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Hadziidae*

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Abstract

The genus *Dulzura* is recorded from Australia for the first time and the new species *Dulzura taylorae* is described. The monotypic genus *Protohadzia* is synonymised with *Dulzura*.

Key words: Crustacea, Amphipoda, Hadziidae, taxonomy, new species, *Dulzura taylorae*

Introduction

The Hadziidae is difficult to distinguish from the Melitidae (*sensu lato*). Traditionally the genus *Dulzura* has been placed in the Hadziidae, except for Stock & Vonk (1991) who placed it in the Melitidae. Stock & Vonk (1991) reviewed *Dulzura* and found six species in the genus for which they provided a key. Up to now *Dulzura* has been known from the Cape Verde Islands in the Atlantic Ocean; Southern California, the Hawaiian Islands and the Galapagos Islands in the Pacific Ocean; and the Madagascar area of the Indian Ocean. We record *Dulzura* in Australia for the first time and describe *D. taylorae* from the Great Barrier Reef.

Material and methods

The description were generated from a DELTA database (Dallwitz 2005) to the melitoid genera and species of the world. Material was hand-collected on snorkel or on scuba and is lodged in the Australian Museum, Sydney (AM). A set of colour plates, a list of standard abbreviations and detailed station data is available in Lowry & Myers (2009). A CD (*Benthic Amphipoda (Crustacea: Peracarida) of the Great Barrier Reef: Interactive Keys*) is available with the book or the keys can be accessed at the crustacea.net website.

Hadziidae S. Karaman, 1943

Dulzura J.L. Barnard, 1969

Dulzura J.L. Barnard, 1969: 114. —Barnard & Barnard, 1983: 655, figs 12–14, 41, map 53.
Type species. *Dulzura sal* J.L. Barnard, 1969, original designation.

Protohadzia Zimmerman & Barnard, 1977: 569. —Barnard & Barnard, 1983: 653, map 56.
Type species. *Eriopisa schoenerae* Fox, 1973, original designation.

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Diagnosis. Mandible palp article 3 slightly falcate, very long, about 4.5 x as long as broad, subequal to or longer than article 2. Maxilla 1 inner plate with setae along medial margin. Lower lip without inner lobes. Maxilliped palp article 3 with patch of short, dense setae. Gnathopods 1–2 carpi without posterior lobe. Pereopod 4 coxa without posteroventral lobe. Gills on gnathopod 1 and pereopods 3–6, stalked with proximal suture. Uropod 1 with or without basofacial robust seta. Uropod 2 peduncle with distomedial comb of setae. Uropod 3 inner ramus about half length of outer; outer ramus with 2 articles. Telson longer than broad, with or without lateral robust setae.

Included species. *Dulzura* includes 8 species: *D. gal* J.L. Barnard, 1979; *D. hamakua* (J.L. Barnard, 1970); *D. lobata* Stock & Vonk, 1991; *D. melitaformis* (Ledoyer, 1979); *D. paucispinosa* Ledoyer, 1983; *D. sal* J.L. Barnard, 1969; *D. schoenerae* (Fox, 1973); *D. taylorae* **sp. nov.**

Remarks. Barnard & Barnard (1983) diagnosed both *Dulzura* and *Protohadzia* Zimmerman & Barnard, 1977, but the distinctions between them have never been strong. The main character that Zimmerman & Barnard (1977) used to separate *P. schoenerae* from *Dulzura* was the projecting apical shelf on the palm of male gnathopod 2. Ledoyer (1979) originally placed *D. melitaformis* in *Protohadzia* based on this character. In other species of *Dulzura* the palm has no apical shelf. Another character used to distinguish *Protohadzia* has been the distal patch of short setae on article 3 of the maxillipedal palp. It has not been illustrated or described for *D. gal*, *D. hamakua*, and *D. melitaformis*. It is clearly present in *P. schoenerae*, *D. lobata* and in *D. taylorae* and there is a form of patch in D. *paucispinosa*. There is apparently no patch in *D. sal*. The palm of male gnathopod 2 with or without dense setae is a variable character and all species have a form of setation. In species of *Dulzura* and *P. schoenerae* sexually dimorphic second gnathopods all look very similar in the females. *Protohadzia schoenerae* has lateral setae on the telson, but so do other species such as *D. taylorae*. All species including *Protohadzia schoenerae* lack inner lobes on the lower lip. The distomedial comb-row of setae on the peduncle of uropod 2, a strong apomorphic character, occur in all species including *P. schoenerae*. For these reasons we are synonymising *Protohadzia* with *Dulzura*.

