

## Crabs from the Kermadec Islands in the South Pacific

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**Abstract** A collection of crabs from the Kermadec Islands in the South Pacific held in the Museum of New Zealand Te Papa Tongarewa contains 52 species in 17 families. Of these, 4 species of Leucosiidae, 2 species of Parthenopidae and 1 species of Xanthidae are not identified to species, while 1 species (*Caphyra acheronae*) of Portunidae, 3 species (*Liomera yaldwyni*, *Platypodia delli* and *Xanthias dawsoni*) of Xanthidae and 1 species (*Actumnus griffini*) of Pilumnidae are described as new to science. The crabs from the Kermadec Islands and adjacent seas are composed of three elements—West Pacific, Indo-West Pacific, and Southern Hemisphere elements including endemic species, in similar proportions.

**Key words:** Kermadec Islands, South Pacific, Brachyura, new species, distribution, fauna.

### Introduction

Under the special project on Collection Building and Natural History Studies in Asia and the Pacific Rim, supported by the National Science Museum, Tokyo, the present authors visited, alternately, the Museum of New Zealand Te Papa Tongarewa (Te Papa) and the National Science Museum, Tokyo, and worked on the taxonomy of a collection of brachyuran crabs from the Kermadec Islands. The collection which belongs to the Museum of New Zealand Te Papa Tongarewa (Te Papa) was subsequently loaned to the National Science Museum, Tokyo, for detailed examination. At the end of 2004, the results of the identifications were summarized and presented at the Seventh Symposium of this project (Takeda & Webber, 2004), and a new inachid crab of the genus *Achaeus* from the connection was described (Webber & Takeda, 2005).

The Kermadec Islands are composed of a group of four islands and numerous islets and rocks lying in a line from Sunday Island (29°50'S, 177°59'W) to French Rock (31°24'S, 178°51'W). The whole group lies about halfway between New Zealand and the islands of Tonga, from 800 to 1,000 km northeast of mainland New Zealand. They are composed of the exposed tips of volcanoes along the Kermadec Ridge, adjacent to the Kermadec Trench immediately to their east.

The first and only paper dealing with the carcinological fauna of the Kermadec Islands, besides Webber and Takeda (2005), is that of Chilton (1911) in which 47 species of Decapoda, 1 species of Euphausiacea, 14 species of Amphipoda, 10 species of Isopoda, 4 species of Cirri-

pedia, 2 species of Ostracoda, 1 species of Branchiopoda, and 4 species of Copepoda were recorded. Chilton (1911) divided the Decapoda into the suborders Natantia and Reptantia, and referred 39 species to the Reptantia. Twenty-five of these reptants are true crabs and are listed here and compared to the crabs examined in the present study.

Most of the specimens examined in this study, including the type specimens, are held in the Museum of New Zealand Te Papa Tongarewa, but some duplicate specimens including some paratypes of the new species are preserved in the National Science Museum, Tokyo. The shore crabs were collected by the staff of the Museum of New Zealand and associated researchers during successive visits to the Kermadec Islands and the deep-water crabs were dredged by the R.V. *Acheron*. The breadth and length of the carapace are abbreviated as cb and cl, respectively. Other abbreviations: NMNZ=Museum of New Zealand Te Papa Tongarewa; NSMT=National Science Museum, Tokyo; fms=fathoms; Exp.=Expedition; RV=Research Vessel; juv(s).=juvenile(s).

### Taxonomic Account

Class CRUSTACEA—Order DECAPODA  
Suborder REPTANTIA—Infraorder BRACHYURA

Family RANINIDAE

*Lyreidus tridentatus* de Haan, 1841

(Fig. 1A)

*Material examined.* Southeast of Chanter Islets (29°16'S, 177°49.3'W), Raoul I., 585–512 m depth, 1 young ♂ (cb 7.6 mm, cl 13.3 mm), NMNZ CR. 10527, 28/VII/1975, RV *Acheron*.

*Remarks.* Although the specimen at hand is young, there is no problem in its identification due to the clear description of the species in Griffin (1970).

This species is known from the mid- and west Pacific, from Hawaii and Japan to New Zealand, and is also known from the southwestern coast of Australia. McLay (1988) recorded its bathymetric range as the continental shelf and slope, 27–382 m. The present record exceeds the known bathymetric range.

Family LEUCOSIIDAE

Four specimens referable to the genera *Ebalia*, *Nucia*, *Nursia*, and *Oreophorus* are in the present collections. No leucosiid species have been recorded previously from the Kermadec Islands. Leucosiids of the Kermadec Islands are to be reported on fully in a forthcoming paper.

Family INACHIDAE

*Achaeus curvirostris* (A. Milne Edwards, 1873)

(Fig. 1B)

*Material examined.* Off Hutchinson Bluff, Raoul I., 46–62 fms depth, 1 ♂ (cb 4.0 mm, cl 7.0 mm), NMNZ CR. 10531, 24/VIII/1972, RV *Acheron*.

*Remarks.* This species was well depicted by Griffin and Yaldwyn (1965), being characterized by an elongated carapace with a long “neck” and long, ventrally spinulated and non-falcate dactyli of the third and fourth ambulatory legs. *Achaeus fissifrons* Haswell, 1879, *A. tenuicollis*

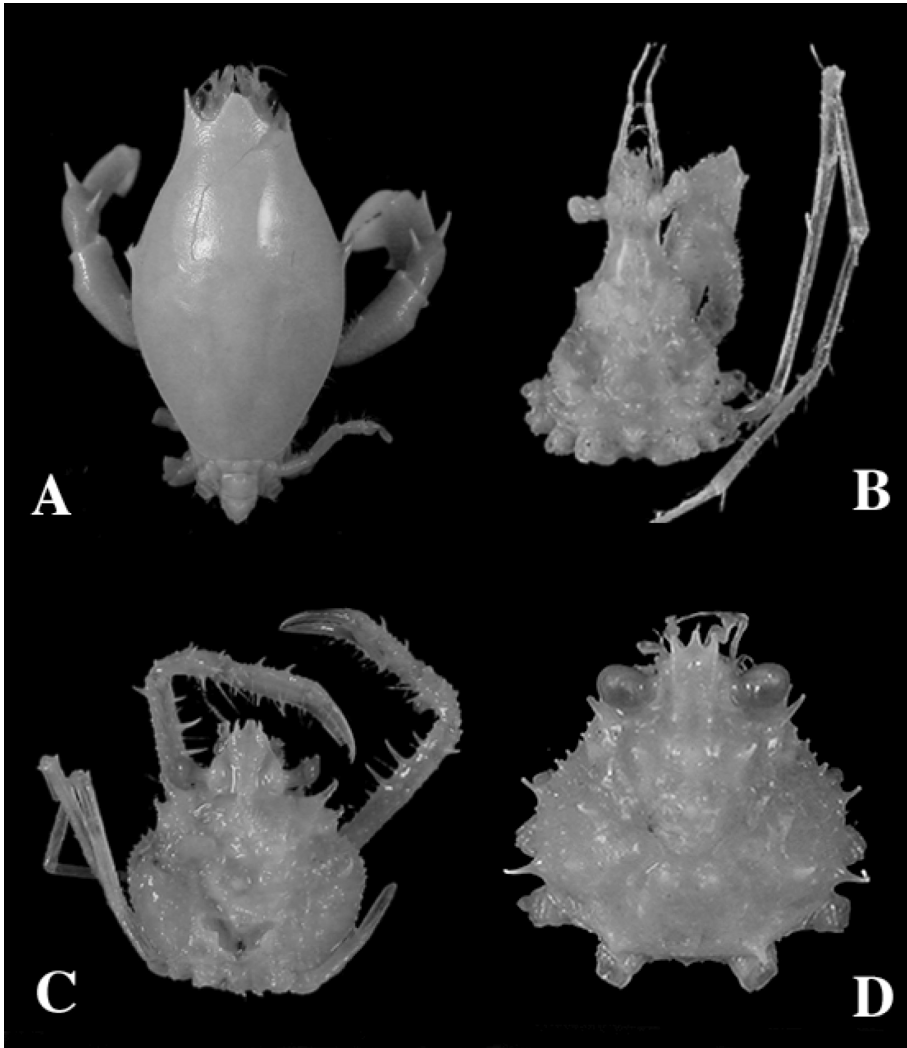


Fig. 1. A, *Lyreidus tridentatus* de Haan, young male (cb 7.6 mm); B, *Achaeus curvirostris* (A. Milne Edwards), male (cb 4.0 mm); C, *Cyrtomaia lamellata* Rathbun, young male (cb 6.5 mm); D, *Platymaia wyvillethomsoni* Miers, juv. (cb 7.8 mm).

Miers, 1886 and *A. elongatus* Sakai, 1938 are synonyms of this species.

*Achaeus curvirostris* is widely distributed in the Indo-West Pacific from Japan to Australia and New Zealand and to east Africa at 36–170 m depth.

*Achaeus kermadecensis* Webber & Takeda, 2005

*Material examined.* Between Meteorological Station and Hutchinson Bluff, Raoul I., 146–110 m depth, 1 ♂ (cb 3.36 mm, cl 4.78 mm), holotype, NMNZ CR. 10009, 4/IV/1973, RV *Acheron*.

*Remarks.* This small species, recently described by Webber and Takeda (2005), is quite characteristic in having strong gastric and cardiac tubercles. The carapace, mouthparts, chela, ambu-

latory leg and first pleopod are figured in detail in the original description.

This species is known only by the holotype male from Raoul Island, taken between 110 and 146 m depth.

***Cyrtomaia lamellata* Rathbun, 1906**

(Fig. 1C)

*Material examined.* East of Dayrell I. (29°14.73'S, 177°49.5'W), Herald Islets, 135–146 m depth, 1 young ♂ (cb 6.5 mm excluding branchial spines), NMNZ CR 10536, 10/IX/1976, RV *Acheron*.

*Remarks.* Griffin and Tranter (1986) considered that *C. lamellata* Rathbun, 1906, *C. hispida* (Borradaile, 1916) and *C. platypes* Yokoya, 1933 are synonymous with *C. lamellata*, whereas Guinot and Richer de Forges (1982) considered these three species as valid. In general, it is difficult to find definitive differences between them and lamellate peduncular segments of the antenna are common to all three species.

This species is known from Hawaii, Japan, New Caledonia, and New Zealand. In New Zealand waters this species was recorded based on the specimens by Borradaile (1916, as *Echinomaia hispida*) at a depth of 100 fms, Bennett (1964, as *Cyrtomaia hispida*) at a depth of 40 fms, and Griffin and Tranter (1986, as *C. lamellata*) at depths of 113–216 m.

***Platymaia wyvillethomsoni* Miers, 1886**

(Fig. 1D)

*Material examined.* Southeast of Chanter Islets (29°16.5'S, 177°49.5'W), Raoul I., 512–549 m depth, 1 juv. (cb 7.8 mm, cl 8.0 mm excluding rostrum), NMNZ CR. 10537, 28/X/1975, RV *Acheron*.

*Remarks.* The small specimen at hand is identified with *P. wyvillethomsoni* rather than *P. alcocki* Rathbun, 1916, following the notes given by Griffin and Tranter (1986) who considered that *P. wyvillethomsoni* is a West Pacific species and *P. alcocki* an Indian Ocean species. Reliable distinguishing characters are not yet developed in this specimen, but it is apparently closer to *P. wyvillethomsoni* which is known from Japan to South Australia through the Philippines and Indonesia.

Family EPIALTIDAE

***Huenia heraldica* (de Haan, 1839)**

(Fig. 2A)

*Material examined.* Denham Bay, Raoul I., 1 ♀, NMNZ CR. 10538, IV/1956, P. Bergquist; Northeast of Hutchinson Bluff (29°13.7'S, 177°57.75'W); Raoul I., 29–36 m depth, 2 ♀♀ (cb 11.6 mm including lateral outgrowths, cl 15.2 mm including rostrum; cb 8.8 mm, cl 11.8 mm), NMNZ CR. 10539, 10/IX/1976, RV *Acheron*; Northwest of Hutchinson Bluff, Raoul I., 38 m depth, 1 ♀ (cb 7.2 mm, cl 11.8 mm), NMNZ CR. 10540, 12/IX/1976, RV *Acheron*.

*Remarks.* In this species it is well known that the shape of the carapace is different in mature males and females. The carapace is elongate triangular in dorsal view in the male, but in the female it is rather quadrate, with two pairs of wing-like lateral expansions. These expansions may be variable with age, but in the specimens at hand they are typically developed. The change of the species name from the well-known *proteus* to *heraldica* was introduced by Holthuis (1987).

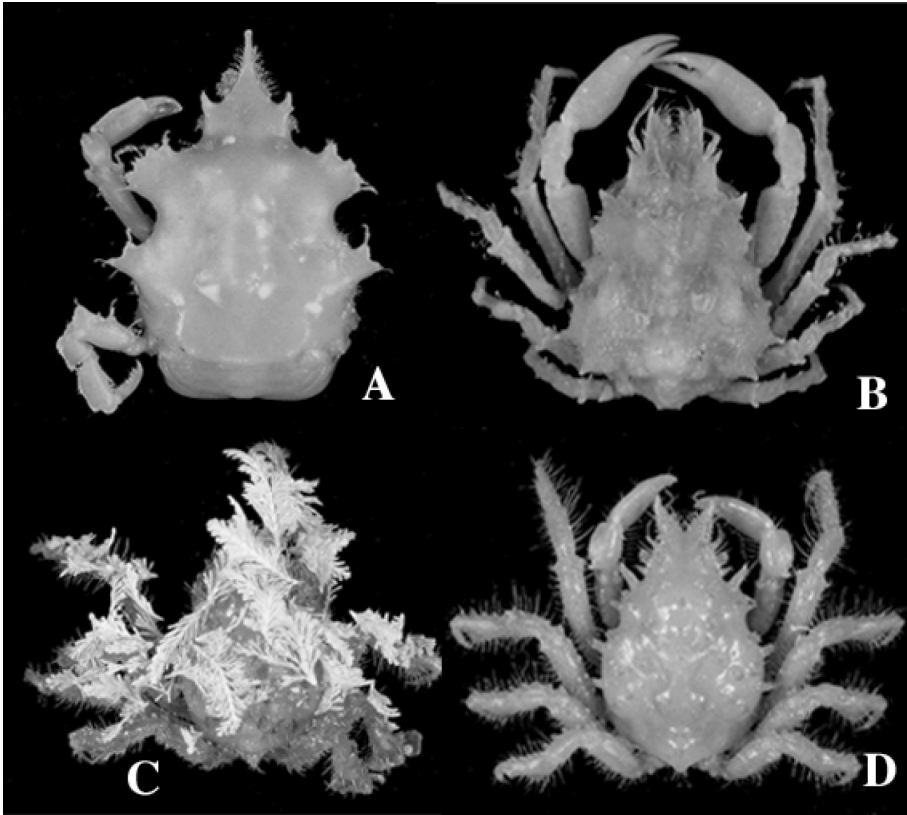


Fig. 2. A, *Huenia heraldica* (de Haan), female (cb 11.6 mm); B, *Notomithrax spinosus* (Miers), male (cb 6.8 mm); C, D, *Naxia spinosa* (Hess), male (C, cb 7.5 mm), male (D, cb 12.8 mm).

This species is known mainly from the West Pacific, from Japan to Queensland and north-western Australia. According to Griffin and Tranter (1986), records of *Huenia proteus* from the Indian Ocean and the Red Sea should be referred to *H. brevifrons* Ward, 1941, *H. grandidierii* A Milne Edwards, 1865, or *Menaethius orientalis* (Sakai, 1969).

#### Family PISIDAE

#### *Leptomaia tuberculata* Griffin & Tranter, 1986

(Fig. 3C)

*Material examined.* Close to east side of Meyer I. (29°14.83'S, 177°51.93'W), Raoul I., 25–29 m depth, 1 ovig. ♀ (cb 6.0 mm, cl 10.4 mm in median line), 1 juv., NMNZ CR. 10541, 1 ♀ (cb 6.2 mm, cl 10.5 mm), NSMT-Cr 16808, 11/IX/1976, RV *Acheron*.

*Remarks.* This species is the monotypic representative of the genus *Leptomaia* in New Zealand waters, and is characterized by having a narrow carapace much longer than wide, with many low, smooth tubercles arranged symmetrically.

This species was described from specimens from the Tasman Sea, Lord Howe Island and the Kermadec Islands, 21.5–85 m depth.

## Family MAJIDAE

*Naxia spinosa* (Hess, 1865)

(Figs. 2C, D)

*Material examined.* Sunday I., 1 ♂ (cb 12.8 mm excluding branchial tubercles, cl 18.3 mm excluding rostrum), 1 ovig. ♀ (cb 11.5 mm, cl 15.5 mm), NMNZ CR. 10542, 1 ovig. ♀ (cb 12.5 mm, cl 17.2 mm), NSMT-Cr 16794, 1909–1910, R. S. Bell; Rock pools, winch landing, Raoul I., 1 ♂ (cb 7.5 mm, cl 10.3 mm), NMNZ CR. 10543, 24/VIII/1972, F. M. Climo.

*Remarks.* Griffin (1966) revised *Naxia* and confined the genus to four species, *N. aries* (Guérin, 1825), *N. aurita* (Latreille, 1825), *N. spinosa* (Hess, 1865), and *N. tumida* (Dana, 1851). A key to these species was given by Griffin and Tranter (1984).

This species has been recorded from the Kermadec Islands by Miers (1879) as *Halimus spinosus* Miers.

*Notomithrax spinosus* (Miers, 1879)

(Fig. 2B)

*Material examined.* Southeast of D'Arcy Point, Raoul I. (29°18.5'S, 177°54.5'W), 44 m depth, 2 ♂♂ (Larger, cb 6.0 mm excluding branchial tubercles, cl 8.6 mm including rostrum), 1 ovig. ♀ (cb 5.7 mm, cl 7.7 mm), NMNZ CR. 10544, 25/X/1975, RV *Acheron*; Between Dayrell and Chanter Islands, Herald Islets, 31–45 m depth, 3 ♂♂ (Largest, cb 6.8 mm, cl 9.5 mm), NMNZ CR. 10545, 11/IX/1976, RV *Acheron*.

*Remarks.* This small species, originally described and figured as *Paramithrax* (*Paramithrax*) from Norfolk Island taken at 23 fms depth, was transferred to the genus *Notomithrax* by Griffin (1963). Griffin and Tranter (1986) recorded 2 specimens from the Kermadec Islands from a depth of 60–85 m. In the specimens at hand the males are armed with larger hepatic and branchial tubercles along the margins than the females.

*Schizophroidea hilensis* (Rathbun, 1906)

(Fig. 3A)

*Material examined.* Sunday I., 1 ovig. ♀ (cb 7.9 mm, cl 11.6 mm in median line), NMNZ CR. 10546, 3 ♂♂ (Largest, cb 7.8 mm, cl 11.1 mm), 1 ovig. ♀ (cb 7.4 mm, cl 10.8 mm), 1 ♀, NMNZ CR. 10547, 1 ♂ (cb 8.3 mm, cl 11.6 mm), 1 ovig. ♀ (cb 8.8 mm, cl 12.4 mm), NSMT-Cr 16795, 1909–1910, R.S. Bell; Northeast of Hutchinson Bluff (29°13.7'S 177°57.75'W), Raoul I., 29–36 m depth, 1 ovig. ♀ (cb 10.5 mm, cl 14.8 mm), NMNZ CR. 10548, 10/IX/1976, RV *Acheron*.

*Remarks.* Specimens of *Schizophroidea hilensis* were recorded from Sunday Island by Griffin and Tranter (1986) who synonymized *S. manazuruana* Sakai with this species. According to them, specimens they examined from Hawaii, Lord Howe Island and New Caledonia belong to the same species despite showing considerable variation in carapace tuberculation, especially in the gastric region.

*Schizophroidea hilensis* is known from the Pacific—Japan (Sakai, 1933, 1938, 1976, as *S. manazuruana*), the Philippines (Buitendijk, 1939, as *S. manazuruana*), Hawaii (Rathbun, 1906; Griffin & Tranter, 1986), the Kermadec Islands (Chilton, 1911; Griffin & Tranter, 1986), Lord Howe Island (Griffin & Tranter, 1986) and New Caledonia (Griffin & Tranter, 1986).

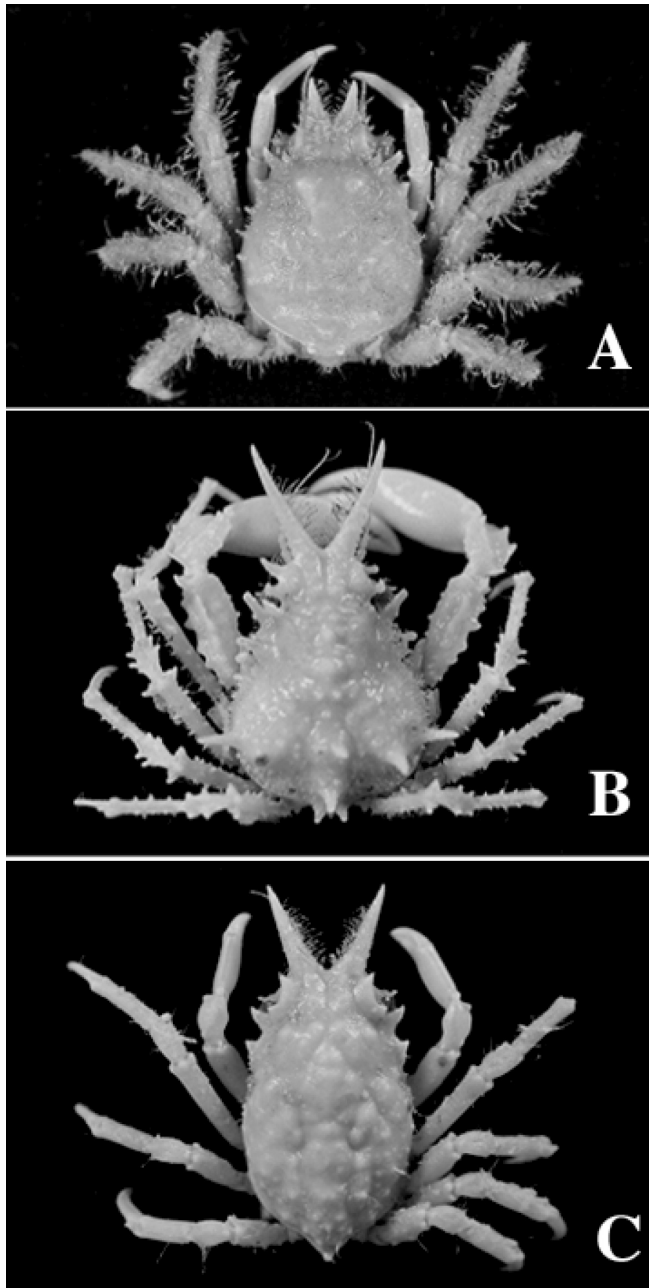


Fig. 3. A, *Schizophroida hilensis* (Rathbun), ovigerous female (cb 7.9 mm); B, *Thacanophrys goldsboroughi* (Rathbun), male (cb 8.9 mm); C *Leptomaia tuberculata* Griffin & Tranter, female (cb 6.2 mm).

