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Deepwater crabs from seamounts and chemosynthetic habitats off eastern New Zealand (Crustacea: Decapoda: Brachyura)

SHANE T. AHYONG



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Table of contents

Abstract	4
Introduction	5
Materials and methods	5
Taxonomic Account	5
Section DROMIACEA De Haan, 1833	5
Family HOMOLIDAE De Haan, 1839	5
<i>Dagnaudus petterdi</i> (Grant, 1905)	5
Family HOMOLODROMIIDAE Alcock, 1899	7
<i>Dicranodromia delli</i> sp. nov.	7
<i>Dicranodromia spinulata</i> Guinot, 1995	11
<i>Homolodromia kai</i> Guinot, 1993	11
Section RANINOIDA De Haan, 1839	11
Family RANINIDAE De Haan, 1839	11
<i>Lyreidus tridentatus</i> De Haan, 1841	11
Section CYCLODORIPPOIDA Ortmann, 1892	12
Family CYMONOMIDAE Bouvier, 1897	12
<i>Cymonomus aequilonius</i> Dell, 1971	12
<i>Cymonomus clarki</i> sp. nov.	13
Section EUBRACHYURA Saint Laurent, 1980.....	16
Family ATELECYCLIDAE Ortmann, 1893	16
<i>Trichopeltarion fantasticum</i> Richardson & Dell, 1964	16
<i>Trichopeltarion janetae</i> sp. nov.	17
Family BYTHOGRAEIDAE Williams, 1980	26
<i>Gandalfus puia</i> McLay, 2007	26
Family DORIPPIDAE MacLeay, 1838	26
<i>Ethusina castro</i> sp. nov.	26
<i>Ethusina rowdeni</i> sp. nov.	29
<i>Chaceon yaldwyni</i> Manning, Dawson & Webber, 1990	31
Family GONEPLACIDAE MacLeay, 1838.....	33
<i>Pycnoplax meridionalis</i> (Rathbun, 1923)	33
<i>Pycnoplax victoriensis</i> (Rathbun, 1923)	34
Family INACHIDAE MacLeay, 1838	35
<i>Cyrtomaia cornuta</i> Richer de Forges & Guinot, 1988	35
<i>Dorhynchus ramusculus</i> (Baker, 1906)	35
<i>Platymaia maoria</i> Dell, 1963	37
<i>Vitjazmaia latidactyla</i> Zarenkov, 1994	37

Family LEUCOSIIDAE Samouelle, 1819	38
<i>Bellidilia cheesmani</i> (Filhol, 1886)	38
<i>Ebalia tuberculosa</i> (A. Milne-Edwards, 1873)	38
Family MAJIDAE Samouelle, 1819	40
<i>Eurynome bituberculata</i> Griffin, 1964	40
<i>Leptomithrax garricki</i> Griffin, 1966	42
Family MATHILDELLIDAE Karasawa & Kato, 2003	42
<i>Intesius richeri</i> Crosnier & Ng, 2004	42
<i>Mathildella mclayi</i> sp. nov.	43
<i>Neopilumnoplax nieli</i> sp. nov.	48
Family PARTHENOPIDAE MacLeay, 1838	55
<i>Garthambrus tani</i> sp. nov.	55
Family PLAGUSIIDAE Dana, 1851	60
<i>Miersiograpsus australiensis</i> Türkay, 1978	60
Family PORTUNIDAE Rafinesque, 1815	60
<i>Ovalipes mollerii</i> (Ward, 1933)	60
Family XANTHIDAE MacLeay, 1838	61
<i>Miersiella haswelli</i> (Miers, 1886)	61
Family XENOGRAPSIDAE Ng, Davie, Schubart & Ng, 2007	61
<i>Xenograpsus ngatama</i> McLay, 2007	61
Discussion	62
Key to deepwater Brachyura known from New Zealand seamounts and chemosynthetic habitats	63
Acknowledgements	65
References	65
Colour plates	71

Abstract

Deepwater crabs from seamounts and chemosynthetic habitats off eastern New Zealand are reported. Of the 30 species reported, eight are new to science: *Cymonomus clarki* **sp. nov.** (Cymonomidae), *Dicranodromia delli* **sp. nov.** (Homolodromiidae), *Ethusina castro* **sp. nov.** and *E. rowdeni* **sp. nov.** (Dorippidae), *Trichopeltarion janetae* **sp. nov.** (Atelecyclidae), *Mathildella mclayi* (Mathildellidae), *Neopilumnoplax nieli* **sp. nov.** (Mathildellidae), and *Garthambrus tani* **sp. nov.** (Parthenopidae). The dorippids, parthenopids and mathidellids reported here are the first members of these families to be described from New Zealand. Three previously described species are recorded for the first time from New Zealand waters: *Dicranodromia spinulata* Guinot, 1995 (Homolodromiidae), *Intesius richeri* Crosnier & Ng, 2004 (Mathildellidae) and *Miersiograpsus australiensis* Türkay, 1978 (Plagusiidae). The majority of brachyurans from New Zealand seamounts and chemosynthetic habitats are 'typical' deepwater forms of which thirteen species are presently unique to New Zealand. At species level, 43% of the seamount and cold-seep brachyurans are apparent New Zealand endemics, with strongest affinities with the eastern Australian fauna (37%). At the generic level, however, congeners of most species reported herein occur widely in the Indo-West Pacific (including eastern Australia and New Caledonia), suggesting that the New Zealand seamount and cold-seep brachyuran fauna is an extension of the tropical Indo-West Pacific fauna. Thirty-three percent (10 of 30 species) of the known New Zealand seamount and cold-seep brachyurans have only been recently discovered indicating that species richness is probably strongly underestimated. A key to the Brachyura known from New Zealand seamounts and chemosynthetic habitats is given.

Key words: Decapoda, Crustacea, Brachyura, New Zealand, new species, seamounts, cold seeps, *Cymonomus*, *Dicranodromia*, *Ethusina*, *Garthambrus*, *Intesius*, *Mathildella*, *Miersiograpsus*, *Neopilumnoplax*, *Trichopeltarion*

Introduction

Seamounts are being increasingly recognised as fragile habitats of high productivity, with a significant impact on deepwater ecosystem processes (Rogers 1994). Consequently, they hold particular scientific and commercial interest. Over the past decade, the National Institute of Water and Atmospheric Research (NIWA) has conducted active multidisciplinary research programmes on New Zealand seamounts (Rowden & Clark 2004). More than 800 seamounts are currently known from New Zealand waters, many of which are sites of active hydrothermal vents (Rowden *et al.* 2005). In addition, deepwater surveys off eastern New Zealand have also discovered other chemosynthetic habitats in the form of active cold seeps along the Hikurangi Margin (Lewis & Marshall 1996). Deepwater benthic sampling in these habitats has yielded extensive invertebrate collections, including new species of octocorals (Sánchez 2005), molluscs (e.g., Lewis & Marshall 1996), sponges (e.g., Kelly 2007) and decapod crustaceans (e.g., Webber 2004; McLay 2007). Although squat lobsters (Anomura: Galatheidae) are the dominant deepwater decapods in New Zealand, numerous crabs (Brachyura) are also present (Clark & O'Shea 2001). Two species of brachyuran crab were recently described from seamounts and hydrothermal vents in the outer Bay of Plenty: *Gandalfus puia* McLay, 2007 (Bythograeidae), *Xenograpsus ngatama* McLay, 2007 (Xenograpsidae). The present study reports Brachyura primarily collected by NIWA expeditions off eastern New Zealand from the Cavalli seamounts (KAH0204), the southern Kermadec Ridge in the outer Bay of Plenty (KAH9907, KAH0011, TAN0104, TAN0107, TAN0413), the Chatham Rise (TAN0604), and cold seeps on the Hikurangi Margin (TAN0616).

Materials and methods

Measurements of specimens are in millimetres (mm). Carapace width (cw) is the maximum width including spines (except in the case of *Trichopeltarion* species, in which the width excludes spines), carapace length (cl) includes the rostrum, and postrostral carapace length (pcl), measured for homolids, excludes the rostrum. The extensor and flexor margin of the pereopod segments are termed dorsal and ventral margins, respectively, and the height is the distance between the dorsal and ventral margins. Pereopods 1–5 are abbreviated P1–5 respectively. Numbering of sternites follows Secretan-Rey (2002) and Guinot & Quenette (2005). Specimens examined are deposited in the invertebrate collection of the National Institute of Water and Atmosphere, Wellington (NIWA), National Museum of New Zealand Te Papa Tongarewa (NMNZ), the Australian Museum (AM), and Raffles Museum of Biodiversity Research, National University of Singapore (ZRC). Material examined from New Zealand is listed from north to south, and Australian material, where examined, is listed after New Zealand material. The high-level classification follows Ah Yong *et al.* (2007). Synonymies are restricted to primary citations, relevant regional studies and major works.

Taxonomic Account

Section DROMIACEA De Haan, 1833

Family HOMOLIDAE De Haan, 1839

Dagnaudus petterdi (Grant, 1905)

(Fig. 1A)

Latreillopsis petterdi Grant, 1905: 317, pl. 10, figs. 2, 2a, 2b [type locality: 28 miles E of Port Jackson, New South Wales, Australia]. — Rathbun 1923: 140–143, pl. 36. — Dell 1955: 147–148, fig. 1; 1963a: 244–245; 1963b: 21;

1968c: 234, 238. — Bennett 1964: 9, 27, fig. 109. — Dell 1968a: 23. — Takeda & Miyake 1969: 157, 159–161, fig. 1, pl. 1. — Takeda in Amaoka *et al.* 1990: 363. — Davie & Short 1996: 163, fig. 1B.

Paromola petterdi. — McLay 1988: 78–80, fig. 13.

Dagnaudus petterdi. — Guinot & Richer de Forges 1995: 418–420, figs 44A–B, 45a–e. — Davie 2002: 234–235. — Poore 2004: 312, fig. 90a, pl. 18c. — Naylor *et al.* 2005: 36. — Ahyong *et al.* 2007: 148.

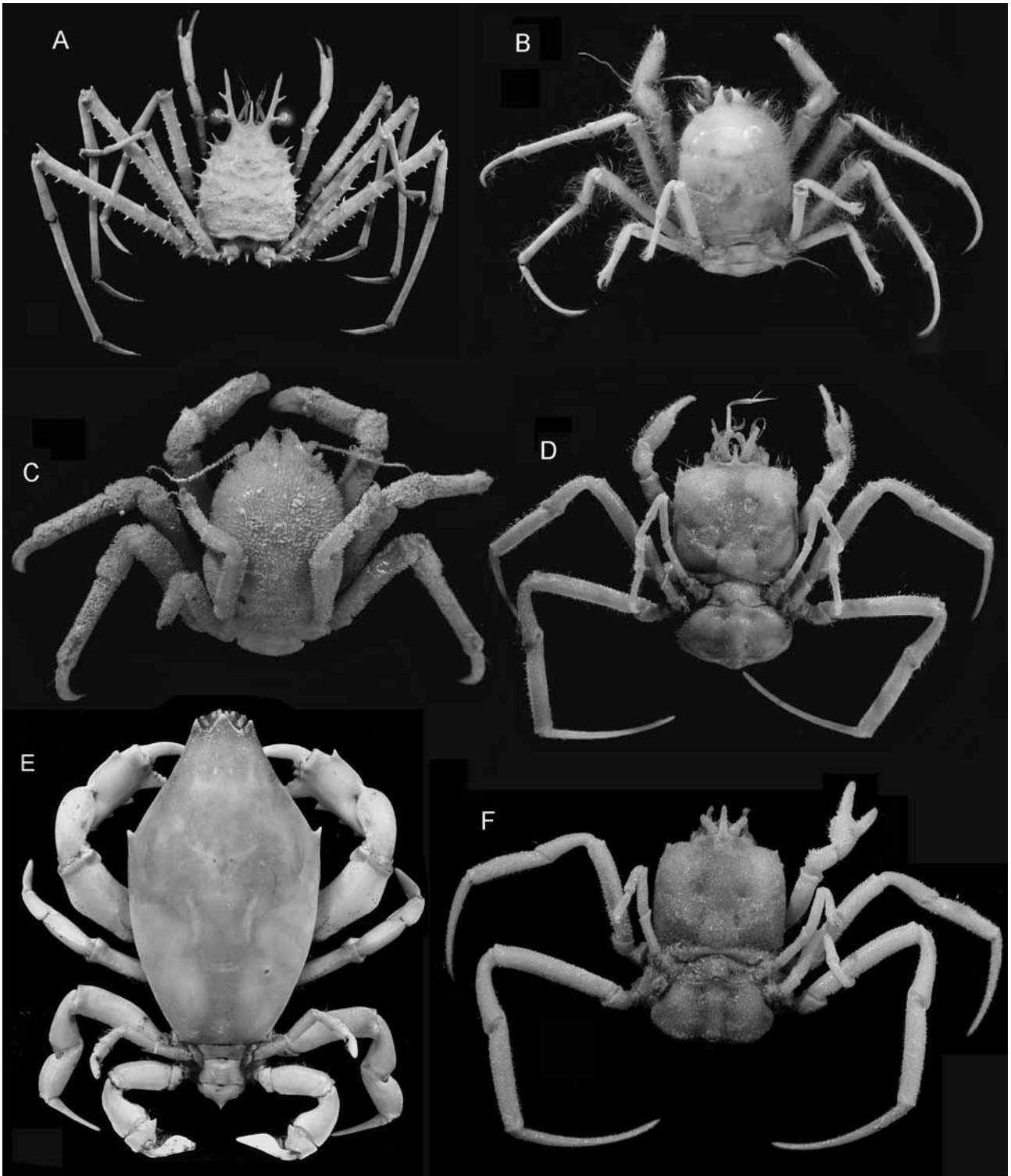


FIGURE 1. A, *Dagnaudus petterdi* (Grant, 1905), female, pcl 44.1 mm (NIWA 34784). B, *Homolodromia kai* Guinot, 1995, female, cl 19.9 mm, cw 14.6 mm (NIWA 6761). C, *Dicranodromia spinulata* Guinot, 1995, male, cl 9.6 mm, cw 6.8 mm (NIWA 34933). D, *Cynomus clarki* **sp. nov.**, ovigerous female holotype, cl 6.9 mm, cw 6.6 mm (NIWA 29666). E, *Lyreidus tridentatus* De Haan, 1841, female, cl 46.6 mm (NIWA 6723). F, *Cynomus aequilonius* Dell, 1971, female, cl 7.7 mm, cw 6.7 mm (NIWA 34966).

