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TWO NEW SPECIES OF *ONYCOCARIS* (DECAPODA, PALAEMONIDAE) FROM THE CENTRAL PACIFIC

BY

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ABSTRACT

Two new species of the genus *Onycocaris* are described, based on single specimens from Fiji and Moorea respectively. *Onycocaris iti* sp. nov. is closely related to the relatively widespread species, *O. seychellensis* Bruce, 1971; whilst *O. brucei* sp. nov. is a pseudo-cryptic species allied to *O. quadratophthalma* (Balss, 1921).

Key words. — *Onycocaris*, new species, Palaemonidae, Fiji, French Polynesia

RÉSUMÉ

Deux nouvelles espèces du genre *Onycocaris* sont décrites, basées sur des spécimens uniques provenant respectivement de Fidji et de Moorea. *Onycocaris iti* sp. nov. est étroitement apparenté à l'espèce relativement répandue, *O. seychellensis* Bruce, 1971 ; tandis que *O. brucei* sp. nov. est une espèce pseudo-cryptique apparentée à *O. quadratophthalma* (Balss, 1921).

Mots clés. — *Onycocaris*, nouvelles espèces, Fidji, Polynésie française

INTRODUCTION

The Indo-Pacific palaemonid genus *Onycocaris*, currently contains 22 species (De Grave & Fransen, 2011; Komai & Itou, 2012; Bruce, 2013; Marin, 2015). Although the host taxa of several species remain unknown, it has been assumed

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that all species in the genus associate with sponges (Marin, 2015). A few species have been recorded across large geographic ranges. For example, *O. spinosa* Fujino & Miyake, 1969, originally described from the Ryukyu Islands, Japan, has since been recorded from Heron and Lizard Island, Queensland, Australia (Bruce, 1990, 2010; Marin & Caley, 2011; Marin, 2015), as well as Aqaba, Jordan (Ďuriš et al., 2011). However, in sharp contrast, the majority of species in the genus are currently only known, at least in literature, from their respective type series, often consisting of only 1–2 specimens. This can, however, to be assumed to be a mere reflection of the difficulty involved in collecting these ecologically cryptic and small-bodied species.

Here, we describe a further two new species, from Fiji and Moorea, respectively. Unfortunately, the descriptions are based on single specimens, with no ensuing knowledge of character variation. Nevertheless, both specimens are morphologically sufficiently distinct to be considered as novel taxa.

Type material is deposited in the Zoological Collections of the Oxford University Museum of Natural History (OUMNH.ZC). Post-orbital carapace length (pocl) was measured from the posterior margin of the orbit to the posterior margin of the carapace.

TAXONOMY

Order DECAPODA Latreille, 1802
Infraorder CARIDEA Dana, 1852
Family PALAEMONIDAE Rafinesque, 1815
Genus *Onycocaris* Nobili, 1904

Onycocaris iti sp. nov.

(figs. 1-2)

Material examined.— Holotype: female (pocl 1.6 mm), slightly damaged (left third, both fourth and fifth pereiopods missing), Papetoai forereef, Opunohu bay, Moorea, French Polynesia, 17°29.01′S 149°52.13′W, from *Pocillopora* rubble washings, 6 m depth, leg. M. Leray, January 2009; OUMNH.ZC.2010-14-007.

Description.— Rostrum (fig. 1A, B, C) short, about 1.8 times as long as basal width, reaching to distal margin of first segment of antennular peduncle; dorsal carina feebly developed, with two strong, acute, dorsal teeth, positioned in distal half of rostrum; tip acute, up-turned, ventral margin convex, non-dentate, non-setose.

Carapace glabrous, smooth; without supraorbital, epigastric and hepatic teeth; antennal tooth acute (fig. 1B), reaching to distal margin of eye; orbit feebly developed; pterygostomial angle broadly rounded.