*Thacanophrys goldsboroughi* (Rathbun, 1906)

(Fig. 3B)

*Material examined.* Off northwest end of Raoul Island, 80–110 fms depth, 1 ♀ (cb 7.3 mm excluding branchial spines, cl 9.5 mm in median line), NMNZ CR. 10549, 5/IV/1973, RV *Acheron*;

Between Meteorological Station and Hutchinson Bluff, Raoul I., 60–66 fms depth, 1 ♀ (cb 8.5 mm, cl 10.8 mm), NMNZ CR. 10550, 4/XI/1973; Between Bell's Flat and Hutchinson Bluff, Raoul I., 85–90 fms depth, 2 young ♀♀, NMNZ CR. 10551, 4/IV/1973, RV *Acheron*; Off Boat Harbour, Meyer I. (29°14.7'S 177°52.7'W), 27–22 m depth, 1 ♂ (soft shell), NMNZ CR. 10552, 28/X/1975, RV *Acheron*; East of Dayrell I. (29°14.73'S, 177°50.34'W), Herald Islets, 135–146 m depth, 1 ♂ (cb 8.9 mm, cl 12.8 mm), NMNZ CR. 10553, 28/X/1976.

*Remarks.* Griffin (1970, recording the genus as *Chlorinoides*) gives some good figures for subsequent identification, and Griffin and Tranter (1986) also figured the carapace of an ovigerous female from the Kermadec Islands collected by the Galathea Expedition.

This species is known from Hawaii (Rathbun, 1906), the Kermadec Islands, and southeastern Australia (Griffin & Brown, 1976).

#### Family PARTHENOPIDAE

There are two small specimens referable to the genera *Platylambrus* and *Tutankhamen*. The former is characteristic in having some costate ridges on the carapace, and the latter is a small species which appears close to *Pseudolambrus*.

#### Family AETHRIDAE

##### *Actaeomorpha erosa* Miers, 1877

(Fig. 5A)

*Material examined.* Sunday I., 1 ovig. ♀ (cb 8.8 mm, 7.2 mm), NMNZ CR. 10556, 1 ovig. ♀ (cb 6.6 mm, cl 5.4 mm), NSMT-Cr 16795, 1909–1910, R. S. Bell, W. R. B. Oliver Collection; Northwest of Fleetwood Bluff, Raoul I. (29°12.7'S, 177°56.1'W, 135 m depth, 1 ♂ (cb 4.9 mm, cl 4.2 mm), 1 ovig. ♀ (cb 5.5 mm, cl 4.6 mm), 1 ♂ (cb 6.8 mm, cl 5.7 mm), NMNZ CR. 10557, 25/X/1975, RV *Acheron*.

*Remarks.* The dorsal erosion seen in these specimens may be variable individually and in the larger two ovigerous females there are many clear-edged circular pits arranged more or less symmetrically. This species was recorded from Sunday and Meyer Islands in the Kermadec Islands by Chilton (1911) who mentioned that the mottled color with red and the granulated nature of the surface give the appearance of small pieces of coral.

This species is widely distributed from Japan and Hawaii to Australia and South Africa.

#### Family PORTUNIDAE

##### *Caphyra acheronae* sp. nov.

(Fig. 4)

*Material examined.* Type specimens. Sunday I., holotype, ♂ (cb 10.2 mm, cl 8.7 mm), NMNZ CR. 10558, 1913, K. Ball; Northeast corner reef, Raoul I., paratype, 1 ♀ (cb 6.5 mm, cl 5.5 mm), NMNZ CR. 10559, soft coral, 24-IV-1990.

*Description of holotype.* Carapace narrowly ovate, ca. 1.2 times wider than long, evenly convex for the main part, flattened along frontorbital margin, smooth and shining, without hairs or granules; regions of dorsal surface ill-defined, with only a weakly curved linear ridge running from median part of lateral margin toward gastric region. Frontal margin divided into two weakly convex lobes by a median, wide, shallow notch, separated laterally from supraorbital angle by a



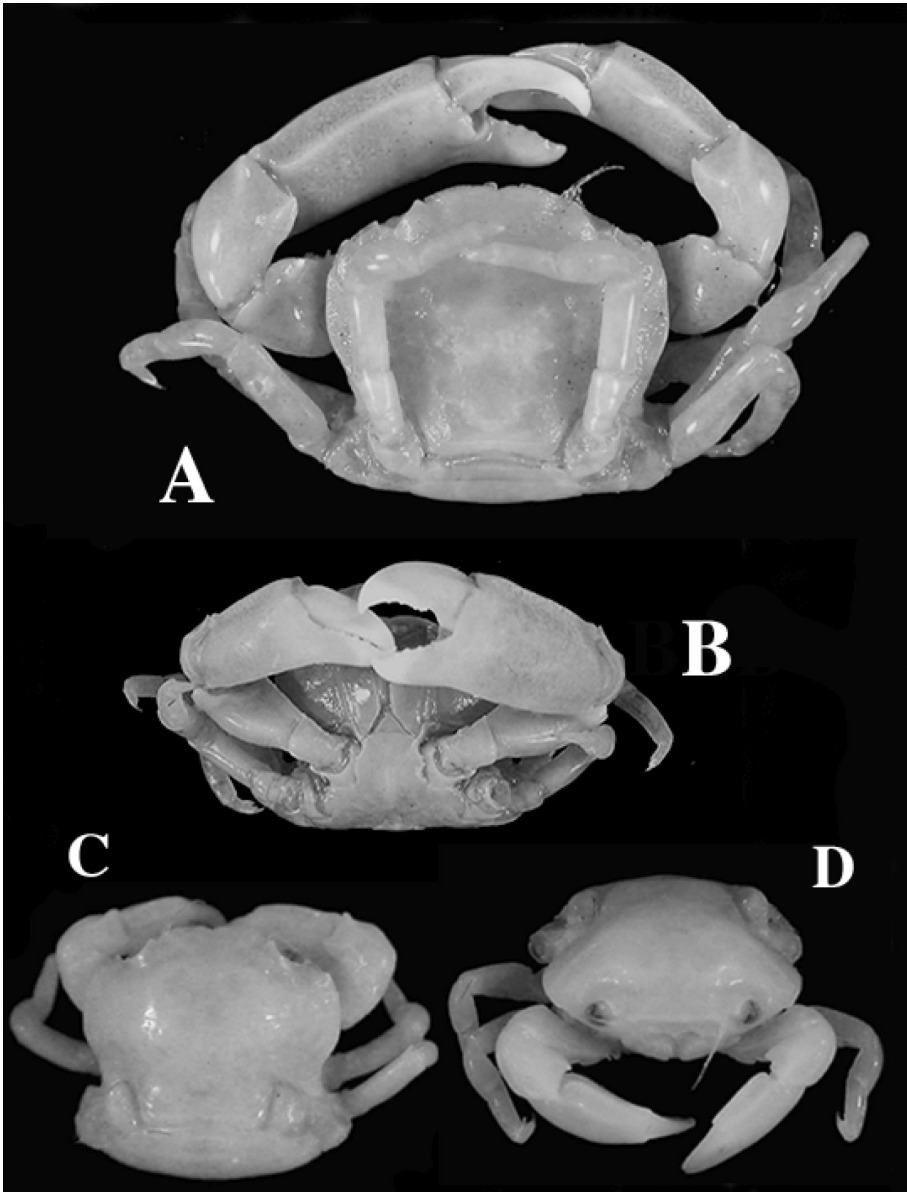


Fig. 4. A, *Caphyra acheronae* sp. nov., holotype male (A, B, cb 10.2 mm), paratype female (C, D, cb 6.5 mm).

V-shaped notch; orbit small, with raised region along its inner half. Lateral margin weakly arched as a whole, cut into two lobes by a small notch before lateral end of a linear ridge; first lobe not separated from external orbital angle which is not produced at all; anterior end of second lobe neither sharp nor extending beyond general contour of anterolateral margin; posterior part of lateral margin behind base of linear ridge nearly longitudinal or feebly divergent, but clearly concave dorsally and marginally. Posterolateral margin markedly concave to receive coxa of fifth leg, with its inner margin almost longitudinal. True posterior margin as long as frontal margin, weakly concave.

Chelipeds heavy, smooth; left cheliped apparently larger than right cheliped, but basically similar in shape. Merus widened in its distal one third, beyond anterolateral margin of carapace; upper surface truncated, its distal one third also turned to be flattened in natural position by a weak transverse ridge. Carpus large, more or less elongated; upper distal surface truncated to form a triangular facet continuous with distal margin of carpus facing palm, and with two obtuse ridges converging from upper and inner angles. Palm long, smooth, with two longitudinal ridges on upper margin; surface between two ridges narrower than distal margin of carpus; outer upper surface shallowly concave adjacent to longitudinal ridge. Fingers longer than half as long as palm, irregularly toothed along both cutting edges; immovable finger rather strongly curved inward in left (larger) chela and slender in right (smaller) chela.

Ambulatory legs stout, smooth, each with stout carpus and horny terminal claw. Last pair distinctly dorsal in position, with elongated ischium; distal three segments directed inward.

*Notes on paratype.* In the ovigerous female which is smaller than the holotype male, both of the last legs are missing. The other features agree well with those of the holotype. The second anterolateral lobe is more distinct than that of the holotype in which the margin is somewhat damaged.

*Etymology.* The species name is obtained from the R.V. *Acheron*.

*Remarks.* In the combination of two features, the bilobed frontal margin and two anterolateral lobes, this species is close to *Caphyra unidentata* Lenz known from Madagascar, Fiji, and New South Wales (Lenz, 1910; Crosnier, 1962; Stephenson & Rees, 1968b), but readily distinguished from it by the inconspicuous second anterolateral lobe. In both specimens at hand, the external orbital angle (= distal end of first anterolateral lobe) and tip of the first anterolateral lobe are not clearly formed, differing from the sharp teeth in *C. unidentata*.

In describing *Caphyra curtipes*, Stephenson and Rees (1968b) mentioned that specimen A identified with *C. rotundifrons* (A. Milne Edwards, 1873) by Barnard (1957) resembles *C. curtipes*, and specimens B and C are apparently different from specimen A, with its uncertain taxonomic status. We note that specimens B and C from Durban, South Africa, are very close to this new species named *C. acheronae*.

### ***Liocarcinus corrugatus* (Pennant, 1777)**

(Fig. 5C)

*Material examined.* Between Dayrell and Chanter Is., Herald Islets, 31–45 m depth, 1 juv., NMNZ CR. 10560, 11/IX/1976, RV *Acheron*; Northwest of Hutchinson Bluff (29°14'S, 177°59.28'W), Raoul I., 38 m depth, 1 juv. (cb 5.8 mm, cl 5.0 mm), NMNZ CR. 10561, 12/IX/1976, RV *Acheron*.

*Remarks.* As summarized by McLay (1988), this species is known from the East Atlantic and the Mediterranean, and also from the Pacific in which the distribution is antitropical with records from Japan in the north, and Australia, and New Zealand in the south.

### ***Ovalipes elongatus* Stephenson & Rees, 1968**

(Fig. 5D)

*Material examined.* Raoul I., 1 ♀ (cb 39.5 mm, cl 25.3 mm), NMNZ CR. 10562, 1957, M. McArthur; Off w. anchorage, Raoul I., 27–30 fms depth, beam trawl, 2 juvs, NMNZ CR. 10563, 24/VIII/ 1972, Kermadec Is. Exp.; East anchorage (29°16'S, 177°51.58'W), Raoul I., 42–47 m depth, 9 juvs, NMNZ CR. 10564, 9/IX/1976, RV *Acheron*; Northeast of Hutchinson Bluff

(29°13.7'S, 177°57.75'W), Raoul I., 29–36 m depth, 6 young ♂♂ (cb 14.0 mm, cl 12.0 mm—cb 15.0 mm, cl 12.6 mm), 1 young ♀ (cb 14.2 mm, cl 12.3 mm), 7 juvs., NMNZ CR. 10565, 10/IX/1976, RV *Acheron*; East end of Denham Bay (29°17.2'S, 177°57.2'W), Raoul I., 27–29 m depth, 4 juvs., NMNZ CR. 10566, 12/IX/1976, RV *Acheron*; East of Smith Bluff (29°18.14'S, 177°56.28'W), Raoul I., 47–40 m depth, 1 juv. (soft shell), NMNZ CR. 10567, 12/IX/1976, RV *Acheron*; Milne Islets (29°16.98'S, 177°53.8'W), under intertidal rocks, 2 young ♀♀ (cb 19.5 mm, cl 16.5 mm; 17.6×15.0 mm), NMNZ CR. 10568, 12/IX/1976, A. N. Baker.

*Remarks.* This species, one of nine known species of the genus *Ovalipes*, is characterized by the elongate carapace and the fine and numerous striae on the under surface of the palm. This species is known only from Lord Howe Island and the Kermadec Islands. The record of *Ovalipes bipustulatus* H. Milne Edwards, 1834, from the Kermadec Islands by Chilton (1911) was interpreted as this species by Stephenson and Rees (1868a), together with the records from Lord Howe Island.

### *Thalamita macropus* Montgomery, 1931

(Fig. 5B)

*Material examined.* Northwest of Fleetwood Bluff (29°12.7'S, 177°56.1'W), Raoul I., 135 m depth, 1 juv., NMNZ CR. 10569, 25/X/1975, RV *Acheron*; 2.5 miles off Smith Bluff, Raoul I., 38 fms depth, 3 juvs., NMNZ CR. 10570, 25/X/1975; Between Dayrell and Chanter Is., Herald Islets, 31–45 m depth, 1♂ (cb 21.7 mm, cl 15.2 mm), NMNZ CR. 10571, 11/IX/1976, RV *Acheron*.

*Remarks.* This rare species was well depicted by the original author in 1931, and Stephenson and Hudson (1957), being most clearly characterized by having a subsidiary tooth at the first anterolateral tooth. In the specimens at hand, the subsidiary tooth is not always distinct, but is present as an interruption to the margin of the first anterolateral tooth. In the smallest juvenile with a carapace breadth of 7.2 mm, the margin of the first anterolateral tooth is more or less complete without evidence of an interruption, but the six-lobed frontal margin is indicative of this species.

This species is known from the Abrolhos Islands and New South Wales, Australia at ca. 10–90 m depth.

## Family XANTHIDAE

### *Antrocarcinus petrosus* Ng & Chia, 1994

(Fig. 6A)

*Material examined.* Off Hutchinson Bluff, Raoul I., 46–62 fms depth, beam trawl, pumice rubble, 2♂♂ (cb 8.7 mm, cl 7.5 mm; cb 12.0 mm, cl 9.9 mm), 1♀ (cb 19.0 mm, cl 3.5 mm), NMNZ CR. 10572, 24/VIII/1972, RV *Acheron*; Between Meteorological Station and Hutchinson Bluff, Raoul I., 80–60 fms depth, beam trawl, 1 young ♂ (cb 10.1 mm, cl 7.4 mm), 1 young ♀ (cb 9.1 mm, cl 7.0 mm), 1 juv., NMNZ CR. 10573, /IV/1973, RV *Acheron*; Between Bell's Flat and Hutchinson Bluff, Raoul I., 60–66 fms depth, 1 ovig. ♀ (cb 12.5 mm, cl 9.6 mm), 9 juvs., NMNZ CR. 10574, 1♂ (cb 9.8 mm, cl 7.6 mm), 1♀ (cb 10.3 mm, cl 8.1 mm), NSMT-Cr 16800, 4/IV/1973, RV *Acheron*; Between Meteorological Station and Hutchinson Bluff, Raoul I., 60–66 fms depth, beam trawl, 1♂ (cb 10.8 mm, cl 8.0 mm), 2 juvs., NMNZ CR. 10575, 4/XI/1973; NW of Fleetwood Bluff (29°12.7'S, 177°56.1'W), Raoul I., 135 m depth, 1♂ (cb 10.9 mm, cl

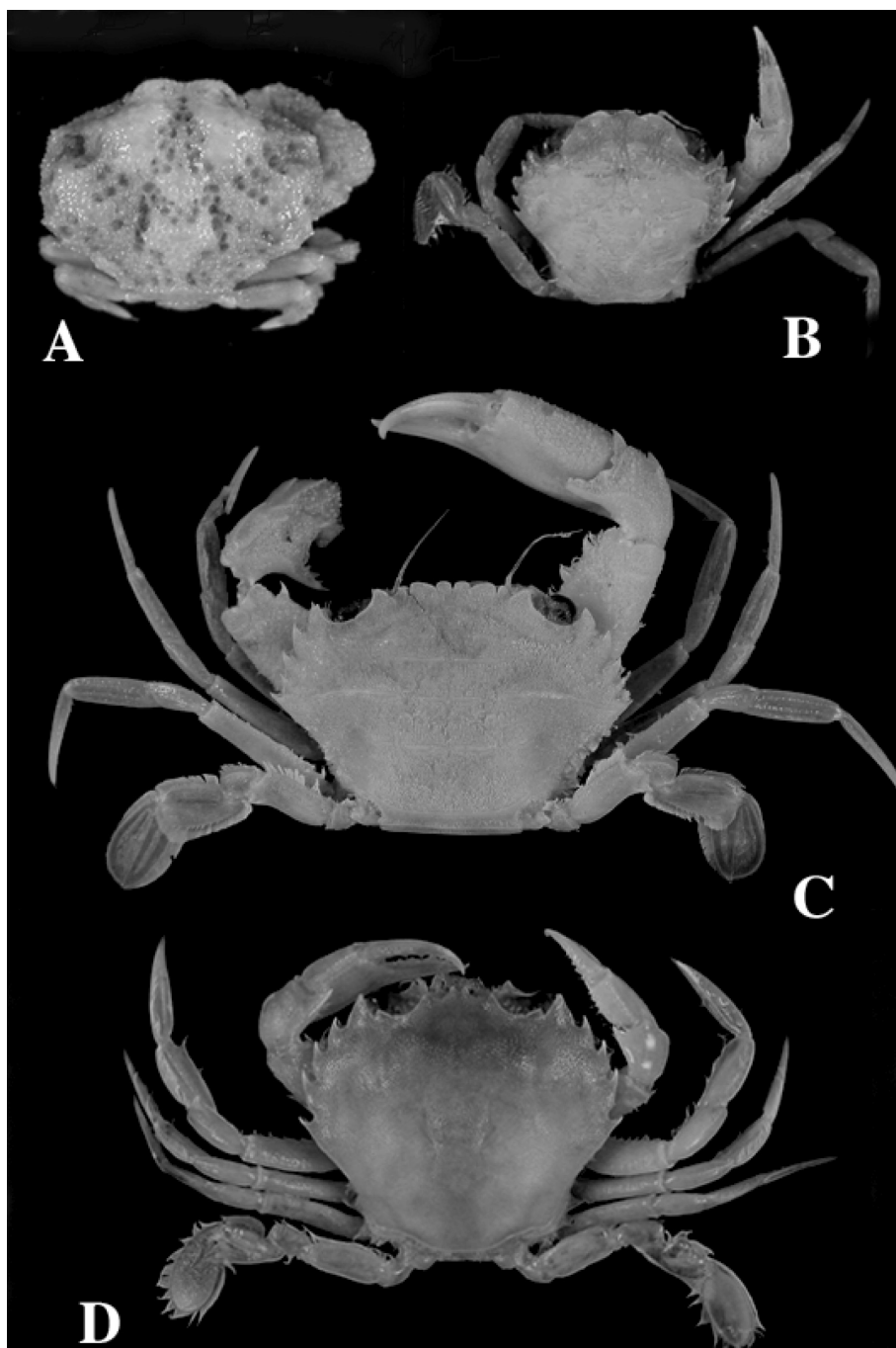


Fig. 5. A, *Actaeomorpha erosa* Miers, male (cb 6.8 mm); B, *Liocarcinus corrugatus* (Pennant), juv. (cb 5.8 mm); C, *Thalamita macropus* Montgomery, male (cb 21.7 mm); D, *Ovalipes elongatus* Stephenson & Rees, young male (cb 14.3 mm).

