YHI YINDI, A NEW GENUS AND SPECIES OF PARACALLIOPIIDAE (CRUSTACEA: AMPHIPODA) FROM THE GREAT BARRIER REEF

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Abstract


The new genus and species, Yhi yindi was found in 4 m on coral-algal sand at Orpheus Island on the Great Barrier Reef. The genus differs from others in the family in the loss of carpal lobes on the gnathopods of both sexes, the strongly reduced male gnathopod 2 and reduced spination on the outer plate of the maxilliped. The antennae are unusually elongate and articles 2-3 of antenna 1 are as long as article 1, found otherwise only in Doowia which has short antenna 1 and fused eyes. Unlike Paracalliopae and Indocalliopae this genus plus Katocalliopae and Doowia are characterized by fossorial pereopods 3-6.

Introduction

A review of Paracalliopidae is presented to include the new genus and species, Yhi yindi, into new keys and into a newly revised diagnosis. This updates what will appear in Barnard and Karaman (in press). Three keys to the genera are presented to provide different starting points for identification.

Paracalliopidae Barnard and Karaman, 1982

Diagnosis. Body plan ordinary but urosomites 2-3 amalgamated: rostrum and incision for antenna 2 ordinary, eyes paired (except Doowia but see Remarks); pereopod 7 elongate and different from shorter pereopods 5-6, dactyl of pereopod 7 elongate and scote; gnathopods sexually diverse or not, mittenform in female, enlarged mittenform in male, with thin wrists and expanded hands twisting inward on death, but males of Yhi with neotenic, female-like gnathopods. Telson longer than wide, but shorter than urosomites 2-3 combined, entire.

Remarks. The family comprises genera with pereopods 3-6 either fossorial or not and temporally includes Doowia which has fused eyes but because of fused urosomites 2-3 is placed in Paracalliopidae rather than Oedicerotidae. The gnathopods of Doowia conform to the facies in Paracalliopidae rather than Oedicerotidae.

The family differs from Exodiceroidea in the lack of apical spines on rami of uropods 1-2:

- from Oedicerotidae in the paired eyes, fused urosomites (occasionally present in Oedicerotidae) and non-galeate head and odd gnathopods;
- from Eusiridae-Calliopiidae in the fused urosomites 1-2 and odd gnathopods;
- from Dexaminiidae in the greatly elongate pereopod 7 with elongate setose dactyl and the unleft telson.


Key 1 to genera of Paracalliopidae

1. Mandibular palp absent ........................................... 2
   — Mandibular palp present ................................... 3
2. Male gnathopod 2 stout, carpus lobate and shorter than propodus, articles 2-3 of antenna 1 much shorter than article 1 ...... Katocalliopae
   — Male gnathopod 2 slender, feeble, carpus not lobate and longer than propodus, articles 2-3 of antenna 1 as long as article 1 ........ Yhi

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3. Eyes fully appressed together on top of head, pereopods 3-6 fully fossorial (like Oedicerotidae) ................ Doowia
   — Eyes separated and lateral, pereopods 3-6 non-fossorial (like Gammaridae) ............................. Paracalliope
4. Inner plate of maxilla 1 with 1 seta .......................... Indocalliope
   — Inner plate of maxilla 1 with 8+ setae ........................ Paracalliope

Key 2 to genera of Paracalliopiidae

1. Inner plates of maxillae 1-2 densely setose medially .................. 2
   — Inner plates of maxillae 1-2 not setose medially .................. 3
2. Pereopods 3-6 ordinary, like gammarids, article 3 of antenna 1 much shorter than article 1, eyes separated and lateral, epimera each with small posteroventral tooth ....................... Paracalliope
   — Pereopods 3-6 fully fossorial, like oedicerotids, article 3 of antenna 1 = article 1, eyes fully appressed dorsomedially, epimera rounded, lacking small posteroventral tooth ...................... Doowia
3. Articles 2-3 of antenna 1 as long as article 1, carpus of gnathopods not lobate ............................. Yhi
   — Articles 2-3 of antenna 1 much shorter than article 1, carpus of gnathopods lobate ......................... 4
4. Mandibular palp present, peduncle of uropod 3 elongate, epimera with small tooth, palp of maxilliped strongly exceeding outer plate .............................. Indocalliope
   — Mandibular palp absent, peduncle of uropod 3 short, epimera smooth, palp of maxilliped not exceeding outer plate ............................. Katocalliope

Key 3 to genera of Paracalliopiidae

1. Articles 2-3 of antenna 1 as long as article 1 .......................... 2
   — Articles 2-3 of antenna 1 much shorter than article 1 .................. 3
2. Carpi of gnathopods lacking lobes ........................ Yhi
   — Carpi of gnathopods lobate ................................ Doowia
3. Mandible lacking palp, peduncle of uropod 3 short, palp of maxilliped not exceeding outer plate .............................. Katocalliope
   — Mandible with long palp, peduncle of uropod 3 elongate, palp of maxilliped strongly exceeding outer plate ......................... 4
4. Medial margins of maxillae 1-2 naked ............................. Indocalliope
   — Medial margins of maxillae 1-2 setose ........................ Paracalliope

Yhi gen. nov.

