

***Conleyus defodio*, a new genus and new species of carcinoplacine crab
(Crustacea: Brachyura: Goneplacidae) from deep rubble beds in
Guam**

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Abstract—A new genus and new species of carcinoplacine crab is described from the rubble beds of Guam. The external appearance of *Conleyus defodio* resembles members of *Planopilumnus* (Planopilumninae) but its reproductive structures are typically carcinoplacine.

Introduction

Among the collections collected from coral rubble beds was a most remarkable carcinoplacine crab with reduced pigmentation, and eyes which cannot be assigned to any known genus or species. It is here described as new.

Measurements provided are of the carapace widths and lengths respectively. The abbreviations G1 and G2 are used for the male first and second pleopods respectively. The types are deposited in the Florida Museum of Natural History, University of Florida (UF), Gainesville, Florida; and Zoological Reference Collection (ZRC), Raffles Museum of Biodiversity Research, National University of Singapore.

Taxonomy

Family Goneplacidae MacLeay, 1838
Subfamily Carcinoplacinae H. Milne Edwards, 1852
Conleyus, new genus

Diagnosis: Dorsal surface of carapace gently convex, regions poorly demarcated; postorbital cristae sharp, outer edges reaching second anterolateral tooth; epigastric cristae sharp, of postorbital cristae. Frontal margin deflexed, with prominent subparallel granulated ridge just behind true margin. External orbital tooth lobiform; first and second teeth prominent. Basal antennal segment subquadrate, relatively narrow; antennules folding transversely. Merus of third maxilliped with anteroexternal angle triangularly auriculiform. Cheliped unequal in adult males. Ambulatory legs long, slender; propodus of first 3 legs styliiform; dactylus of fourth leg subspatuliform. Thoracic sternites 1 and 2 and separated by ridged suture; sternites 3 and 4, and 4 and 5 separated by deep sutures; sternite 4

with longitudinal groove Penis coxo-sternal. Male abdomen relatively broad; all segments freely articulating. G1 sinuous, distal part directed upwards; distal part lined with short sharp spines, without long setae; G2 as long as G1, basal segment much longer than distal segment.

Type species: *Conleyus defodio*, new species, by present designation.

Etymology: The genus is named after the late Mr. Harry T. Conley, collector extra-ordinaire, whose explorations of the rubble beds of Guam has led to many interesting discoveries for carcinology. The gender is masculine.

Remarks: With regards to the features of the carapace, in particular the form of the cristae and teeth, *Conleyus* somewhat resembles members of the genus *Planopilumnus* Balss, 1933, of the subfamily Planopilumninae Serène, 1984. As was recently discussed by Ng & Clark (2000a, b) and Ng et al. (2001), *Planopilumnus* s. str. is actually not a pilumnid or even a xanthid, but should be referred to the Goneplacidae for the time being. The G1 of *Planopilumnus spongiosus* (Nobili, 1905), the type species of *Planopilumnus*, is stout and the G2 is shorter than half the length of the G1 (unpublished data). This is quite different from the longer G2 of *Conleyus*. In any case, members of the genus *Planopilumnus* are far more hirsute in their carapace and appendages compared to *Conleyus*.

Conleyus also bears a superficial resemblance to more typical carcinoplacines like *Intesius* Guinot & Richer de Forges, 1981, and *Platypilumnus* Alcock, 1894 (see also Richer de Forges 1996; Ng & Chan 1997), but its carapace (and G1) features differ so markedly that we have little doubt that they are not congeneric. Both these genera are also typically deeper water taxa, found well below 300 m. In the form of its male abdomen (all segments freely articulating), the stout G1 and relatively long G2 (exceeding half the length of the G1) (see also Ng & Guinot 1999), *Conleyus* is clearly a member of the Carcinoplacinae.

Some of the features associated with *Conleyus*, viz. the poorly pigmented carapace, elongated ambulatory legs and relatively reduced orbits are adaptations associated with obligate cavernicolous animals (see Guinot 1988, 1994). These features are also present in species living in deep waters. Considering the habitat where *Conleyus* was collected from, i.e. deep coral rubble beds, it is not surprising that it has features associated with such organisms. Nevertheless, on the basis of just two specimens, not much else can be said about its preferred habitat.