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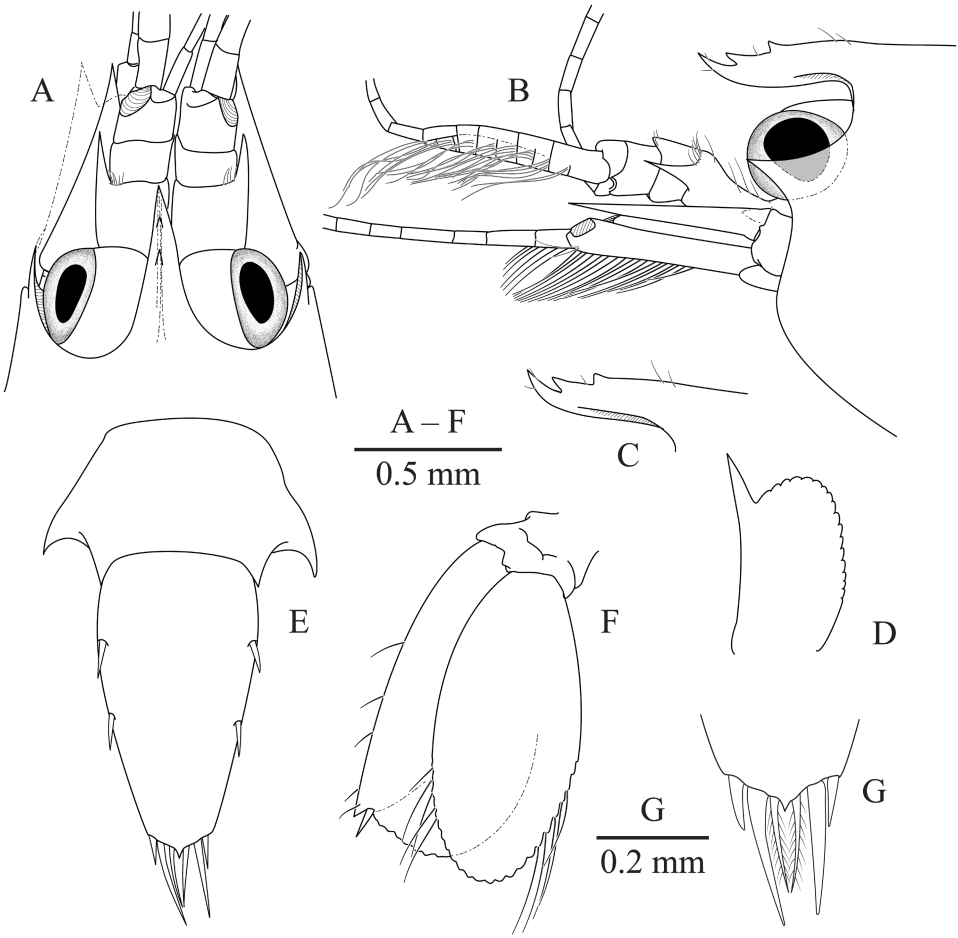

Fig. 1. *Onycocaris iti* sp. nov. Holotype female (OUMNH.ZC.2010-14-007): A, frontal region of carapace, dorsal; B, same, lateral; C, rostrum, lateral; D, scaphocerite, dorsal; E, telson, dorsal; F, Uropod, dorsal.

Abdomen without special features, sixth somite subequal in length to fifth; posterolateral and posteroventral angles well-developed, acute, subequal in size (fig. 1E).

Telson (fig. 1E) about 1.8 times as long as proximal width, lateral margins convex, with two pairs of small, sub-marginal dorsal spiniform setae, inserted at 0.4 and 0.6 of telson length; posterior margin (fig. 1 G) with moderately developed median tooth and three pairs of spiniform setae, intermediate pair about 2.5 times longer than lateral pair, submedian pair slightly shorter, setulose.

Antennule (fig. 1A, B) with proximal segment about twice as long as wide; anterolateral margin with strong distal tooth, over-reaching distal margin of

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intermediate segment; statocyst poorly developed, statolith absent; intermediate segment shorter in length than distal segment; upper flagellum biramous, rami with first six segments fused, short free ramus with single segment.

Antenna (fig. 1B) with stout, unarmed basicerite; carpocerite well-developed, as long as scaphocerite; lamella of scaphocerite about 1.75 times as long as wide, lateral margin mildly convex, with strong distal tooth, far exceeding distal margin of lamella (fig. 1D).

Eye (fig. 1A) semi-quadrate, cornea hemispherical, well-facetted; eyestalk swollen, length subequal to corneal diameter.

