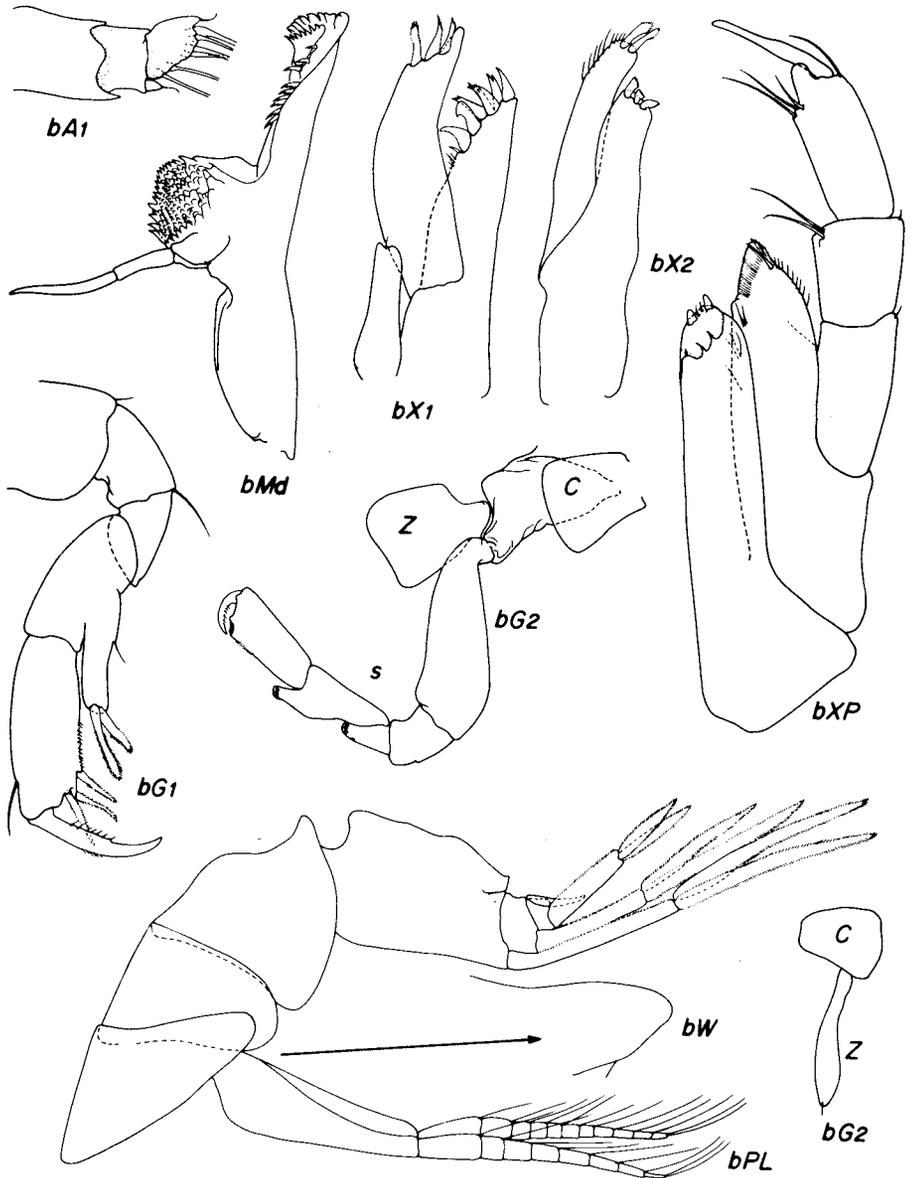


Figure 3. *Moolapheonoides utmas*, holotype, female "b", 2.09 mm.

*Paratypes*.— USNM No. 239484, juvenile "a", 1.80 mm, Madang, Gosem Reef near Christensen Research Institute, 3 m, wash of primarily *Acropora* rubble on western part of reef, sparse live coral cover, collected by J. D. Thomas, JDT-PNG 26c; USNM no. 239484, ovigerous female "c", 2.10, mm, juvenile "d", 1.49 mm, juvenile "e", 1.61 mm,

Madang, Tab Anchorage, Rasch Passage, coral rubble gully, 4–6 m, coll. J. D. Thomas PNG 57j.

*Relationships*.—Differing from all of the other species in the genus by the enlarged, sharp posteroventral process on article 2 of pereopod 7; the lower dorsal crest height of the urosome; and the bulbous dorsolateral projections of pereonites 3–4. In addition, differing from *M. angustipes* in the longer article 3 of pereopods 5–7, and the evenly oblique (though humped) palm of gnathopod 2 bearing 3 large dominant spine-setae.

*Remarks*.—*M. utmas* exhibits a strong dilation and bulbous dorsolateral expansion of pereonites 3 and 4 along the dorsal coxal suture line giving the body an inflated dorsal view and a “telescoped” appearance from lateral view. This morphology has been noted in two other cyproideid species in two different genera. Superficially, the extreme condition found in *M. utmas* resembles to a lesser extent that found *Naraphoenoides mullaya* Barnard, 1972, from Western Australia and New South Wales, Australia. *Hoplophoenoides obessa* Shoemaker, 1956 from Florida exhibits a distinct but less developed form of this character state. Barnard described the following for *N. myllaya*: “pereonites 3–5 strongly swollen laterally and bulging above coxae, the largest coxae angled mesiad so that they meet along ventral margins and squeeze pereonal appendages tightly between them.” Shoemaker’s description of *H. obessa* from Dry Tortugas, Florida includes the following description: “The body of the animal viewed from above widens rather abruptly toward the fourth segment which is the widest and which bulges out laterally over the central coxal plates. The body then tapers off to the posterior end which is very narrow.” The ventral margins of coxae 3–4 in *M. utmas* and *N. mullaya*, and to a lesser extent, *H. obessa*, forms a sharp appressed keel along ventral coxal margin. The resultant opening is very thin, leaving barely enough room for terminal articles of the pereopods to protrude. A final consideration is that the bulbous dorsal projection acts as a type of “operculum” to seal the amphipod in the myriad small holes and openings prevalent in coral rubble. The keel formed by the ventral margin of coxae 3–4 would allow the amphipod to become tightly ensconced in a very small opening.

The occurrence of this unusual morphology in three geographically separated species in different genera indicates this condition could be habitat-related and linked to the amphipod’s ecology among the complex cryptic habitats in coral rubble and other various attached and sessile invertebrates. One possible explanation for this dorsal feature is that it could accommodate internal organs or gonadal tissue due to the thin knife-like body morphology ventral of the coxal suture line.

In other aspects the taxa differ significantly. *Moolaphoenoides* has a 3-segmented mandibular palp, while both *Hoplophoenoides* and *Naraphoenoides* lack mandibular palps. Additionally, *Naraphoenoides* differs from *Hoplophoenoides* and *Moolaphoenoides* in the less expanded article 2 on pereopod 6 and a shorter telson.

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