Conleyus defodio, new species
(Figs. 1-5)

Material examined: Holotype – male (16.4 by 12.2 mm) (UF 2098), Luminiao fore-reef, 220 feet deep, in coral rubble, Guam, coll. H. T. Conley, October 1999. Paratype – 1 male (9.4 by 7.1 mm) (ZRC 2002.175), Luminiao Reef, metre deep in rubble, ca. 30 m depth, Guam, coll. B. Hencke, March 2001.

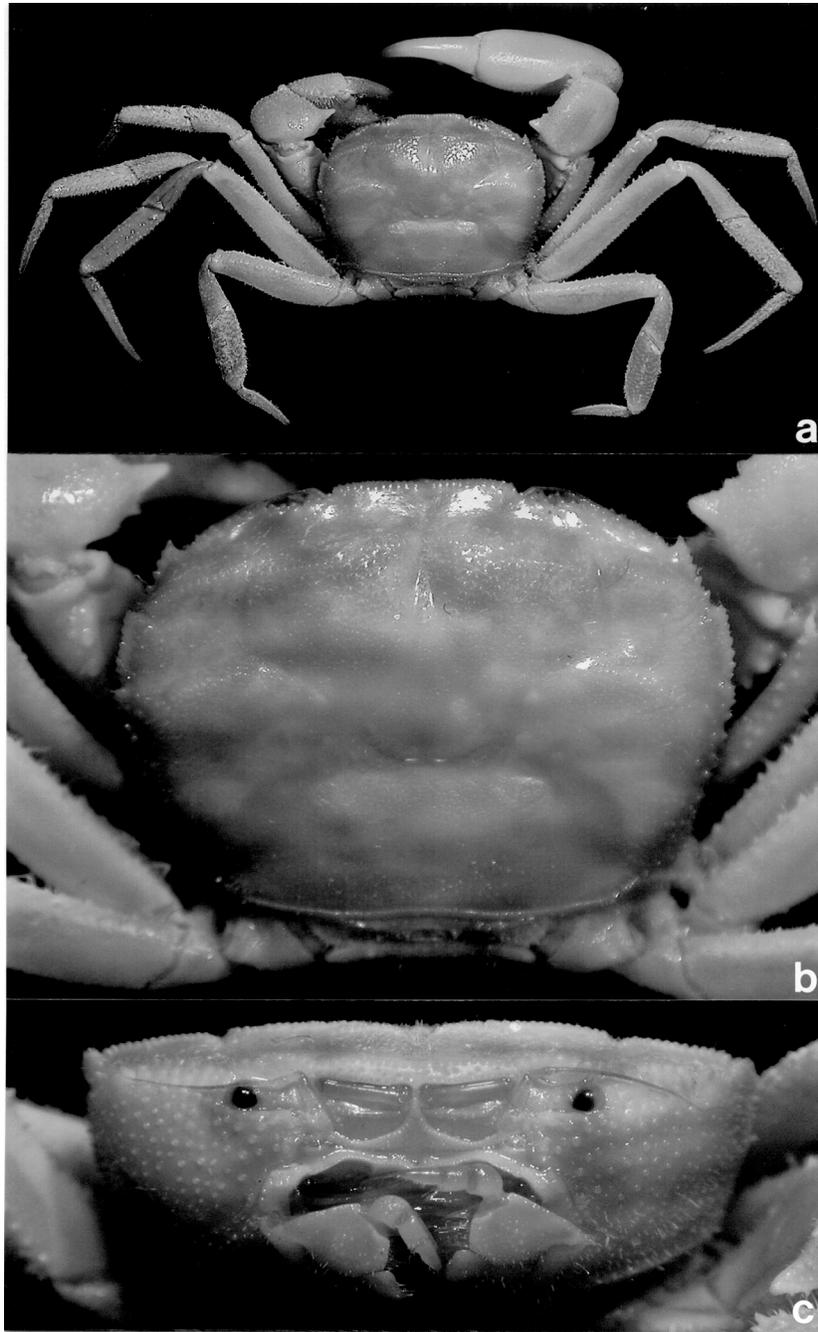


Figure 2. *Conleyus defodio*, new species. Holotype male (16.4 by 12.2 mm) (UF 2098). a, overall view; b, frontal view; c, left chela.

