

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

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## Abstract

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 piidae (Crustacea: Amphipoda) from the Great Barrier Reef. *Memoirs of the Museum of*  
*Victoria* 52: 283–289.

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 *Paracalliope* and *Indocalliope* this genus plus  
*Katocalliope* and *Doowia* are characterized by fossorial pereopods 3–6.

## Introduction

A review of Paracalliopiidae 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.

### Paracalliopiidae 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 setose; 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 per-  
 copods 3–6 either fossorial or not and temporar-

ily includes *Doowia* which has fused eyes but  
 because of fused urosomites 2–3 is placed in  
 Paracalliopiidae rather than Oedicerotidae. The  
 gnathopods of *Doowia* conform to the facies in  
 Paracalliopiidae rather than Oedicerotidae.

The family differs from Exoedicerotidae in  
 the lack of apical spines on rami of uropods 1–  
 2;

from Oedicerotidae in the paired eyes, fused  
 urosomites (occasionally present in Oediceroti-  
 dae) and non-galeate head and odd gnatho-  
 pods;

from Eusiridae-Calliopiidae in the fused uro-  
 somites 1–2 and odd gnathopods;

from Dexaminidae in the greatly elongate per-  
 copod 7 with elongate setose dactyl and the  
 unleft telson.

**List of genera.** *Paracalliope* Stebbing (1899) (= *Paroediceropsis* Fearn-Wannan, 1968), (see J.L.  
 Barnard, 1972 for analysis), *Indocalliope* Bar-  
 nard and Karaman (1982), *Katocalliope* Barnard  
 and Drummond (1984), and provisionally  
*Doowia* Barnard and Drummond (1987), differ-  
 ing from Paracalliopiidae in the fully appressed  
 eyes dorsally.

## Key 1 to genera of Paracalliopiidae

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

- 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) ..... 4
- 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, molars 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 *Paracalliope*); 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 *Paracalliope*); 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.