Mouthparts not dissected, typical for genus in external observation.

Thoracic sternites unarmed.

First pereiopod (fig. 2A) long, slender; chela with palm subcylindrical, slightly compressed; fingers short, about 0.35 of palm length, tips simple; carpus subcylindrical, distally slightly wider, about 1.5 times as long as chela; merus subequal in length to carpus.

Major second pereiopod (fig. 2B, C) with robust chela, sub-oval in section, about twice as long as maximal depth; dactylus about 0.62 times length of palm, with stout, hooked, blunt tip, cutting edge with two well-developed teeth, proximal one with corresponding fossa on fixed finger; fixed finger robust, with proximal boss and two well-developed teeth, proximal-most teeth with corresponding fossa on dactylus; carpus vase-shaped, antero-lateral margin with mesial tooth; merus about 1.4 as long as carpus, medial margin finely tuberculate; ischium short, about 0.7 times as long as merus, unadorned.

Minor second pereiopod (fig. 2D–G) robust, smaller and dissimilar to major second pereiopod; medially excavated, sub-oval in section, about twice as long as maximal depth; dactylus about 0.5 of palm length, cutting edge serrated, distally serration more pronounced, tip simple; fixed finger deeply divided in distal quarter; cutting edges serrated, distally serration more pronounced, tip(s) simple; carpus vase-shaped, antero-lateral margin with mesial tooth; merus about 1.1 times as long as carpus, medial margin very finely tuberculate; ischium short, about 0.6 times as long as merus, unadorned.

Third pereiopod (fig. 2H, I) propodus with five single spiniform setae along medial margin, mediodistal margin with pair of spiniform setae; medial margin of dactylus highly ornamented (fig. 2J).

Uropods (fig. 1F) as illustrated, without special features.

Etymology.— From the Tahitian word, *iti*, meaning small, in reference to the small size of the holotype. Used as a noun in apposition.

Type locality and distribution.— Papetoai forereef, Opunohu bay, Moorea, French Polynesia; currently only known from the type locality.

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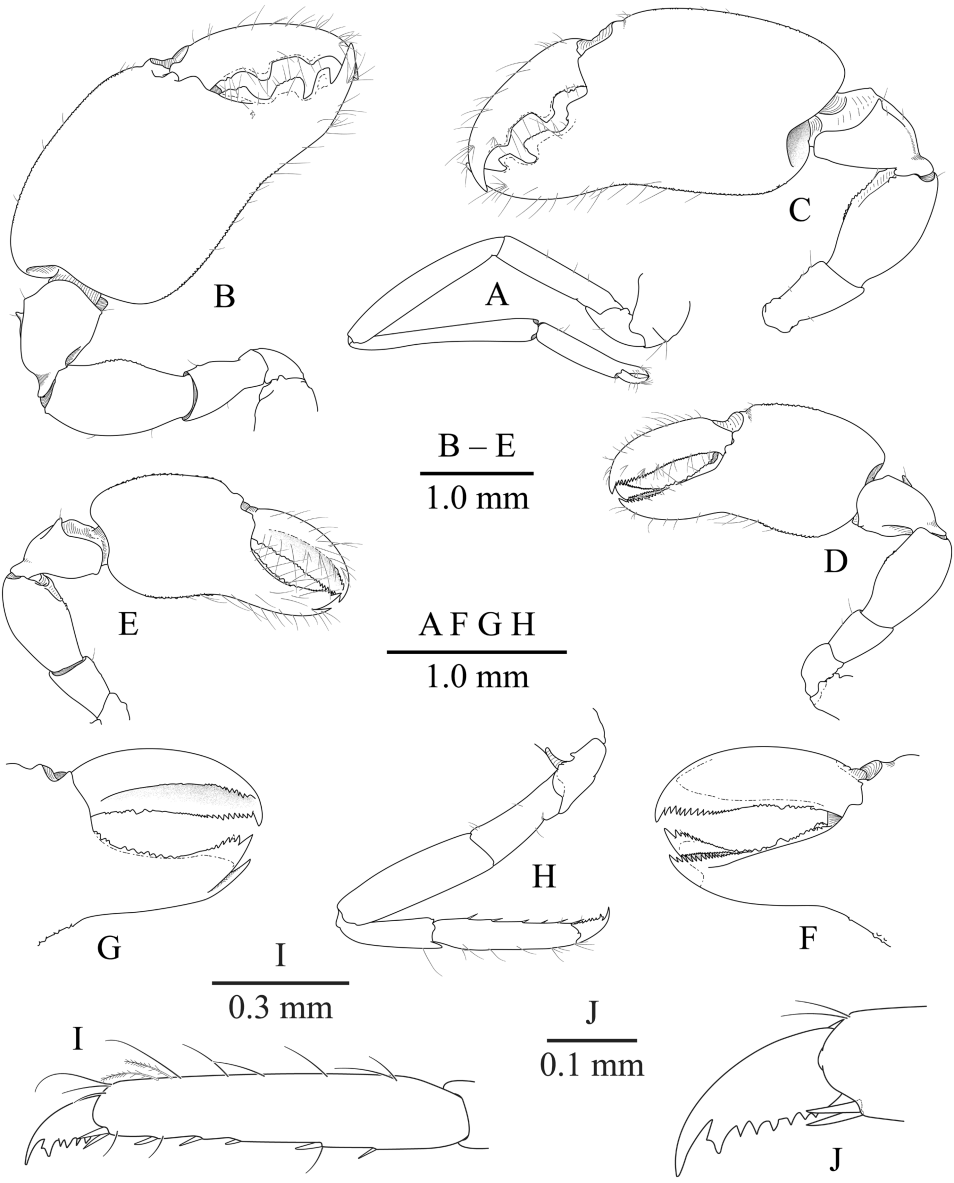