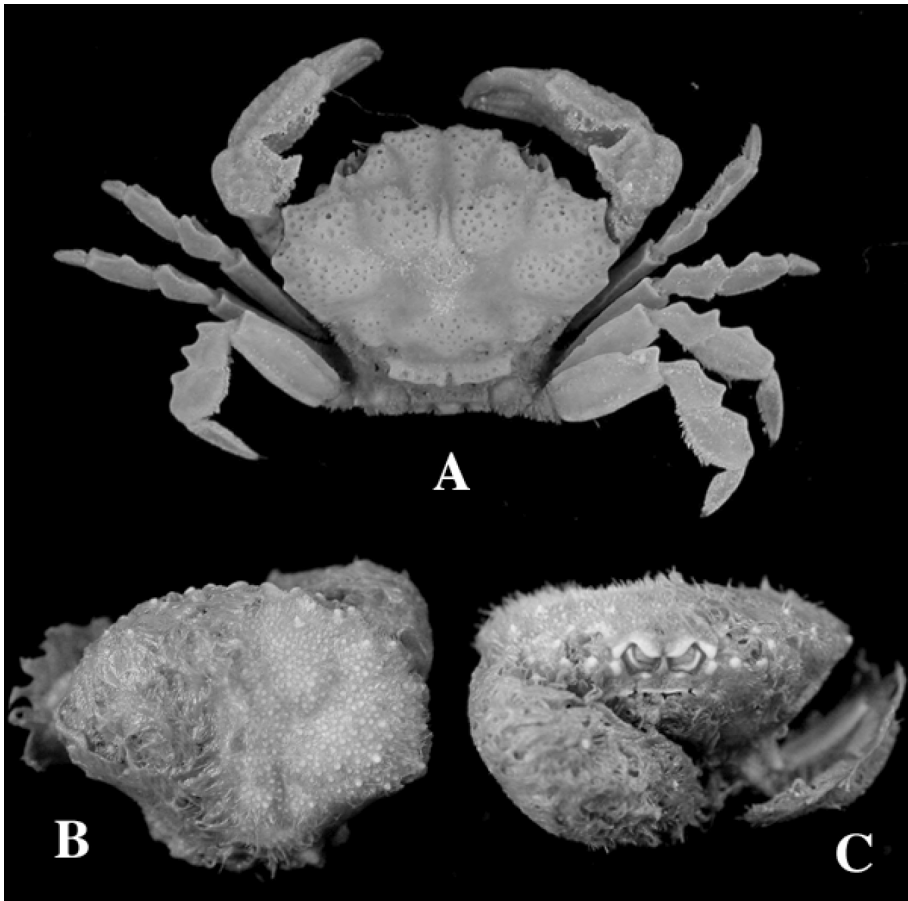


Fig. 6. A, *Antrocarcinus petrosus* Ng & Chia, male (cb mm); B, C, *Banareia banareias* (Rathbun), female (cb 18.2 mm).

8.5 mm), NMNZ CR. 10576, 25/X/1975, RV *Acheron*; Southeast of Smith Bluff (29°18.9'S, 177°56.4'W), Raoul I., 82–100 m depth, 1♂ (cb 12.7 mm, cl 9.9 mm), NMNZ CR. 10577, 10/IX/1976, RV *Acheron*; East of Dayrell Island (29°14.73'S, 177°50.34'W), Herald Islets, 135–146 m depth, 1♀ (cb 14.4 mm, cl 10.4 mm), 1 juv., NMNZ CR. 10578, 10/X/1976; Curtis Island (30°34.5'S, 178°34.5'W), 420–100 m depth, 1♂ (damaged), 1 juv., NMNZ CR. 10579, 26/IV/1990.

*Remarks.* The specimens at hand, having the carapace surface quite uneven, agree well with the original description and figures of this species, the monotypic representative of the genus *Antrocarcinus* Ng & Chia, 1994, which was designated the type genus of the subfamily Antrocarcininae in the family Xanthidae. The systematic status of *Antrocarcinus* was correctly and fully discussed by Ng and Chia (1994) in relation to the genera *Glyptocarcinus* Takeda, 1973, and *Cyrtocarcinus* Ng & Chia, 1994. This species is characteristic in its deeply sculptured areolation of the dorsal surface of the carapace, and with the intestinal region ornamented by a pair of plates. This species was originally reported from New Caledonia from 235–244 m depth.

***Banareia banareias*** (Rathbun, 1911)

(Fig. 6B, C)

*Material examined.* Off northwest end of Raoul I., 110–80 fms depth, 1 ♀ (cb 18.2 mm, cl 13.8 mm), NMNZ CR. 10580, 5/IV/1973.

*Remarks.* This species is characterized by having its ill-defined carapace covered with prominent granules and shaggy hairs. This species was illustrated by the original author (1911, as *Actaea*), Monod (1938, as *Actaea*), Edmondson (1962, as *Actaea*), Takeda and Miyake (1968), Guinot (1976), and Serène (1984).

This species is widely distributed in the Indo-West Pacific. Chilton (1911) recorded *Banareia armata* A. Milne Edwards, 1873, from the Kermadec Islands, but in that species the dorsal surface of the carapace is deeply areolated, with distinct anterolateral teeth behind the orbit.

***Gaillardiiellus bathus*** Davie, 1997

(Fig. 7A)

*Material examined.* Off northwest end of Raoul I., 80–110 m depth, 1 ♀ (cb 11.0 mm, cl 8.2 mm), NMNZ CR. 10581, 5/IV/1973, RV *Acheron*; Between Bell's Flat and Hutchinson Bluff, Raoul I., 85–90 fms depth, 1 ♀ (cb 10.0 mm, cl 7.4 mm), NMNZ CR. 10582, 4/IV/1973, RV *Acheron*; Between Meteorological Station and Hutchinson Bluff, 60–66 fms depth, beam trawl, 1 ♀ (cb 11.4 mm, cl 8.5 mm), NMNZ CR. 10583, 4/XI/1973, RV *Acheron*.

*Remarks.* The specimen is very close to *G. rueppelli* (Krauss, 1843), but the dorsal areolae are not distinctly sculptured, not particularly convex and not separated from each other with rather shallow furrows; the protogastric region appears to be indistinctly separated along its posterior part; the granules on each areola are smaller, with short setae, and only a few longish setae and no very long setae. These differences indicate that the specimens at hand may be referred to *G. bathus* Davie from New Caledonia found at 270–312 m depth.

***Gaillardiiellus rueppelli*** (Krauss, 1843)

(Fig. 7B)

*Material examined.* Sunday I., 1 young ♂, 1 young ♀, NMNZ CR. 10584, 1909–1910, R. S. Bell, W. R. B. Oliver Collection; East end of Denham Bay, Raoul I., 27–29 m depth, 1 ♂ (cb 12.3 mm, cl 10.2 mm), NMNZ CR. 10585, 12/IX/1976.

*Remarks.* The specimen examined agrees well with the photograph given by Guinot (1976), being typical of the species in having distinct dorsal areolae covered with pearly granules of good size. Each granule is surrounded by short, stiff setae, each areola having several long setae. The anterolateral margin of the carapace is separated into four somewhat lobate, thick teeth. The first and last anterolateral teeth are similar in shape and size.

This species is widely distributed in the Indo-West Pacific from Japan to Samoa, Australia and South Africa.

***Liomera yaldwyni*** sp. nov.

(Fig. 8)

*Material examined.* Type specimens. Off Hutchinson Bluff, Raoul I., 46–62 fms depth, beam trawl, pumice rubble, holotype, ♂ (cb 7.2 mm, cl 4.8 mm), NMNZ CR. 10586, 24/VIII/1972, RV *Acheron*; Between Bell's Flat and Hutchinson Bluff, Raoul I., 60–66 fms depth, paratypes, 1 ♂

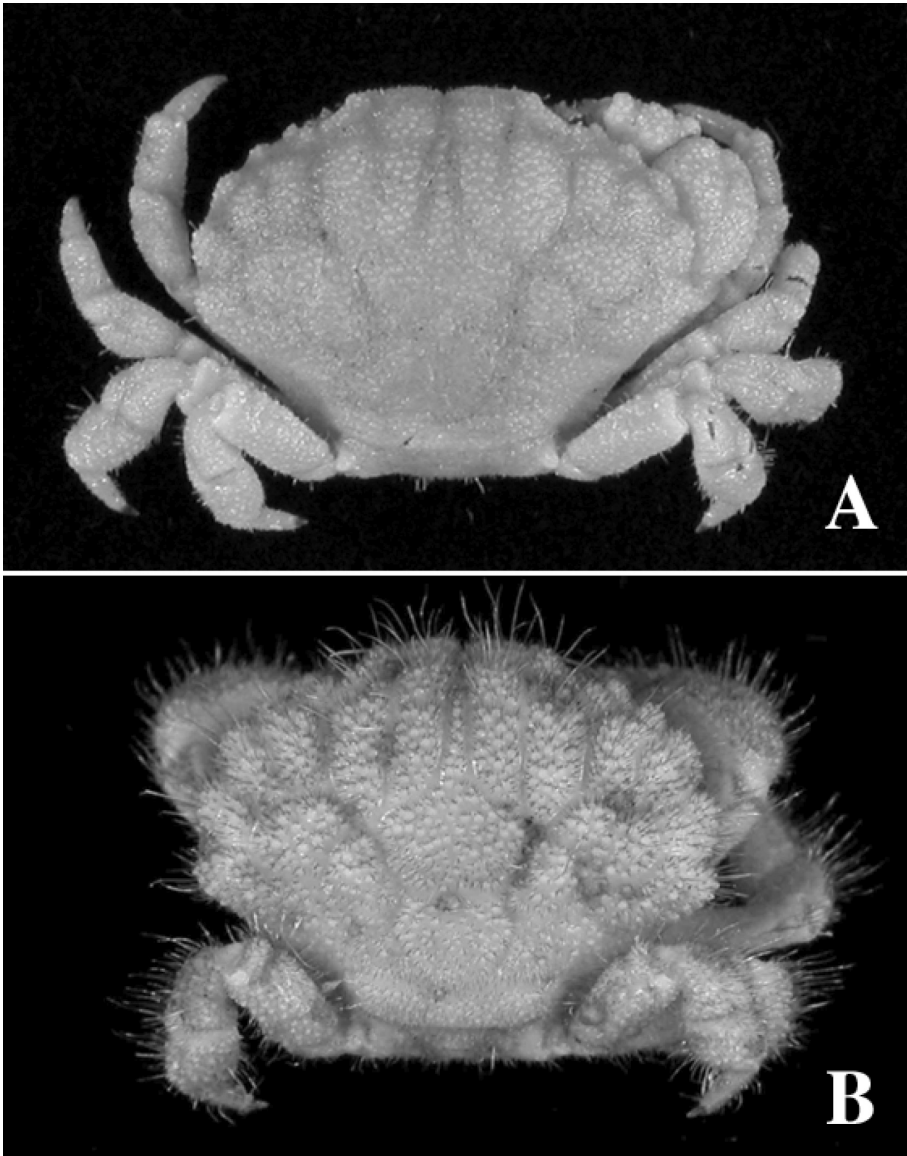


Fig. 7. A, *Gaillardieillus bathus* Davie, female (cb 11.4 mm); B, *Gaillardieillus rueppelli* (Krauss), male (cb 12.3 mm).

(cb 7.3 mm, cl 4.9 mm), NMNZ CR. 10587, 1♀ (cb 6.3 mm, 4.3 mm), NSMT-Cr 16811, 4/IV/1973, RV *Acheron*.

*Description of holotype.* Carapace ca. 1.5 times wider than long, rather elliptical, with convex anterolateral borders, weakly convex anteriorly, nearly flattened laterally and posteriorly; anterior half of dorsal surface clearly divided into regions by linear furrows; each region raised, thickly and uniformly covered with pearly granules; frontal region (2F) prominent, separated posteriorly from epigastric region (1M) by a transverse furrow which is weakly convex anteriorly; 1M not separated from inner part of protogastric region (2M) which is incompletely subdivided into two for its anterior 2/3 by a longitudinal furrow from outer margin of 1M; outer part of protogastric

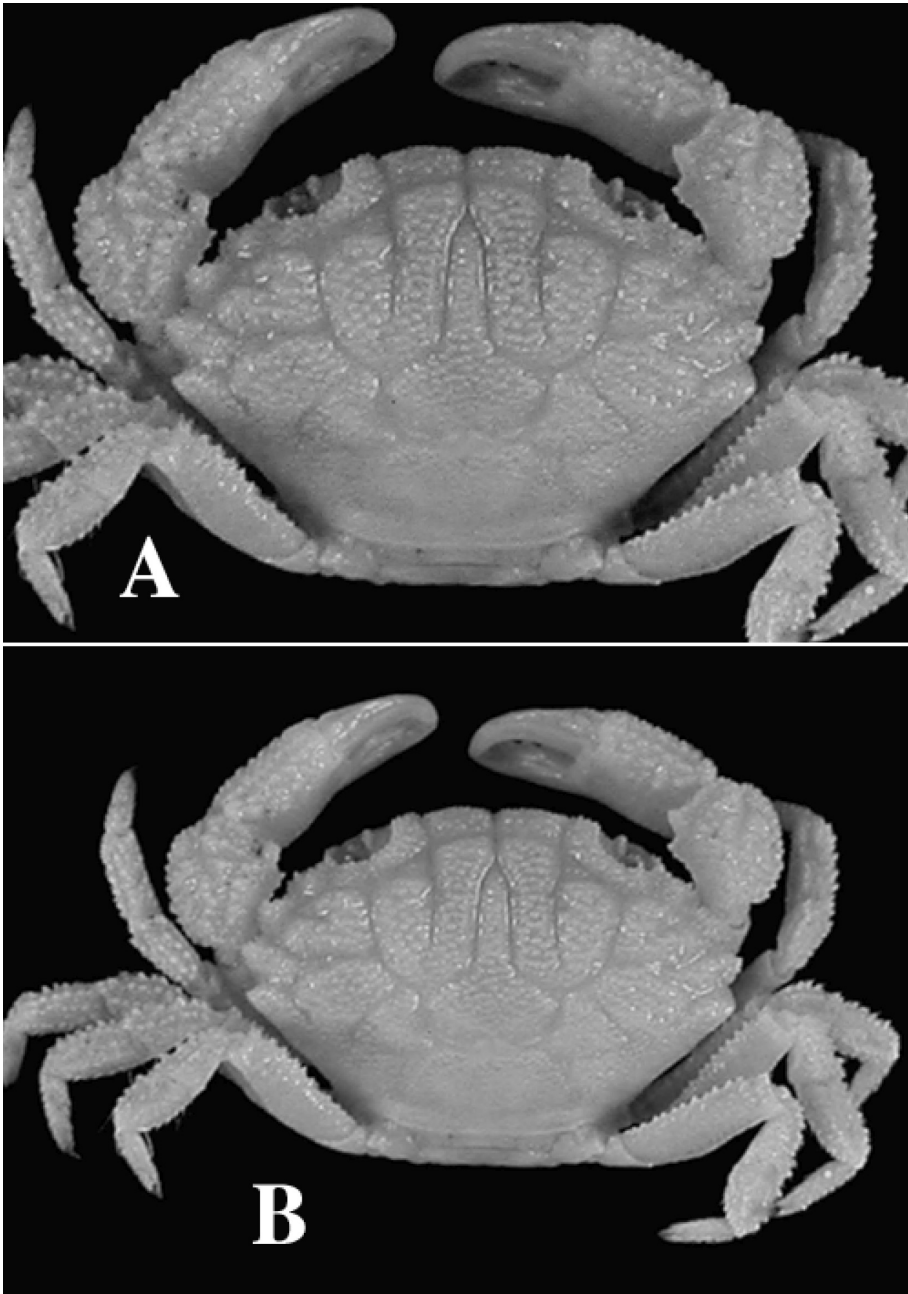


Fig. 8. *Liomera yaldwyni* sp. nov, holotype male (cb 7.3 mm).

region slightly wider than inner part; anterior prolongation of mesogastric region prominent, only slightly narrower than inner part of mesogastric region (3M), not tapering except for its distal part; anterolateral margin of mesogastric region obliquely directed outward, lateral margin weakly convergent; epibranchial region inside first two anterolateral teeth obliquely heart-shaped, with short indentation; a small ridge-like region confluent with third anterolateral tooth, being separated from a region confluent with fourth anterolateral tooth by an oblique shallow furrow; a wide



region behind epibranchial region and inside regions of third and fourth anterolateral regions; a triangular region directed laterally outside mesobranchial region; cardiac region wide, trapezoid, its posterior margin as wide as posterior margin of carapace.

Frontal margin separated into two by a small, but distinct median notch, each lobe only weakly convex and separated from inner part of orbital region which is raised along supraorbital margin. Anterolateral margin convex as a whole, with four teeth behind external orbital angle; orbital angle weakly raised as a part of orbital region, but not toothed; first anterolateral tooth not prominent, weakly angulated, armed with some sharp granules; second and third teeth more or less tuberculated, subacute, fringed with sharp granules along their anterior margins, being isolated from each other by a wide V-shaped notch; distance between third teeth of both sides gives greatest breadth of carapace; fourth tooth smaller than preceding two teeth, subacute at tip. Posterolateral margins of carapace straight, strongly convergent toward lateral end of posterior margin of carapace.

Chelipeds subequal in size and shape; merus short, completely disguised under carapace; outer surfaces of carpus and palm roughened by conical granules to give them a scaly or eroded appearance, in some areas arranged to longitudinal ridges and furrows.

Ambulatory legs moderate in length and stoutness, not nodular; anterior margins of meri fringed with sharp granules of good size; anterior margins of carpi and propodi, and posterior margin of propodi with fringes of sharp granules like those of meri; upper surfaces of carpi and propodi also with two longitudinal rows of sharp granules.

*Notes on paratype.* The paratype female is slightly smaller than the holotype male, but the dorsal areolation of the carapace agrees quite well with that of the holotype. As in the other species of the genus *Liomera*, both chelipeds in the female are smaller than in the male, and there is no marked difference except for their size.

*Etymology.* This species is dedicated to the late Dr. John C. Yaldwyn, who was the Director of the National Museum of New Zealand, specialized in the taxonomy of the Decapoda making a major contribution to the systematics of natant shrimps and prawns.

*Remarks.* The new species is characteristic in having the protogastric region imperfectly subdivided by a deep longitudinal furrow so as to form a "U", although the regions are not strongly convex dorsally. With respect to this character as well the pearly granules on the regions, the new species is somewhat similar to *L. rugata* (H. Milne Edwards, 1834) and *L. caelata* (Odhner, 1925), but the general contour of the carapace and the branchial areolation are distinctly different from those of *L. rugata*. In *L. caelata* each region is more swollen dorsally, with wider interregional furrows, the epigastric region (1M) is isolated from the inner part of the protogastric region (2M), and the anterior borders of the ambulatory carpi and propodi are each provided with two nodules. In the new species each ambulatory merus is armed with a line of sharp granules on the anterior margin and the ambulatory carpi and propodi are also armed with sharp granules, without nodules.

The new species may be closest to *Liomera bella* (Dana, 1852) in the general appearance of the carapace. *Liomera bella* is the same as the new species in having the protogastric region incompletely subdivided, but in *L. bella* each region is covered with smaller granules, and the chelipeds and ambulatory legs are also covered with minute granules, differing from the roughened appearance with sharp granules in the new species.

***Lybia leptochelis*** (Zehntner, 1894)

(Fig. 9A)

*Material examined.* Southeast of D'Arcy Point (29°18.5'S, 177°54.5'W), Raoul I., 44 m depth, 1 ♂ (cb 5.5 mm, cl 5.1 mm), NMNZ CR. 10588, 25/X/1975, RV *Acheron*.

*Remarks.* In spite of the thorough discussion of Guinot (1976) about the validity of *Lybia* species including the differences between *L. leptochelis* (Zehntner, 1894) and *L. plumosa* Barnard, 1947, the specimen at hand cannot be identified definitely to *L. leptochelis*. In the Kermadec Islands specimen the first anterolateral tooth is truncated to form a straight margin which lies obliquely toward the second tooth; the second tooth is nearly triangular on the left side and truncated on the right side, and the third tooth is obtusely triangular on the right and not formed on the left side. In comparison with the figures given by Guinot (1976), the carapace of the Kermadec specimen is seemingly closer to that of *L. plumosa* than that of *L. leptochelis*. However, the figures given by Guinot (1976) are not always clearly different from each other, and there is also the possibility of individual or developmental variation. *Lybia plumosa* was described as being covered with dense hairs, but in *L. leptochelis* the carapace is provided only with sparse hairs. Even the first male pleopods of *L. leptochelis* and *L. plumosa* given by Guinot (1976) are too close to each other to use as a distinguishing character for the two species in question. In the present specimen the spiniform recurved teeth are 5 on each finger, while they are 7 in *L. plumosa* and 9 in *L. leptochelis*.

Balss (1934), Barnard (1950), and Sakai (1967) considered *L. pugil* (Alcock, 1898) as a synonym of *L. leptochelis*, while Guinot (1976) mentioned the possibility of the resurrection of *L. pugil*. The difficulty of identification of *Lybia* species is entirely due to the scarcity of the specimens. If the chelae of the additional specimens from the Kermadec Islands should be armed with 5 spines on each prehensile edge of the chelae, it may be possible to establish a new species distinct from *L. leptochelis* and *L. plumosa*, or *L. pugil*.

*Lybia leptochelis* was originally reported from Ambon, Indonesia (Zehntner, 1894), and later from Fiji by Balss (1938). *Lybia plumosa* was originally reported from Natal, South Africa (Barnard, 1947; 1950), and then from Durban Bay and Delagoa Bay, South Africa (Barnard, 1955), Mozambique (Barnard, 1957), Madagascar (Balss, 1934, as *L. leptochelis*), and Somalia (Guinot, 1964, as *L. aff. plumosa*). This species was originally reported from Sri Lanka (Alcock, 1898) and later from Saya de Malha, Amirantes (Rathbun, 1911). These reported geographical ranges may indicate that the Kermadec Islands record is of *L. leptochelis* rather than *L. plumosa*.