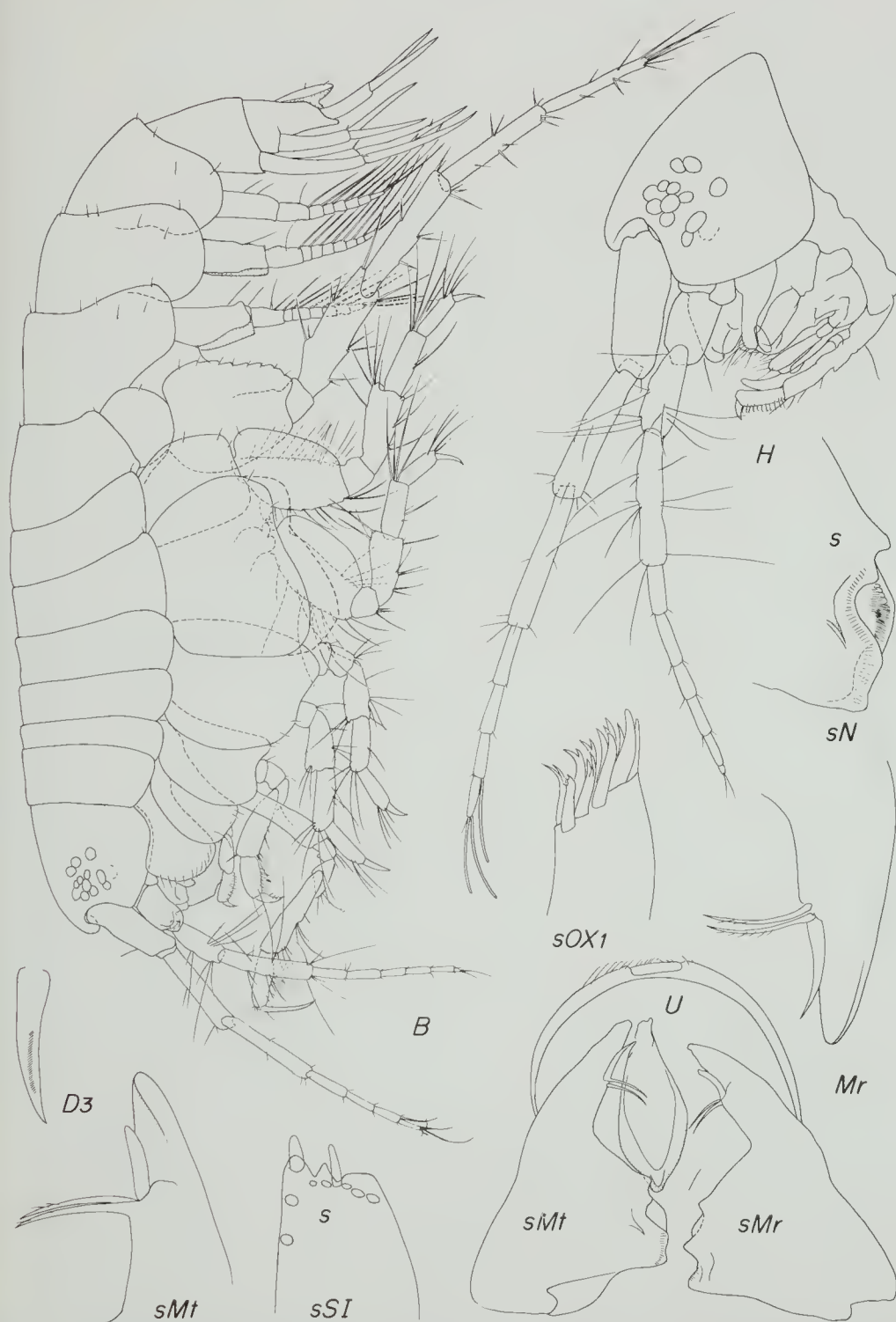


Figure 1. *Yhi yindi*, unattributed figures = holotype female "o"; s = female "s" 1.61 mm. Capital letters in figures refer to parts; lower case letters to left of capital letters refer to specimens and to the right refer to adjectives as described below: B, body; C, coxa; D, dactyl; G, gnathopod; H, head; I, inner plate or ramus; L, labium; M, mandible; N, right molar; O, outer plate or ramus; P, pereopod; R, uropod; S, maxilliped; T, telson; U, upper lip; X, maxilla; Y, gill; Z, oostegite; m, medial; r, right; s, setae removed; t, left.

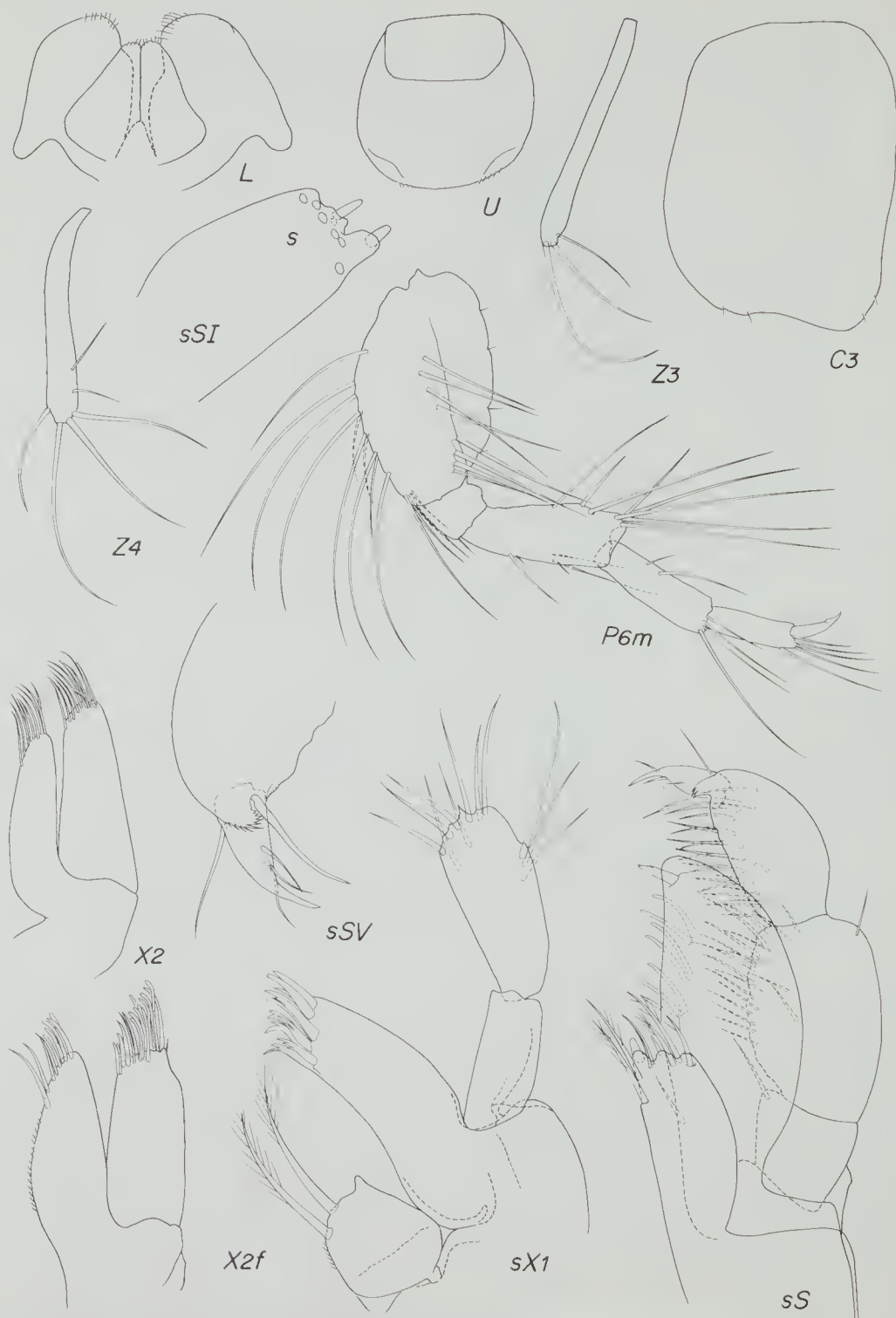


Figure 2. *Yhi yindi*, unattributed figures = holotype female "o"; s = female "s", 1.61 mm.