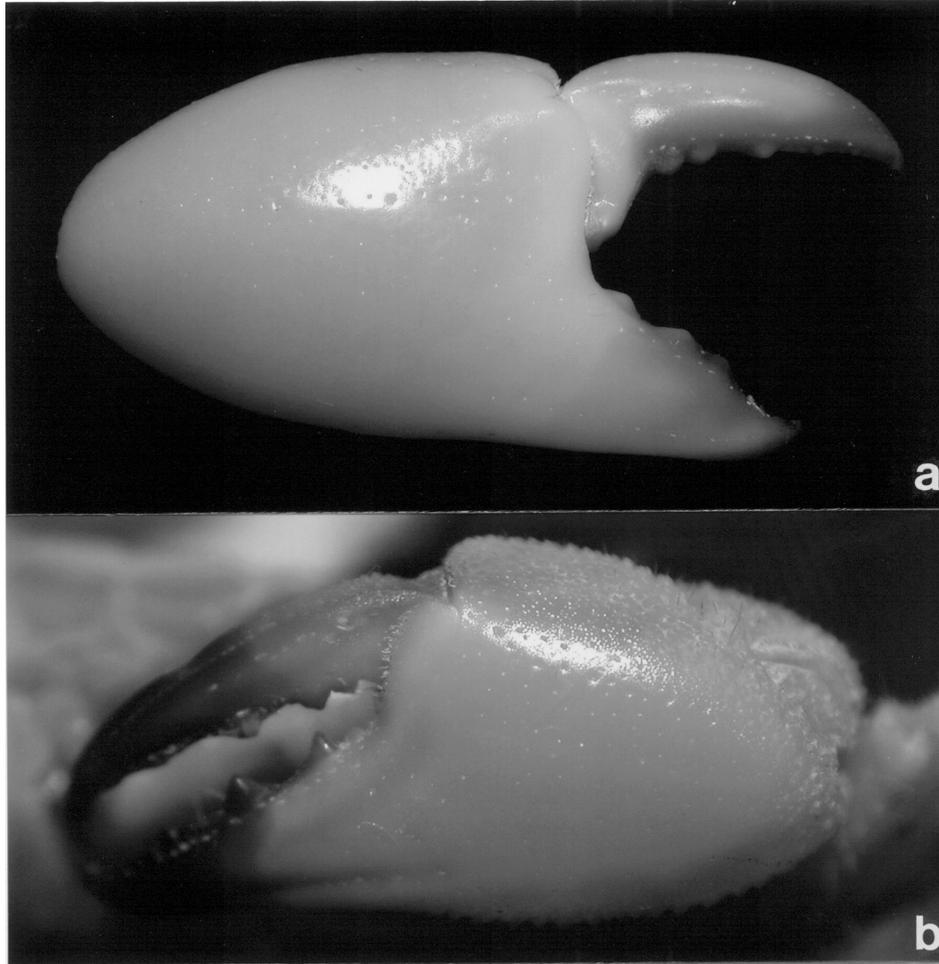


Figure 3. *Conleyus defodio*, new species. Holotype male (16.4 by 12.2 mm) (UF 2098). a, major right chela; b, minor left chela.

Description of holotype: Carapace transversely quadrate, distinctly broader than long; dorsal surface of carapace gently convex, regions weakly demarcated. Postorbital cristae sharp, prominent, lined by rounded granules; separated into 2 halves by cervical groove, outer edges reaching second anterolateral tooth. Epigastric cristae sharp, granulated, anterior of but clearly separated from postorbital cristae by gap. Frontal margin relatively straight from dorsal view, deflexed strongly, granulated, not visible from dorsal view, with prominent subparallel granulated ridge just behind true margin which is visible from dorsal view; from frontal view, front appears to be double-ridged; 2 broadly truncate