Fig. 2. *Onycocaris iti* sp. nov. Holotype female (OUMNH.ZC.2010-14-007): A, first pereiopod, lateral; B, major second pereiopod, lateral; C, same, mesial; D, minor second pereiopod, lateral; E, same, mesial; F, same, fingers, lateral; G, same, mesial; H, third pereiopod, mesial; I, same, propodus and dactylus, lateral; J, same, distal portion of propodus and dactylus, lateral.

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Ecology.— No details are available, but probably associated with encrusting sponges.

Remarks.— The presence of a dorsally dentate rostrum, at once separates *O. iti*. sp. nov., from all but 8 previously described species in the genus; to wit *O. furculata* Bruce, 1979; *O. longirostris* Bruce, 1980; *O. nieli* Bruce, 2011a; *O. profunda* Bruce, 1985; *O. rudolfi* Marin, 2015; *O. seychellensis* Bruce, 1971a; *O. temiri* Marin, 2005; and *O. zanzibarica* Bruce, 1971b.

The presence of a well-developed antennal tooth in the new species (vs. absent in *O. furculata*), the lateral tooth of the scaphocerite far over-reaching the distal margin of the lamella (vs. short in *O. furculata*), as well as details of the ornamentation of the cutting edges of the minor second chela, separates the new species from *O. furculata*, known only from La Réunion (Bruce, 1979).

The new species can easily be separated from *O. longirostris* (currently known from New Caledonia and Western Australia, *fide* Bruce, 2012) by the shape of the antennal tooth (compare fig. 1B with fig. 7A in Bruce, 1980), the differently shaped scaphocerite with a more developed lateral tooth (compare fig. 1D with fig. 7E in Bruce, 1980), the differential ornamentation of the dactylus of the third pereiopod (compare fig. 2J with fig. 10E in Bruce, 1980) and the absence of a large disto-ventral tooth on the merus of the major second chela vs. present in *O. longirostris* (see Bruce, 1980, 2012).

Onycocaris profunda is only known from a single damaged female specimen, obtained from 81–84 m depth in the Philippines (Bruce, 1985). Compared to that species, *O. iti* sp. nov. has a much longer rostrum, over-reaching the distal margin of the eyes (vs. shorter in *O. profunda*), a more developed antennal tooth (vs. short) and a less elongate first pereiopod (vs. elongate in *O. profunda*).

The new species can easily be separated from *O. rudolfi*, currently also only known from Moorea (Marin, 2015) by a less elongate first pereiopod (vs. elongate in *O. rudolfi*), the overall shape of the minor second pereiopod (compare fig. 2E with fig. 12D in Marin, 2015), as well as the chela being medially excavated (vs. not in *O. rudolfi*) and the presence of a small, medial tooth on the distal telson margin (vs. absent in *O. rudolfi*).