***Miersiela haswelli*** (Miers, 1886)

(Fig. 9B)

*Material examined.* 3.5 miles north of Meteorological Station, Raoul I., 94–98 fms depth, 10 ♂♂ (Largest, cb 8.3 mm, cl 6.3 mm), 19 ♀♀ (Largest, cb 8.3 mm, cl 6.7 mm), NMNZ CR. 10595, 2 ♂♂ (cb 7.9 mm, cl 5.8 mm; cb 8.0 mm, cl 5.8 mm), 2 ♀♀ (cb 7.5 mm, cl 5.8 mm; cb 8.1 mm, cl 5.9 mm), NSMT-Cr 16809, 24/VIII/1972, RV *Acheron*; Between Bell's Flat and Hutchinson Bluff, Raoul I., 85–90 fms depth, 10 ♂♂ (Largest, cb 8.4 mm, cl 6.5 mm), 16 ♀♀ (Largest two, cb 8.6 mm, cl 6.1 mm; cb 8.2 mm, cl 6.3 mm), 2 ovig. ♀♀ (cb 8.5 mm, cl 6.4 mm; cb 8.4 mm, cl 6.0 mm), 2 juvs., 1 megalopa, NMNZ CR. 10596, 4/IV/1973, RV *Acheron*; Off northwest end, Raoul I., 80–110 fms depth, 7 ♂♂ (Largest, cb 7.2 mm, cl 6.1 mm), 10 ♀♀ (Largest, cb 8.5 mm, cl 6.3 mm), 5 juvs., 3 megalopae, NMNZ CR. 10597, 4/IV/1973, RV *Acheron*; Between Meteorological Station and Hutchinson Bluff, Raoul I., 80–60 fms depth, beam trawl, 1 ♀

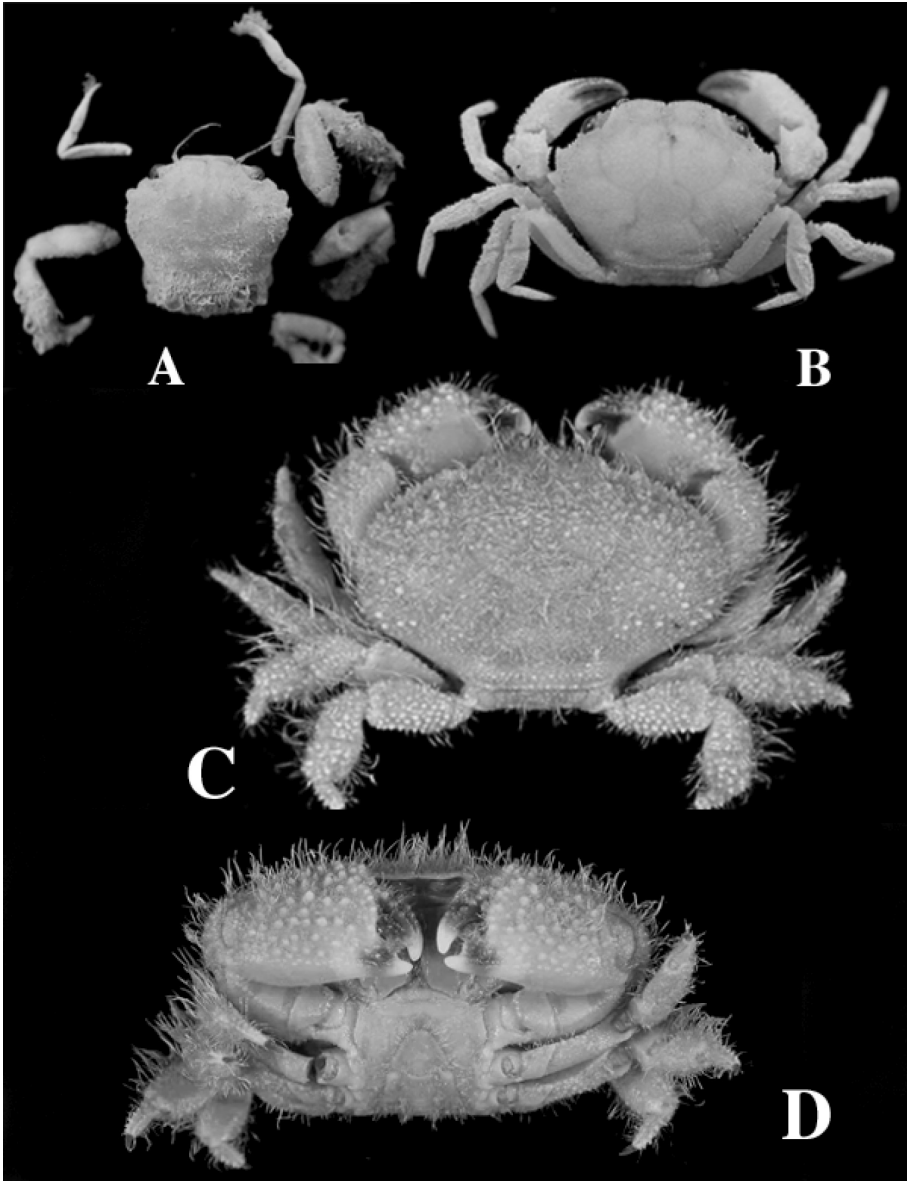


Fig. 9. A, *Lybia leptochelis* (Zehntner), male (cb 5.5 mm); B, *Miersiella haswelli* (Miers), male (cb 8.3 mm); C, D, *Pseudoliomera helleri* (A. Milne Edwards), female (cb 21.7 mm).

(cb 5.0 mm, cl 3.7 mm), NMNZ CR. 10598, 4/IV/1973, RV *Acheron*; Northwest of Fleetwood Bluff, Raoul I. (29°12.7'S, 177°56.1'W), 135 m depth, 1 juv., NMNZ CR. 10599, 25/X/1975, RV *Acheron*; 2.2 miles southeast of Nugent I. (29°14.7'S, 177°49.4'W), 165–146 m depth, 1 young ♀, NMNZ CR. 10600, 28/X/1975.

*Remarks.* These small specimens are unexpectedly close to *Nanocassiope tridentata* Davie, 1995, in general appearance, with the male first pleopod armed with many conical tubercles along the stout shaft, but having no apical long recurved ones unlike *N. tridentata*. *Miersiella haswelli* was finely illustrated by Guinot (1967). Takeda (1989) described a second species, *M.*

*cavifrons* from southern Japan.

This species is known from off Twofold Bay, N.S.W., Australia at 150 fms depth (Miers 1886, as *Medaeus*), from about 7 miles off Twofold Bay at 45 fms depth and from W.S.W of Gabo I., N.S.W. at 70 fms depth, (McNeil, 1953, as *Medaeus*), from Christmas Island in the Indian Ocean (Calman, 1911, as *Xanthias*), and from Sagami Bay, Japan (Balss, 1922, as *Platypilumnus*).

*Nanocassiope* sp.

*Material examined.* Sunday I., 1 ♂ (cb 6.0 mm, cl 4.5 mm), 3 ♀ (cb 5.2 mm, cl 3.7 mm; cb 5.7 mm, cl 4.0 mm; cl 5.9 mm, cl 4.5 mm), 2 ovig. ♀ (cb 5.7 mm, cl 3.8 mm; cb 6.1 mm, cl 4.3 mm), NMNZ CR. 10601, 1909–1910, R. S. Bell, W. R. B. Oliver Collection.

*Remarks.* This species is represented by six specimens, all of which are small, even the ovigerous females. The general appearance is very close to those of *Nanocassiope* Guinot, 1967 and *Alainodaeus* Davie, 1992. These two genera may be differentiated in the shape of the first male pleopod; in *Nanocassiope* the stocky and twisted shaft is apically armed with stout longish setae incurved toward the base, while in *Alainodaeus* the shaft is more slender and armed only with numerous conical tubercles, without longish setae or hairs. In the specimens from the Kermadec Islands, the first male pleopod of the sole male examined is provided with a series of longish stout setae at its apical and subdistal parts, but those setae are not distinctly recurved, differing from the pleopods of the known species of *Nanocassiope*, *N. alcocki* (Rathbun) from the western Indian Ocean, *N. granulipes* (Sakai) from Japan, *N. melanodactylus* (A. Milne Edwards) from the eastern Atlantic, *N. oblonga* Davie from French Polynesia, *N. polita* (Rathbun) from the Pacific coast of America, and *N. tridentata* Davie from Indonesia.

In the general shape of the carapace the Kermadec species is very close to *N. tridentata* and also, unexpectedly, to that of *Alainodaeus nuku* Davie from French Polynesia. The present identification to *Nanocassiope* is tentative because of the somewhat different setae formation of the first male pleopod.

*Platypodia delli* sp. nov.

(Fig. 10)

*Material examined.* Type specimen. Rock pool, Raoul I., holotype, ♂ (cb 26.4 mm, cl 18.6 mm), NMNZ CR. 10602, 1975/76, Evan McEwen.

*Description of holotype.* Carapace oval, ca. 1.4 times wider than long; dorsal surface evenly convex, separated into regions by shallow furrows, covered with small pearly granules interspaced with stiff setae of variable, but rather short length; granules and setae dispersed uniformly, not aggregated. Frontal, orbital and anterolateral margins thin, naked; frontal margin divided into two by a median slit, continuous with supraorbital margin without depression; supraorbital margin raised, with two slits near external orbital angle; external orbital angle not formed as a tooth at all; anterolateral margin divided into three lobes and a tooth by two slits and a deep notch, with three lobes subequal in length, regularly armed with naked crest diminishing in width posteriorly; third lobe evenly convex, small granules along margin, last tooth obtusely angulate, not reaching beyond margin of third lobe.

Both chelipeds short, heavy, equal in size and shape. Merus almost wholly disguised under carapace, its distal small part visible from above. Carpus large, with whole inner surface tightly fitted to anterolateral margin of carapace; outer surface entirely covered with a raised, smooth scab provided with irregular, deep fissures. Palm also covered with a scab on upper half of outer

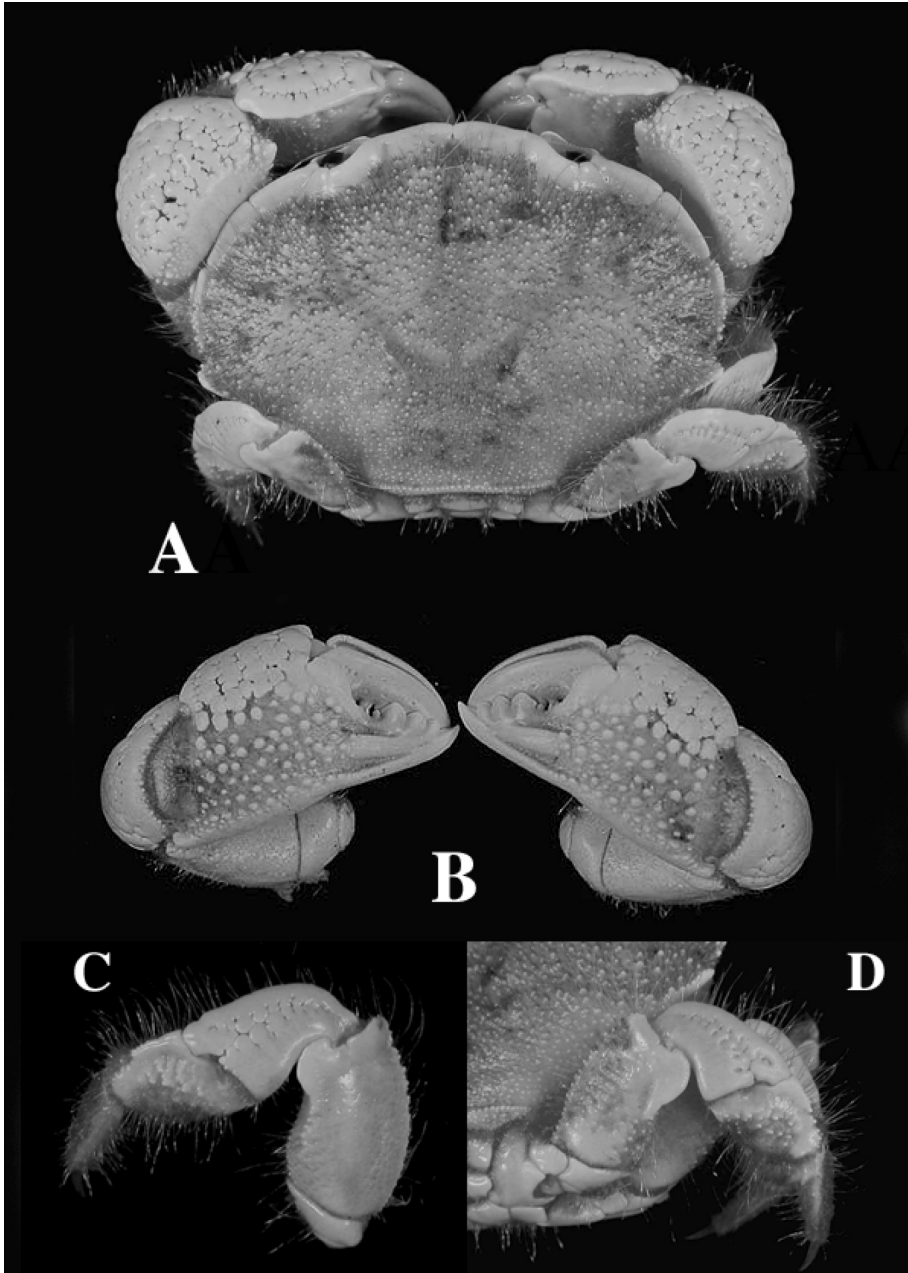


Fig. 10. *Platypodia delli* sp. nov., holotype male (cb 26.4 mm).

surface; several truncated granules of good size cut out from lower edge of scab; lower half of outer surface covered with obtuse granules of good and variable sizes and stiff setae of variable lengths; granules arranged more or less in longitudinal rows; upper margin of palm sharply crested for its whole length, supported by a longitudinal submarginal seam incised by deep fissures; lower margin of palm thickened, smooth, continuous with lower margin of immovable finger without any interruption. Each finger as long as upper margin of palm, with sharply pointed tips;

outer surface of immovable finger with a longitudinal smooth ridge, truncated proximally; cutting edge of immovable finger thickened, smooth at basal part close to articulation with movable finger, armed with three conical, sharp, close-set teeth along distal half; movable finger stout, smooth for its whole surface, with two longitudinal deep furrows filled with short setae on each of outer and inner surfaces along upper margin.

Ambulatory legs stout, not long, strongly depressed, with crested anterior margins on meri, carpi and propodi, densely fringed with setae of variable lengths; each merus covered with minute, sharp granules on anterior margin, main part of upper surface and basal half of lower margin; basal one fourth and distal one fifth smooth, raised without setae and granules; distal half of lower margin also smooth, raised, together with lobate upper distal margin. Carpus of each ambulatory leg prominent, subequal to merus, upper surface smooth with a longitudinal seam; propodus short, about two thirds as long as carpus, covered with several granules of good size and thick setae of variable length for the main part, but with smooth surface along basal and anterior margins; anterior margin also fringed with long setae and several granules of good size; dactylus as long as propodus, with a sharp terminal claw, surfaces along anterior and posterior margins covered with dense hairs and long setae.

*Etymology.* This species is named after the late Dr. Richard Dell, a past director of the National Museum of New Zealand, who made a valuable contribution to the taxonomy of New Zealand's crab fauna.

*Remarks.* This new species is generally close to *Platypodia pseudogranulosa* Serène, 1984, in which the carapace dorsal granules are much smaller than those of *P. granulosa* (Rüppell, 1830). In both *P. pseudogranulosa* and *P. granulosa*, each anterolateral margin is crested for its whole length, is of similar width throughout, and is cut into four lobes; in the new species, however, the marginal crest becomes narrower posteriorly and the anterolateral margin is cut into three lobes and an isolated tooth. In *P. pseudogranulosa* and *P. granulosa* the upper margin of each palm is not crested at all, quite different from the strongly crested upper margin of the palm in the new species. The new species is most characterized, and readily distinguished from all the known species, by the fissured smooth scab covering the chelipedal carpus and the upper half of the palm.

***Pseudoliomera helleri*** (A. Milne Edwards, 1865)

(Fig. 9C, D)

*Material examined.* Close to east side of Meyer Island (29°14.83'S, 177°51.93'W), Raoul I., 25–29 m depth, 1 ♀ (cb 21.7 mm, cl 14.3 mm), NMNZ CR. 10603, 11/IX/1976, RV *Acheron*.

*Remarks.* This species has an Indo-West Pacific distribution, from Japan to Australia, the western Indian Ocean and the Red Sea, inhabiting rocky shores to a depth of 35 m.

***Xanthias dawsoni*** sp. nov.

(Figs. 11, 12)

*Material examined.* Type specimens. Northwest of Fleetwood Bluff, Raoul I. (29°12.7'S, 177°56.1'W), 135 m depth, holotype, ♂ (cb 11.8 mm, cl 7.5 mm), NMNZ CR. 10604, 25/X/1975, RV *Acheron*; East of Dayrell I., Herald Islets (29°14.73'S, 177°50.34'W), 135–146 m depth, paratypes, 1 ♂ (cb 5.4 mm, cl 3.6 mm), 3 ♀♀ (cb 4.4 mm, cl 3.1 mm; cb 5.5 mm, cl 3.6 mm; cb 5.8 mm, cl 4.0 mm), NMNZ CR. 10605, 1 ♂ (cb 6.2 mm, cl 4.2 mm), NSMT-Cr 16812, 10-IX-1976; Southeast of D'Arcy Point, Raoul I. (29°19.1'S, 177°54.6'W), 70 m depth, paratype, 1 ♂

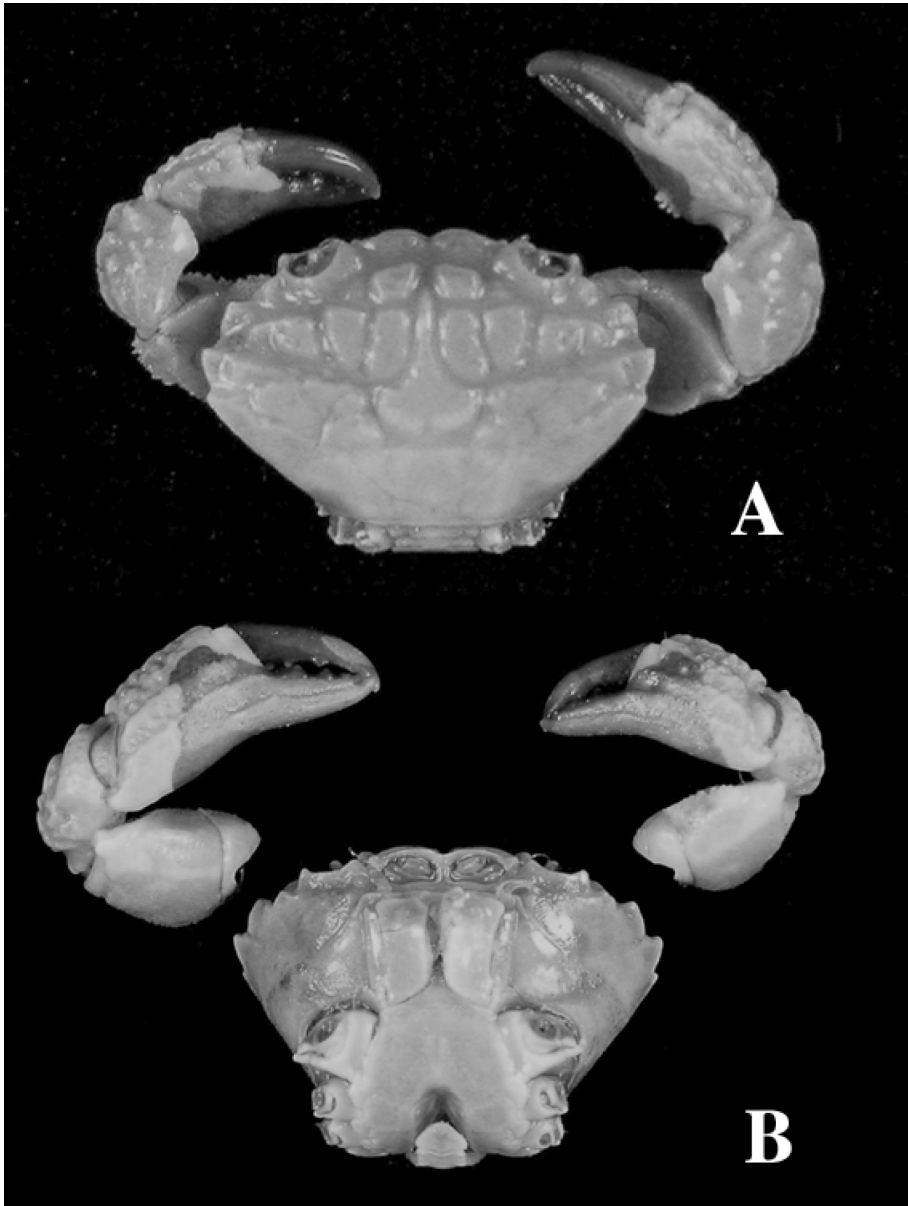


Fig. 11. *Xanthias dawsoni* sp. nov., holotype male (cb 11.8 mm).

(cb 7.0 mm, cl 4.7 mm), NMNZ CR. 10606, 25-X-1975, RV *Acheron*.

Additional non-type specimens. Off Hutchinson Bluff, Raoul I., 46–62 fms depth, pumice rubble, 1 ♂ (cb 4.5 mm), somewhat damaged, 1 juv., NMNZ CR. 10607, 24/VIII/1972, RV *Acheron*; Same data as the holotype, 2 ♂♂ (cb 4.2 mm, cl 4.5 mm), NMNZ CR. 10608, somewhat damaged.

*Description of holotype.* Carapace ovate, about 1.57 times wider than long, weakly convex fore and aft, nearly flat laterally; dorsal surface smooth, without prominent granules and hairs, deeply sculpted into regions. Under high magnification each region frosted with extremely

minute granules. Regions isolated from other regions by smooth, deep interregional furrows; frontal region not raised for the most part, but anterior part produced to form a transverse ridge, resulting in a weakly convex margin in dorsal view, just above true frontal margin of carapace; epigastric region (1 M) prominent, with anterior margin oblique toward bottom of upper orbital margin; a small islet formed between outer margin of epigastric region and upper orbital margin; protogastric region (2 M) prominent, longitudinally subdivided into two; an interregional furrow weakly curving outward along its posterior half, so that inner subdivision of protogastric region is longer than outer subdivision; anterior outgrowth of mesogastric region (3 M) narrow for the most part, exceeding transverse furrow between epigastric and protogastric regions; anterolateral angle of main part of mesogastric region rounded; metagastric region (4 M) not distinct; outer margin of mesogastric region weakly convex, weakly converging toward anterolateral angle of cardiac region (1 P) which is separated anteriorly from gastric region by a rather depressed, distinct transverse furrow, laterally and posteriorly from brachial and intestinal regions by indistinct linear furrows or wrinkles; epibranchial region transverse just outside protogastric region, narrowing toward dorsal depression between second and third anterolateral teeth; a small forward indentation in posterior margin of outer part of epibranchial region; mesobranchial region from third anterolateral tooth to mesogastric region subdivided with shallow furrows; metabranchial region not subdivided, weakly curving posterolateral margin of carapace separated from outer part of mesobranchial region by an oblique deep furrow from dorsal depression of third and fourth anterolateral teeth, and by shallow, transverse indistinct furrow over greater part of mesobranchial region.