Stock & Vonk (1991) mention sexual dimorphism in the rami of uropod 3 for some species of *Dulzura*, but apparently not in *D. taylorae*. The monotypic genus *Gammaropisa* Ruffo & Vigna Taglianti, 1988, which has sexually dimorphic third pleopods, appears to be similar to *Dulzura*. The only apparent differences between these genera appears to be the absence of a distomedial comb on the peduncle of uropod 2 in *Gammaropisa*.

***Dulzura taylorae* sp. nov.**
(Figs 1, 2)

Type material. Holotype, male, 2.1 mm, AM P77595, Mermaid Cove, Lizard Island (14°38.90'S 145°27.26'E), swash/subtidal, protected beach with patch reefs offshore, coarse coral sand with pieces of coral, 0.5–1.0 m, S.E. LeCroy, 2 July 2001 (SEL/LZI-1-1). Paratypes: female, 2.7 mm, AM P77596, 4 females, AMP77597, same locality.

Additional material examined. 1 male, 4 females, AMP77598 (QLD 20); 1 female, AM P70881 (QLD 1700); 1 female, AM P71347 (QLD 1793).

Type locality. Mermaid Cove, Lizard Island (14°38.90'S 145°27.26'E).

Etymology. Named for Taylor Springthorpe, the first author's lovely daughter.

Description. Based on holotype, male, 2.1 mm, AM P77595, paratype, female, 2.7 mm, AM P77596.

Head. *Head* eyes poorly developed, round; anteroventral margin with very small ventral notch, anteroventral corner rounded. *Antenna 1* longer than antenna 2; peduncular article 1 slightly longer than article 2, with 1 robust seta on posterior margin; peduncular article 2 longer than article 3; accessory flagellum minute, with 2 articles. *Antenna 2* not strongly setose; peduncular article 2 cone gland not reaching to end of peduncular article 3; peduncular article 4 slightly longer than article 5; flagellum with about 6 articles. *Mandible* molar medium size, accessory setal row present, 5 well developed serrate setae; palp well

developed, 3-articulate; article 1 about as long as broad, shorter than article 2, inner margin produced distally; article 2 subequal in length to article 3; article 3 sparsely setose, rectolinear. *Maxilla 1* inner plate subtriangular, setae along entire inner margin. *Maxilla 2* inner plate with oblique setal row on inner face, with marginal setal row. *Lower lip* inner lobes absent. *Maxilliped* palp article 3, about as long as broad with patch of small dense setae.