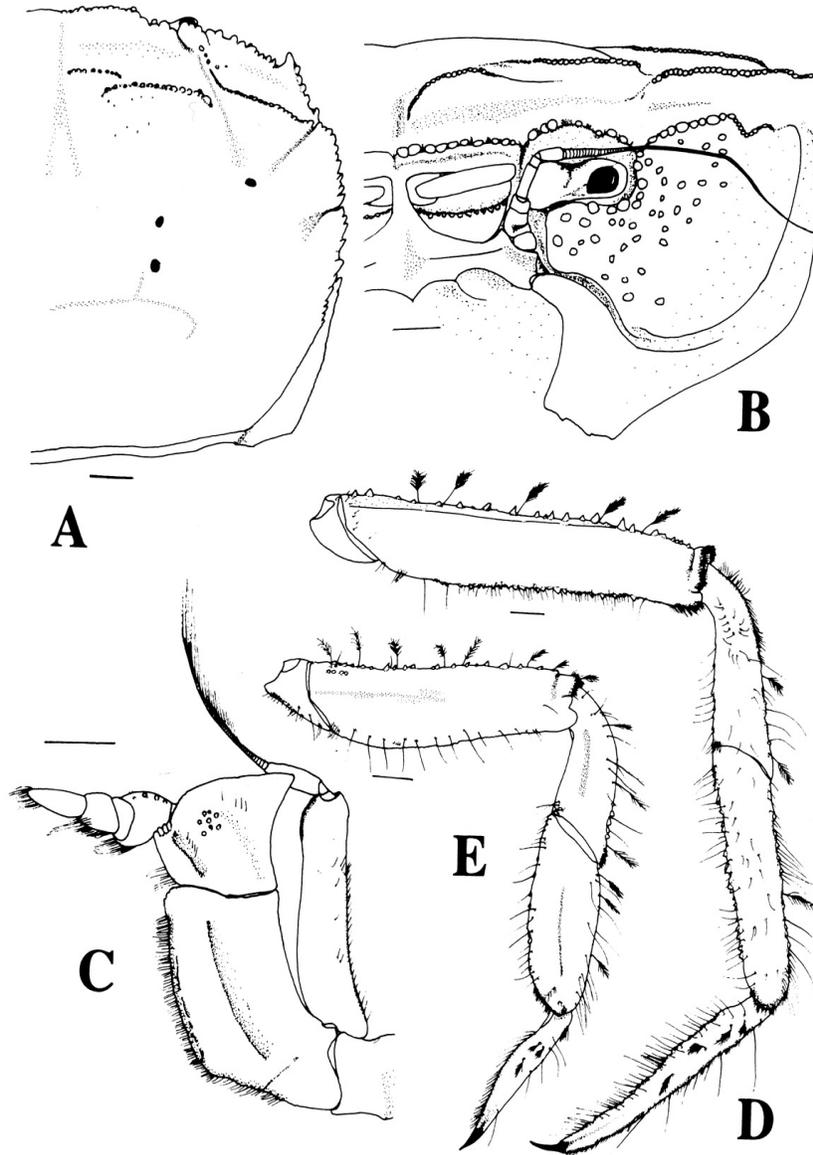


Figure 4. *Conleyus defodio*, new species. Holotype male (16.4 by 12.2 mm) (FMNH). A, carapace (denuded); B, frontal view (denuded); C, left third maxilliped; D, right third ambulatory leg; E, right fourth ambulatory leg. Scales = 1.0 mm.

frontal lobes discernible, separated by shallow notch. H-shaped groove relatively shallow. Anterolateral margin gently convex; external orbital tooth low, lobi-form, broad, lined with large conical granules; first tooth prominent, sharp, margins lined with sharp granules; second tooth lower, margins lined with granules, marks beginning of posterolateral margin. Posterolateral margin gently convex, gradually converging towards gently sinuous posterior carapace margin; margin prominently granulated, especially along anterior part. Sub-hepatic and sub-orbital regions distinctly granular. Supraorbital margin granulated, with submedian fissure, inner and outer angles not well demarcated from rest of margin by tooth or spine. Infraorbital margin granulated, without prominent spine or tooth. Basal antennal segment subquadrate, relatively narrow, segment 3 slender, relatively long, flagellum very long. Antennules folding transversely; basal segment with transverse row of granules. Posterior margin of epistome sinuous, with prominent median triangular lobe which is divided medially by deep fissure; lateral margin with lower triangular lobe and cleft. Third maxilliped relatively elongate, surfaces gently granular. Ischium separated from basis by prominent suture, with distinct oblique median sulcus, inner margin uneven. Merus with inner margin granular, anteroexternal angle prominent triangular auriculiform projection. Exopod straight, with well developed flagellum.

Chelipeds unequal. Carpus covered with sharp granules, especially on outer surface; inner distal angle with well developed sharp tooth, with proximal sub-basal tubercle. Merus with margins distinctly granulated. Dorsal margin of minor chela somewhat raised and subcristate, slightly bent inwards; dorsal and ventral margins lined with sharp granules; outer surface finely granular to pitted; fingers shorter than palm, pigmented on distal half; gaping along most of length when closed; cutting edges with well developed teeth and denticles. Outer and inner surfaces as well as margins of major chela smooth, without granules; fingers shorter than palm, pigmented on posterior half; cutting edges with several prominent teeth and denticles.