Material examined. *Rangatira Knoll*: NMNZ Cr5640, 3 males (pcl 58.7–77.5 mm), 7 ovigerous females (47.7–54.8 mm), 37°16.5'S, 176°52.6'E, 238 m, gill net, FV *Francis*, O. Pool.

Mahina Knoll: NIWA 6742, 1 female (cl 75.1 mm), 37°19.76–19.64'S, 177°04.38–04.63'E, 350–380 m, TAN0413/128, 14 Nov 2004.

Tuatoru Seamount: NIWA 6741, 1 female (pcl 23.2 mm), 37°27.63–27.91'S, 177°12.52–12.18'E, 464–473 m, TAN0413/72, 12 Nov 2004; NIWA 18050, 2 females (pcl 9.5–9.7 mm), 37°28.25–28.41'S, 177°13.35–13.58'E, 207–216 m, TAN0413/85, 12 Nov 2004.

NE of Reserve Bank, Chatham Rise: NIWA 34784, 1 female (pcl 44.1 mm), TAN9901/57, 43°08.97–06.22'S, 177°55.56–53.89'E, 365 m, 14 Jan 1999.

Remarks. The 9.5 mm female (NIWA 18050) was carrying an unidentified sponge (19 mm greatest dimension) and an ovigerous female (54.3 mm, NMNZ Cr5640) was carrying an unidentified sea anemone on its left P5.

Distribution. Australia, New Caledonia and New Zealand, from the Snares Islands, Fiordland, Banks Peninsula, to the Bay of Plenty and the Cavalli seamounts; 81–920 m (McLay 1988; Poore 2004).

Family HOMOLODROMIIDAE Alcock, 1899

Dicranodromia delli sp. nov.

(Figs 2–4)

Type material. HOLOTYPE: NIWA 18049, ovigerous female (cl 19.0 mm, cw 15.5 mm), Nukuhou Seamount, 37°14.22–14.52'S, 177°16.64'E, 1126–1134 m, TAN0413/54, 11 Nov 2004.

Diagnosis. Carapace ovate, longer than broad, strongly convex transversely and longitudinally; dorsal surface covered with short, stiff setae and fine spinules, becoming elongate granules on central surface; frontal lobes with inner and outer margins concave; margin near orbit with several spinules. Outer orbital tooth a slender, anterolaterally directed spine, inner margin with several spinules. Epistome with posterior surface unarmed. Cheliped propodi with well-spaced conical granules or spinules. P2–3 long, slender, meri and carpi with scattered elongate granules or spinules, propodi smooth; meri exceeding 6 times height; propodi exceeding 10 times height; dactyli half propodus length.

Description. Carapace ovate, longer than broad, prominently convex transversely and longitudinally; regions faintly indicated; dorsal surface covered with short, stiff setae and fine spinules, becoming elongate granules on central surface; front with 2 prominent triangular lobes separated by deep U-shaped sinus, inner and outer margins concave, distally rounded; margin near orbit with several spinules. Outer orbital tooth a slender anterolaterally directed spine, inner margin with several spinules. Anterolateral and posterolateral margins rounded, spinulose. Posterior margin faintly concave. Suborbital, pterygostomial and sub-branchial regions, spinulate. Epistome with anterior and median surfaces sparsely granular or spinulate; posterior surface unarmed. Basal antennal and proximal antennular segments covered with small spinules or granules. Third maxilliped ischiobasis demarcated by distinct groove; ischium quadrate, surface smooth, margins with short teeth or granules. Merus subovate, as long as ischiobasis; 1.6 times longer than wide; surface sparsely spinulate, margins spinulate. Propodus, carpus and dactylus unarmed. Exopod surface smooth, inner mesial and outer proximal margins spinulate; apex reaching slightly beyond midlength of merus of endopod.

Chelipeds equal in size and ornamentation, covered with short, stiff, scattered setae. Merus surfaces with well-spaced conical granules or spinules, most pronounced dorsally and ventrally. Carpus with pair of outer distal spines and small, scattered conical granules or spinules. Propodus relatively slender, not swollen; surfaces with well-spaced conical granules or spinules. Fingers slightly shorter than dorsal margin of palm; glabrous, smooth, forming narrow gape when closed; occlusal margin of pollex slightly crenulate, that of dactylus evenly curved.



FIGURE 2. *Dicranodromia delli* sp. nov., ovigerous female holotype, cl 19.0 mm, cw 15.5 mm (NIWA 18049). A, dorsal habitus. B, carapace, dorsal view.

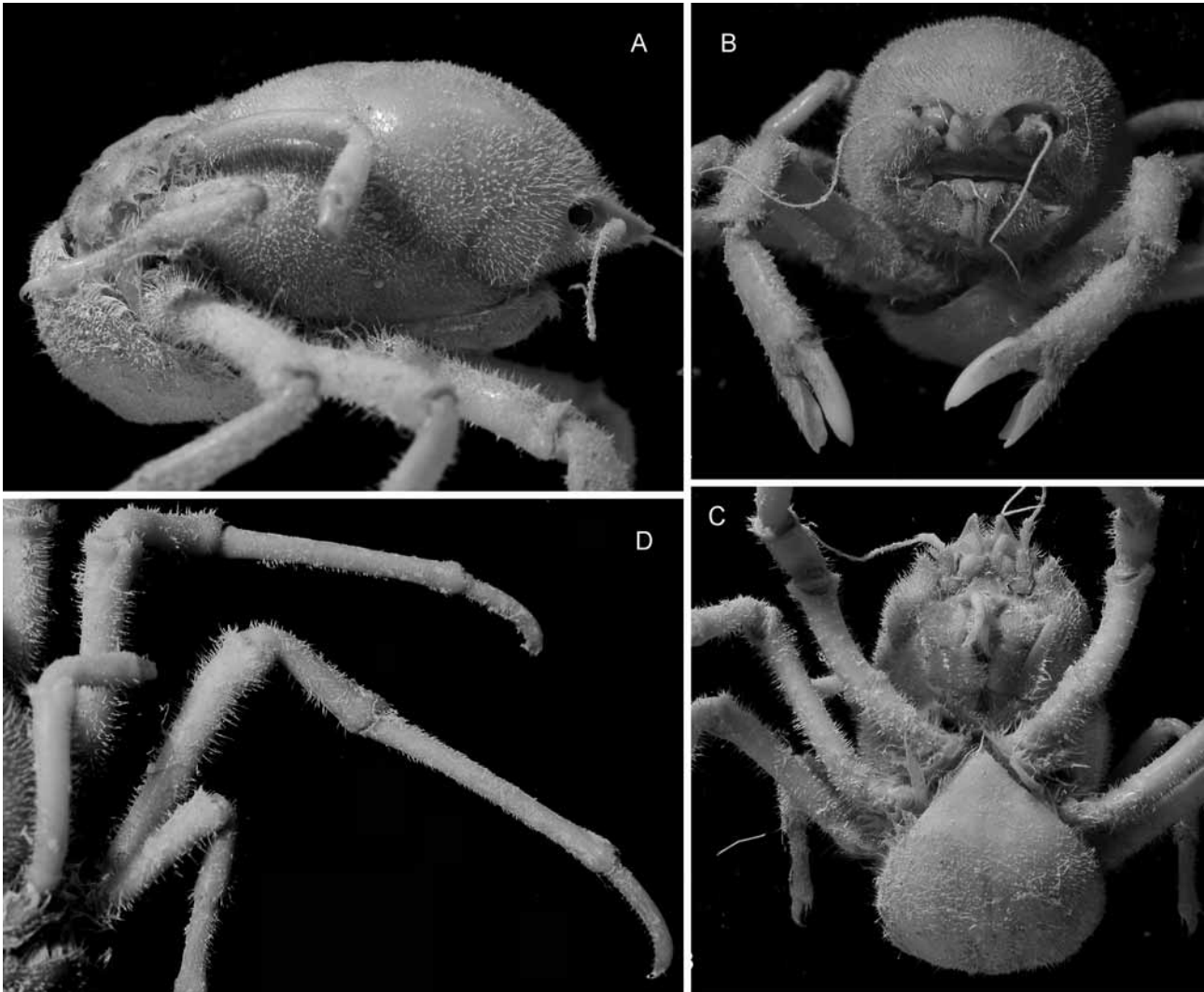


FIGURE 3. *Dicranodromia delli* sp. nov., ovigerous female holotype, cl 19.0 mm, cw 15.5 mm (NIWA 18049). A, right lateral. B, anterior. C, ventral. D, right pereopods.

P2–3 long, slender, setose; meri and carpi with scattered elongate granules or spinules; propodi smooth; dactyli strongly curved, ventral margin lined with corneous spines, apex corneous. P2 merus 6.6 times as long as high; propodus 10.6 times as long as high; dactylus half propodus length. P3 longest, 1.9 times carapace length; merus 6.6 times height; propodus 11.1 times height; dactylus half propodus length.

P4–5 setose, smooth except for few scattered spinules on merus; distal margin of P4 propodus with 2 dorsal and 3 or 4 movable ventral spines opposing dactylus; distal margin of P5 propodus with 2 dorsal and 7 movable ventral spines opposing dactylus. P4–5 dactyli markedly shorter than respective propodi, strongly curved, each with corneous apex and 3 or 4 obliquely inclined, corneous spines on ventral margin. P5 merus, when folded against carapace, reaching lateral extent of cervical groove.

Mature female abdomen subovate, forming brood chamber; telson triangular, fused with somites 5 and 6; somites 5 and 6 demarcated by distinct suture; demarcation between somite 6 and telson faint or absent.

Etymology. Named for the late Richard. K. Dell, in recognition of his substantial contributions to New Zealand carcinology.

Remarks. *Dicranodromia delli* sp. nov. is the eleventh Indo-West Pacific species of the genus to be recognised (for full species list see Guinot 1995; Ng & McLay 2005; Ng & Naruse 2007) and the first species of Homolodromiidae to be described from New Zealand. *Dicranodromia delli* most closely resembles *D. spinu-*

lata Guinot, 1995 (from New Caledonia and now New Zealand) and *D. pequegnati* Guinot, 1995 (from off West Africa) in sharing the finely spinulate carapace surface, sparse dorsal setation, and slender, spinulate outer orbital teeth. The new species differs from *D. spinulata* and *D. pequegnati* in having the spinulation of the central surface of the carapace reduced to short or low granules rather than distinct spinules, sparse rather than dense setation on the pereopods and the more slender P2 and P3 as measured by segment proportions (compare Figs 1C & 2–3). In *D. delli*, the P2 and P3 merus length is 6.6 times height, the propodus length exceeds 10 times its height and is twice the length of the dactylus. In *D. spinulata* and *D. pequegnati*, the P2 and P3 meral length is less than 5 times height, the propodus length is less than 7 times the height and the dactyli are about 0.6 propodus length. *Dicranodromia delli* further differs from *D. spinulata* in having a smooth rather than spinulose posterior surface of the epistome (Fig. 4B), and distinctly concave rather than almost straight lateral frontal margins (Fig. 4A–B). In addition, *D. delli* apparently attains a much larger size (cl 19.0 mm versus 11.0 mm), being almost twice the maximum known lengths of *D. spinulata* and *D. pequegnati*.

The holotype is a gravid female, carrying 18 large, late stage embryos and ‘megalopae’ (3.2–3.5 mm) similar to those reported by Guinot (1995) for *D. nagaii* Guinot, 1995.

Distribution. Presently known only from Nukuhou Seamount, Bay of Plenty, northeastern New Zealand; 1126–1134 m.