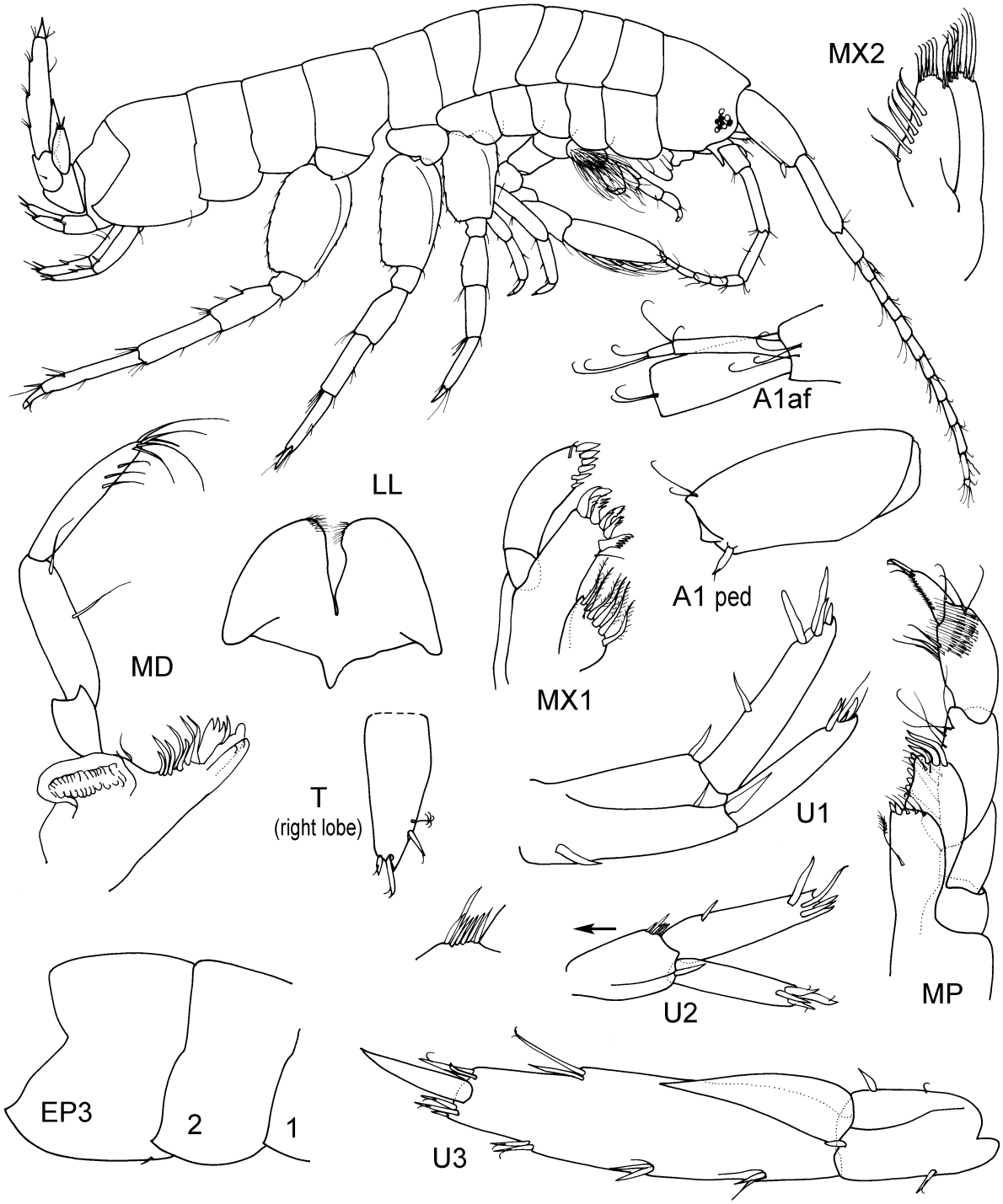

FIGURE 1. *Dulzura taylorae* **sp. nov.**, holotype, male, 2.1 mm, AM P77595, Mermaid Cove, Lizard Island, Great Barrier Reef.