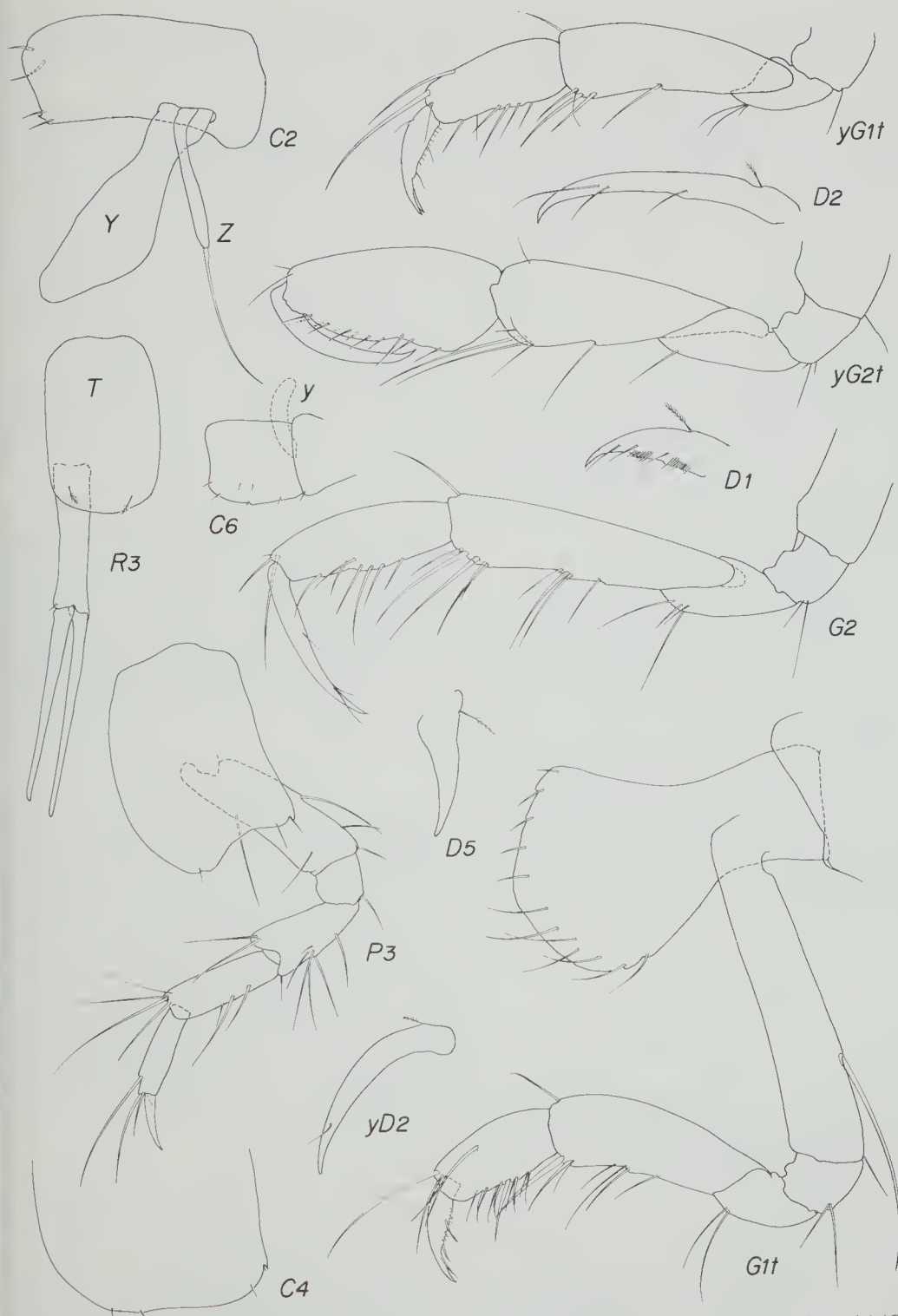


Figure 3. *Yhi yindi*, unattributed figures = holotype female "o"; y = male "y", 1.52 mm. Gnathopod 1 (G1t) and its coxa and gnathopod 2 (G2) greatly enlarged, but coxa 2 (C2) with gill and oostegite and all other oostegites and gills not strongly enlarged.

*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 Oedicerotidae (such as *Synchelidium* and *Arllis*) and in the Zobrachoidae, Urothoidae and Urohaustoriidae.

The lack of all but one medial spine on the outer plate of the maxilliped is relatively uncommon although this spination in *Paracalliope 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 *Paracalliope*) 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 unsexed; to 1.85 mm.

Holotype: Orpheus Island, Great Barrier Reef, Australia, 4 m, medium coral-algal sand (high density of amphipods including oedicerotids, phoxocephalids, dexaminiids, 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 61), 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, aesthetascs 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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