The female holotype of *O. iti* is rather similar in rostrum shape and size to the male allotype of *O. temiri*, currently only known from Vietnam (Marin, 2005); also sharing a well-developed antennal tooth with the species. Nevertheless, both species can easily be separated by the medially excavated chela of the minor second pereiopod (vs. non-excavated in *O. temiri*) and the less developed median tooth on the distal margin of the telson (vs. strongly developed in *O. temiri*).

The rostrum of the new species is similar to *O. nieli*, a species only known from a single specimen from Heron Island (Queensland), with evidently the major

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chela being a regenerated minor chela, in view of their complete absence of dimorphism (see Bruce, 2011a). Should that species be valid, the new species can be separated from it by the shape of the pterygostomial margin being quadrate (vs. completely obsolete in *O. nieli*), the medially excavated chela of the minor second pereiopod (vs. non-excavated in *O. nieli*), as well as the secondary unguis of the third pereiopod being subdivided (vs. simple in *O. nieli*).

The new species can be easily separated from *O. zanzibarica* by the pterygostomial margin being quadrate (vs. protruding in *O. zanzibarica*), the more developed antennal tooth (vs. shorter in *O. zanzibarica*), the lateral tooth of the scaphocerite far over-reaching the distal margin of the lamella (vs. not reaching in *O. zanzibarica*) and the lack of a bifurcating, denticulate flange along the distal margin of the fixed finger of the major chela (vs. present in *O. zanzibarica*, see fig. 2C in Bruce, 1971b).

Overall, the new species is rather similar to *O. seychellensis*, a species known from the Seychelles (Bruce, 1971a), Kenya (Bruce, 1976) and Fiji (Bruce, 1981). Strong similarities are apparent in the shape and dentition of the rostrum, the subspatulate minor chela, the ornamentation of the dactylus of the third pereiopod and the shape of the scaphocerite (see Bruce, 1971a, 1981). However, the ornamentation of the fixed and moveable fingers of the major chela easily separates both species. Notably, in the new species the fixed finger is provided with two large, blunt teeth and is distally not bifurcated, vs. a single blunt tooth and distally bifurcating in *O. seychellensis* (compare fig. 2B, C vs. fig. 5c in Bruce, 1971a and fig. 5B in Bruce, 1981).

Onycocaris brucei sp. nov.

(figs. 3–4)

Material examined.— Holotype: subadult female (pocl 1.1 mm), Serua Reef Pass, Fiji, 18°17.861′S 177°55.830′E, from consolidated coral rubble washings, 24–26 m depth, leg. N.L. Bruce and M. Kaz, October 2015; OUMNH.2005-09-063.

Description.— Rostrum (fig. 3A, B) very short, about 0.4 times as long as basal width; dorsal carina feebly developed, dorsally and ventrally non-dentate, non-setose.

Carapace glabrous, smooth; without supraorbital, epigastric, hepatic and antennal teeth (fig. 3B); suborbital and pterygostomial angles broadly rounded (fig. 3A).

Abdomen without special features, sixth somite subequal in length to fifth; posterolateral and posteroventral angles well-developed, acute, subequal in size (fig. 3C).

Telson (fig. 3C) about 2.0 times as long as proximal width, lateral margins convex, with two pairs of small, sub-marginal dorsal spiniform setae, inserted