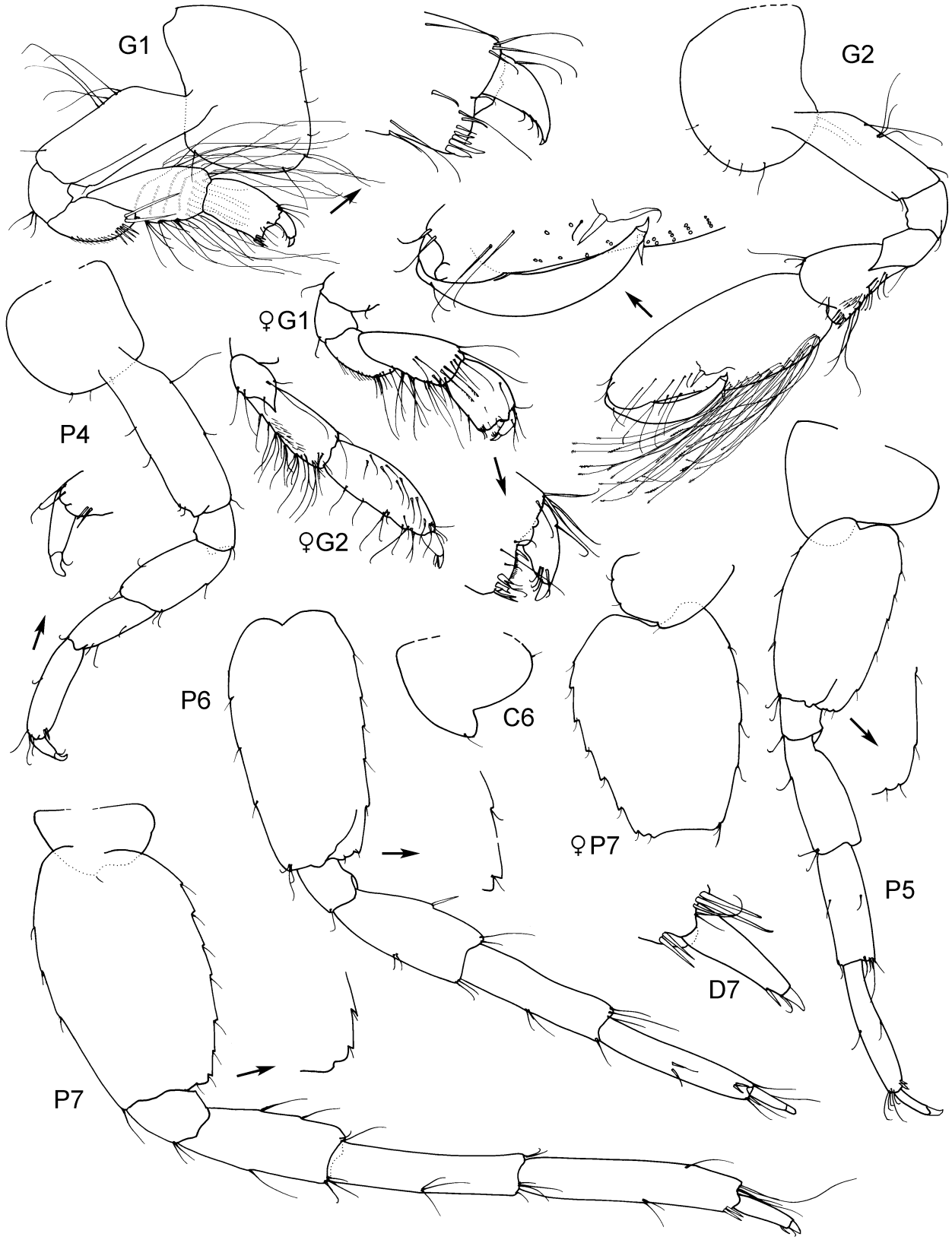

FIGURE 2. *Dulzura taylorae* **sp. nov.**, holotype, male, 2.1 mm, AM P77595, paratype female, 2.7 mm, AM P77596, Mermaid Cove, Lizard Island, Great Barrier Reef.