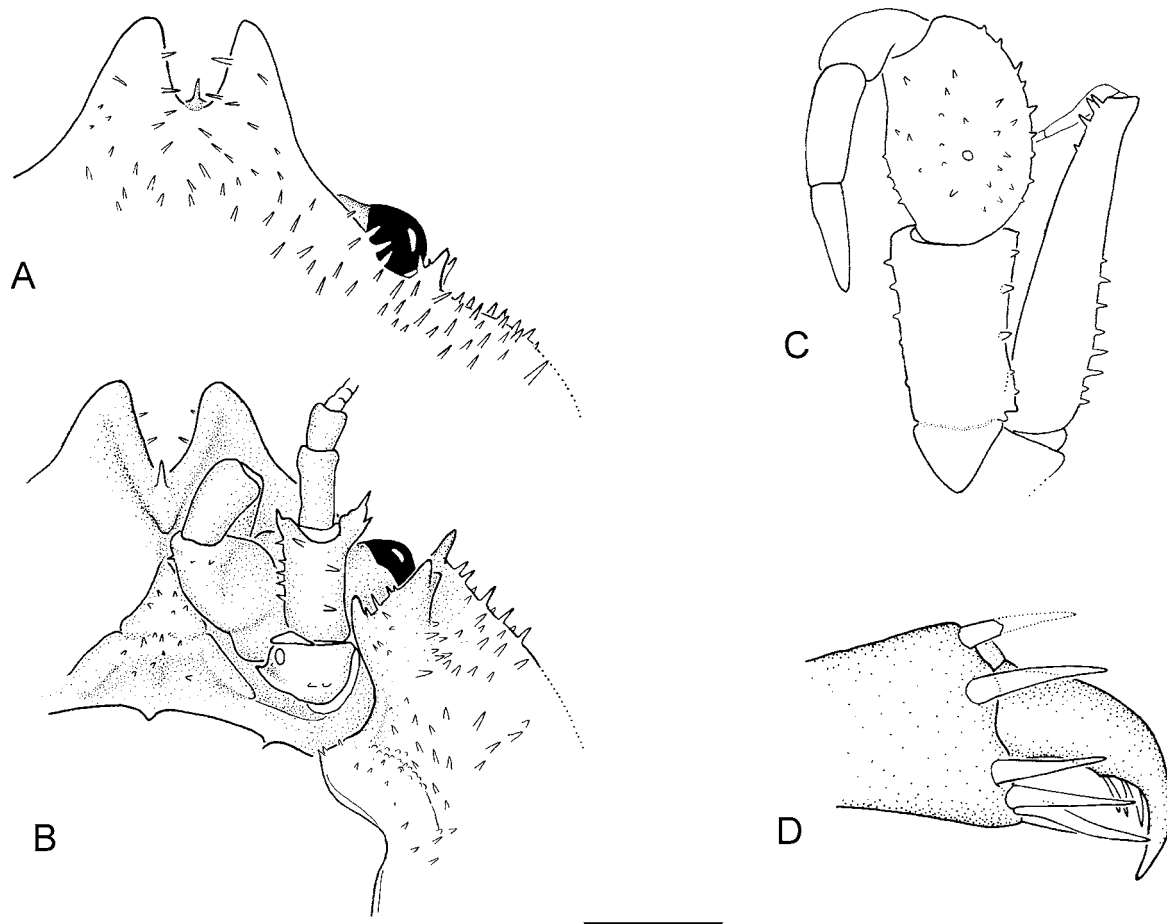


FIGURE 4. *Dicranodromia delli* sp. nov., ovigerous female holotype, cl 19.0 mm, cw 15.5 mm (NIWA 18049). A, anterior, dorsal view. B, anterior, ventral view. C, left third maxilliped. D, left P5 dactylus and propodus. Scale: A–C = 2.0 mm, D = 1.0 mm.

***Dicranodromia spinulata* Guinot, 1995**

(Fig. 1C)

Dicranodromia spinulata Guinot, 1995: 225–227, fig. 21a–c, 22A–B, 25D [type locality: New Caledonia, 23°10'S, 167°10'E; 675 m].

Material examined. *Rock Garden cold seep*: NIWA 34933, 1 male (cl 9.6 mm, cw 6.8 mm), 40°02.31'–02.47'S, 178°08.58'–08.62'E, 730–747 m, TAN0616/06, 4 Nov 2006.

Remarks. The single specimen of *Dicranodromia spinulata* constitutes the first record of the species, and only the third record of the family from New Zealand.

Distribution. New Caledonia and now from Rock Garden cold seep, eastern New Zealand; 675–747 m (Guinot 1995; this study).

***Homolodromia kai* Guinot, 1993**

(Fig. 1B)

Homolodromia kai Guinot, 1993: 1228, fig. 5 [type locality: Kai Islands, Indonesia]; 1995: 197–200, fig. 5B, 9a–d, 10A–D. — Ng & Ho 1999: 1123–1125, fig. 1. — Dawson 2002: 6–12, figs 1c, 2, pls 1–3. — Poore 2004: 311, fig. 89e.

Material examined. *Mahina Knoll*: NIWA 6761, 1 female (cl 19.9 mm, cw 14.6 mm), 37°21.74'–21.40'S, 177°06.63'E, 632–458 m, TAN0413/136, 14 Nov 2004.

Eastern Australia: AM P60914, 1 female (cl 36.1 mm), E of Port Stephens, New South Wales, 32°49'S, 152°47'E, 935 m, K88-21-02, 3 Dec 1988.

Remarks. The present specimen is the second to be recorded from New Zealand, with the first also from the Bay of Plenty at a depth of 350–382 m (Dawson 2002). *Homolodromia kai* is one of three known New Zealand homolodromiids. The two others, *Dicranodromia delli* sp. nov. and *D. spinulata* Guinot, 1995, can be distinguished from *H. kai* by their the subcheliform rather than cheliform P4–5 (compare Fig. 1C, 2A, 4D), and proportionally shorter P2–3 dactyli, being markedly shorter, rather than as long as than their respective propodi (Fig. 1C, 3D). Poore's (2004) record of *H. kai* from southeastern Australia is based on a 36.1 mm female (AM P60914), the largest and deepest known specimen of the species.

Distribution. Indonesia, the South China Sea, Vanuatu, New Caledonia, southeastern Australia and north-eastern New Zealand; 350–935 m.

Section RANINOIDA De Haan, 1839

Family RANINIDAE De Haan, 1839

***Lyreidus tridentatus* De Haan, 1841**

(Figs 1E, 28F)

Lyreidus tridentatus De Haan, 1841: 140, pl. 35: fig. 6 [type locality: Japan]. — McNeill 1953: 91. — Dell 1955: 148; 1963a: 243–244; 1963b: 20; 1968a: 23; 1968c: 234, 238. — Griffin 1970: 94–104, figs 1–5, 6a, e, f, j–n, o, 7a, b, 8a, b, f, g, pl. 1A. — McLay 1988: 84, fig. 15. — Davie 2002: 486–487. — Poore 2004: 322, fig. 94a, pl. 18e.

Lyreidus elongatus Miers, 1879: 46 [type locality: Kada Bay, Japan].

Lyreidus australiensis Ward, 1933: 377, pl. 23: fig 10 [off Newcastle, New South Wales, Australia]. — Richardson & Kreft 1949: 69–71, fig. 1.

Lyreidus fossor Bennett, 1964: 9, 24–26, figs 5–9, 106 [type locality: N of Whale Island, Bay of Plenty].

Material examined. *Mahina Knoll*: NIWA 6726, 1 female (cl 40.6 mm), 37°19.76–19.64'S, 177°04.38–04.63'E, 350–380 m, TAN0413/128, 14 Nov 2004.

Off White Island: NIWA 34967, 1 female (cl 12.5 mm), 37°28.14–28.11'S, 177°06.97–06.51'E, 230–318 m, KAH9907/50, 5 Jun 1999.

Tuatoru Seamount: NIWA 6717, 2 females (cl 21.6–24.5 mm), 37°28.28–28.32'S, 177°12.30–12.59'E, 295–200 m, TAN0413/68, 11 Nov 2004; NIWA 6718, 4 males (cl 11.5–20.3 mm), 3 females (cl 24.0–31.9 mm), 37°28.19–28.33'S, 177°13.20–12.94'E, 200–175 m, TAN0413/74, 12 Nov 2004; NIWA 6719, 1 damaged female, 37°28.84–28.64'S, 177°13.74–13.57'E, 454–317 m, TAN0413/76, 12 Nov 2004; NIWA 6720, 1 male (cl 38.5 mm), 1 female (cl 19.5 mm), 37°28.26–28.48'S, 177°12.89–12.82'E, 180–177 m, TAN0413/77, 12 Nov 2004; NIWA 6721, 1 male (cl 15.5 mm), 1 female (cl 14.9 mm), 37°28.30–28.49'S, 177°13.49–13.24'E, 218–220 m, TAN0413/84, 12 Nov 2004; NIWA 6722, 1 male (cl 23.1 mm), 37°29.14–28.89'S, 177°12.92–12.86'E, 400–225 m, TAN0413/92, 12 Nov 2004; NIWA 6723, 3 males (cl 15.1–16.5 mm), 3 females (cl 15.0–46.6 mm), 37°28.58–28.40'S, 177°12.94–12.73'E, 180–179 m, TAN0413/93, 13 Nov 2004.

Tumokemoke Seamount: NIWA 6727, 2 males (cl 14.2–15.5 mm), 1 female (cl 23.9 mm), 37°28.36–28.22'S, 176°55.13–54.97'E, 260–219 m, TAN0413/152, 15 Nov 2004; NIWA 18048, 4 males (cl 15.4–31.6 mm), 37°27.46–27.64'S, 176°54.08–54.24'E, 312–278 m, TAN0413/160, 15 Nov 2004; NIWA 6728, 4 males (cl 14.5–37.7 mm), 2 females (cl 14.5–22.8 mm), 37°28.02–28.13'S, 176°55.13–54.98'E, 232–218 m, TAN0413/161, 15 Nov 2004; NIWA 6729, 6 specimens, 37°28.27–28.20'S, 176°55.21–55.07'E, 262–230 m, TAN0413/162, 15 Nov 2004; NIWA 6730, 1 damaged male, 37°28.4–28.11'S, 176°55.79–55.58'E, 315–283 m, TAN0413/163, 15 Nov 2004; NIWA 6731, 1 male (cl 14.5 mm), 2 females (cl 15.1–35.0 mm), 1 damaged (cl 25.0 mm), 37°28.00–28.16'S, 176°54.91–54.87'E, 225–210 m, TAN0413/164, 15 Nov 2004; NIWA 6732, 3 males (cl 11.3–15.3 mm), 3 females (cl 14.6–15.2 mm), 37°28.19–28.15'S, 176°55.15–54.94'E, 240–212 m, TAN0413/166, 15 Nov 2004; NIWA 6733, 2 males (cl 23.9–26.5 mm), 37°27.61–27.72'S, 176°55.59–55.48'E, 320–302 m, TAN0413/167, 15 Nov 2004; NIWA 6734, 2 males (cl 11.6–16.4 mm), 1 female (cl 25.4 mm), 37°27.69–27.87'S, 176°54.81–54.85'E, 294–247 m, TAN0413/170, 16 Nov 2004.

Rungapapa Seamount: NIWA 6724, 1 male (cl 17.3 mm), 37°33.41–33.18'S, 176°58.94–59.05'E, 266–197 m, TAN0413/97, 13 Nov 2004; NIWA 6725, 1 damaged female, 37°32.11–32.20'S, 176°58.26–58.32'E, 217–169 m, TAN0413/112, 13 Nov 2004.

Remarks. *Lyreidus tridentatus* is easily recognised by its smooth, elongated, pod-shaped carapace. It was frequently collected with *Bellidilia cheesmani* (Filhol, 1886) and *Ebalia tuberculosa* (A. Milne-Edwards, 1873) on Tumokemoke Seamount.

Distribution. Western Indian Ocean and western Pacific from Japan to Hawaii, Fiji, Australia and New Zealand around the whole of the North Island; 27–512 m (McLay 1988; Takeda & Webber 2006).

Section CYCLODORIPPOIDA Ortmann, 1892

Family CYMONOMIDAE Bouvier, 1897

Cyonomus aequilonius Dell, 1971

(Fig. 1F)

Cyonomus aequilonius Dell, 1971: 59–61, figs 11–15 [type locality: NE of Mayor Island, Bay of Plenty, New Zealand, 37°10'S, 176°23.5'E, 731 m]. — McLay 1988: 92, fig. 17. — Ahyong & Brown 2003: 1372.

Material examined. *Tims Bank, S of Ritchie Hill*: NIWA 34966, 1 male (cl 5.9 mm, cw 4.8 mm), 1 female (cl 7.7 mm, cw 6.7 mm), 40°01.29–01.20'S, 178°04.15–04.09'E, 797–804 m, KAH9907/01, 1 Jun 1999.