Frontal margin strongly directed downward, divided into two convex lobes, with a median, wide depression; a small lobe at outer end of each frontal lobe widely separated from main lobe; narrow hiatus between lower prolongation of frontal lateral lobe and inner infraorbital angle completely occupied by second and third antennular segments. Orbital region raised, narrowing laterally toward its external angle; upper and lower margins thin, more or less crested, without distinct indentation; external angle not angulated at all, simply continuing to lower margin and first anterolateral tooth which is ridged and weakly convex; lower margin of orbit produced as a lobe, weakly concave as a whole, with sharp angulation just below external orbital angle and with angulated inner angle.

In dorsal view, subhepatic region raised as a short ridge seen below first anterolateral tooth, second anterolateral tooth weakly convex along outer margin, angled at its anterior end; third anterolateral tooth directed obliquely outward, its outer margin almost straight or very weakly convex; third tooth deeply isolated from second tooth along margins and also dorsally by outermost part of transverse interregional furrow between epibranchial and mesobranchial regions; fourth anterolateral tooth much smaller, obtusely angled. Whole length of posterior margin of carapace as wide as frontorbital breadth, true posterior margin as wide as frontal breadth.

Merus and carpus of third maxilliped wide, with exopod about half as wide as merus, smooth without hairs and granules; inner margin of merus minutely, but distinctly toothed throughout length, fringed with a line of short setae; carpus quadrate with obtusely angled antero-outer angle and obliquely truncated antero-inner angle; anterior margin of merus fringed with microscopic granules and ridged together with inner half of carpus.

Chelipeds comparatively large, not long; right cheliped only slightly larger than left but both chelipeds close to each other in size and shape; merus short, truncated, completely disguised under carapace, its inner surface completely excavated; its anterior margin thickened, posterior margin microscopically granulated, more or less distinctly crested, with a subterminal depression



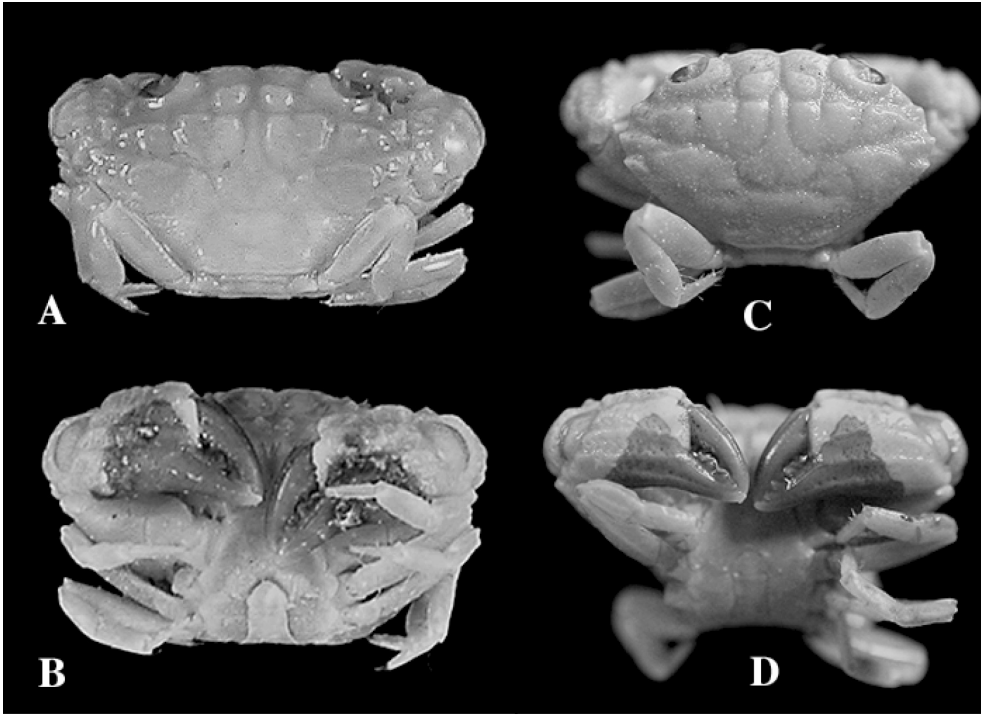


Fig. 12. *Xanthias dawsoni* sp. nov., paratype males (cb 5.4 mm, 6.2 mm).

arising from submarginal furrow of outer surface; outer surfaces of carpus and palm prominently eroded with furrows and depressions, inner angle of carpus produced into a thick tubercle directed obliquely upward, outer surface of palm with four or five longitudinal ridges; surfaces between ridges with many irregular depressions; about half of inner and outer surfaces of palm covered with dark color extending from immovable finger, dark color extending to basal one third of lower margin of both palms; fingers thick, with obtuse conical teeth, immovable finger weakly curved downward at distal part of palm, movable finger as long as upper margin of palm, tips of both fingers not sharply pointed.

All ambulatory legs detached in holotype, stout, smooth, with scant, longish setae along posterior margins of propodi and dactyli; anterior margin of each merus thin-edged, with microscopic granules only; upper surface of each carpus with a longitudinal ridge along anterior margin curving close to merus; anterior margin undulating with two or three shallow depressions.

Fused third to fifth abdominal segments narrow, weakly tapering toward sixth segment; terminal segment rounded-triangular, its basal part wider than sixth segment. First pleopod strongly curved outward, distal beak pointed, with conical tubercles on distal part of outer surface and a line of very long hairs along distal one fifth of inner margin of shaft.

*Notes on paratypes and additional specimens.* All the remaining specimens examined are smaller than the holotype, and some specimens are not fully developed. In the males, in spite of their small size, the dark color of the immovable finger is widely extended onto the palm as in the holotype. It is notable that the dorsal areolation of the carapace is distinct in all the specimens examined but, in comparison to the holotype, less distinct in the remaining specimens with shallower furrows, and with the protogastric region imperfectly subdivided into two by a shorter lon-

gitudinal furrow. The depth of this protogastric subdivision is thus variable between individuals and depending on the developmental stage, but even in the juvenile specimens the protogastric region is not complete, having a shallow, short furrow or notch in its anterior margin.

*Etymology.* This species is named for Mr. Elliot Dawson, a long time contributor to the taxonomy of marine invertebrates, especially decapods, and a Research Associate at Te Papa.

*Remarks.* The new species is, without doubt, most closely related to *X. glabra* Edmondson, 1951, known from off Oahu Island, the Hawaiian Islands. In the holotype of *X. glabra* the breadth and length of the carapace are given as 21 mm and 13 mm, respectively. This means the carapace is bigger and proportionally wider than those of all the specimens referred to the new species from the Kermadec Islands. In *X. glabra* the protogastric region is complete, without any trace of a notch or indentation and the epibranchial region is also sharply defined without erosion or any indentation and differs thus from the new species in which the epibranchial region is cut short at the outer part of its posterior margin. In the new species, furthermore, the mesobranchial region is subdivided with shallow furrows, but in *X. glabra* the region is clearly surrounded by anterior and posterior furrows. In *X. glabra* the carpus of each cheliped is described by Edmondson (1951) as “Carpus smooth, outer surface impressed by shallow tri-radiating grooves which do not reach the border; inner angle bearing a stout, blunt tooth”, but in the new species the whole outer surface is markedly eroded, as described above. The palm of *X. glabra* was described by Edmondson as “Both outer and inner surfaces microscopically pitted giving appearance of vertical wrinkles”, but in the new species the palm is also prominently eroded with depressions and furrows similar to the outer surface of the carpus.

#### Family ERIPHIIDAE

##### *Bountiana norfolcensis* (Grant & McCulloch, 1907)

(Fig. 13A)

*Material examined.* Macauley I., high tidal pools, 1 ovig. ♀ (cb 10.4 mm, cl 8.3 mm), NMNZ CR. 10609, 1 ♀ (cb 9.4 mm, cl 7.0 mm), NSMT-Cr 16806, XI/1970, W. Spiekman & J. C. Yaldwyn.

*Remarks.* This species originally described as *Eriphia* was monotypically designated as the type species of the genus *Bountiana* established by Davie and Ng (2000).

This species has been previously reported from Norfolk Island, Lord Howe Island and New South Wales, Australia, by Grant and McCulloch (1907), McNeill and Ward (1930), and Davie and Ng (2000).

##### *Ozius truncatus* H. Milne Edwards, 1834

(Fig. 13B)

*Material examined.* Raynor Point, Raoul I., under rock, 1 young ♀, 1 juv., NMNZ CR. 10610, 29/XII/1965, R. G. Wear; Macauley I., high tidal pools, 7 ♂♂ (Largest, cb 40.0 mm, cl 25. mm), NMNZ CR. 10611, 1 ♂ (cb 28.0 mm, cl 17.8 mm), NSMT-Cr 16805, XI/1970, W. Spiekman & J. C. Yaldwyn.

*Remarks.* In its general appearance, this species is close to *O. rugulosus* Stimpson, 1858, but distinguished from that widely distributed species by having a flattened carapace and more prominent and rather angled third and fourth anterolateral teeth. The linear ridge toward the protogastric region arising from the fourth or last tooth is very distinct. In *O. rugulosus* the carapace

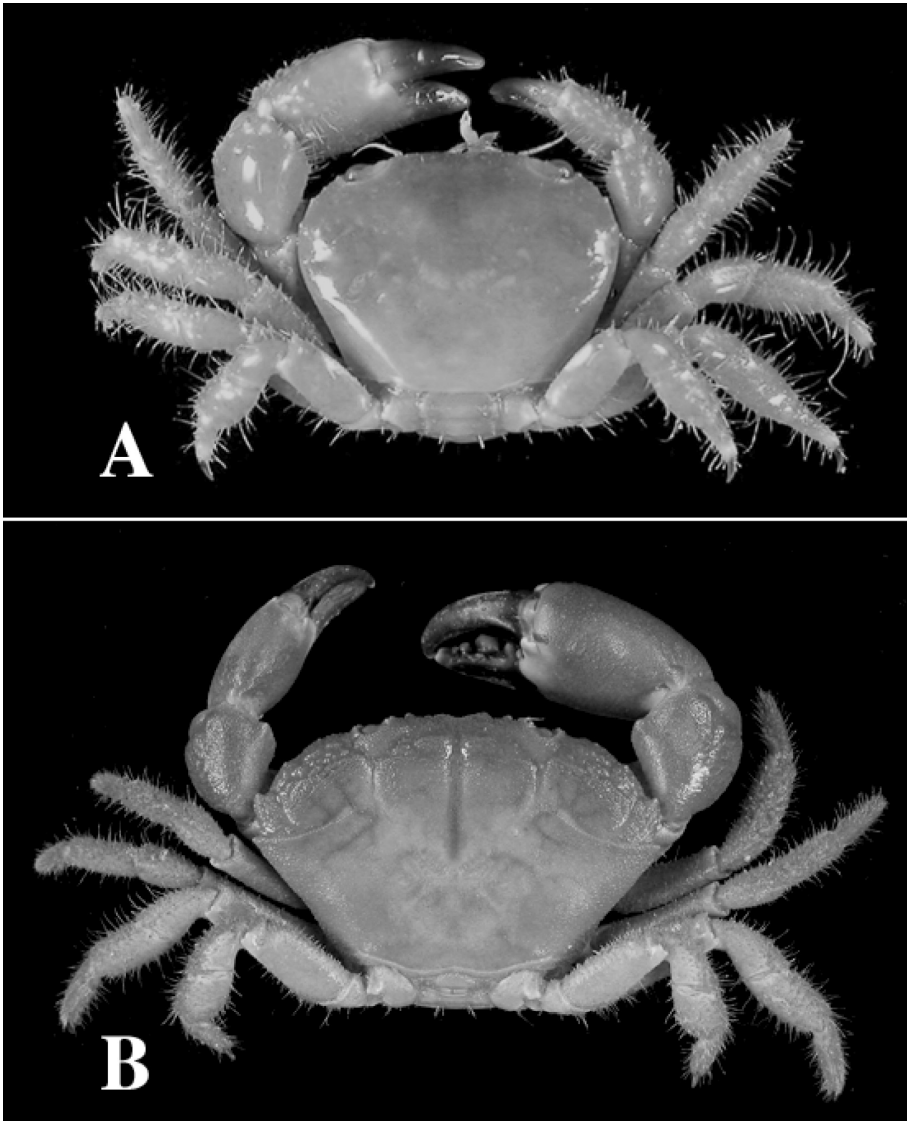


Fig. 13. *Bountiana norfolcensis* (Grant & McCulloch), ovigerous female (cb 10.4 mm); B, *Ozius truncatus* H. Milne Edwards, male (cb 40.0 mm).

is fairly convex as a whole, with an additional small tooth behind the last anterolateral tooth, from which there is an indistinct ridge running inward. Chilton (1911) recorded *O. lobatus* Heller, 1861, from the Kermadec Islands, with the comment that the two species (*O. lobatus* and *O. truncatus*) are probably identical to each other.

This species is known from the lower east, south and lower west coasts of Australia, Lord Howe Island, Norfolk Island, the Kermadec Islands and New Zealand.

## Family PILUMNIDAE

*Actumnus griffini* sp. nov.

(Fig. 14)

*Material examined.* Type specimen. Between Dayrell and Chanter Islands, Herald Islets, 31–45 m depth, holotype, ♂ (cb 7.2 mm including lateral teeth, cl 5.4 mm), NMNZ CR. 10627, 9/XI/1976, RV *Acheron*.

*Description of holotype.* Carapace ovoid, rather narrow, ca. 1.3 times wider than long, convex in both directions, uniformly covered with rather short, stiff setae of variable length; dorsal surface smooth, regions ill-defined, with only indistinct shallow, narrow furrows surrounding proto-gastric and mesogastric regions. Frontal margin strongly directed downward, divided into two convex lobes. Supraorbital margin obliquely retreating laterally, fringed with fine, sharp granules, bearing two notches, inner middle notch small but distinctly V-shaped, outer notch close to external orbital tooth, indicated by depression. External orbital angle triangular with weakly convex outer margin, tip sharp and directed obliquely outward. Anterolateral margin, behind external orbital angle, cut into three triangular or more or less lobular teeth each with a sharp tip, each separated by a deep notch, first tooth largest, somewhat similar to external orbital angle, but with tip directed forward, outer margin nearly longitudinal along most of length and posterior part curving inward to notch in front of second tooth; second tooth more slender than first tooth and directed obliquely outward; last tooth smaller, sharper than, and parallel with second tooth, tip of last tooth exceeding tip of second tooth. Posterolateral margin of carapace nearly straight, strongly convergent toward lateral end of posterior margin, only slightly longer than anterolateral margin. Posterior margin subequal to frontal margin.

Right cheliped missing. Left cheliped short, stout, covered with stiff setae like those of carapace, armed with many spiniform or tuberculiform granules; merus wholly disguised under carapace; inner surface of merus wholly truncated and flattened; outer surfaces of carpus and palm armed with spiniform or tuberculiform granules that are not arranged in rows; palm inflated, with lower margin weakly convex for its basal three fourths and shallowly concave distally; fingers short, about two thirds as long as palm; movable finger strongly curved toward tip of immovable finger, a wide gape between both fingers; upper margins of movable finger armed with strongly spiniform granules similar to outer surface of palm; a tuft of setae on outer surface of movable and immovable fingers.

Ambulatory legs thick, strong, unarmed, except for stiff setae of variable length mainly on anterior margins and upper surface of last pair of legs.

*Etymology.* This species is named after Dr. Desmond J. G. Griffin, retired Director of the Australian Museum and specialist in Brachyura, particularly the Majoidea.

*Remarks.* The new species is characterized by the ill-defined regions on the dorsal surface of the carapace which is covered with stiff setae of variable length, by the three strong anterolateral teeth and by the strongly curved, short fingers with a tuft of setae on each outer surface. In particular the form of the immovable finger is not known in any other species of the genus.

*Pilumnus novaezelandiae* Filhol, 1886

(Fig. 15A, B)

*Material examined.* Off northeast end of Raoul I., 110–80 fms depth, 1 juv. (cb 6.6 mm excluding lateral spines, cl 5.7 mm), NMNZ CR. 10628, 5/IV/1973; Northwest of Fleetwood Bluff,

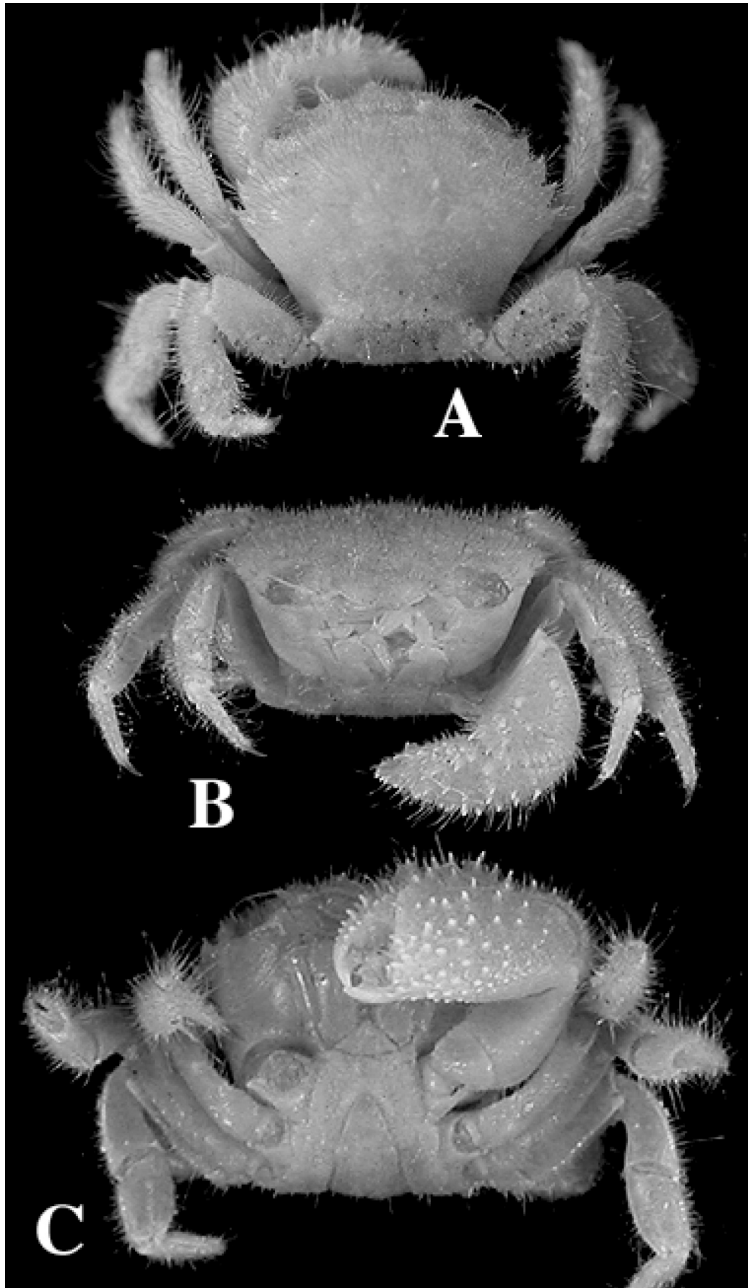


Fig. 14. *Actumnus griffini* sp. nov, holotype male (cb mm).

Raoul I. (29°12.7'S, 177°56.1'W), 135 m depth, 1 juv. (cb 5.2 mm), NMNZ CR. 10629, 25/X/1975, RV *Acheron*.