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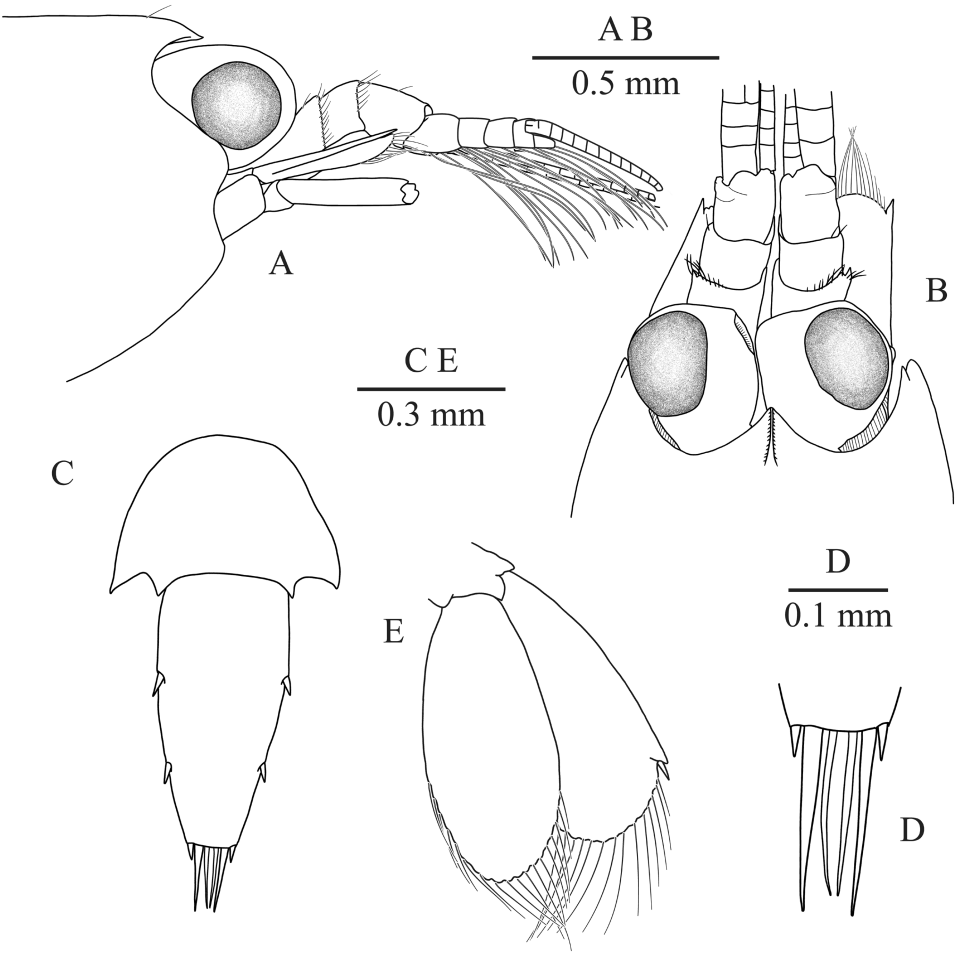

Fig. 3. *Onycocaris brucei* sp. nov. Holotype female (OUMNH.ZC.2005-09-063): A, frontal region of carapace, lateral; B, same, dorsal; C, telson, dorsal; D, same, tip of telson, dorsal; E, uropod, dorsal.

at 0.4 and 0.7 of telson length; posterior margin (fig. 3D) without median tooth; three pairs of spiniform setae present, intermediate pair about 2.5 times longer than lateral pair, submedian pair slightly shorter, setulose.

Antennule (fig. 3A, B) with proximal segment about twice as long as wide; anterolateral margin with short tooth, not reaching midlength of intermediate segment; statocyst poorly developed, statolith absent; intermediate segment shorter in length than distal segment; upper flagellum biramous, rami with first four segments fused, short free ramus with single segment.

Antenna (fig. 3B) with lamella of scaphocerite about 2.2 times as long as wide, lateral margin straight, with short distal tooth, slightly exceeding distal margin of lamella.

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Eye (fig. 1A) semi-quadrate; cornea offset, hemispherical, well-facetted; eyestalk swollen, length subequal to corneal diameter.

Mouthparts not dissected, typical for genus in external observation.

Thoracic sternites unarmed.

First pereiopod (fig. 4A) long, slender; chela with palm subcylindrical, slightly compressed; fingers short, about 0.32 of palm length, tips simple; carpus subcylin-