Diagnosis. Paracalliopiidae with elongate articles 2-3 of antenna 1, article 5 of antenna 2 thin and elongate, longer than article 4; eyes separate, ommatidia scattered (as in life); mandibular palp absent, raker spines reduced to 2 on each mandible, laciniae mobiles weakly diverse but simple, molar not extended on stalks; inner lobes of lower lip separate but appressed; inner plate of maxilla 1 foliate, poorly armed (generally with 2 setae only), outer plate with 11 almost straight spines, palp article 1 elongate; plates of maxilla 2 slender, inner plate lacking mediofacial setal row, with 1-2 subapical but medial marginal setae; inner plate of maxilliped with at least 2 short stout tooth-spines, palp article 3 extending beyond outer plate; coxae relatively long in context of family (compared to Paracalliopiidae); coxa 1 extended forward to enfold ventral margin of head; ventral margins of coxae 3-4 weakly excavate; coxa 4 not excavate posteriorly; gnathopods in both sexes very feeble, carpi lacking lobes and longer than propodi, male gnathopod 2 scarcely broadened; pereopods 5-6 relatively shortened (compared to Paracalliopiidae); coxal gills 2-6 present; brood plates unexpanded; epimera rounded (notches or small teeth vestigial); peduncle of uropod 3 elongate.

Type species. Yhi yindi sp. nov. Monotypic.
Figure 1. Yhi yindi, unattributed figures = holotype female “o”; s = female “s” 1.61 mm. 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: B, body; C, coxa; D, dactyl; G, gnathopod; H, head; I, inner plate or ramus; L, labium; M, mandible; N, right molar; O, outer plate or ramus; P, peropod; R, uropod; S, maxilliped; T, telson; U, upper lip; X, maxilla; Y, gill; Z, oostegite; m, medial; r, right; s, setae removed; t, left.
Figure 2. *Yhi yindi*, unattributed figures = holotype female “o”; s = female “s”, 1.61 mm.
Figure 3. *Yhi yindi*, unattributed figures = holotype female "o"; y = male "y", 1.52 mm. Gnathopod 1 (G1t) and its coxa and gnathopod 2 (G2) greatly enlarged, but coxa 2 (C2) with gill and oostegite and all other oostegites and gills not strongly enlarged.
Etymology. Named for an aboriginal goddess of the sun in reference to the sunny climes from which this shallow-water species comes.

Remarks. Although the elongate and very slender antennae, and their articles, are generally foreign to Paracalliopiidae, this situation occurs frequently in other families, where unusually elongate antennae occur in the Oedicerotidace (such as Synchelidium and Arthris) and in the Zobrachidace, Urioideidae and Urohaustoridace.

The lack of all but one medial spine on the outer plate of the maxilliped is relatively uncommon although this spination in Paracalliopa novizealandiae is poor.

The genus combines apomorphies such as neotenic male gnathopods, loss of spines on outer plate of maxilliped and fossorial pereopods 3–6 (compared to Paracalliopa) with possible plesiomorphies such as elongate articles of antennae, unfused inner lobes of the lower lip, and narrow lobes of maxilla 2.

The new genus differs from Doowia in the slender antennae, separated eyes, lack of carpal lobes on the gnathopods, the poor medial setation of the maxillae, the absence of mandibular palp, the presence of short tooth-spines on the inner plate of the maxilliped, the uncurved spines on the outer plates of maxilla 1, and the anteriorly extended coxa 1.

It differs from Katocalliope in the elongate articles 2–3 of antenna 1, the elongate article 5 of antenna 2, the non-pediculate molars, the longer and broader anterior coxae, uncurved spines on outer plate of maxilla 1, the longer peduncle of uropod 3, the divided inner lobes on the lower lip, the narrow plates of maxilla 2, and the anteriorly extended coxa 1.

Yhi yindi sp. nov.

Figures 1–3

Material examined. 3 males, 6 females, 2 unsed: to 1.85 mm.

Holotype: Orpheus Island, Great Barrier Reef, Australia, 4 m, medium coral-algal sand (high density of amphipods including oedicerotids, phoxocephalids, dexamnids, platyschnopids), J.D. Thomas and J. Clark, 13 Feb 1989 (stn JDT-OPH 6), Museum of Victoria (NMV) J20847 (ovigerous female "o" with 2 eggs, 1.51 mm).

Paratypes: Type locality, NMV J20488 (female "p", 1.85 mm), NMV J20489 (unsexed "q", 1.78 mm), NMV J20490 (unsexed "r", 1.59 mm), USNM 253539 (female "s", 1.61 mm; female "t", 1.50 mm; female "u", 1.52 mm; female "v", 1.75 mm). Orpheus Island, reef front E of Iris Point, 4 m, same date, medium coral-algal sand, J.D. Thomas (stn JDT-OPH 6), NMV J20491 (male "w", 1.30 mm), NMV J20492 (male "x", 1.31 mm), USNM 253538 (male "y", 1.52 mm).

Description. Female holotype "o". Complex of epistome and upper lip very bulky, projecting forward bluntly; gills of pereopods 3–5 like that illustrated for gnathopod 2, oostegite of pereopod 5 like pereopod 4 (with 6 setae) but also with one basal seta; pleopods ordinary, rami subequally extending, on pleopods 1–3 articles on outer ramus = 8–7–7, on inner ramus = 7–7–7, lengths of outer and inner rami on pleopods 1–3 (in relative units) = 37–32, 34–33, 34–33, each peduncle with 2 coupling hooks.

Male. "y". Flagella of antennae 1–2 each with 6 articles, calceoli absent, aesthetasces on articles 3–4–5–6 = 2–2–1–0, accessory flagellum absent.

Etymology. Yindi, from Aboriginal "sun".

Remarks. Very little description is needed for this species because the genus has so many distinctions from other genera of the group that most of the comments are made in the generic diagnosis. The figures are left to describe other details. The description of the female is limited to features not well seen in the illustrations; the description of the male is limited to distinctions from the female.

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References