*Remarks.* Both of the specimens at hand are very young specimens. The carapace is narrow, with a rounded contour in dorsal view; the dorsal surface is strongly vaulted longitudinally with regions ill-defined and is smooth except for rather sparse setae of variable length. The front is well developed, divided into two convex lobes by a wide and deep median notch; and the antero-

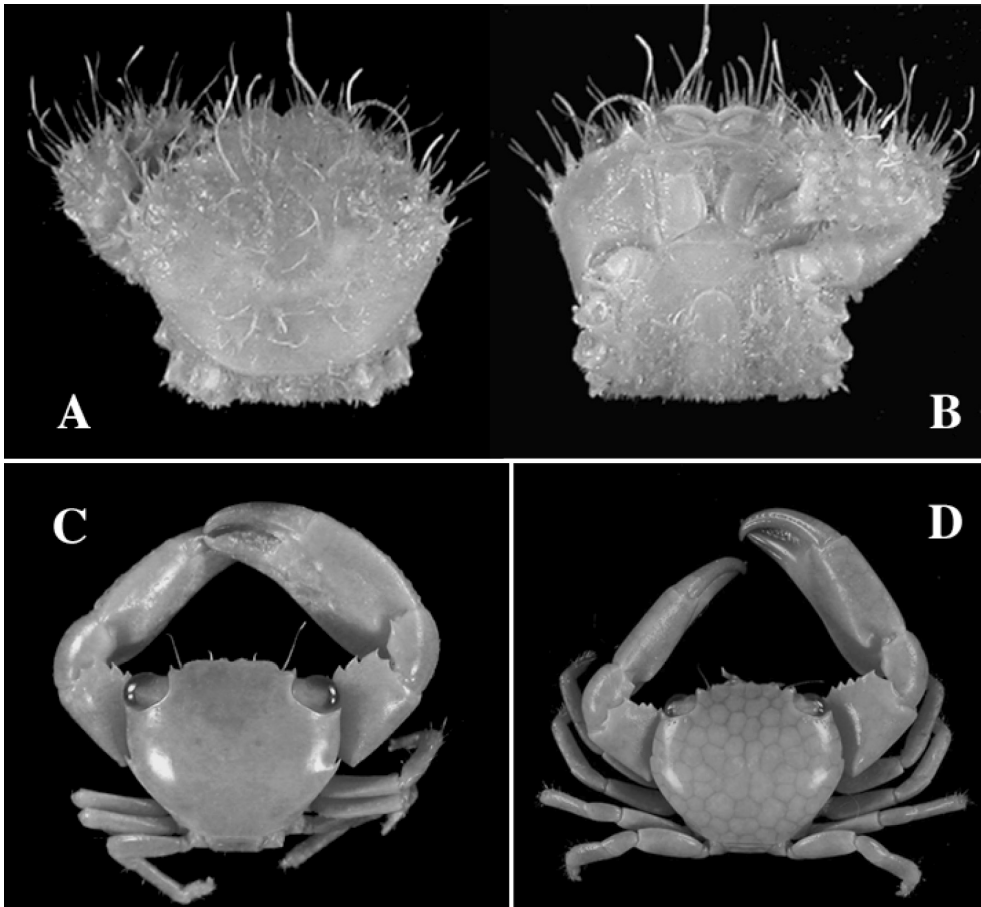


Fig. 15. A, B, *Pilumnus novaehollandiae* Filhol, juv. (cb 6.6 mm); C, *Trapezia cymodoce* (Herbst), male (cb 8.1 mm); D, *Trapezia septata* Dana, male (cb 11.5 mm).

lateral margin is armed with three slender spines directed obliquely forward but there is no external orbital spine. The outer surfaces of the cheliped carpi and palms are each armed with several long spines. The merus of each ambulatory leg is armed with three or four small spines midway along the anterior border and a prominent spine at the distal end; and each ambulatory carpus is armed with three long spines on the anterior margin. These characters are notable among *Pilumnus* species, and only seen otherwise in *P. novaehollandiae* from New Zealand and *P. australis* Whitelegge, 1900, from New South Wales, which was collected from 45–75 fms depth. Although *P. novaehollandiae* is known from several descriptions including the most useful one by Bennett (1964), there is no subsequent record of *P. australis* since its description by Whitelegge (1900). There are some minor discrepancies between the descriptions of each of these species, viz. the external orbital and subhepatic armature, but there also seems to be considerable variation in their developmental stages. It is highly probable that both these species are synonymous, with the nomenclatural priority of *P. novaehollandiae* over *P. australis*.

This species has previously been known from New Zealand (North Cape to Stewart Island, and the Chatham Islands), from the intertidal zone to 11 fms depth.

## Family TRAPEZIIDAE

*Trapezia cymodoce* (Herbst, 1801)

(Fig. 15C)

*Material examined.* Sunday I., 1 ♂ (cb 8.1 mm, cl 6.9 mm), NMNZ CR. 10630, 1909–1910, R. S. Bell, W. R. B. Oliver Collection.

*Remarks.* This species is one of the most well-known species of the genus *Trapezia*, having many synonyms. Castro (1997a) and Castro *et al.* (2004) discussed the synonymy of *T. cymodoce* in detail.

This species is found living in close association with living coral of the genus *Pocillopora*, throughout the Indo-West Pacific except for the Hawaiian Islands and in the eastern Pacific.

*Trapezia guttata* Rüppell, 1830

*Material examined.* Denham Bay, Raoul I., 1 juv. (cb 2.7 mm, cl 2.3 mm), NMNZ CR. 10631, VI/1956, Bergquist.

*Remarks.* The specimen at hand is too small for its definite identification, but the front is only weakly sinuous, the lateral margin of the carapace is armed with a sharp spine, the posterior half of the carapace is strongly convergent and the frontal margin is indistinctly colored as a transverse band.

This species is known from the Indo-West Pacific except for the Hawaiian Islands.

*Trapezia septata* Dana, 1852

(Fig. 15D)

*Material examined.* Sunday I., 8 ♂♂ (cb 5.7 mm, cl 4.7 mm—cb 11.5 mm, cl 9.5 mm), 2 ovig. ♀♀ (cb 10.8 mm, cl 9.0 mm; cb 10.8 mm, cl 8.8 mm), 3 ♀♀ (cb 7.1 mm, cl 5.8 mm—cb 11.0 mm, cl 9.6 mm), NMNZ CR. 10632, 2 ♂♂ (cb 8.6 mm, cl 7.0 mm; cb 9.6 mm, cl 8.2 mm), NSMT-Cr 16804, 1909–1910, R. S. Bell, W. R. B. Oliver Collection.

*Remarks.* This widely known species, having a honeycomb network of red-brown lines on the carapace and chelipeds, is well-defined and distinguished from *T. areolata* Dana, 1852, by Galil and Lewinsohn (1985).

*Trapezia septata* is known throughout the Indo-West Pacific except for the Hawaiian Islands (Castro, 1997b), mainly inhabiting colonies of *Pocillopora*. This species was recorded by Chilton (1911) from Meyer Island as *T. ferruginea* var. *areolata* Dana.

## Family GONEPLACIDAE

*Goneplax marivenae* Komatsu & Takeda, 2004

(Fig. 16A)

*Material examined.* Northwest of Fleetwood Bluff, Raoul I., 135 m depth, 1 ♂ (cb 12.0 mm, cl 8.1 mm), NMNZ CR. 10633, 25/X/1975, RV *Acheron*; 2.2 miles off Nugent Id. (29°14.7'S, 177°49.4'W), Raoul I., 165–146 fms depth, 2 ♂♂ (cb 13.5 mm, cl 8.4 mm; cb 11.5 mm, cl 7.5 mm), 2 ovig. ♀♀ (cb 13.2 mm, cl 8.3 mm; cb 11.9 mm, cl 8.1 mm), 1 ♀ (cb 11.5 mm, cl 7.2 mm), 1 juv., NMNZ CR. 10634, 1 ♂ (cb 14.0 mm, cl 8.9 mm), NSMT-Cr 16802, 28/X/1975, RV *Acheron*; Curtis I. (30°34.5'S 178°34.5'W), 420–100 m depth, 1 ♂ (cb 13.2 mm, cl 9.2 mm),



Fig. 16. A, *Goneplax marivenae* Komatsu & Takeda, male (cb 13.2 mm); B, *Pseudopalicus oahuensis* (Rathbun), female (cb 15.0 mm).

NMNZ CR. 10635, 26/IV/1994; East of Dayrell I. (29°14.73'S, 177°50.34'W), Herald Islets, 135–146 depth, 3 juvs., NMNZ CR. 10636, 10/X/1976.

*Remarks.* The specimens at hand agree well with the species described recently from the Philippines, having the anterolateral tooth protruding beyond the external orbital tooth. In its close congener from Japan, *G. megalops* Komatsu & Takeda, 2004, the lateral margins of the carapace are strongly convergent posteriorly, with the anterolateral tooth smaller than the external orbital tooth.



## Family PALICIDAE

*Pseudopalicus oahuensis* (Rathbun, 1906)

(Fig. 16B)

*Material examined.* Southeast of Chanter Islets (29°16'S, 177°49.3'W), Raoul I., 585–512 m depth, 1 ♀ (cb 15.0 mm, cl 11.4 mm), NMNZ CR. 10637, 28/X/1975, RV *Acheron*; 3.1 miles off Nugent Id., Raoul I., 280–300 fms depth, 1 ♀ (cb 14.2 mm, cl 10.8 mm), NMNZ CR. 10638, RV *Acheron*.

*Remarks.* The specimens at hand agree well with the figures and diagnosis given by Castro (2000), as the first anterolateral tooth is short and rounded in contrast to the prominent second and third teeth, and the meri of the ambulatory legs are fringed with many, somewhat lobate tubercles on their anterior margins and sharp tubercles on their posterior margins. In the specimens from the Kermadec Islands, all the chelipeds and ambulatory legs are detached but are present. Castro (2000) included 11 species in the genus *Pseudopalicus* Moosa & Serène and provided a key to the species. The closest congeners to *P. oahuensis* are *P. amadaibai* (Sakai, 1963) known from Japan, the Philippines, New Caledonia and Fiji, and *P. acanthodactylus* Castro, 2000, described from New Caledonia, but the dactyli of the ambulatory legs are entire in *P. oahuensis* unlike the other two species.

This species is known from the West Pacific from Hawaii and Taiwan to the Banda Sea, Coral Sea, Chesterfield Islands and French Polynesia. Its bathymetric range is from 200 to 680 m depth.

## Family OCYPODIDAE

*Ocypode pallidula* Jacquinot, [1842–1847]

(Fig. 17)

*Material examined.* At night on sandy beach, Macauley I., 1 ♂ (cb 21.1 mm, cl 19.2 mm), 1 ♀ (cb 19.7 mm, cl 17.1 mm), NMNZ CR. 10639, XI/1970, W. Spiekman & J. C. Yaldwyn; Sandy Bay, Macauley I., 1 ♂ (cb 19.6 mm, cl 17.6 mm), NMNZ CR. 10640, IX or XII/1988, Allan Tenyson; In holes on sandy beach, north beach and Denham Bay, Raoul I., 3 ♂♂ (cb 13.8 mm, cl 11.9 mm—cb 19.2 mm, cl 17.0 mm), 1 ♀ (cb 19.5 mm, cl 17.1 mm), NMNZ CR. 10641, 1 ♀ (cb 18.6 mm, cl 16.7 mm), NSMT-Cr 16803; Raoul I., 1 ♀ (cb 23.7 mm, cl 21.4 mm), NMNZ CR. 10642, 1963–1964, R. G. Lovegrove..

*Remarks.* This species has been considered as a synonym of *Ocypode urvillei* Guerin, 1829, following Ortmann (1898), but was resurrected by Sakai and Türkay (1976) who indicated that *O. urvillei* is a synonym of *O. ceratophthalma* (Pallas, 1772). According to Sakai and Türkay (1976), *O. laevis* Dana, 1852 is also a synonym of *O. ceratophthalma*. Following the paper of Sakai and Türkay (1976) there seems to be no doubt about the synonymy, this species being distinguished from its congeners by the shape of the carapace; the lateral margin of the carapace is nearly longitudinal or even divergent along its anterior half and then strongly convergent along its posterior half. The stridulating mill on the inner surface of the male larger palm is well developed just like that of *O. ceratophthalma*, but in the latter species, it is well known that the corneous horn is developed in the male as one of the secondary sexual characters. On the other hand, the general appearance of the carapace in *O. pallidula* is more or less similar to that of *O. ryderi* Kingsley, 1880, and *O. kuhlii* de Haan, 1835, although in these two latter species the inner surface of the palm is ornamented with a line of small tubercles instead of a stridulating mill.

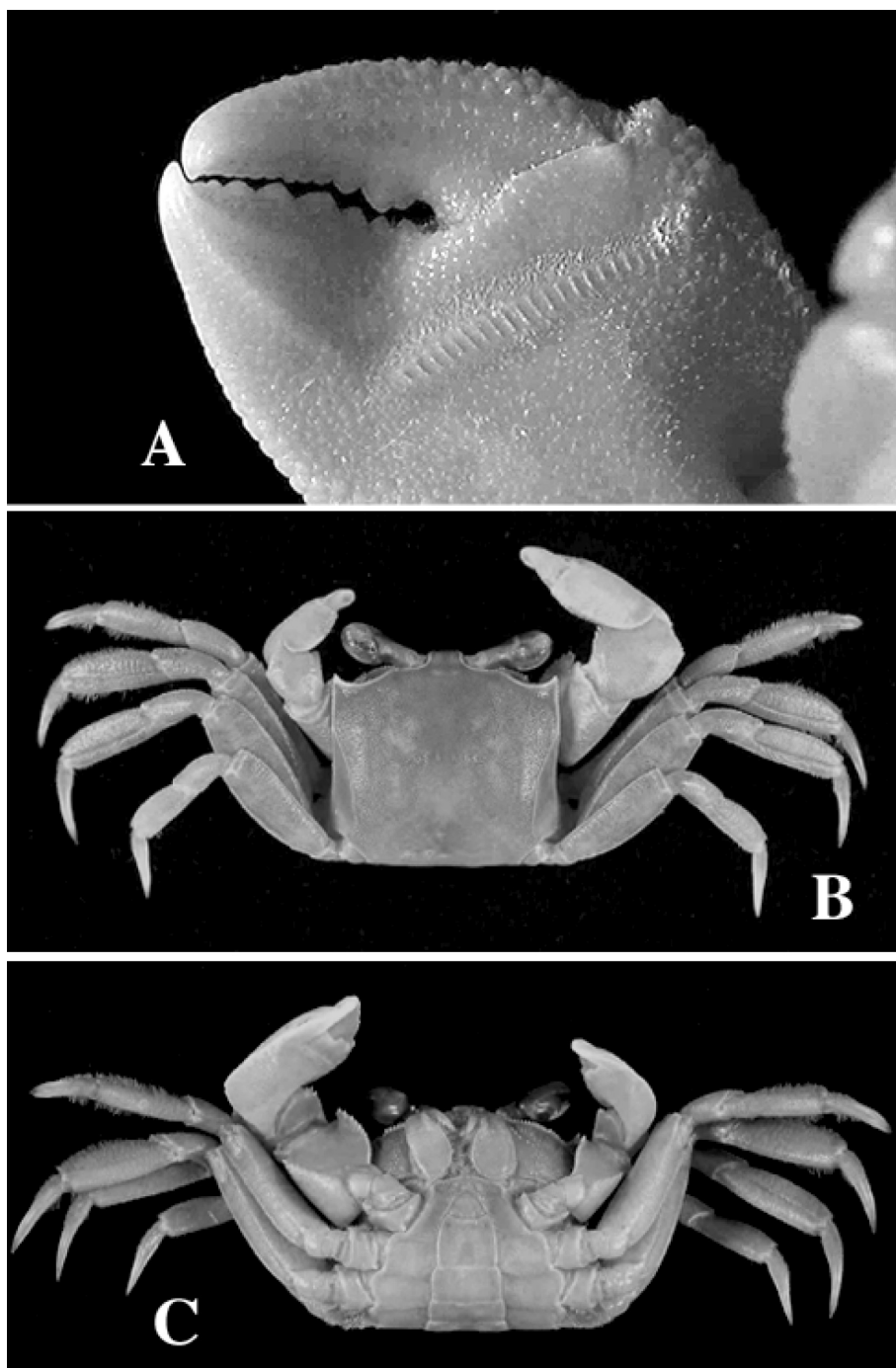


Fig. 17. *Ocypode pallidula* Jacquinot, male (cb 21.1 mm).

This species occurs in the Pacific Ocean from the Hawaiian Islands southward to the Mollucas, Tuamotu and the Cook Islands, and in the northeast of Australia, and also the Western Indian Ocean (Madagascar and Mauritius).

Family GRAPSIDAE

*Cyclograpsus insularum* Campbell & Griffin, 1966

(Fig. 18A)

*Material examined.* Raoul I., intertidal zone, 4♂♂ (cb 9.7 mm, cl 8.2 mm—cb17.5 mm, cl 15.3 mm), 3♀♀ (cb 10.5 mm, cl 8.3 mm—cb16.2 mm, cl 14.6 mm), NMNZ CR. 10643, 1♂ (cb 17.4 mm, cl 15.0 mm), NSMT-Cr 16801, 20/XII/1965, R. G. Wear; Beach near Meteorological Office, under rocks, 3♂♂ (cb 12.0 mm, cl10.2 mm—cb 14.8 mm, cl 12.5 mm), NMNZ CR. 10644, 23/IV/1973.

*Remarks.* Campbell and Griffin (1966) made a key to the Indo-West Pacific species of the genus *Cyclograpsus*, and described this species based on specimens from Lord Howe Island, Norfolk Island, the Kermadec Islands, and New Zealand. The infraorbital ridge is crenulate, with some 15 granules decreasing in size laterally. *Cyclograpsus lavauxi* (H. Milne Edwards, 1853) recorded by Chilton (1911) from Sunday Island in the Kermadec Islands is here referred to *C. insularum*.

*Geograpsus grayi* (H. Milne Edwards, 1853)

(Fig. 18B)

*Material examined.* Raoul I., in rotten tree 300 yards from sea, 1♀ (cb 17.7 mm, cl 13.6 mm), NMNZ CR. 10645, 13/IX/1959, Civil aviation; Raoul I., 1♂ (cb 25.8 mm, cl 20.5 mm), 1♀ (cb 20.9 mm, cl 17.1 mm), NMNZ CR. 10646, 16/IV/1973; Curtis I., from burrows about 100 feet up steep slope, 1♂ (cb 39.3 mm, cl 32.3 mm), NMNZ CR. 10647, 1 ovig. ♀ (cb 34.4 mm, cl 27.9 mm), NSMT-Cr 16797, XI/1970, J. C. Yaldwyn; North Meyer I., 3♂♂ (cb 29.5 mm, cl 24.6 mm—cb 35.9 mm, cl 29.5 mm), 1 ovig. ♀ (cb 28.4 mm, cl 24.1 mm), MNNZ CR. 1704, 19/I/1967, D. V. Martin.

*Remarks.* *Geograpsus grayi* is a land-dwelling crab distributed throughout the Indo-West Pacific from Japan to Australia, coasts of the Red Sea and the east coast of Africa. Takeda (1982) recorded this species at the summit of Minami-Iwojima Island, one of the southernmost islands of Japan, at 916 m above sea level.

*Leptograpsus variegatus* (Fabricius, 1793)

(Fig. 18C)

*Material examined.* Curtis I., from rock pools around high water mark and on rock faces a small way from pools, 1 young ♀ (cb 19.5 mm, cl 17.0 mm), NMNZ CR. 10649, 9/XI/1989, A. Tennyson, det. W. R. Webber.

*Remarks.* This large shore crab was revised by Griffin (1973) and also figured by McLay (1988), with many synonyms, viz. *Grapsus personatus* Lamarck, 1818, *G. strigilatus* White, 1842, *G. planifrons* Dana, 1852, *Leptograpsus ansoni* H. Milne Edwards, 1853, *L. gayi* H. Milne Edwards, 1853, *L. verreauxi* H. Milne Edwards, 1853, and *Sesarma pentagoana* Hutton, 1875.

*Leptograpsus variegatus* was recorded from Sunday Island in the Kermadec Islands by Chilton (1911), and is distributed in the warm temperate Southern Hemisphere, from Western

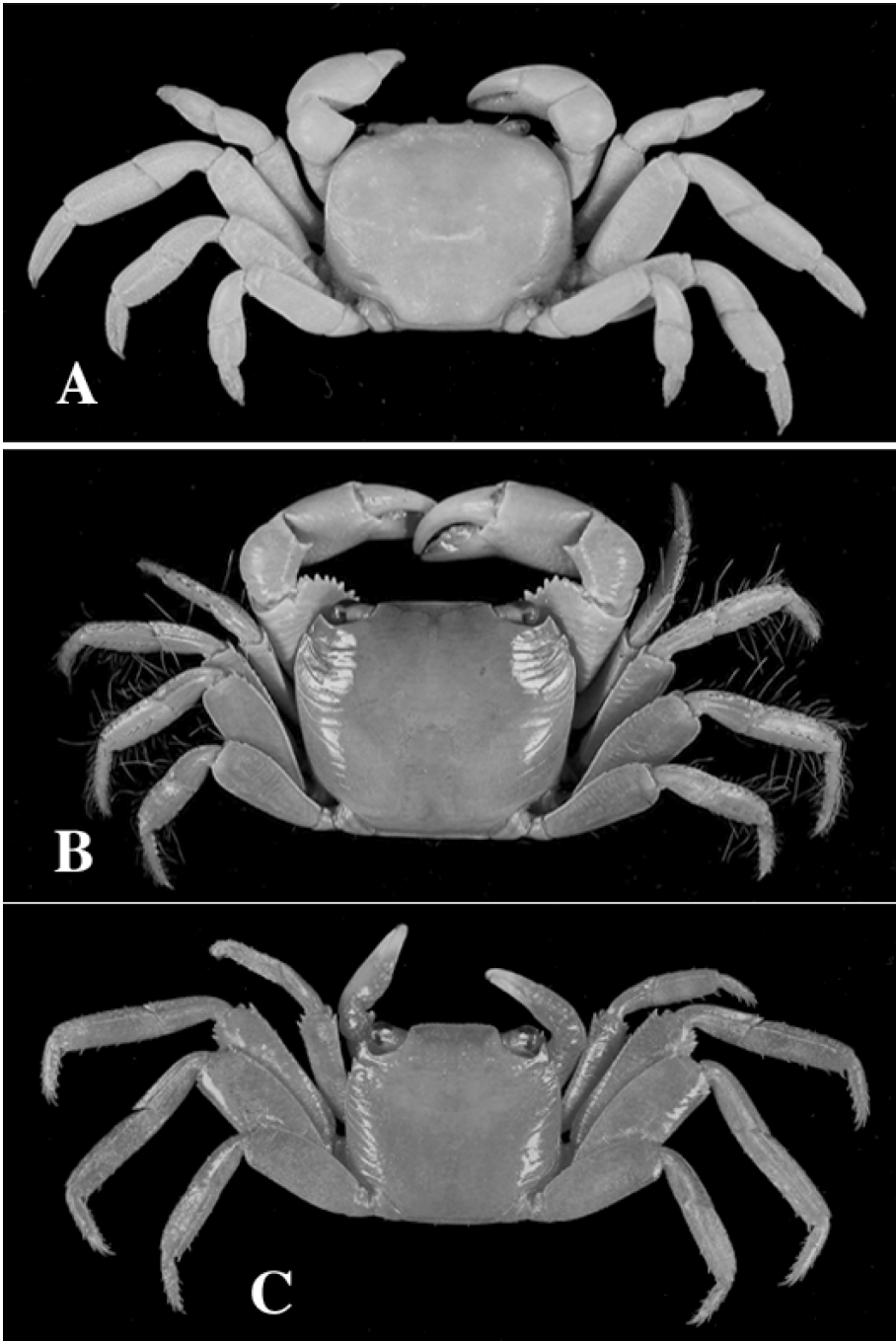


Fig. 18. A, *Cyclograpsus insularum* Campbell & Griffin, male (cb 17.5 mm); B, *Geograpsus grayi* (H. Milne Edwards), male (cb 35.9 mm); C, *Leptograpsus variegatus* (Fabricius), young female (cb 19.5 mm).