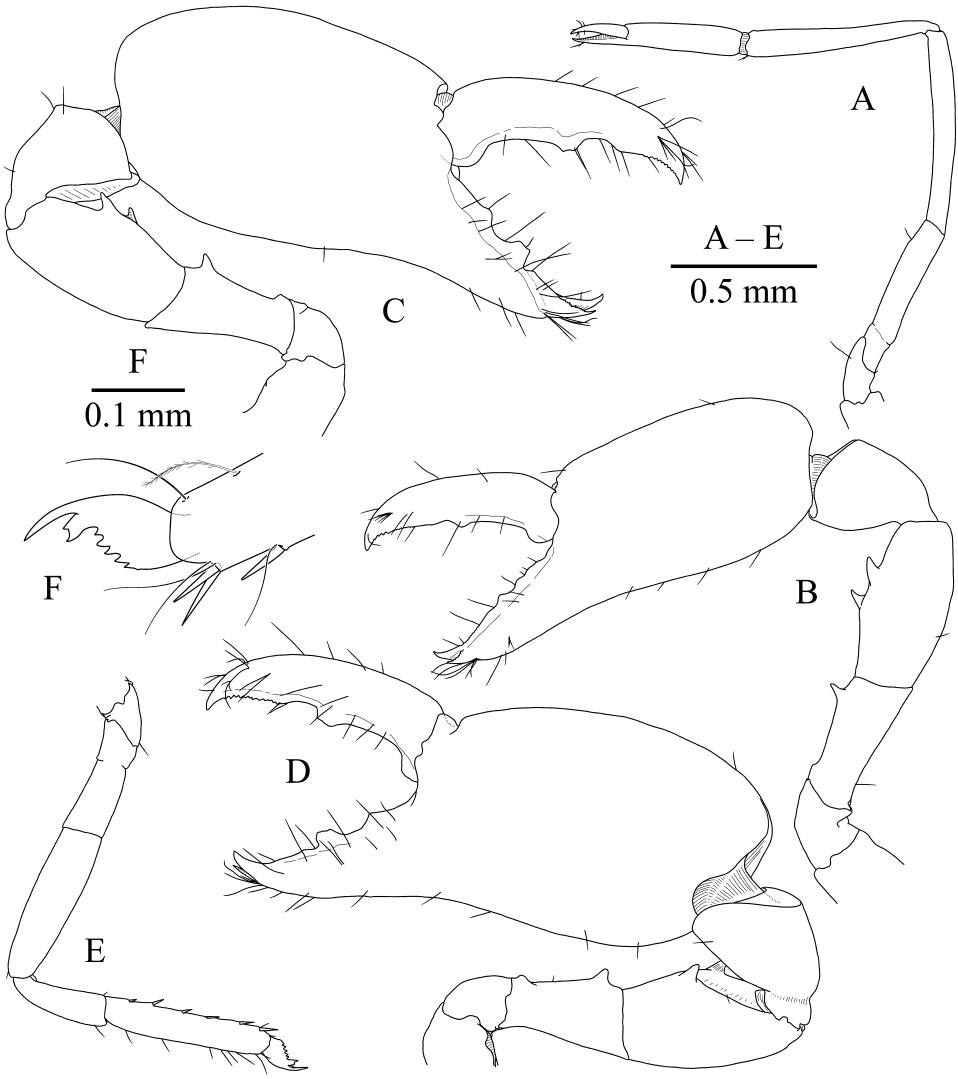

Fig. 4. *Onycocaris brucei* sp. nov. Holotype female (OUMNH.ZC.2005-09-063): A, first pereiopod, lateral; B, minor second pereiopod, lateral; C, major second pereiopod, lateral; D, same, mesial; E, third pereiopod, lateral; F, same, distal portion of propodus and dactylus, lateral.

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drical, distally slightly wider, about 1.5 times as long as chela; merus subequal in length to carpus.

Minor second pereiopod (fig. 4B) robust, smaller and dissimilar than major second pereiopod; sub-oval in section, about 2.5 times as long as maximal depth; dactylus about 0.75 of palm length, cutting edge smooth (except distal portion), low tooth(boss) present at mid-length, tip simple; fixed finger with cutting edges smooth, tip simple, two poorly developed teeth at about mid-length, poorly developed submarginal flange distolaterally; carpus vase-shaped; merus about 1.7 times as long as carpus, medial margin with two, sharp teeth; ischium about 0.75 times as long as merus, medial margin subdistally with pronounced tooth..