Mernoo Bank, Chatham Rise: NIWA 16829, 1 ovigerous female (cl 8.9 mm, cw 8.2 mm), 44°20.0'S, 173°54.2'E, 675 m, S0161, 28 Oct 1979.

Remarks. The three specimens reported here represent the first records of *C. aequilonius* since it was first described, extending the known range south to the Chatham Rise. Among the three species of *Cyonomus* known from New Zealand, *C. aequilonius* is distinctive in its rostral length — longer than rather than distinctly shorter than the eyestalks.

Distribution. Eastern New Zealand: Bay of Plenty south to the Chatham Rise; 675–804 m.

***Cyonomus clarki* sp. nov.**

(Figs 1D, 6)

Type material. HOLOTYPE: NIWA 29666, ovigerous female (cl 6.9 mm, cw 6.6 mm), Graveyard Seamount, 42°45.91'S, 179°59.26'W, 993–1090 m, coral rubble and rocks, TAN0604/16, 29 May 2006. PARATYPES: NIWA 34965, 1 ovigerous female (cl 7.3 mm, cw 7.1 mm), Ritchie Hill, 39°29.44–28.51'S, 178°25.05–25.48'E, 1000–980 m, KAH9907/37, 3 Jun 1999; NIWA 29663, 1 ovigerous female (cl 6.7 mm, cw 6.6 mm), Ghoul Seamount, 42°47.85'S, 179°59.26'E, 925–1054 m, coral rubble and rocks, TAN0604/118, 7 Jun 2006.

Diagnosis. Carapace almost square, lateral margins almost parallel; with anterolateral spine; anterior and anterolateral surfaces with long, fine setae, other surfaces with sparse, short fine setae; dorsal and lateral surfaces entirely covered with minute granules. Fronto-orbital margin (excluding rostrum and lateral projections) not advanced beyond anterolateral margins; lateral frontal projections subequal to length of rostrum. Rostrum about half-length of eyestalks. Eyestalks distinctly divergent, reaching anteriorly to end of first antennular peduncle segment. Third maxilliped sparsely granular; merus as long as ischium, about 2.5 times longer than wide; tapering distally to rounded apex. Chelipeds granular; carpus with 2 or 3 dorsal spines; palm without dorsal spines. P2 and P3 setose; all segments except for dactylus finely granular. P3 merus as long as carapace length (excluding rostrum). P4 and P5 longer than merus of P3; dactyli with corneous spines on ventral margins. P5 merus when folded against carapace, reaching to the anterior quarter of carapace. Female telson subtriangular, margins concave near midlength, apex rounded.

Description. Carapace quadrate, almost square, lateral margins almost parallel; regions weakly indicated; with blunt anteriorly directed anterolateral spine and one or two smaller laterally directed spines on lateral margin behind anterolateral spine; lower pterygostomian region swollen; anterior and anterolateral surfaces with long, fine setae, other surfaces with sparse, short fine setae. Dorsal and lateral surfaces entirely covered with minute granules, with granules becoming larger and more elongate anterolaterally. Fronto-orbital margin (excluding rostrum and lateral projections) not advanced beyond anterolateral margins; about half anterior carapace width; lateral frontal projections slender, elongate, situated below plane of rostrum, laterally spinulate, with acute apices, subequal to length of rostrum. Rostrum 0.12–0.15 cl, half or slightly less than half-length of eyestalks; slender, tapering to acute apex, minutely granular laterally and dorsally. Eyestalks distinctly divergent, flattened, fused to carapace below rostral base; reaching anteriorly to end of first antennular peduncle segment; granular and spinulate; cornea apparently vestigial, not pigmented. Epistome smooth except for blunt tubercle at base of rostrum and blunt tubercle mesial to base of antennules.

Antennular peduncle shorter than carapace length; first segment laterally granular; second segment minutely granular; third segment smooth. Basal antennal segment fused to epistome; second segment granular, laterally and distally spinulate; third segment granular; fourth segment smooth.

Third maxilliped ischiobasis subquadrate, sparsely granular, with longitudinal sublateral groove; ischium and basis demarcated by shallow groove. Merus elongate, as long as ischium, about 2.5 times longer than wide; tapering distally to rounded apex; surface sparsely granular or spinulate, margins spinulate. Propodus and carpus sparsely spinulate. Dactylus conical, unarmed. Exopod sparsely granular, not exceeding merus of endopod.

Chelipeds (P1) equal in size and ornamentation, setose. Merus finely granular. Carpus finely granular, dorsal margin with 2 or 3 spines. Palm surfaces with fine granules and few scattered acute granules, slightly more prominent on upper margin, but none produced to spines. Dactylus and pollex about 1.5 times upper palm length; without spines; with faint longitudinal carina on outer surface, occlusal surfaces of dactylus and pollex crenulate, with slight gape when closed; proximal half of dactylus with scattered granules.

P2 and P3 long, slender, setose; all segments except for dactylus finely granular. P3 longest, as long as carapace length (excluding rostrum). Dactyli broadly curved, smooth, with longitudinal rib. P3 dactylus slightly shorter than combined length of propodus and carpus.

P4 and P5 finely granular and setose; longer than merus of P3; dactyli markedly shorter than propodi, falcate, with corneous apex and 4–6 small, obliquely inclined, corneous spines on ventral margin. P5 merus, when folded against carapace, reaching anterior quarter of carapace.

Female abdomen with margins and surface finely granular; telson subtriangular, margins concave near midlength, apex rounded; length 0.5–0.6 times width. Egg diameter 1.2–1.5 mm (eyes not yet visible).

Etymology. Dedicated to Malcolm Clark, for his longstanding work on New Zealand seamounts.

Remarks. Three species of *Cymonomus* A. Milne-Edwards, 1880 are now known from New Zealand: *C. aequilonius* Dell, 1971 (type locality: northeast of Mayor Island, Bay of Plenty), *C. bathamae* Dell, 1971 (type locality: Papanui Canyon, off Otago coast), and *C. clarki* **sp. nov.** *Cymonomus clarki* is readily distinguished from *C. bathamae* in the form of the fronto-orbital region (not advanced anteriorly beyond anterolateral margins), and in the longer P2 and P3 (P3 merus as long as rather than distinctly shorter than postrostral carapace length). Rostral length immediately distinguishes *C. clarki* from *C. aequilonius* (about half the length, rather than distinctly longer than the eyestalks).

Of the known species of *Cymonomus*, *C. clarki* most closely resembles *C. soela* Ahyong & Brown, 2003, from seamounts off Tasmania, Australia, sharing the combination of divergent eyestalks, a slender rostrum that reaches anteriorly to about the midlength of the eyestalks, well-developed lateral frontal projections of similar length to the rostrum, and granular carapace and pereopodal surfaces. *Cymonomus clarki* differs from *C. soela* in having distinctly setose rather than almost glabrous dorsal surfaces (few, scattered short setae on the rostrum and chelipeds of *C. soela*); the third maxilliped ischium is proportionally longer (length 2.5 versus about 2 times width; Fig. 6C) with a more slender distal half; the terminal abdominal segment is proportionally longer (length 0.6 versus 0.4 times width) with concave rather than angularly convex margins and a rounded rather than angular apex (Fig. 6D); having comparatively finer overall granulation, especially on the cheliped palm which lacks prominent, blunt, upright spines and elongate granules, and on the cheliped carpus, which bears only 2 or 3 rather than a cluster of dorsal spines; and in having a proportionally longer P4 and P5, which are distinctly longer than, rather than as long as the P3 merus (Fig. 1D, 6A). Additionally, when P5 is folded against the carapace, the distal end of the merus reaches the anterior quarter of the carapace in *C. clarki*, rather than the midlength as in *C. soela*.

The type specimens of *C. clarki* agree well in almost all respects, differing only marginally. The smaller paratype differs from the holotype in the length: width ratio of the telson (0.5 versus 0.6), in the slightly shorter rostrum (0.12 versus 0.15 cl), and in having slightly shorter anterolateral spines on the carapace. All specimens are ovigerous. The eggs are large (1.2–1.5 mm diameter) and few in number (25–31 eggs), suggesting that *C. clarki* could be expected to have limited dispersal capabilities and a narrow range.

Takeda *et al.* (2005) reported as *C. soela*, a male and female from the Ryukyu Islands (Japan), noting that it differed from the type description in having a much shorter rostrum and a more finely granular third maxilliped. According to Takeda *et al.* (2005: fig. 2), the Ryukyu specimens are also dorsally setose and the lengths of P4 and P5 are closer to those of *C. clarki* than *C. soela*. The Ryukyu specimens probably represent an undescribed species.

Distribution. Presently known only from seamounts on the northern Chatham Rise, New Zealand; 925–1054 m.

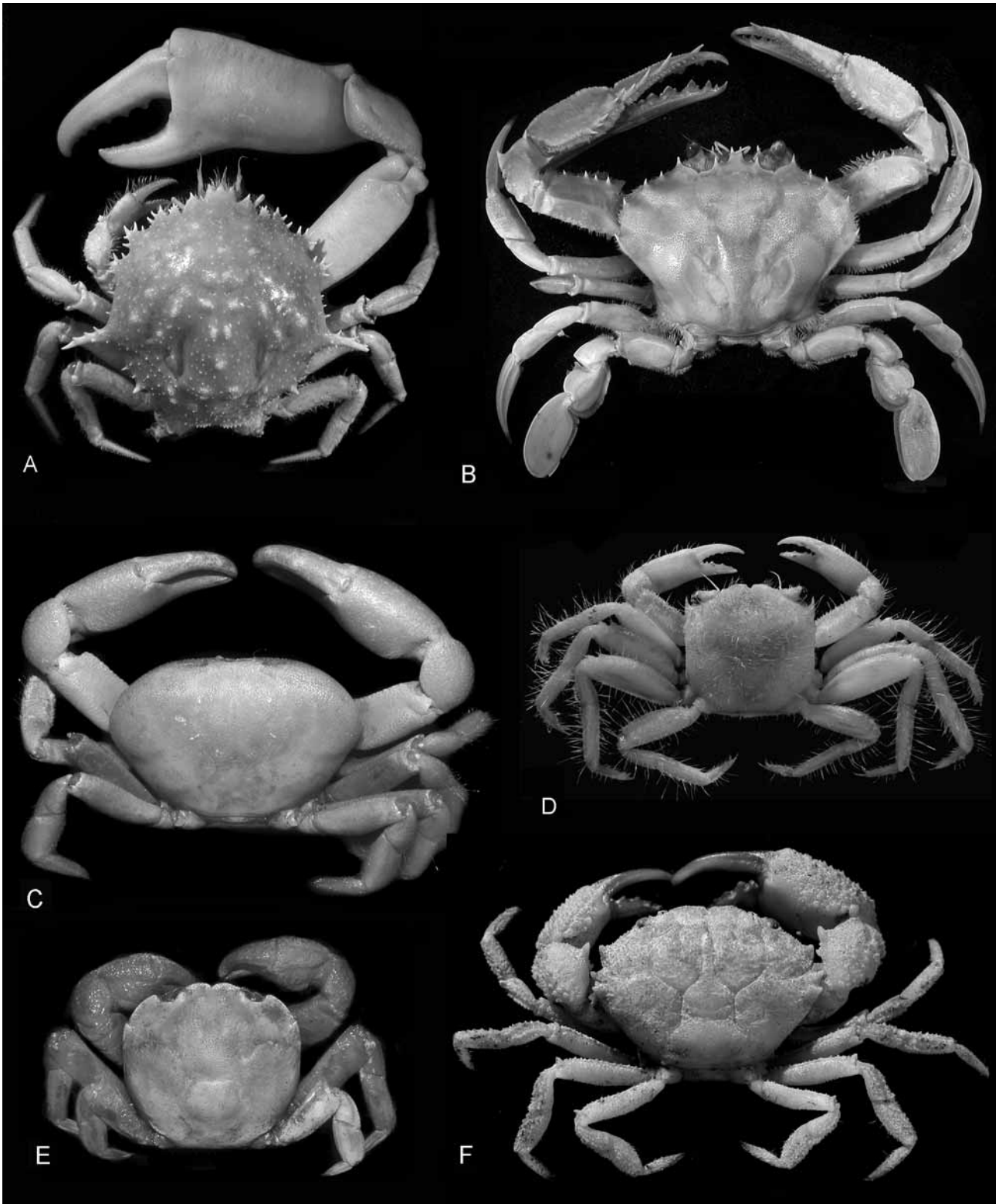


FIGURE 5. A, *Trichopeltarion fantasticum* Richardson & Dell, 1964, male, cl 58.1 mm (NIWA 16492). B, *Ovalipes molleri* (Ward, 1933), male, cl 75.6 mm (NMNZ Cr7223). C, *Gandalfus puia* McLay, 2007, male holotype, cl 15.5 mm, cw 24.3 mm (NIWA 27855). D, *Miersiograpsus australiensis* Türkay, 1978, male, cl 11.4 mm, cw 11.8 mm (NIWA 29390). E, *Xenograpsus ngatama* McLay, 2007, male, cl 25.9 mm, cw 27.4 mm (NIWA 27854). F, *Miersiella haswelli* (Miers, 1886), male, cl 7.8 mm (NIWA 6760). C, E, after McLay (2007)