Australia to the Pacific coast of South America including Norfolk Island, the Kermadec Islands, and Easter Island.

***Pachygrapsus minutus*** A. Milne Edwards, 1873

(Fig. 20A)

*Material examined.* Denham Bay, Sunday I., 1 ♂ (cb 4.4 mm, cl 3.5 mm), 2 juvs., NMNZ CR. 10667, VI/1956, P. Bergquist; Macauley I., high tidal pools, 1 ovig. ♀ (cb 4.4 mm, cl 3.5 mm), NMNZ CR. 10668, XI/1970, W. Spiekman & J.C. Yaldwyn.

*Remarks.* There is a label with *Pachygrapsus* cf. *transverses* (Gibbes) in the vial. This small species, which inhabits the intertidal rocky shore is not uncommon in the whole Indo-West Pacific, with New Caledonia as the type locality.

***Percnon planissimum*** (Herbst, 1804)

(Fig. 19A)

*Material examined.* Denham Bay, Raoul I. 1 ♂ (cb 24.0 mm, cl 26.0 mm including rostrum), 1 juv., NMNZ CR. 10669, IV/1956, P. Bergquist; Under rock in pool, boat cove, Raoul I., 1 ♂ damaged, NMNZ CR. 10670, 6/I/1966, R. G. Wear; Fishing rock, Raoul I., 1 juv., NMNZ CR. 10671, 5/V/1973, J. Ireland; Rock pool, Raoul I., 1 ♂ (cb 17.0 mm, 18.5 mm), 1 juv., NMNZ CR. 10672, 1975–1976, Evan McEwen.

*Remarks.* In the larger specimens at hand, the chelae are quite smooth without a mat of short hairs, the dorsal surface of the carapace is ornamented symmetrically with bands of denuded areas, and the anterolateral carapace teeth are subequal or only decrease slightly in size posteriorly. As figured by Crosnier (1965) and others, these characters are typical of *P. planissimum*. In the juvenile specimens examined the dorsal ornamentation is not distinct, and the second anterolateral tooth is seemingly larger than the first as in *P. pilimanus* (A. Milne Edwards, 1873) which was recorded from the Kermadec Islands by Chilton (1911) and later reduced to synonymy with *P. affine* (H. Milne Edwards, 1853). The extent of the hairy mat on the chela of *P. planissimum* is a secondary sexual characteristic, and useful to distinguish only the males. In spite of the comment of Chilton (1911) that *P. pilimanus* [= *P. affine*] is fairly common among rocks near the low tide mark in Sunday Island, the specimens at hand from Raoul Island are identified with *P. planissimum* on the basis of the characters mentioned above.

This species is widely distributed throughout the Indo-West Pacific.

***Plagusia chabrui*** (Linnaeus, 1758)

(Fig. 19B)

*Material examined.* Raoul I., 2 ♂♂ (cb 26.3 mm, cl 24.2 mm; cb 25.5 mm, cl 23.5 mm), 1 ♀ (cb 37.0 mm, cl 34.0 mm), NMNZ CR. 10673, 1 ♀ (cb 36.0 mm, cl 33.8 mm), NSMT-Cr 16810, XII/1965-I/1966, R. G. Wear; Fishing rock, Raoul I., at low tide, 1 ♂ (cb 46.5 mm, cl 42.5 mm), NMNZ CR. 10674, 18/I/1968, D. Browning & N. Brown; Rock pool, Raoul I., 2 ♂♂ (cb 40.0 mm, cl 32.3 mm; cb 34.0 mm, cl 36.0 mm), 1 ovig. ♀ (cb 29.5 mm, cl 27.3 mm), 1 juv. (cb 16.0 mm, cl 14.4 mm), NMNZ CR. 10675, 1975–76, Evan McEwen; Macauley I., high tidal pools, 1 ♀ (cb 24.0 mm, cl 26.8 mm), NMNZ CR. 10676, XI/1970, W. Spiekman & J. C. Yaldwyn.

*Remarks.* This species is distributed throughout the southern Indian Ocean and South Pacific, from South Africa to Australia, and New Zealand, and was recorded from the Kermadec Islands

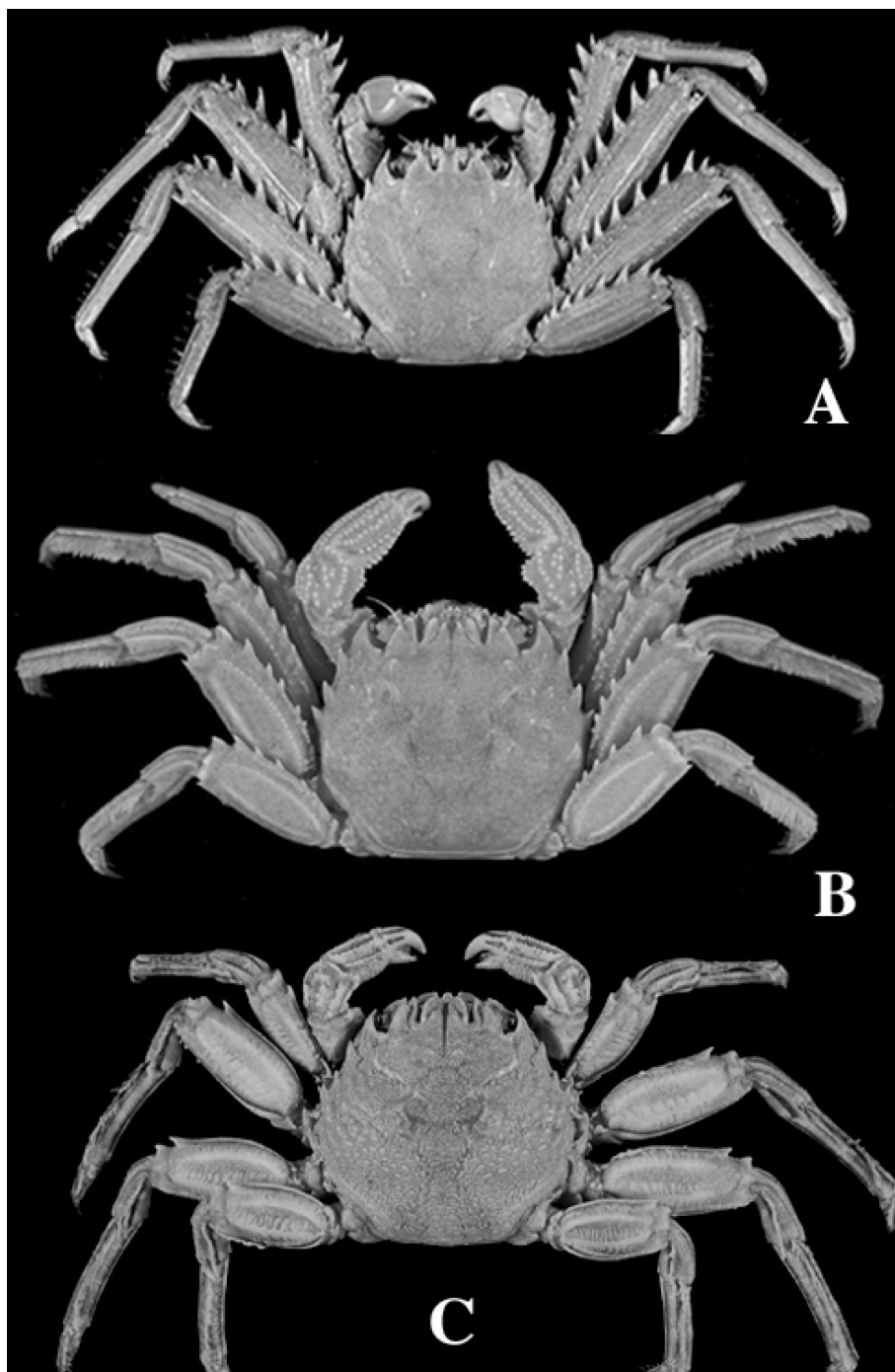


Fig. 19. A, *Percnon planissimum* (Herbst), male (cb 24.0 mm), B, *Plagusia chabrus* (Linnaeus), male (cb 46.5 mm); C, *Plagusia tuberculata* Lamarck, male (cb 47.0 mm).

by Chilton (1911).

***Plagusia tuberculata*** Lamarck, 1818

(Fig. 19C)

*Material examined.* Coral Bay, Turtle Bay, Raoul I., on sunny rock above water, 1 ovig. ♀ (cb 43.5 mm, cl 41.5 mm), NMNZ CR. 10677, 29/XII/1965, R. G. Wear; west of D'Arcy Point (29°8.14'S, 177°55.4'W), Raoul I., 29 m deep, 1 ♂ (cb 47.0 mm, cl 44.7 mm), NMNZ CR. 10678, 12/IX/1976, RV *Acheron*; Macauley I., high tidal pools, 1 ♂ (ecdysis, partly damaged), NMNZ CR. 10679, XI/1970, W. Spiekman & J. C. Yaldwyn.

*Remarks.* This species is not uncommon on rocky shores of the Indo-West Pacific, and was recorded from the Kermadec Islands by Chilton (1911).

***Planes major*** (MacLeay, 1838)

(Fig. 20C)

*Material examined.* Raoul I., from floatsam, 2 ♀♀ (cb 15.7 mm, cl 15.6 mm; cb 20.8 mm, cl 20.7 mm), NMNZ CR. 10680, 1 ♀ (cb 14.1 mm, cl 14.2 mm), NSMT-Cr 16799, 10/IX/1976.

*Remarks.* Ng and Ahyong (2001) resurrected *Nautilograpsus major* MacLeay, 1838, based on the examination of MacLeay's type specimen from South Africa. It is readily understood from the photograph of the lectotype male that *N. major* MacLeay is conspecific with, and the senior subjective synonym of, *Planes cyaneus* Dana, 1852. As indicated by Ng and Ahyong (2001), the genus *Nautilograpsus* is recognized as a junior subjective synonym of *Planes*, but the specific name should be changed from *cyaneus* to *major*, although the name of *P. cyaneus* is rather well known in the field of popular science as the Pacific Ocean drifting crab. This species is widely distributed in the Pacific and South Atlantic Oceans.

***Planes marinus*** Rathbun, 1914

(Fig. 20B)

*Material examined.* Raoul I., rock pools, fishing rock, 2 ♂♂ (cb 12.4 mm, cl 10.3 mm, cb 14.6 mm, cl 12.1 mm), 1 ovig. ♀ (cb 10.0 mm, cl 8.2 mm), 2 ♀♀ (cb 10.0 mm, cl 8.0 mm, cb 12.8 mm, cl 10.5 mm), 3 juvs., NMNZ CR. 10681, 22/XII/1965, R. G. Wear; Raoul I., Fishing rock, 1 ovig. ♀ (cb 12.8 mm, cl 10.4 mm), NMNZ CR. 10682, 23/XII/1965, R. G. Wear; Raoul I., from floatsam, 1 ♂ (cb 10.2 mm, cl 9.3 mm), NMNZ CR. 10683, 10/IX/1976; Denham Bay, Sunday I., beach, 1 ♂ (cb 11.9 mm, cl 10.7 mm), 2 ♀♀ (cb 11.5 mm, cl 10.4 mm; cb 14.9 mm, cl 13.3 mm), 15 juvs., 1 megalopa, NMNZ CR. 10684, 14/X/1908, W. R. B. Oliver; Macauley I., high tidal pools, 1 ♂ (cb 13.5 mm, cl 11.6 mm), 1 ♀ (cb 12.6 mm, cl 10.0 mm), 2 ovig. ♀♀ (cb 9.6 mm, cl 8.2 mm, cb 13.6 mm, cl 10.7 mm), NMNZ CR. 10685, 1 ovig. ♀ (cb 14.3 mm, cl 11.8 mm), NSMT-Cr 16798, XI/1970, W. Spiekman & J. C. Yaldwyn.

*Remarks.* This species was illustrated by McLay (1988) who recorded its distribution as Indo-Pacific, Japan, west coast of North America, Australia, New Zealand and St. Helena (South Atlantic).

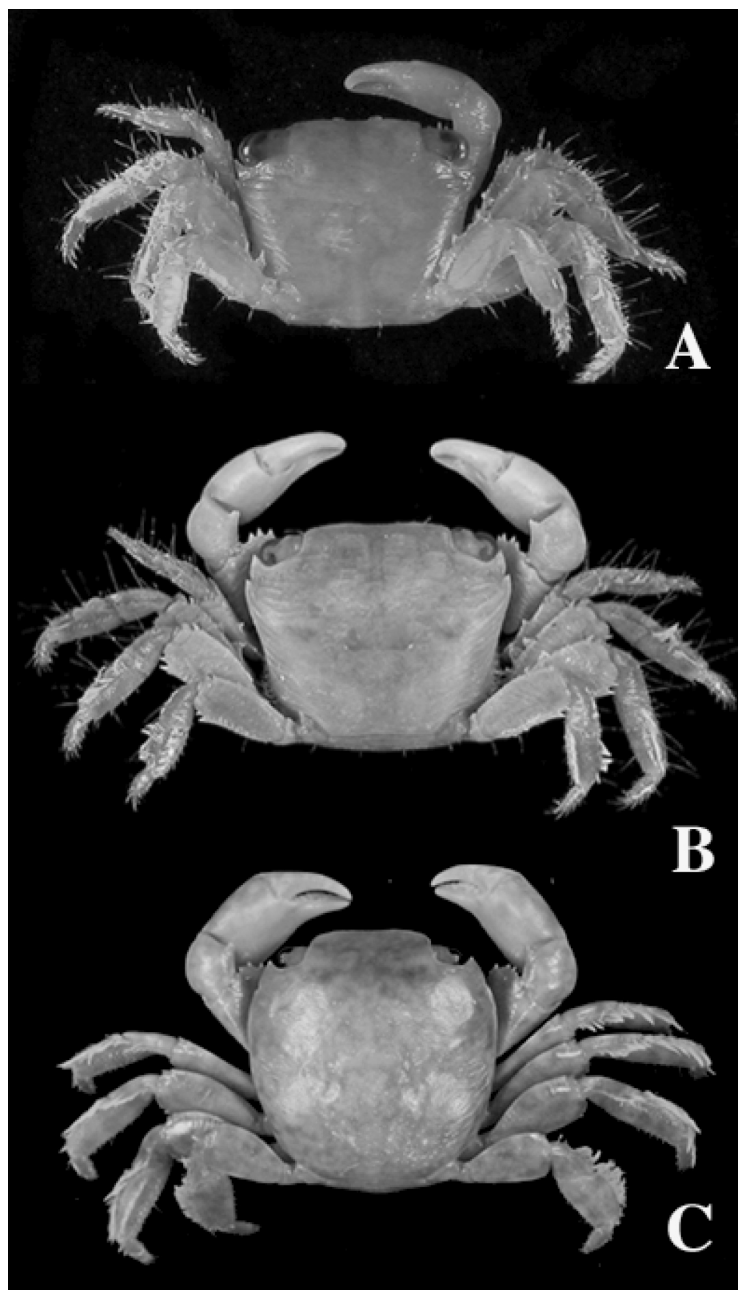


Fig. 20. A, *Pachygrapsus minutus* A. Milne Edwards, male (cb 4.4 mm); B, *Planes marinus* Rathbun, male (cb 11.9 mm); C, *Planes major* (MacLeay), female (cb 20.8 mm).

#### **General discussion on the taxonomy and distribution of the crabs from the Kermadec Islands**

In the present paper, a total of 52 species of 17 families, including seven unidentified species of the families Leucosiidae, Parthenopidae, and Xanthidae, are recorded from the Kermadec Is-



lands. In addition to the specimens preserved in the Museum of New Zealand, there may be some additional material from the Kermadec Islands held in other collections which will help to give a fuller picture of the crab fauna at these islands at a future date. The present paper provides general notes on the taxonomy of brachyurans of the Kermadecs and a preliminary assessment of distribution and relationships.

During this study a new species of spider crab, *Achaeus kermadecensis* (Inachidae), has already been described by the present authors (Webber & Takeda 2005). It is notable that five further species, *Caphyra acheronae* (Portunidae), *Liomera yaldwyni*, *Platypodia delli* and *Xanthias dawsoni* (Xanthidae) and *Actumnus griffini* (Pilumnidae), are described as new to science among the 45 definitely identified species recorded in the present paper. The number of new species is comparatively high and reflects the fact that the Kermadec Islands crab fauna has not been comprehensively sampled or reported to date. Most of the specimens in the collection are shallow water inhabitants collected by the R.V. *Acheron*, and shore or intertidal inhabitants are very few, probably due to the steep topography of the islands and rocks and their sharp drop-off into deep water which limit the number of beaches and rocky foreshores on the Islands. It is interesting that the Grapsidae is represented by nine species while only one species of Ocypodidae and no representatives of mud flat inhabiting Ocypodidae are present in the collection. However, this probably reflects a shortage of habitats suitable for ocypodids, as suggested above. Although collecting is not always thorough, and the remoteness and rocky nature of these islands cause some real difficulty in collecting representative samples, the number of crab species and individual specimens recorded here from the Kermadec Islands suggests they are not abundant.

It is not clear at present whether the six new species described are widely distributed or restricted to the Kermadec Islands and surrounded seas. The remaining 39 species recorded here are divided into three species groups based on their distribution patterns; 1) Southern Hemisphere elements, 2) West Pacific elements, and 3) Indo-West Pacific elements.

**Southern Hemisphere elements:** The following 13 species are referred to this distribution pattern—\**Naxia spinosa*, \**Notomithrax spinosus* (MAJIDAE)/\**Leptomaia tuberculata* (PISIDAE), \**Ovalipes elongates*, *Thalamita macropus* (PORTUNIDAE)/\**Antrocarcinus petrosus*, \**Gaillardieillus bathus* (XANTHIDAE)/\**Bountiana norfolcensis*, \**Ozius truncatus* (ERIPHIIDAE)/ \**Pilumnus novaezealandiae* (PILUMNIDAE)/\**Cyclograpsus insularum*, *Leptograpsus variegatus*, *Plagusia chabrus* (GRAPSIDAE)—Of the 14 species numbered, 10 (each with an asterisk), are endemic elements confined to the Kermadec Islands, Lord Howe Island, Norfolk Island, and New Caledonia, with some species extending their ranges to the east coast of Australia and northern New Zealand. One of them, *Leptograpsus variegates* ranges to the Pacific coast of South America.

**West Pacific elements:** The following 12 species are referred to this distribution pattern—*Lyreidus tridentatus* (RANINIDAE)/*Huenia heraldica* (EPIALTIDAE)/*Cyrtomaia lamellata*, *Platymaia wyvillethomsoni* (INACHIDAE)/*Schizophroida hilensis*, *Thacanophrys goldsboroughi* (MAJIDAE)/*Liocarcinus corrugatus* (PORTUNIDAE)/*Lybia leptochelis* (XANTHIDAE)/*Goneplax marivenae* (GONEPLACIDAE)/*Pseudopalicus oahuensis* (PALICIDAE)/*Geograpsus grayi*, *Planes major* (GRAPSIDAE). Most of these species are restricted to the West Pacific but *L. corrugatus* is known also from the East Pacific and, furthermore, from the East Atlantic including the Mediterranean Sea. The ocean-drifting crab, *Planes major*, ranges extensively throughout the whole Pacific into the South Atlantic.

**Indo-West Pacific elements:** The following 14 species are referred to this distribution pattern—*Achaeus curvirostris* (INACHIDAE)/*Actaeomorpha erosa* (AETHRIDAE)/*Banareia ba-*

*nareias*, *Gaillardieillus rueppelli*, *Miersiella haswelli*, *Pseudoliomera helleri* (XANTHIDAE)/*Trapezia cymodoce*, *T. guttata*, *T. septata* (TRAPEZIIDAE)/*Ocypode pallidula* (OCYPODIIDAE)/*Pachygrapsus minutus*, *Percnon planissimum*, *Plagusia tuberculata*, *Planes marinus* (GRAPSIDAE). These species are most typically distributed in the West Pacific from the Hawaiian Islands and Japan to the Tuamotu Archipelago and Australia, and in the Indian Ocean including the Red Sea. The ocean-drifting crab, *Planes marinus* is known not only in the Indo-West Pacific, but also in the South Atlantic, differing in its distribution from *P. major* which is unknown from the Indian Ocean. Otherwise, it is remarkable that three species associated with living coral, *Trapezia cymodoce*, *T. guttata*, and *T. septata*, are common in the Indo-West Pacific, but unknown from the Hawaiian Islands.

So far as the listed species are concerned, we conclude that the three elements of the Kermadec Islands crab fauna (Pacific, Indo-West Pacific, and Southern Hemisphere) are divided in roughly similar proportions, and that about two thirds of the Southern Hemisphere elements are restricted to the coastal waters of islands and coasts in the subtropical Southwest Pacific.

Neither crab species nor individuals at the Kermadec Islands seem to be abundant; as already mentioned, Chilton (1911) recorded 25 species. Of the 45 species definitely identified and recorded in this paper, 32 are new to the Kermadec Islands, and the 6 species identified here to genus only (4 of Leucosiidae on page \* and 2 of parthenopidae on page \*) are also new additions to the Kermadec carcinological fauna. Following is a list of the known species from the Kermadec Islands recorded by Chilton (1911) (asterisk) and in the present paper (boldface).