Ambulatory legs long, relatively slender; second leg longest. Outer surfaces faintly granular to smooth, margins especially lined with long stiff simple or plumose setae but not obscuring margins or surface. Dorsal and ventral margins of merus lined with sharp granules, some of those on dorsal margin spiniform. Dorsal margin of carpus appears serrated. Dorsal and ventral margins of propodus gently serrated. Dactyli of first 3 ambulatory legs long, slender, styliform with corneous tip; dactylus of fourth leg relatively shorter, subspatuliform. Thoracic sternum with surfaces faintly granular except for area near abdomen which is more distinctly granular. Sternites 1 and 2 and separated by ridged suture. Sternites 3 and 4 separated by deep, almost straight suture. Sternites 3 and 4 separated by complete suture which is prominently concave towards abdomen. Sternite 4 with prominent longitudinal groove which continues into abdominal cavity. Sternite 5 medially interrupted by complete plate.

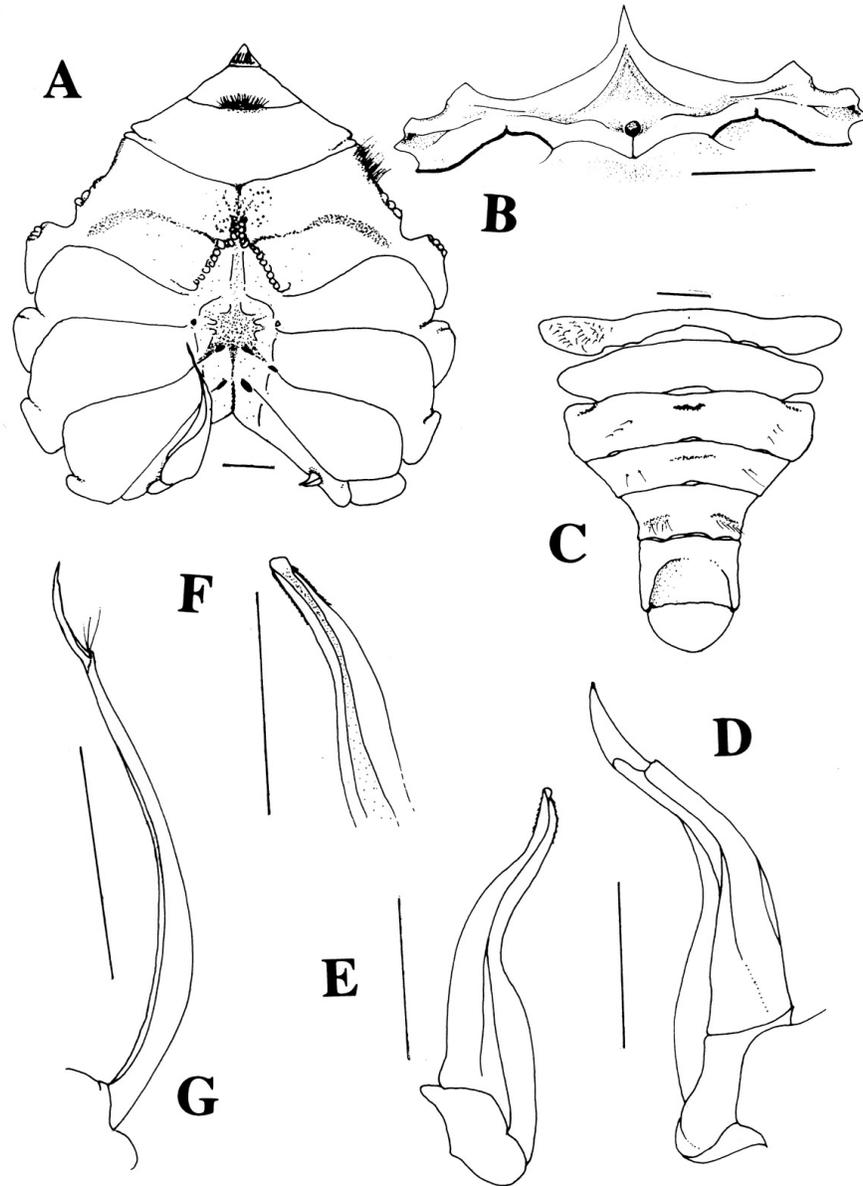


Figure 5. *Conleyus defodio*, new species. Holotype male (16.4 by 12.2 mm) (FMNH). A, thoracic sternum; B, epistome; C, abdomen; D-F, left G1 (denuded); G, left G2 (denuded). Scales = 1.0 mm.