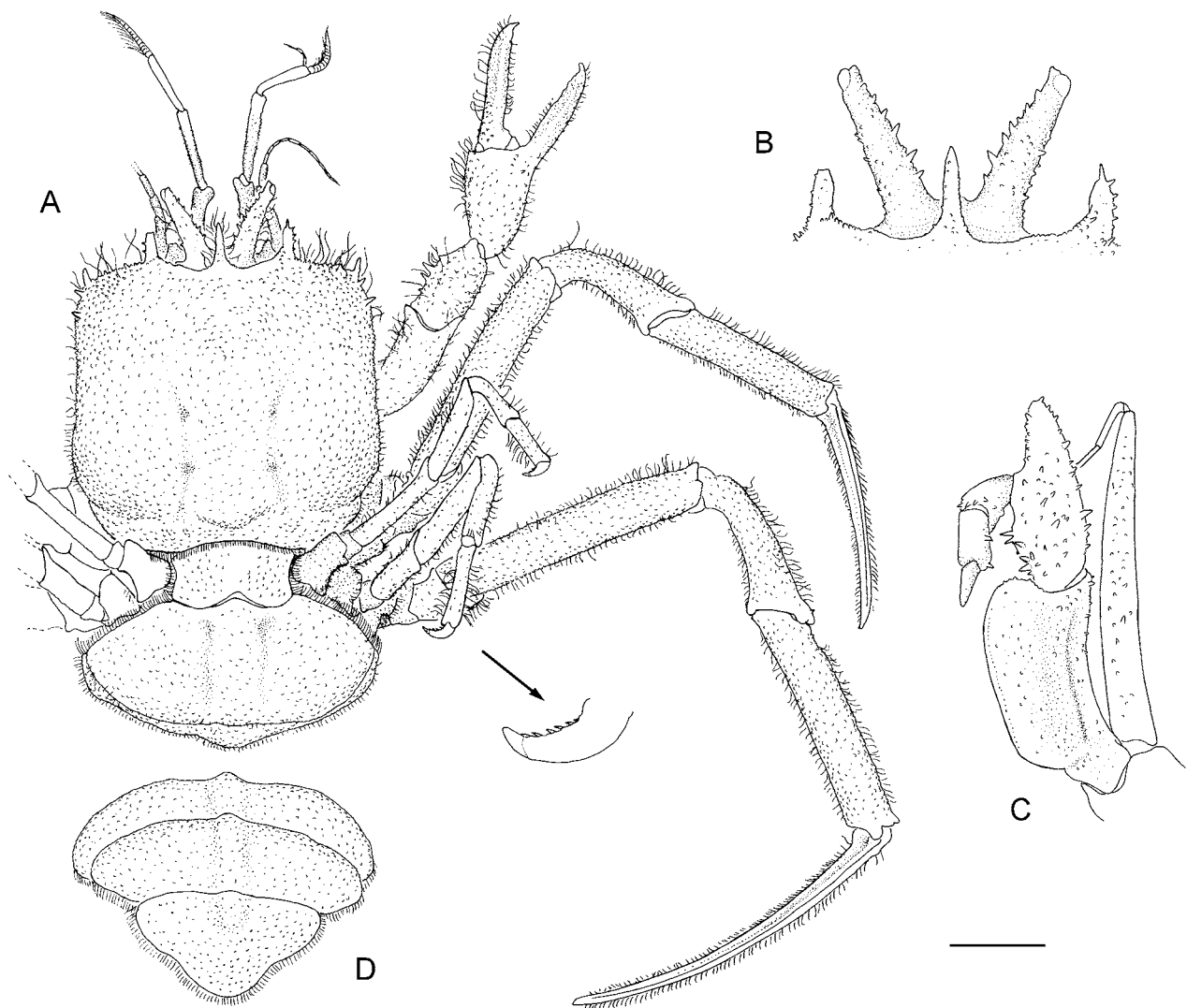


FIGURE 6. *Cymonomus clarki* sp. nov., ovigerous female holotype, cl 6.9 mm, cw 6.6 mm (NIWA 29666). A, dorsal habitus. B, frontal region. C, left third maxilliped. D, distal abdominal somites. Scale: A, D = 2.0 mm, B–C = 1.0 mm.

Section EUBRACHYURA Saint Laurent, 1980

Family ATELECYCLIDAE Ortmann, 1893

Trichopeltarion fantasticum Richardson & Dell, 1964

(Figs 5A, 28C)

Trichopeltarion sp. — Dell, 1960: 5; 1963b: 18.

Trichopeltarion fantasticum Richardson & Dell, 1964: 145–151, figs 1–11 [type locality: Palliser Bay, 41°32.5'S, 174°52'E, 180 m]. — Dell 1968a: 25; 1968c: 233, 238. — Takeda & Miyake 1969: 157, 163–164, pl. 3B. — McLay 1988: 186–188, fig. 43. — Takeda in Amaoka *et al.* 1990: 371. — Salva & Feldmann 2001: 37–40, figs 16, 17A, 20. — Ahyong *et al.* 2007: 141.

Material examined. *Tuatoru Seamount*: NIWA 6754, 1 female (cl 53.1 mm), 37°29.14–28.89'S, 177°12.92–12.86'E, 400–225 m, TAN0413/92, 12 Nov 2004.

Reserve Bank: NIWA 16492, 1 male (cl 58.1 mm), 43°08.97–06.22'S, 177°55.56–53.89'E, 365 m, TAN9901/57, 14 Jan 1999.

Main Knoll: NIWA 29657, 1 male (cl 20.9 mm), 43°31.85'S, 179°37.75'W, 378–390 m, TAN0604/110, 7 Jun 2006.

Remarks. *Trichopeltarion fantasticum* is the most common and most widely distributed atelecyclid in New Zealand waters. Features distinguishing *T. fantasticum* from *T. janetae* **sp. nov.** are discussed below under the account of the latter.

Distribution. Known only from New Zealand: Bay of Plenty to Foveaux Strait, Chatham Rise, Kaipara to Fiordland; 15–730 m (McLay 1988).

***Trichopeltarion janetae* sp. nov.**

(Figs 7–11, 28D)

Trichopeltarion sp. — Poore *et al.* 1998: 68, 72. — Poore 2004: 400, fig. 123b, pl. 22a.

Type material. HOLOTYPE: NIWA 29655, male (cl 28.0 mm, cw 26.3 mm), Gothic Seamount, 42°43.62'S, 179°53.88'W, 992–1120 m, TAN0604/105, 4 Jun 2006. PARATYPES: *Gothic Seamount*: NIWA 34982, 4 females (cl 12.3–26.5 mm, cw 11.1–25.3 mm), type locality; NIWA 29656, 1 male (cl 13.4 mm, cw 11.9 mm), 2 females (cl 17.0–18.9 mm, cw 16.3–18.5 mm; larger ovigerous), 42°43.61'S, 179°53.97'W, 1030–1156 m, TAN0604/106, 5 Jun 2006; NIWA 29661, 1 male (cl 12.3 mm, cw 11.5 mm), 42°43.62'S, 179°53.90'W, 990–1040 m, TAN0604/112, 7 Jun 2006; NIWA 29662, 1 male (cl 27.7 mm, cw 26.0 mm), 2 females (cl 17.0 mm, cw 16.3 mm; 1 crushed), 42°43.65'S, 179°53.94'W, 1000–1107 m, TAN0604/113, 7 Jun 2006; NIWA 34980, 3 males (cl 18.2–22.9 mm, cw 17.8–22.7 mm; largest with rhizocephalan), 4 females (cl 9.8–22.5 mm cw 9.0–22.1 mm), 42°43.79'S, 179°53.4'W, 1130–1000 m, TAN0104/152, 18 Apr 2001; NIWA 34981, 9 males (cl 10.1–23.6 mm, cw 9.9–23.3 mm), 7 females (cl 9.5–23.4 mm cw 9.0–23.2 mm), 42°43.95'S, 179°53.91'W, 1076–990 m, TAN0104/153, 18 Apr 2001; ZRC 2008.0007, 1 male (cl 25.2 mm, cw 24.1 mm), 1 ovigerous female (cl 21.0 mm cw 9.0–20.6 mm), 42°43.95'S, 179°53.91'W, 1076–990 m, TAN0104/153, 18 Apr 2001.

Other material examined. *Otara Seamount*: NIWA 6710, 1 male (cl 14.4 mm, cw 13.8 mm), 36°57.57–57.69'S, 177°19.92–19.54'E, 1396–1462 m, TAN0413/35, 9 Nov 2004.

Whakatane Seamount: NIWA 6709, 1 ovigerous female (cl 19.5 mm, cw 18.4 mm), 36°46.19–46.51'S, 177°28.39–28.64'E, 1506–1491 m, TAN0413/18, 8 Nov 2004.

Rock Garden Cold Seep: NIWA 32007, 1 female (cl 21.3 mm, cw 20.1 mm), 39°58.64–58.63'S, 178°14.14–14.17'E, 907–908 m, SO191-3/238, 6 Mar 2007.

Moa cold seep, Omakere Ridge: NIWA 32005, 1 male (cl 26.5 mm, cw 26.0 mm; with rhizocephalan), 40°03.33'S, 177°48.81'E, 1111–1120 m, SO191-3/218, 4 Mar 2007.

LM-9 cold seep, Omakere Ridge: NIWA 32010, 1 male (cl 32.4 mm, cw 30.3 mm), 40°03.191–03.193'S, 177°49.092–49.136'E, 1109–1112 m, SO191-2/165, 22 Feb 2007; NIWA 32001, 1 ovigerous female (cl 26.9 mm, cw 26.7 mm), 40°03.19–03.18'S, 177°44.12–49.37'E, 1106–1098 m, SO191-2/87, 12 Feb 2007; NIWA 32000, female (cl 30.7 mm, cw 30.0 mm), 40°03.24–03.26'S, 177°48.74–48.75'E, 1119–1120 m, SO191-3/87, 5 Mar 2007.

Shipleigh Seamount: NIWA 29655, 2 males (cl 15.9–26.3 mm, cw 14.6–25.1 mm), 41°48.07'S, 179°29.61'W, 1260–1240 m, TAN0604/133, 9 Jun 2006.

Morgue Seamount: NIWA 34991, 1 female (damaged; cl ~ 25 mm; with rhizocephalan), 42°43.02'S, 179°57.60'W, 1162–980 m, TAN0104/149, 18 Apr 2001; NIWA 29369, 1 female (cl 26.3 mm, cw 25.9 mm), 42°43.20'S, 179°57.63'W, 1012–890 m, TAN0104/399, 21 Apr 2001.

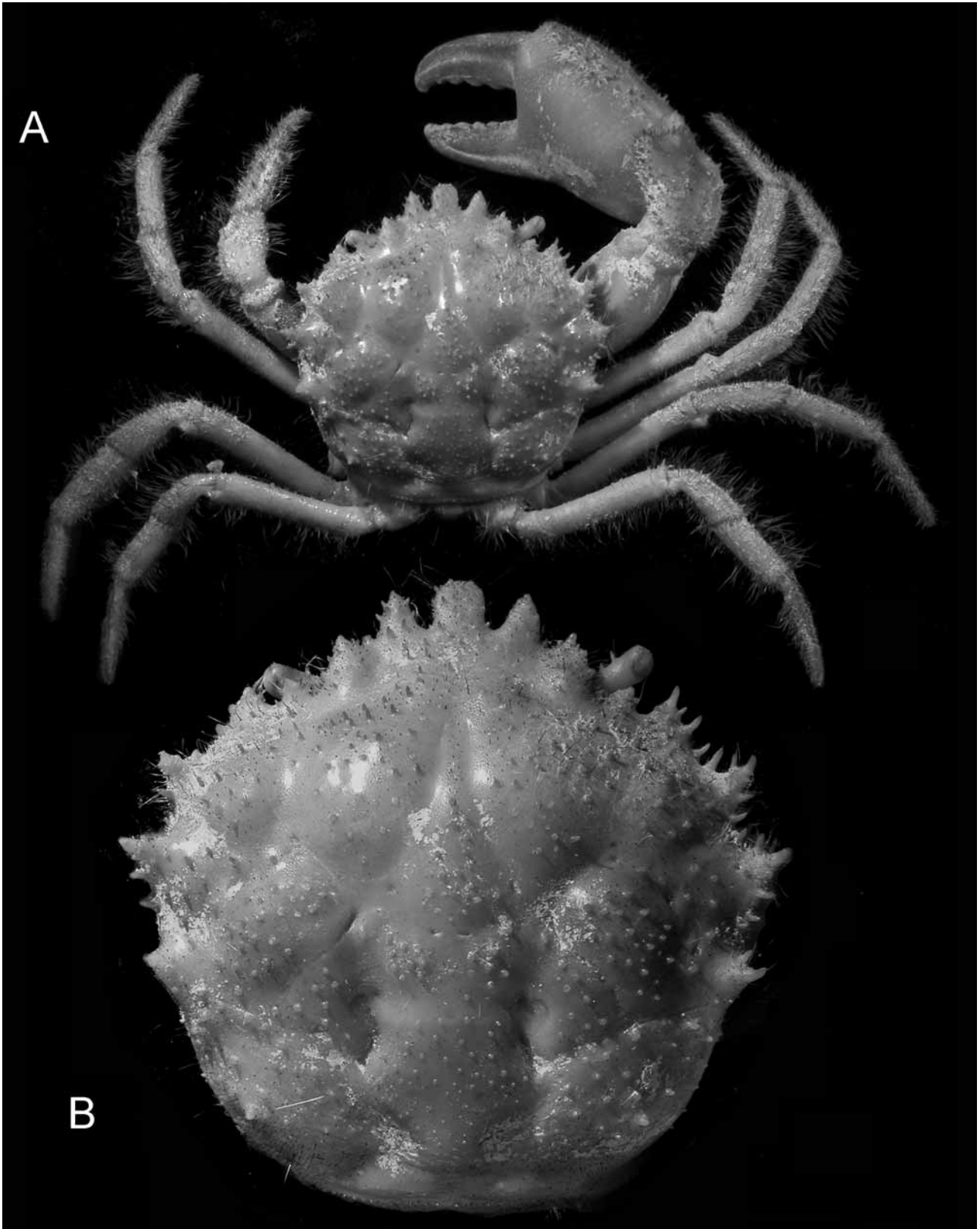


FIGURE 7. *Trichopeltarion janetae* sp. nov., male holotype, cl 28.0 mm, cw 26.3 mm (NIWA 29655). A, dorsal habitus. B, carapace, dorsal view. Carapace setae removed.