#### RANINIDAE

***Lyreidus tridentatus*** de Haan, 1841

#### DROMIIDAE

\* *Cryptodromiopsis unidentata* (Rüppell, 1830) (as *Dromia*)

#### EPIALTIIDAE

\* ***Huenia heraldica*** (de Haan, 1839) (as *H. proteus* (de Haan, 1839))

#### INACHIDAE

***Achaeus curvirostris*** (A. Milne Edwards, 1873)

***Achaeus kermadecensis*** Webber & Takeda, 2005

***Cyrtomaia lamellata*** Rathbun, 1906

***Platymaia wyvillethomsoni*** Miers, 1886

#### MAJIDAE

\* ***Naxia spinosa*** (Hess, 1865) (as *Halimus*)

***Notomithrax spinosus*** (Miers, 1879)

\* ***Schizophroida hilensis*** (Rathbun, 1906) (as *Schizophrys*)

***Thacanophrys goldsboroughi*** (Rathbun, 1906)

#### PISIDAE

***Leptomaia tuberculata*** Griffin & Tranter, 1986

#### AETHRIDAE

\* ***Actaeomorpha erosa*** Miers, 1877

#### PORTUNIDAE

***Caphyra acheronae*** sp. nov.

***Liocarcinus corrugatus*** (Pennant, 1777)

***Ovalipes elongatus*** Stephenson & Rees, 1968

\* ***Ovalipes bipustulatus*** (H. Milne Edwards, 1834) = *O. catharus* (White, 1843)

*Thalamita macropus* Montgomery, 1931

XANTHIDAE

*Antrocarcinus petrosus* Ng & Chia, 1994

\* *Banareia armata* A. Milne Edwards, 1869

*Banareia banareias* (Rathbun, 1911)

*Gaillardiiellus bathus* Davie, 1997

*Gaillardiiellus rueppelli* (Krauss, 1843)

\* *Leptodius nudipes* (Dana, 1852) (as Xantho)

*Liomera yaldwyni* sp. nov.

*Lybia leptochelis* (Zehntner, 1894)

*Miersiela haswelli* (Miers, 1886)

\* *Pilodius nigrochrinitus* Dana, 1852

(as *Chlorodopsis melanochira* A. Milne Edwards, 1873)

*Platypodia delli* sp. nov.

*Pseudoliomera helleri* (A. Milne Edwards, 1865)

\* *Serenius actaeoides* (A. Milne-Edwards, 1873) (as *Lophactaea*)

*Xanthias dawsoni* sp. nov.

\* *Xanthias lamarckii* (H. Milne Edwards, 1834) (as *Xanthodes*)

ERIPHIIDAE

\* *Bountiana norfolcensis* (Grant & McCulloch, 1907) (as *Eriphia*)

\* *Ozius truncatus* H. Milne Edwards, 1834 (as *O. lobatus* Heller, 1865)

PILUMNIDAE

*Actumnus griffini* sp. nov.

\* *Pilumnus fimbriatus* H. Milne Edwards, 1834

*Pilumnus novaezealandiae* Filhol, 1886

TRAPEZIIDAE

*Trapezia cymodoce* (Herbst, 1801)

*Trapezia guttata* Rüppell, 1830

\* *Trapezia septata* Dana, 1852 (as *T. ferruginea* var. *areolata* Dana, 1852)

GONEPLACIDAE

*Goneplax marivenae* Komatsu & Takeda, 2004

PALICIDAE

*Pseudopalicus oahuensis* (Rathbun, 1906)

OCYPODIDAE

\* *Ocypode kuhlii* de Haan, 1835

*Ocypode pallidula* Jacquinot, [1842–1847]

GRAPSIDAE

\* *Cyclograpsus insularum* Campbell & Griffin, 1966

(as *C. lavauxi* H. Milne Edwards, 1853)

*Geograpsus grayi* (H. Milne Edwards, 1853) (as *Grapsus*)

\* *Leptograpsus variegatus* (Fabricius, 1793)

*Pachygrapsus minutus* A. Milne Edwards, 1873

\* *Percnon affine* (H. Milne Edwards, 1853)

(as *P. pilimanus* (A. Milne Edwards))

*Percnon planissimum* (Herbst, 1804)

\* *Plagusia chabrus* (Linnaeus, 1758)

- \* *Plagusia dentipes* (de Haan, 1835)
- \* *Plagusia tuberculata* Lamarck, 1818
- \* *Planes major* (MacLeay, 1838) (as *P. minutus* (Linnaeus))
- Planes marinus* Rathbun, 1914

## CRYPTOCHIRIDAE

- \* *Cryptochirus coralliodytes* Heller, 1861

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### Literature

- Alcock, A., 1898. Materials for a carcinological fauna of India. No. 3. The Brachyura Cyclometopa. Part 1. The family Xanthidae. *J. Asiat. Soc. Bengal*, **67**: 67–233.
- Balss, H., 1922. Ostasiatische Decapoden. IV. Die Brachyrhynchen (Cancridea). *Arch. Nat.*, (A), **88**: 104–140.
- Balss, H., 1934. Sur quelques Décapodes Brachyours de Madagascar. *Faune Colon. Franç.*, **5**: 501–528.
- Balss, H., 1938. Die Dekapoda Brachyura von Dr. Sixten Bocks Pazifik-Expedition 1917–1918. *Göteborg. K. Vet.-o. Vitt.-Samh. Handl.*, (B), **5** (7): 1–85, pls. 1, 2.
- Barnard, K. H., 1947. Descriptions of new species of South African decapod Crustacea, with notes on synonymy and new records. *Ann. Mag. Nat. Hist.*, (11), **13**: 361–392.
- Barnard, K. H., 1950. Descriptive catalogue of South African decapod Crustacea (Crabs and shrimps). *Ann. S. Afr. Mus.*, **38**: 1–837.
- Barnard, K. H., 1955. Additions to the fauna-list of South African Crustacea and Pycnogonida. *Ann. S. Afr. Mus.*, **43**: 1–107.
- Barnard, K. H., 1957. Additions to the fauna-list of South African Crustacea. *Ann. Mag. Nat. Hist.*, (12), **10**: 1–12.
- Bennett, E. W., 1964. The marine fauna of New Zealand: Crustacea Brachyura. *Bull. N.Z. Dept. Sci. Indust. Res.*, (153): 1–120.
- Borradaile, L. A., 1916. Crustacea, 1. Decapoda. *Nat. Hist. Rep. Br. Antarct. Terra Nova Exp.*, **3** (2): 75–110.
- Buitendijk, A. M., 1939. Biological results of the Snellius Expedition. V. The Dromiacea, Oxystomata and Oxyrhyncha of the Snellius Expedition. *Temminckia*, (4): 223–275, pls. 7–11.
- Calman, W. T., 1911. On decapod Crustacea from Christmas Island, collected by C. W. Andrews, F.R.S., F.Z.S. *Proc. Zool. Soc. London*, 1909: 703–713, pl. 72.
- Campbell, B. M. & D. J. G. Griffin, 1966. The Australian Sesarminae (Crustacea: Brachyura): Genera *Helice*, *Helograpsus* nov., *Cyclograpsus*, and *Paragrapsus*. *Mem. Qld Mus.*, **14**: 127–174, pls. 20–23.
- Castro, P., 1997a. Trapeziid crabs (Brachyura: Xanthoidea: Trapeziidae) of New Caledonia, eastern Australia and the Coral Sea. In: Richer de Forges, B. (ed.), *Les Fonds Meubles des Lagons de Nouvelle-Calédonie (Sédimentologie, Benthos)*, **3**: 59–107.
- Castro, P., 1997b. Trapeziid crabs (Brachyura: Xanthoidea: Trapeziidae) of French Polynesia. In: Richer de Forges, B. (ed.), *Les Fonds Meubles des Lagons de Nouvelle-Calédonie (Sédimentologie, Benthos)*, **3**: 109–139.
- Castro, P., 2000. Crustacea Decapoda: A revision of the Indo-west Pacific species of palicid crabs (Brachyura Palicidae). In: A. Crosnier (ed.), *Résultats des campagnes MUSORSTOM 21. Mém. Mus. Natn. Hist. Nat.*, Paris, (184) 437–610.
- Castro, P., P. K. L. Ng & S. T. Ah Yong, 2004. Phylogeny and systematics of the Trapeziidae Miers, 1886 (Crustacea: Brachyura), with the description of a new family. *Zootaxa*, (643): 1–70.
- Chilton, C., 1911. The Crustacea of the Kermadec Islands. *Trans. Proc. N.Z. Inst.*, **43**: 544–573.
- Crosnier, A., 1962. Crustacés Décapodes Portunidae. *Faune de Madagascar*, (16): 1–154, pls. 1–13.
- Crosnier, A., 1965. Crustacés Décapodes Grapsidae et Ocypodidae. *Faune de Madagascar*, (18): 1–143, pls. 1–11.

- Dana, J. D., 1852b. Crustacea. *United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U.S.N.*, (13): 1–1393.
- Davie, P. J. F., 1992. Deepwater xanthid crabs from French Polynesia (Crustacea, Decapoda, Xanthoidea). *Bull. Mus. Natn. Hist. Nat.*, Paris, (4), **14**: 501–561.
- Davie, P. J. F., 1995. Two new species of *Nanocassiope* from the western Pacific (Crustacea, Brachyura Xanthidae). *Bull. Mus. Nat. Hist. Nat.*, Paris, (4), **17**: 201–210.
- Davie, P. J. F., 1997. Crustacea Decapoda: Deep water Xanthoidea from the south-western Pacific and the western Indian Ocean. In: A. Crosnier (ed.), Résultats des campagnes MUSORSTOM, 18. *Mém. Mus. Natn. Hist. Nat.*, Paris, (176): 337–387.
- Davie, P. J. F. & P. K. L. Ng, 2000. *Boutiana*, a new genus for *Eriphia norfolcensis* Grant & McCulloch, 1907 (Crustacea: Brachyura: Eriphiidae). *Mem. Qld Mus.*, **45**: 267–272.
- Edmondson, C. H., 1951. Some central Pacific crustaceans. *Occ. Pap. Bernice P. Bishop Mus.*, **20**: 183–243.
- Edmondson, C. H., 1962. Xanthidae of Hawaii. *Occ. Pap. Bernice P. Bishop Mus.*, **22**: 215–309.
- Galil, B. & C. Lewinsohn, 1985. On the taxonomic status of *Trapezia areolata* Dana and *Trapezia septata* Dana (Decapoda, Brachyura). *Crustaceana*, **48**: 286–293.
- Grant, F. E. & A. R. McCulloch, 1907. Decapod Crustacea from Norfolk Island. *Proc. Linn. Soc. N.S.W.*, **32**: 151–156, pl. 1.
- Griffin, D. J. G., 1963. *Notomithrax* gen. nov. and the status of the genus *Paramithrax* H. Milne Edwards (Crustacea, Brachyura, Majidae). *Trans. Roy. Soc. N.Z.*, (Zool.), **3**: 229–237.
- Griffin, D. J. G., 1966. The marine fauna of New Zealand: Spider crabs, family Majidae (Crustacea, Brachyura). *Bull. N.Z. Dept. Sci. Industr. Res.*, (172): 1–111.
- Griffin, D. J. G., 1970. A revision of the recent Indo-West Pacific species of the genus *Lyreidus* de Haan (Crustacea Decapoda, Raninidae). *Trans. Roy. Soc. N.Z.*, **12**: 89–112.
- Griffin, D. J. G., 1970. The genus *Chlorinoides* (Crustacea, Brachyura, Majidae). 2. *Chlorinoides goldsboroughi* Rathbun from eastern Australia, *C. tenuirostris* Haswell and a new species from Western Australia. *Rec. Austr. Mus.*, **28**: 65–76.
- Griffin, D. J. G., 1973. A revision of the two southern temperate shore crabs *Leptograpsus variegatus* (Fabricius) and *Plagusia chabrus* (Linnaeus) (Crustacea, Decapoda, Grapsidae). *J. Roy. Soc. N.Z.*, **3**: 415–440.
- Griffin, D. J. G. & D. E. Brown, 1976. Deepwater decapod Crustacea from eastern Australia: Brachyuran crabs. *Rec. Austr. Mus.*, **30**: 248–271.
- Griffin, D. J. G. & H. A. Tranter, 1986. The Decapoda Brachyura of the Siboga Expedition. Part VIII. Majidae. *Siboga-Exp.*, **39** (c4): 1–335.
- Griffin, D. J. G. & J. C. Yaldwn, 1965. A record of the majid brachyuran genus *Achaeus* from New Zealand with notes on the Australian species. *Trans. Roy. Soc. N.Z.*, (Zool.), **6**: 33–51.
- Guinot, D., 1964. Crustacés Décapodes Brachyours (Xanthidae) des campagnes de la Calypso en Mer Rouge (1952), dans le Golfe Persique et à l'île Aldabra (1954). *Mém. Mus. Natn. Hist. Nat.*, (A), (32): 1–108, pls. 1–12.
- Guinot, D., 1967. Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours. II. Les anciens genres *Micropanope* Stimpson et *Medaeus* Dana. *Bull. Mus. Natn. Hist. Nat.*, Paris, (2), **39**: 345–374.
- Guinot, D., 1976. Constitution de quelques groupes naturels chez les Crustacés Décapodes Brachyours. I. La superfamille des Belloioidea et trios sous-familles de Xanthidae (Polydectinae Dana, Trichiinae de Haan, Actaeinae Alcock). *Mém. Mus. Natn. Hist. Nat.*, Paris, (A), (97): 1–308, pls. 1–19.
- Guinot, D. & B. Richer de Forges, 1982. Révision du genre Indo-Pacifique *Cyrtomaia* Miers, 1886: Campagnes Océanographiques du *Challenger*, de l'*Albatross*, du *Siboga* et du *Vauban* (Crustacea Decapoda Brachyura). *Ann. Inst. Océanogr.*, Paris, (n.s.), **58**: 5–88.
- Holthuis, L. B., 1987. *Huenia heraldica*, the correct name for *Huenia proteus*, and the name of the type species of the genus *Huenia*. *Res. Crust.*, (16): 15–18.
- Komatsu, H. & M. Takeda, 2004. Two new species of the genus *Goneplax* (Decapoda, Brachyura, Goneplacidae) from East Asia. *Crustaceana*, **76**: 1243–1256.
- Lenz, H., 1910. Crustaceen von Madagaskar, Ostafrika und Ceylon. Reise in Ostafrika in den Jahren 1903–1905. In: A. Voeltzkow, Wissenschaftliche Ergebnisse, **2**: 39–576.
- McLay, C. L., 1988. Brachyura and crab-like Anomura of New Zealand. *Leigh Lab. Bull.*, (22): iv+463.
- McCulloch, A. R., 1907. Studies in Australian Crustacea. No. 1. *Rec. Austr. Mus.*, **7**: 51–59, pl. 12.
- McNeill, F., 1953. Carcinological notes. No. 2. *Rec. Austr. Mus.*, **23**: 89–96, pl. 7.
- McNeill, F. A. & M. Ward, 1930. Carcinological notes. No. 1. *Rec. Austr. Mus.*, **17**: 357–383, pls. 59–61.
- Miers, J. E., 1877. On a collection of Crustacea made by the Rev. G. Brown, C.M.Z.S., on Duke-of-York Island. *Proc.*

- Zool. Soc. Lond.*, (1877): 133–138.
- Miers, J. E., 1879. Descriptions of new or little-known species of maioid Crustacea (Oxyrhyncha) in the collection of the British Museum. *Ann. Mag. Nat. Hist.*, (5), 4: 1–28, pls. 4, 5.
- Miers, J. E., 1886. Report on the Brachyura collected by H.M.S. Challenger during 1873–1876. *Rep. Sci. Res. Voy. H.M.S. Challenger*, (Zool.), 17 (2): i-L, 1–362, pls. 1–29.
- Milne Edwards, A., 1865. Etudes zoologiques sur les Crustacés récents de la famille des Cancériens. *Nouv. Arch. Mus. Hist. Nat.*, Paris, 1: 177–308, pls. 11–19.
- Milne Edwards, H., 1834. *Histoire naturelle des Crustacés, comprenant l'anatomie, la physiologie et la classification de ces animaux*, 1: i-xxxv, 1–468.
- Milne Edwards, H., 1853. Mémoire sur la famille des ocyropodiens (Suite: le début dans l'article précédent). *Ann. Sci. Nat. Zool.*, (3), 20: 163–228, pls. 6–11.
- Montgomery, S. K., 1931. Report on the Crustacea Brachyura of the Percy Sladen Trust Expedition to the Abrolhos Islands under the leadership of Professor W. J. Dakin, D.Sc., F.L.S., in 1913; along with other crabs from Western Australia. *J. Linn. Soc. Lond.*, (Zool.), 37: 405–464, pls. 24–30.
- Monod, T., 1938. Mission R. Ph. Dollfus en Egypte. VIII. Decapoda Brachyura. *Mém. Inst. Egypte*, 37: 91–162.
- Ng, P. K. L. & S. T. Ah Yong 2001. Brachyuran type specimens (Crustacea: Decapoda) in the MacLeay Collection, University of Sydney, Australia. *Raffles Bull. Zool.*, 49: 83–100.
- Ng, P. K. L. & D. G. B. Chia, 1994. The genus *Glyptocarcinus* Takeda, 1973, with descriptions of a new subfamily, two new genera and two new species from New Caledonia (Crustacea: Decapoda: Brachyura: Xanthidae). *Raffles Bull. Zool.*, 42: 701–731.
- Odhner, T., 1925. Monographierte Gattungen der Krabbenfamilie Xanthidae I. *Göteborg. K. Vet.-och Vit.-Samh. Handl.*, (4), 29 (1): 1–92, pls. 1–5.
- Ortmann, A., 1898. Carcinologische Studien. *Zool. Jahrb. (Syst)*, 10: 258–372, pl. 17.
- Rathbun, M. J., 1906. The Brachyura and Macrura of the Hawaiian Islands. *Bull. U.S. Fish. Comm.*, 23: 827–930, pls. 1–24.
- Rathbun, M. J., 1911. The Percy Sladen Trust Expedition to the Indian Ocean in 1905. 3 (11). Marine Brachyura. *Trans. Linn. Soc. Lond.*, (Zool.), 14: 191–261, pls. 15–20.
- Rüppell, E. S., 1830. *Beschreibung und Abbildung von 24 Arten kurzschwänzigen Krabben, als Beitrag zur Naturgeschichte des rothen Meeres*. Frankfurt, a.M., 1–28, pls. 1–6.
- Sakai, K. & M. Türkay, 1976. Bemerkungen zu einigen *Ocyropode*-Arten (Crustacea: Decapoda). *Senckenb. Biol.*, 57: 81–96.
- Sakai, T., 1933. A new genus and some new species of crabs from Simoda. *Sci. Rep. Tokyo Bunrika Daigaku*, (B), 1: 41–59, pls. 2, 3.
- Sakai, T., 1938. *Studies on the crabs of Japan. III. Brachygnatha, Oxyrhyncha*. Yokendo, Tokyo, pp. 193–364, pls. 20–41.
- Sakai, T., 1967. Notes from the carcinological fauna of Japan (III). *Res. Crust.*, (3): 68–83, 1 frontispiece. (In English and Japanese.)
- Sakai, T., 1976. *Crabs of Japan and the Adjacent Seas*. Kodansha Ltd., Tokyo, xxix+773 pp. (In English), 461 pp. (In Japanese), 16 pp.+251 pls. (Plates).
- Serène, R., 1984. Crustacés Décapodes Brachyours de l'Océan Indien occidental et de la Mer Rouge. Xanthoidea: Xanthidae et Trapeziidae. Addendum. Carpiliidae et Menippidae by A. Crosnier. *Faune Tropicale*, (24): 1–349, pls. 1–48.
- Stephenson, W. & J. J. Hudson, 1957. The Australian portunids (Crustacea; Portunidae). I. The genus *Thalamita*. *Aust. J. Mar. Freshw. Res.*, 8: 312–368, pls. 1–10.
- Stephenson, W. & M. Rees, 1968a. A revision of the genus *Ovalipes* Rathbun, 1898 (Crustacea, Decapoda, Portunidae). *Rec. Austr. Mus.*, 27: 213–261, pls. 35–42.
- Stephenson, W. & M. Rees, 1968b. The Endeavour and other Australian Museum collections of portunid crabs (Crustacea, Decapoda, Portunidae). *Rec. Austr. Mus.*, 27: 285–298, pl. 43.
- Stimpson, W., 1907. Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853–1856. *Smiths. Misc. Coll.*, 49: 1–240, pls. 1–26.
- Takeda, M., 1982. Two land-dwelling crabs from Minami-Iwojima Island. In: Conservation reports of the Minami-Iwojima Wilderness Area, Tokyo Japan, pp. 379–382. (In Japanese with English summary.)
- Takeda, M., 1989. Shallow-water crabs from the Oshima Passage between Amami-Oshima and Kakeroma-jima Islands, the northern Ryukyu Islands. *Mem. Natn. Sci. Mus.*, Tokyo, (22): 135–184, pl. 4.
- Takeda, M. & S. Miyake, 1968. Six unrecorded xanthid crabs from the Ryukyu Islands preserved in the Zoological Lab-

- oratory, Kyushu University. *Biol. Mag.*, Okinawa, (5): 1–10, pl. 1. (In English with Japanese abstract.)
- Takeda, M. & W. R. Webber, 2004. Crabs from the Kermadec Islands. Seventh Symposium on Collection Building and Natural History Studies in Asia and the Pacific Rim. Abstracts, p. 4. Natn. Sci. Mus., Tokyo.
- Webber, W. R. & M. Takeda, 2005. A new spider crab of the genus *Achaeus* (Crustacea, Decapoda, Brachyura) from the Kermadec Islands. *Bull. Natn. Sci. Mus.*, Tokyo, (A), 31: 45–50.
- Whitelegge, T., 1900. Crustacea, Part I. Decapoda and Stomatopoda. Scientific results of the trawling expedition of H.M.C.S. “Thetis,” off the coast of New South Wales, in February and March, 1898. *Mem. Aust. Mus.*, (4): 135–199, pls. 32–35.
- Zehntner, L., 1894. Crustacés de l’Archipel malais. Voyage de MM. M. Bedot et C. Pictet dans l’Archipel malais. *Rev. Suisse Zool.*, 2: 135–214, pls. 7–9.