Sternites 6-8 with well developed longitudinal median groove. Press button lock for abdomen on proximal part of sternite 5. Penis coxo-sternal, lodged in covered channel in sternite 8, but still completely mobile with coxa.

Male abdomen relatively broad; all segments freely articulating. Telson semicircular. Segment 6 rectangular with slightly concave lateral margins. Segments 3-5 progressively less trapezoidal in shape; lateral margins of segments 5 and 6 concave, those of segment 3 convex. Segment 2 as wide as segment 3 with rounded lateral margins. Segment 1 very broad, subtrapezoidal.

G1 sinuous, distal part directed upwards; distal part lined with short sharp spines; tip slightly flared. G2 as long as G1, basal segment much longer than distal segment, junction with cup-like structure and some setae.

Etymology: The species name means “deep digging” and is derived from the Latin “fodio” for dig, alluding to the deep rubble beds the type specimen was collected from. The name is used as a noun in apposition

Colour: Reddish-orange in general with ventral surfaces and parts of carapace, chelipeds and legs white (Fig. 1).

Remarks: See remarks for genus. The paratype male specimen, although smaller than the holotype, agrees with it in all major characters, except that its chelae are relatively less well developed, the spinules on the ambulatory legs are relatively sharper and the living colour is somewhat paler.

Both specimens were collected in approximately the same area and habitat, deep under coral rubble.

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References

- Guinot, D. 1988. Les crabes cavernicoles du monde. *Mémoires Biospéologie* 15: 3-40.
- Guinot, D. 1994. Decapoda Brachyura. In C. Juberthie and V. Decou (eds.), *Encyclopaedia Biospéologica*. Tome 1. Société de Biospéologie, Moulis (CNRS) and Bucarest (Académie Roumaine), pp. 165-179, pl. 3.
- Guinot, D. & B. Richer de Forges. 1981. Crabes de profondeur, nouveaux ou rares, de l'Indo-Pacifique (Crustacea, Decapoda, Brachyura) (Première partie). *Bulletin du Muséum d'Histoire naturelle, Paris* (4)2(A4): 1113-1153, pls. 1-7.

- Ng, P. K. L. & T.-Y. Chan. 1997. Two newly recorded crab genera (Crustacea: Decapoda: Brachyura) from Taiwan: *Platypilumnus* (Goneplacidae) and *Trachycarcinus* (Atelecyliidae). *Journal of Taiwan Museum* 50: 107-112.
- Ng, P. K. L. & P. F. Clark. 2000a. The Indo-Pacific Pilumnidae XII. On the familial placement of *Chlorodiella bidentata* (Nobili, 1901) and *Tanaocheles stenochilus* Kropp, 1984 using adult and larval characters with the establishment of a new subfamily, Tanaochelinae (Crustacea: Decapoda: Brachyura). *Journal of Natural History* 34: 207-245.
- Ng, P. K. L. & P. F. Clark. 2000b. The eumedonid file: a case study of systematic compatibility using larval and adult characters (Crustacea: Decapoda: Brachyura). *Invertebrate Reproduction and Development, Israel* 38(3): 225-252.
- Ng, P. K. L. & D. Guinot. 1999. On a new species of deep-water crab of the genus *Progeryon* (Decapoda, Brachyura, Geryonidae) from Hawaii. *Crustaceana* 72(7): 685-692.
- Ng, P. K. L., C.-H. Wang, P.-H. Ho & H.-T. Shih. 2001. An annotated checklist of brachyuran crabs from Taiwan (Crustacea: Decapoda). *National Taiwan Museum Special Publication Series, Taipei, Number 11*: 1-86, 8 colour plates.
- Richer de Forges, B. 1996. The genus *Platypilumnus* Alcock and description of *P. jamiesoni* n. sp. from New Caledonia (Crustacea, Decapoda, Brachyura). *Records of the Australian Museum* 48: 1-6.

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