Pyre Seamount: NIWA 29647, 1 male (cl 14.2 mm, cw 12.9 mm), 42°43.04'S, 179°54.38'W, 1050–1140 m, TAN0604/53, 31 May 2006; NIWA 29653, 1 female (cl 18.2 mm, cw 18.0 mm), 42°43.06'S,

179°54.29'W, 1025–1156 m, TAN0604/102, 4 Jun 2006; NIWA 29654, 1 female (cl 15.7 mm, cw 15.0 mm), 42°42.97'S, 179°54.34'E, 1005–1070 m, TAN0604/104, 4 Jun 2006; NIWA 27538, 1 male (cl 18.4 mm, cw 17.7 mm), 4 females (cl 14.6–19.4 mm, cw 14.3–18.9 mm), 1 ovigerous female (cl 17.28 mm, cw 16.70 mm), 42°43.09–43.18'S, 179°54.57–54.87'E, 1075–1008 m, TAN0104/333, 20 Apr 2001; NIWA 34987, 1 male (cl 25.0 mm, cw 24.0 mm), 42°42.98'S, 179°54.69'W, TAN0104/397, 21 Apr 2001.

Zombie Seamount: NIWA 29641, 3 males (cl 13.2–21.9 mm, cw 12.2–20.8 mm), 6 females (cl 8.6–26.5 mm, cw 7.7–26.1 mm), 42°45.76'S, 179°55.51'W, 1019–1081 m, TAN0604/09, 28 May 2006; NIWA 29644, 1 female (cl 8.3 mm, cw 7.3 mm), 42°45.96'S, 179°55.57'W, 906–1061 m, TAN0604/21, 29 May 2006; NIWA 29645, 2 females (cl 14.0–14.6 mm, cw 13.4–13.5 mm), 42°45.93'S, 179°55.6'E, 930–1090 m, TAN0604/38, 30 May 2006; NIWA 29646, 1 female (cl 20.8 mm, cw 19.7 mm), 42°45.99'S, 179°55.6'W, 932–1070 m, TAN0604/44, 31 May 2006; NIWA 27540, 2 males (cl 14.8–23.5 mm, cw 13.3–21.7 mm), 2 females (cl 18.5–22.5 mm, cw 17.7–21.7 mm), 42°46.07'S, 179°55.31'E, 955–890 m, TAN0104/336, 24 Apr 2001; NIWA 34986, 1 male (cl 24.2 mm, cw 22.5 mm), 2 females (cl 18.7–19.8 mm, cw 18.3–19.6 mm), 42°46.00'S, 179°55.36'W, 970–900 m, TAN0104/337, 20 Apr 2001; NIWA 27851, 4 females (cl 13.7–21.4 mm, cw 12.8–20.9 mm; largest ovigerous), 42°46.13'S, 179°55.68'W, 987–895 m, TAN0104/197, 18 Apr 2001; NIWA 34984, 2 females (cl 25.0–28.4 mm, cw 23.5–27.2 mm), 42°45.92'S, 179°55.62'W, 1058–990 m, TAN0104/198, 19 Apr 2001.

Scroll Seamount: NIWA, 2 males (cl 14.4–15.9 mm, cw 12.7–15.0 mm), 42°47.14'S, 179°59.85'E, 898–1067 m, TAN0604/08, 28 May 2006.

Diabolical Seamount: NIWA 29650, male (cl 27.9 mm, cw 27.3 mm), 42°47.48'S, 179°59.28'W, 882–1000 m, TAN0604/97, 4 Jun 2006; NIWA 29649, 3 females (cl 21.5–23.5 mm, cw 21.1–23.7 mm), 42°47.48'S, 179°59.28'W, 882–1000 m, TAN0604/97, 4 Jun 2006; NIWA 29652, 1 juvenile female, 42°47.33'S, 179°59.11'W, 960–1036 m, TAN0604/98, 4 Jun 2006; NIWA 29648, 2 juvenile males (cl 9.6–10.0 mm, cw 8.9–9.1 mm), 42°47.44'S, 179°59.21'W, 1030–1156 m, TAN0604/96; NIWA 34985, 2 females (cl 11.1–14.3 mm, cw 10.6–13.9 mm), 42°47.68'S, 179°58.95'W, 1045–900 m, TAN0104/46, 16 Apr 2001; NIWA 34990, 1 female (cl 21.5 mm cw 20.1 mm), 1 carapace (cl 19.3, cw 19.1 mm), 42°47.57'S, 179°58.86'W, 950–900 m, TAN0104/47, 16 Apr 2001; NIWA 34988, 5 males (cl 13.1–23.5 mm, cw 12.6–22.8 mm), 7 females (cl 16.0–24.5 mm cw 15.6–24.0 mm), 1 carapace (cl 19.3, cw 19.1 mm), 42°47.17–46.96'S, 179°59.11–59.01'W, 993–900 m, TAN0104/48, 16 Apr 2001.

Ghoul Seamount: NIWA 29664, 1 female (cl 12.3 mm, cw 11.7 mm), 42°47.85'S, 179°59.26'E, 925–1054 m, TAN0604/118, 7 Jun 2006; NIWA 29659, 1 male (cl 16.6 mm, cw 16.1 mm), 3 females (cl 15.3–26.6 mm, cw 14.8–26.6 mm), 42°47.85'S, 179°59.26'E, 970–1040 m, TAN0604/111, 7 Jun 2006; NIWA 34983, 1 male (cl 23.5 mm, cw 21.6 mm), 1 female (cl 10.9 mm, cw 10.8 mm), 42°47.84'S, 179°58.91'E, 1000–922 m, TAN0104/116, 17 Apr 2001.

Graveyard Seamount: NIWA 29643, 1 ovigerous female (cl 27.8 mm, cw 26.8 mm), 42°45.45'S, 179°59.53'W, 830–1060 m, TAN0604/15, 29 May 2006; NIWA 34989, 1 male (cl 23.7 mm, cw 22.8 mm), 42°45.52–45.60'S, 179°59.61–59.62'W, 925 m, TAN0104/42, 16 Apr 2001; NIWA 29372, 1 female (cw 25.2 mm), 42°45.68'S, 179°59.33'W, 920–771 m, TAN0104/394, 21 Apr 2001.

Chatham Rise: NIWA 13887, 1 male (cl 16.6 mm, cw 15.9 mm), 44°14.50'S, 174°36.60'W, 985–1060 m, Z11072, bottom temperature 5.1°C, MFISH SOP trip 1643/18, FV *Otakau*, A. Rapson, 24 Apr 2002.

Bollon's Seamount: NIWA 27539, 1 male (cl 23.6 mm, cw 23.6 mm), 1 female (24.3 mm, cw 24.0 mm), 49°48.63'S, 175°19.30'E, 908–887 m, TAN0307/79, 2 May 2003.

Tasmania, Australia: NMV J41285, 4 males (cl 15.1–28.6 mm, cw 14.0–27.1 mm), 6 females (cl 18.3–25.7 mm, cw 17.8–25.7 mm; smallest ovigerous), J1 Seamount, 84 km SSE of Southeast Cape, 44°16.2'S, 147°19.8'E, 1300 m, epibenthic sled, SS01/97 37, T. Stranks *et al.*, 27 Jan 1997; NMV J41288, 3 males (cl 24.7–28.9 mm, cw 23.2–28.6 mm), 7 females (cl 12.0–19.8 mm, cw 11.3–19.0 mm), V Seamount, 94.5 km SSE of Southeast Cape, 44°24.0'S, 147°09.0'E, 1400 m, sled, T. Stranks *et al.*, 31 Jan 1997.

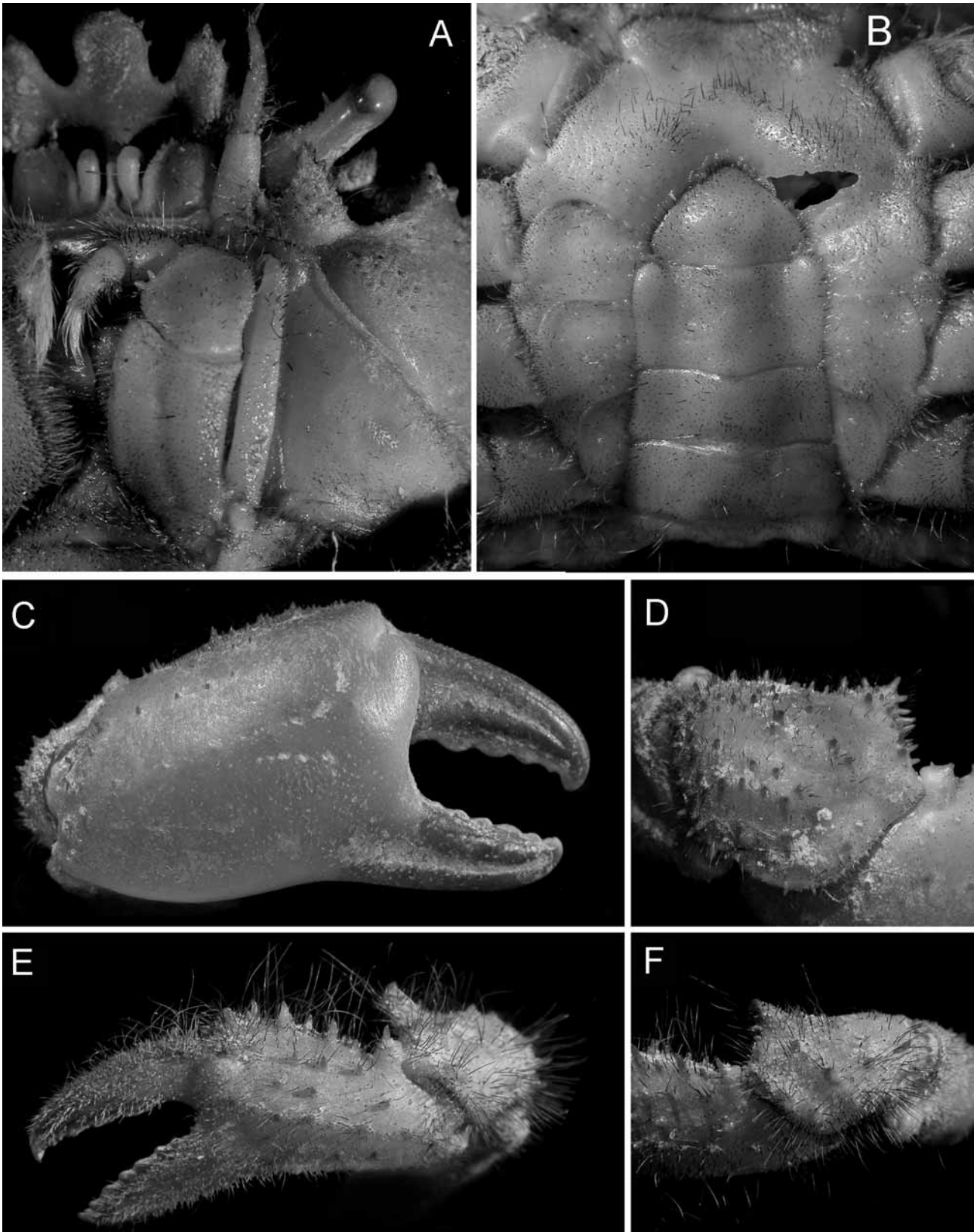


FIGURE 8. *Trichopeltarion janetae* sp. nov., male holotype, cl 28.0 mm, cw 26.3 mm (NIWA 29655). A, third maxilliped and ventral anterior. B, abdomen. C, right chela. D, right cheliped carpus. E, left chela. F, left cheliped carpus.