Pereon. *Gnathopod 1* subchelate, sexually dimorphic; coxa anteroventral corner not produced, anterior margin straight, not produced, posteroventral corner notch absent; merus without posterodistal tooth; carpus about 2 x as long as broad, longer than propodus, heavily setose laterally; palm nearly transverse, straight, entire, defined by posterodistal corner, with posterodistal robust setae; dactylus well developed, fitting palm. *Gnathopod 2* subchelate, sexually dimorphic, slightly enlarged in male and female; coxa posteroventral corner notch absent; merus acutely produced distoventrally; carpus short, not lobate, not enclosed by merus and propodus; propodus linear, with strong concentration of setae, palm extremely acute, straight or slightly concave, minutely sculptured, with sparse robust setae, without teeth along margin, without posteroventral corner, with 2 posterodistal robust setae; dactylus closing along palm, reaching end of palm, inner margin smooth, apically acute/subacute. *Pereopod 3* coxa subequal in length to coxa 2. *Pereopod 4* coxa posteroventral lobe absent, posterior margin straight. *Pereopod 5* basis slightly expanded, posterior margin straight, posteroventral corner narrowly rounded or subquadrate; carpus and propodus with few long, slender setae along anterior margin. *Pereopod 6* coxa anterior lobe slightly produced, rounded; basis posterior margin straight, posteroventral corner narrowly rounded or subquadrate; carpus and propodus with few long, slender setae along anterior margin. *Pereopod 7* coxa anterior lobe slightly produced, rounded; basis sexually dimorphic, posterior margin slightly convex, smooth or minutely castelloserrate, not produced posterodistally, posteroventral corner narrowly rounded or subquadrate; merus posterodistal margin narrowly rounded or subquadrate; propodus not expanded posterodistally.

Pleon. *Pleonites/urosomites* without dorsal spines or setae. *Epimera 1–2* posteroventral margin without spines above posteroventral corner. *Epimeron 1* anteroventral corner rounded, without robust seta, posteroventral corner with small acute spine. *Epimeron 2* posteroventral corner acute. *Epimeron 3* ventral margin smooth, posteroventral corner with small acute spine. *Uropod 1* peduncle with basofacial robust seta, without distoventral spine; outer ramus slightly longer than inner. *Uropod 2* peduncle with distolateral comb of short setae; rami slender, outer ramus slightly longer than inner. *Uropod 3* inner ramus short, about 0.5 x outer ramus; outer ramus very long, much longer than peduncle, 2-articulate, article 2 long. *Telson* cleft, slightly longer than broad, tapering distally, without dorsal robust setae, apical margins concave, with 2 short apical/subapical robust setae, with robust setae on outer margins, without robust setae on inner margins.

Female (sexually dimorphic characters). Based on female, 2.7 mm, AM P77596 *Gnathopod 1* carpus sparsely setose laterally. *Gnathopod 2* carpus long, subequal to propodus; propodus sparsely setose posteriorly. *Pereopod 7* basis expanded, posterior margin strongly convex, tapering distally.

Habitat. Among coarse coral sand with pieces of coral on protected beaches, and sub-tidally among coral rubble and sediments, 2–10 m.

Remarks. *Dulzura taylorae* appears to be most similar to *D. paucispinosa* Ledoyer, 1983, from the Glorieuses Islands in the south-western Indian Ocean. The main differences between these species appear to be the peduncle of uropod 1 which has a basofacial robust seta in *D. taylorae* (absent in *D. paucispinosa*) and the posteroventral corner of epimeron 3 which forms a small acute spine in *D. taylorae*, but is apparently sexually dimorphic in *D. paucispinosa* (forming a large acute spine in the female and a narrowly rounded corner with a small acute spine just above it in the male).

Dulzura taylorae is also similar to *D. melitaformis* (Ledoyer, 1979) from Madagascar. However, in *D. taylorae* there is no distal palmar shelf on the propodus of male gnathopod 2 (present in *D. melitaformis*), pereopods 5–6 are slender (broad in *D. melitaformis*), the inner ramus of uropod 3 is half as long as the outer (scale-like in *D. melitaformis*) and the outer ramus is shorter and stouter. The long, narrow outer ramus of *D. melitaformis* is unique in the genus.

Dulzura taylorae differs from the Hawaiian species *D. hamakua* (J.L. Barnard, 1970) in having no dorsal robust setae on the urosome (present in *D. hamakua*) and in the posteroventral corner of epimeron 3 which forms a small acute spine (rounded in *D. hamakua*).

Distribution. *Australia*. Lizard Island: Mermaid Cove; reef between Bird Islet & South Island; Yonge Reef (current study).

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