Major second pereiopod (fig. 4C, D) with robust chela, sub-oval in section, about 2.5 times as long as maximal depth; dactylus about 0.64 times length of palm, with stout, hooked, blunt tip, cutting edge with single, low tooth, at about mid-length followed by a fossa; cutting edge denticulate from fossa to tip; fixed finger with corresponding low tooth and fossa to dactylus, tip distally with weakly developed bifurcation; carpus vase-shaped; merus about 1.3 times as long as carpus, subdistally excavated, medial and lateral margin with sharp tooth below excavation; ischium short, about 0.72 times as long as merus, subdistally with blunt tooth.

Third pereiopod (fig. 4E) propodus with five single spiniform setae along medial margin, mediodistal margin with pair of spiniform setae; medial margin of dactylus highly ornamented (fig. 4F). Fourth and fifth pereiopods similar to third, slight more robust, propodi armed with three spiniform setae along medial margin and distal pair.

Uropods (fig. 3E) as illustrated, without special features.

Etymology.— Named in memory of A.J. “Sandy” Bruce (1929–2022), undisputed master of commensal Palaemonidae taxonomy, who described over half of the known species of *Onycocaris*.

Type locality and distribution.— Serua Reef Pass, Fiji; currently only known from the type locality.

Ecology.— No details are available, but probably associated with encrusting sponges.

Remarks.— Within the genus, *O. brucei* sp. nov. shares the presence of a very short rostrum with fourteen species. Of these, only three species have the distal tip of the fixed finger of the minor cheliped not bifurcated, forming a cavity into which the tip of the dactylus slots. These species are *O. amakusensis* Fujino & Miyake, 1969, known from the western Indian Ocean, Japan, Vietnam and possibly French Polynesia (Marin, 2015); *O. stradbrokei* Bruce, 1998, only known from the type series from Moreton Bay (Australia) and *O. quadratophthalma* (Balss,

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1921), currently known with certainty only from Western Australia and possibly Hong Kong, as the existence of a species complex has been inferred (Bruce & Coombes, 1995; Bruce, 2011b) and records from throughout its reported range require reassessing. *Onycocaris fujinoi* Bruce, 2011b was also described as lacking a bifurcated tip of the fixed finger, although the original description of those specimens by Fujino & Miyake (1969, as *O. quadratophthalma*; specimens from Japan only, see Bruce, 2011b) clearly stated the tip to be bifurcated (see also Komai & Itou, 2012).

A number of characteristics easily separate the new species from *O. amakusensis* (illustrated by Miyake & Fujino, 1967 as *O. quadratophthalma*) and *O. stradbrokei*. Notably, these are the poorly developed distolateral flange along the distal part of the fixed finger of the minor cheliped (vs. well developed in both *O. amakusensis* and *O. stradbrokei*); the presence of two teeth on the mesial margin of the merus minor cheliped (vs. absent in *O. amakusensis*, single tooth present in *O. stradbrokei*), the distally excavated subdistal medial margin flanked by two teeth of the major cheliped (vs. absent in both *O. amakusensis* and *O. stradbrokei*), as well as the much shorter rostrum (not reaching distal margin of pterygostomial angle in *O. brucei* sp. nov. vs. reaching to or slightly over-reaching in *O. amakusensis* and *O. stradbrokei*).

Balss (1921) described *O. quadratophthalmus* on the basis of a single, ovigerous female from Cape Jaubert, and although the description is very brief, an illustration is provided of a dorsal view of the carapace, frontal appendages and pereiopods 1–4. Fujino & Miyake (1969) re-examined the holotype, noting that all pereiopods and certain mouthparts were missing and provided several further illustrations, to wit a dorsal view of the frontal part of the carapace and appendages, telson, basal portion of the antennule and the scaphocerite. Based on these illustrations, it is evident that *O. brucei* is closely related to *O. quadratophthalmus*, sharing with it the quadrate eyes, the very short rostrum and the poorly developed stylocerite. Nevertheless, both species can be easily differentiated by the dentition on the ischium and merus of both minor and major chelipeds (vs. absent in *O. quadratophthalmus*, cf. fig. 7 in Balss, 1921), whilst further differences are the position and size of the dorsal telson spines (compare fig. 3C with fig. 18a in Fujino & Miyake, 1969), and the size of the distal tooth on the scaphocerite (compare fig. 3B with fig. 18f in Fujino & Miyake, 1969).

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