Diagnosis. Carapace subcircular, as long as or slightly longer than wide (excluding spines); covered by long black-brown setae and short velvety tomentum; regions with small, well-spaced granules or short

spinules, not usually protruding through tomentum. Carapace frontal width basally about 3 times length; sinuses separating lobes almost reaching to frontal base; frontal lobes marginally granular or spinulate; median lobe apically rounded, broader and slightly longer than lateral lobes; lateral lobes pointed. Anterolateral margins with 4 (including outerorbital) short, prominent, evenly spaced, secondarily spinous conical spines. Posterolateral margins without prominent spines, with acute tubercle or small spine near midlength and occasionally another near anterior quarter. Antennal segments unarmed, peduncle not extending beyond median rostral tooth. Right (major) cheliped of adult males massive; palm with scattered setae and small sparsely distributed spinules on upper margin and upper third of outer surface; surfaces otherwise smooth, glabrous. Ambulatory legs with few scattered granules or short spines on merus, carpus and propodus.

Description. Carapace subcircular, as long as or slightly longer than wide (excluding spines), moderately arched longitudinally, slightly arched transversely. Dorsal surface covered by long black-brown setae and short velvety tomentum (loaded with sediment, usually mud, in fresh specimens); regions indicated and bearing small, well-spaced granules or short spinules, not usually protruding through tomentum; granules and spinules on anterior half of carapace generally more prominent than on posterior half. Branchiocardiac grooves deep, arcuate. Front trilobate, lobes short, anteriorly directed; frontal width basally about 3 times length; sinuses separating lobes reaching almost to frontal base; margins of lobes with granules or small spines; median lobe apically rounded, as long as or slightly longer than broad, margins subparallel, broader and slightly longer than lateral lobes; lateral lobes triangular, pointed. Orbits transverse. Eyestalk with 1 or 2 anterior spinules. Inner and outerorbital teeth triangular, margins with acute granules or small spines. Supraorbital margin with triangular, marginally spinulate tooth. Suborbital margin with rounded or acute granules, mesial margin produced to a spinulose triangular lobe. Pterygostomial regions smooth to finely granular, setose. Anterolateral margin convex, with 4 short, prominent, evenly spaced, secondarily spinous conical spines (including outer orbital), apices directed anterolaterally; margins lined with granules and short spines. Posterolateral margins broadly convex; without prominent spines but with acute tubercle or small spine near midlength and occasionally another near anterior quarter (both slightly larger than adjacent granules or spinules). Posterior margin granular, broadly convex, occasionally slightly emarginate medially.

Sternum ovoid, widest at sternite 5 (= sternite of P2); surface with stiff setae and velvety tomentum, punctate, with low scattered granules. Sternites 2 and 3 well demarcated. Sternites 3 and 4 fused. Press-button of abdominal locking mechanism in males positioned near posterior margin of sternite 5. Female gonopore on sternite 6; orifice simple. Anterior end of sternoabdominal cavity reaching anterior half of sternite 4. Sutures 4/5 and 5/6 medially interrupted. Suture 6/7 and 7/8 complete. Sternites 7 and 8 with median groove.

Antennular basal segment with granular mesial margin, otherwise unarmed. Antennal segments unarmed, peduncle not extending beyond median rostral tooth, flagellum as long as or shorter than peduncle.

Third maxilliped setose; merus minutely and sparsely granular, subpentagonal, anteroexternal angle rounded, margin granular, inner proximal margin with 1 or 2 spines; ischium subrectangular, with submedian sulcus; exopod stout, apex blunt, reaching to distal edge of merus.

Right (major) cheliped of adult males stout, massive; chela 1.1 cl in largest specimen. Merus trigonal, length less than 1.5 times width across articulation with carpus; setose dorsally; sparsely granular. Carpus setose; with scattered, prominent granules or spinules; mesial margin with triangular, spinulose tooth. Palm height subequal to length of dorsal margin; with scattered setae and small sparsely distributed spinules on upper margin and upper third of outer surface; surfaces otherwise smooth, glabrous. Pollex with longitudinal groove on lateral and mesial surfaces, otherwise smooth, glabrous. Dactylus as long as pollex and almost as long as dorsal margin of palm; surface finely granular, glabrous; lateral and mesial surfaces with broad longitudinal sulcus. Both fingers dark brown; occlusal margins with 4 or 5 low, blunt teeth.

Left (minor) cheliped of male slender; chela 0.6 cl in largest specimen. Merus length about twice width across articulation with carpus; surfaces setose; distal dorsal margins with granules or short spines. Carpus setose; with scattered granules or short spines; mesial margin with triangular, spinulose tooth. Palm height

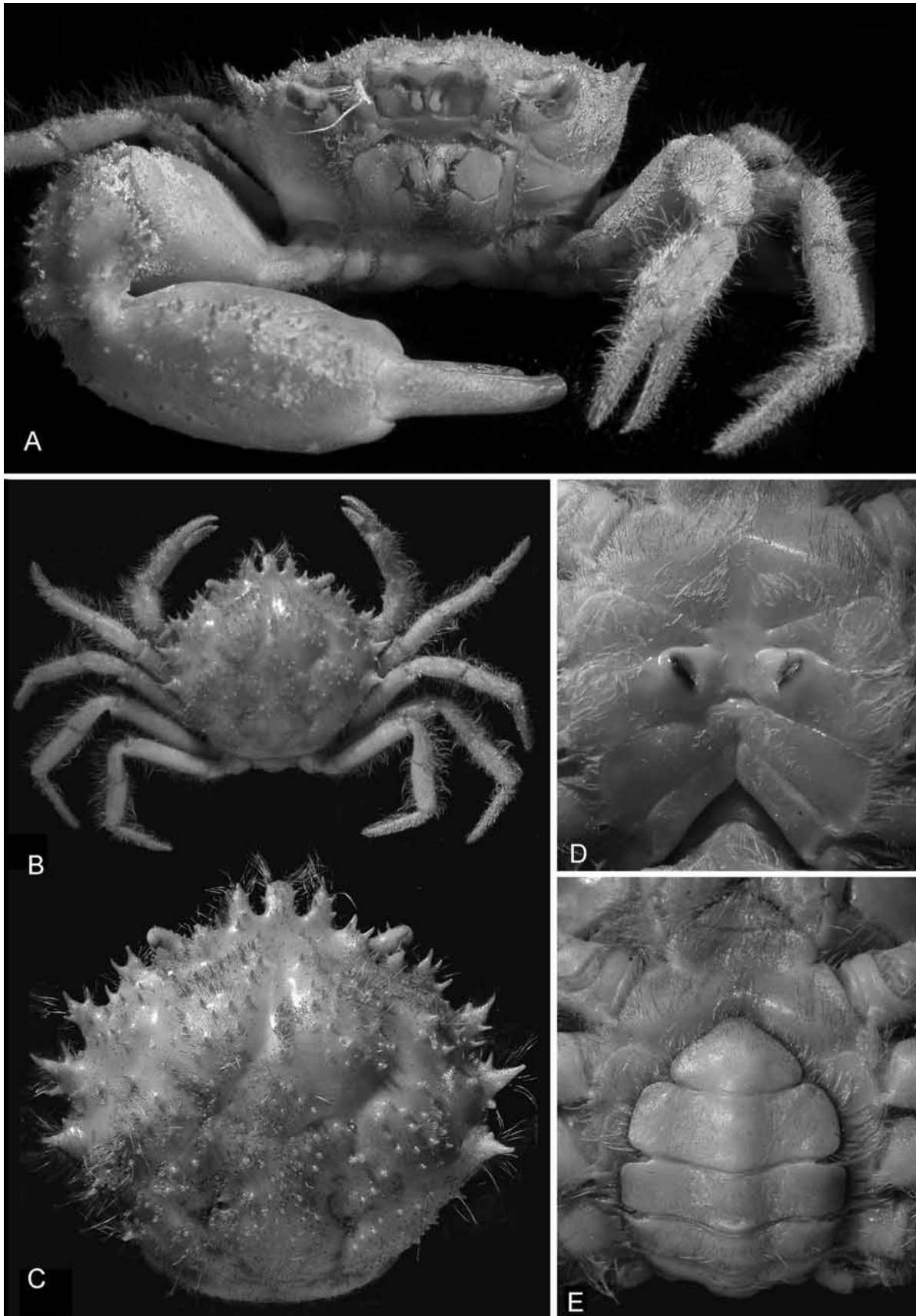


FIGURE 9. *Trichopeltarion janetae* sp. nov. A, anterior of male holotype, cl 28.0 mm, cw 26.3 mm (NIWA 29655). B–D, female paratype, cl 26.5 mm, cw 25.3 mm (NIWA 34982). B, dorsal habitus. C, carapace, dorsal view. D, sternum. E, abdomen. Carapace setae removed.

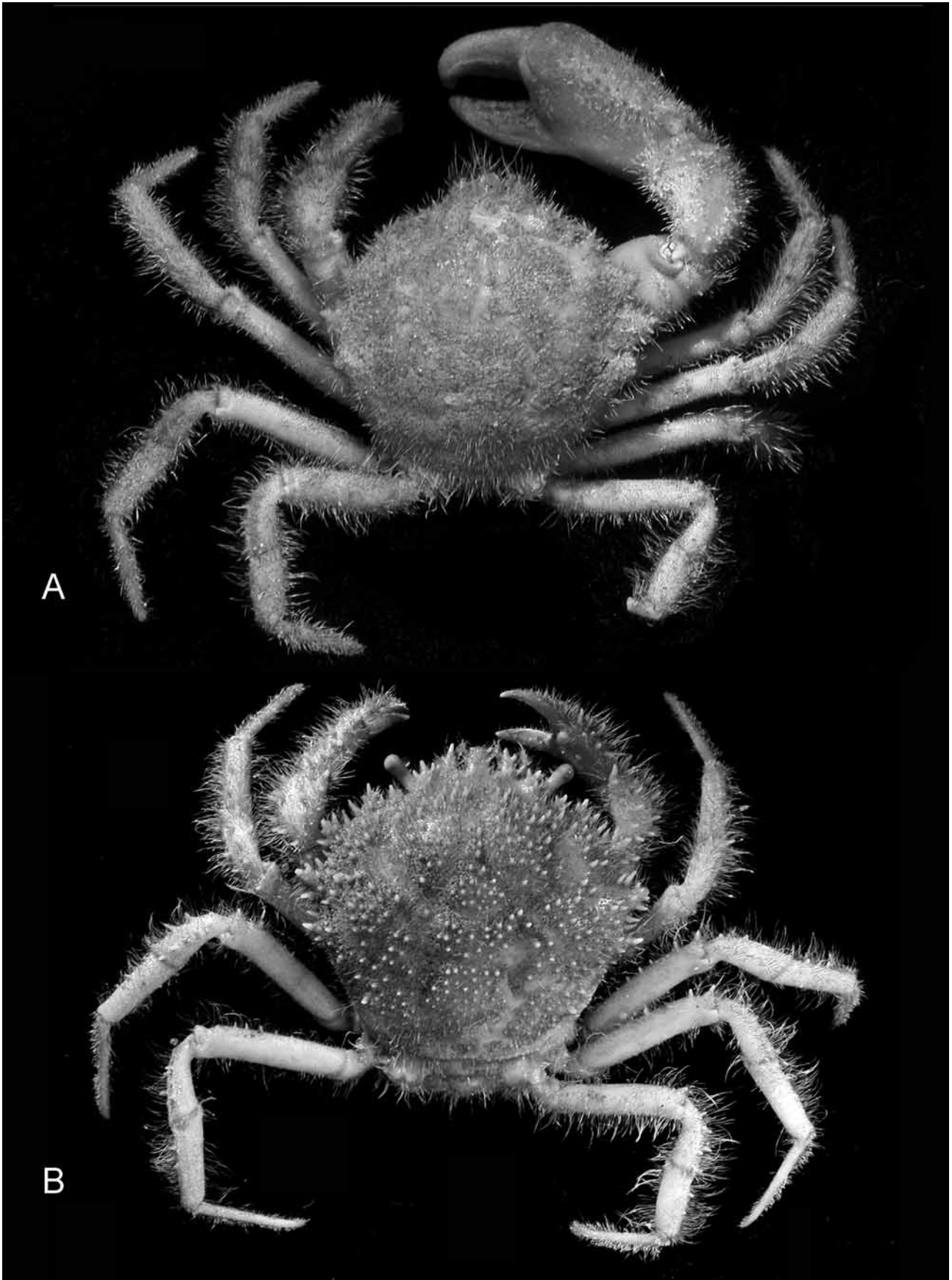


FIGURE 10. *Trichopeltarion janetae* sp. nov. A, male paratype, cl 27.9 mm, cw 27.3 mm (NIWA 29650). B, female, cl 27.8 mm, cw 26.8 mm, Graveyard Seamount (NIWA 29643).

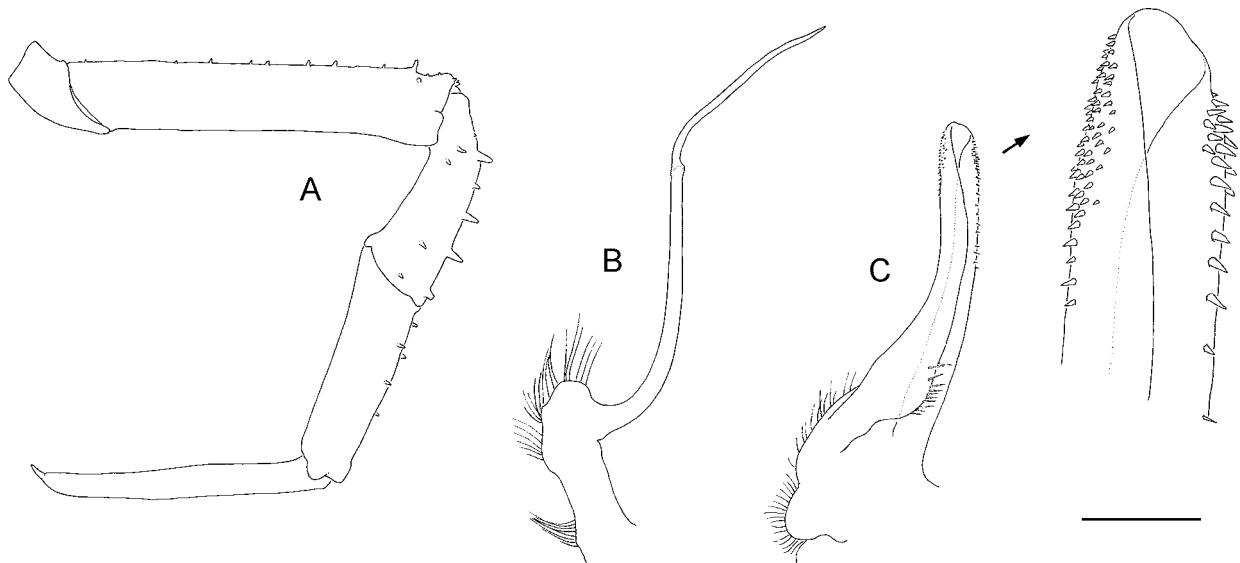


FIGURE 11. *Trichopeltarion janetae* sp. nov., male holotype, cl 28.0 mm, cw 26.3 mm (NIWA 29655). A, right P5. B, right G2, abdominal view. C, right G1, abdominal view. Scale: A = 5.0 mm, B–C = 2.0 mm.

subequal to length of dorsal margin; with dense setae and short, sparsely distributed spines on upper margin and outer surfaces. Pollex and dactylus subequal; surfaces densely setose, without longitudinal sulci; fingers darkened in distal third; occlusal margins with 4–6 low, blunt brown teeth.

Both chelipeds of female similar to that of left male cheliped; chela 0.5 cl at all sizes.

Ambulatory legs similar, relative lengths $P4 > P3 > P2 > P5$; $P4$ 1.4–1.6 cl, increasing with size and slightly longer in males than females (up to 1.6 cl in males; up to 1.5 cl in females); surfaces covered with long, brown setae and short, velvety tomentum; dactyli also densely covered with short, coarse setae. Merus ovate in cross-section; dorsal margin with few scattered granules and 1 or 2 short spines distally. Carpus about 0.6 merus length, sparsely spinulate. Propodus about as long as carpus, unarmed or with scattered granules or spinules along dorsal margin. Dactylus about 1.5 times propodus length, apex corneous.

Abdomen with 6 free somites and telson in both sexes; surface setose, without tubercles or granules. Male abdomen widest at somite 3; somites 4 and 5 subequal, subrectangular, margins slightly convergent; somite 6 longer than somites 4 and 5, margins subparallel, distolateral angles slightly swollen; telson triangular, wider than long, apex rounded. G1 thick, relatively straight, as illustrated. G2 styliform, sinuous, apex spiniform; longer than G1. Female abdomen ovoid, widest at somite 5; telson wider than long, apex rounded.

Etymology. Named for Janet Grieve, fellow carcinologist, for her contributions to New Zealand marine science.

Remarks. Of the known extant species of *Trichopeltarion* A. Milne-Edwards, 1880, *T. janetae* most closely resembles *T. pezzutoi* Tavares & Melo, 2005 (Brazil) and *T. nobile* A. Milne-Edwards, 1880 (Gulf of Mexico and Caribbean Sea) in the combination of the subcircular carapace, similarly sized anterolateral spines, simple rather than compound dorsal carapace spinules or granules, and a frontal carapace region that is not strongly produced anteriorly such that the bases of the frontal lobes are more or less in line with the general carapace outline. *Trichopeltarion janetae* differs from both *T. pezzutoi* and *T. nobile* in spinous rather than unarmed margins of the frontal lobes and a median frontal lobe that is apically rounded and linguiform, rather than acutely triangular (Fig. 7B, 9C). Moreover, *T. janetae* (to 32.4 mm cl) attains a smaller size than either *T. pezzutoi* or *T. nobile*, both of which exceed 80 mm cl (Tavares & Melo 2005). *Trichopeltarion janetae* perhaps most closely resembles the extinct *T. greggi* Dell, 1969, from the middle–late Miocene of New Zealand sharing similar carapace shape and ornamentation including equally sized, secondarily spinous anterolateral

spines and sparsely distributed, simple dorsal granules or spinules. Like *T. pezzutoi* and *T. nobile*, however, *T. greggi* is a much larger species (up to 91.2 mm cl) with an apically pointed rather than apically rounded median frontal lobe, and unarmed rather than spinous margins of the frontal lobes.

Trichopeltarion janetae is the second extant species of the genus known from New Zealand. A third species, *T. wardi* Dell, 1968b, is known from southeastern Australia. The new species is readily distinguished from its New Zealand congener, *T. fantasticum* Richardson & Dell, 1964 (Fig. 5D), by its much smaller adult size (up to 28.0 mm cl versus 74.0 mm cl [male, Bay of Plenty, NIWA 16547]), densely setose rather than sparsely setose carapace, and most readily by the length of the last anterolateral spine — subequal to the preceding tooth in *T. janetae*; considerably longer than the other anterolateral teeth in *T. fantasticum* (Fig. 5A, 7B, 9C, 28C). Owing to the dense overall setation, freshly collected specimens of *T. janetae* are invariably covered in sediment that obscures most of the surface ornamentation (Figs 10A, 28D). Consequently, in the field, even small specimens of *T. fantasticum* are readily distinguished from *T. janetae* by the relatively clean versus ‘dirty’ carapace. *Trichopeltarion wardi* is similar to *T. janetae* in its small size (to 26 mm cl) and similarly sized anterolateral carapace spines, but is readily distinguished by having compound instead of simple dorsal carapace granules and tubercles, and in similarly sized and unarmed rostral lobes (in contrast to median lobe broader than laterals, each with marginal spinules).

As in most species of *Trichopeltarion*, male *T. janetae* exhibit considerable sexual dimorphism in the development of the right cheliped. Juvenile males, like females, have small, equally-sized chelipeds with the chela about 0.5 cl. Males have well-developed gonopods by about 12 mm cl, and cheliped dimorphism is apparent by about 19 mm cl in which the right cheliped is slightly larger than the left (chela 0.5 versus 0.7 cl) and the lower distal half of the cheliped palm lacks setae. By about 22 mm cl, the right cheliped is prominently enlarged (chela 0.8 cl) and is glabrous on the outer surface. By about 28 mm cl, the right cheliped is massively enlarged with the major chela 1.1 cl and minor chela 0.6 cl. A male from Gothic Seamount (NIWA 34980), a female from Morgue Seamount (NIWA 34981) and a male from Moa cold seep (NIWA 32005) were infected by rhizocephala.

Juvenile females up to about 12 mm cl have a narrow abdomen and functional press-button for the abdominal locking mechanism. By 14–15 mm cl, the press-button is lost and the abdomen is slightly broader, but the gonopores are rudimentary. Females exceeding about 17 mm cl appear to be mature with well-developed gonopores and a broad abdomen. The smallest ovigerous female measures 17.3 mm cl, 16.7 mm cw (NIWA 27558).

The degree of carapace granulation or spinulation in *T. janetae* is somewhat variable. Most specimens have sparsely distributed carapace granules or spinules (Figs 4–6), few of which protrude through the tomentum. On the posterior half of the carapace, the tubercles and spinules are generally lower than on the anterior half, and are occasionally indistinct on the cardiac, intestinal and posteromesial branchial regions. Two large females, one from Graveyard Seamount (NIWA 29643), and one from Morgue Seamount (NIWA 29369) have more prominent and more elongate tubercles or spinules on the carapace that protrude through the dorsal tomentum (Fig. 10B), with similarly elongate spinules on the chelipeds and ambulatory meri. The specimens appear to represent an extreme in variation.

Trichopeltarion sp., reported by Poore (2004: fig. 123b, pl. 22a) from seamounts off Tasmania, Australia, is referable to *T. janetae*. The specimens from Tasmania agree well in all respects with New Zealand material.

Distribution. Eastern New Zealand, from seamounts in the Bay of Plenty south to the Chatham Rise and Bollons Seamount at 830–1506 m, and from seamounts off Tasmania, Australia, at 900–1700 m (Poore 2004).

Family BYTHOGRAEIDAE Williams, 1980

Gandalfus puia McLay, 2007

(Fig. 5C)

Gandalfus puia McLay, 2007: 5–9, figs 1A–F, 2A–G, 3A–B, 4A–B, 5A–D [type locality: Rumble III Seamount, outer Bay of Plenty, New Zealand].

Material examined. *Macauley Caldera*: NIWA 18017, male paratype (cl 20.6 mm), 30°12.78'S, 181°33.04'E, 337 m, KOK0505/22, 12 Apr 2005; NIWA 18018, 2 males (cl 11.6–22.6 mm; larger damaged), 30°12.78'S, 181°33.04'E, 337 m, KOK0505/22, 12 Apr 2005.

Brothers Seamount: NIWA 18019, female paratype (cl 22.4 mm), 34°51.70'S, 179°03.58'E, 1647 m, KOK0506/32, 2 May 2005.

Rumble III Seamount: NIWA 28855, holotype male (cl 15.5 mm), 35°44.22–44.04'S, 178°29.72–29.63'E, 239–270 m, TAN0107/128, Z10782, 21 May 2005.

Remarks. *Gandalfus puia* was recently described in detail by McLay (2007) from specimens collected at hydrothermal vents on Rumble III and Brothers seamounts in the outer Bay of Plenty, and the Macauley Caldera (Kermadec Islands).

Distribution. The Kermadec Ridge, ranging from the outer Bay of Plenty to the Kermadec Islands; 239–1647 m.

Family DORIPPIDAE MacLeay, 1838

Ethusina castro sp. nov.

(Figs 12A, 13A–B, 14A–E, 28A–B)

Type material. HOLOTYPE: NIWA 6067, ovigerous female (cl 14.1 mm, cw 14.3 mm), Gisborne Knolls, 39°00.41–00.92'S, 179°17.83–18.48'E, 2672–2776 m, TAN0413/182, 17 Nov 2004.

Diagnosis. Carapace slightly broader than long; dorsal surface microscopically granular. Frontal median sinus broad, V-shaped; submedian teeth obtusely triangular, margins straight; lateral teeth narrow, acutely triangular, as long as submedian teeth. Orbital sinus shallow; outerorbital tooth small, conical, obtuse, not extending anteriorly beyond eye. Ocular peduncle oriented transversely, not extending laterally beyond outerorbital tooth. P2 and P3 long, slender, sparsely pubescent, otherwise smooth; meri 6.5 times as long as high or longer.

Description. Carapace subpyriform, slightly broader than long; dorsal surface microscopically granular, sparsely pubescent. Urogastric and cardiac regions slightly elevated, bordered by narrow grooves, deepest along lateral margins of metagastric region and posterior margins of protogastric region; cervical and branchial grooves shallow. Branchial regions inflated laterally. Front with broad, V-shaped median sinus; submedian teeth obtusely triangular, margins straight; lateral teeth narrow, acutely triangular, as long as submedian teeth. Orbital sinus shallow; outerorbital tooth small, conical, obtuse, not extending anteriorly beyond eye. Ocular peduncle immobile, longer than cornea, oriented transversely; eyes partially visible dorsally, not extending laterally beyond outerorbital tooth.

Anterior margin of endostome below posterior margin of basal antennular segment. Antennular basal segment smooth, with blunt, rounded lobe anterior to articulation with segment 2.

Third maxilliped sparsely granular, lightly pubescent. Ischiobasis with broad, shallow submedian groove; ischium and basis demarcated by shallow groove. Merus about half ischium length, longer than broad. Propodus, carpus and dactylus unarmed, sparsely setose. Dactylus slightly compressed. Exopod reaching midlength of endopod merus.

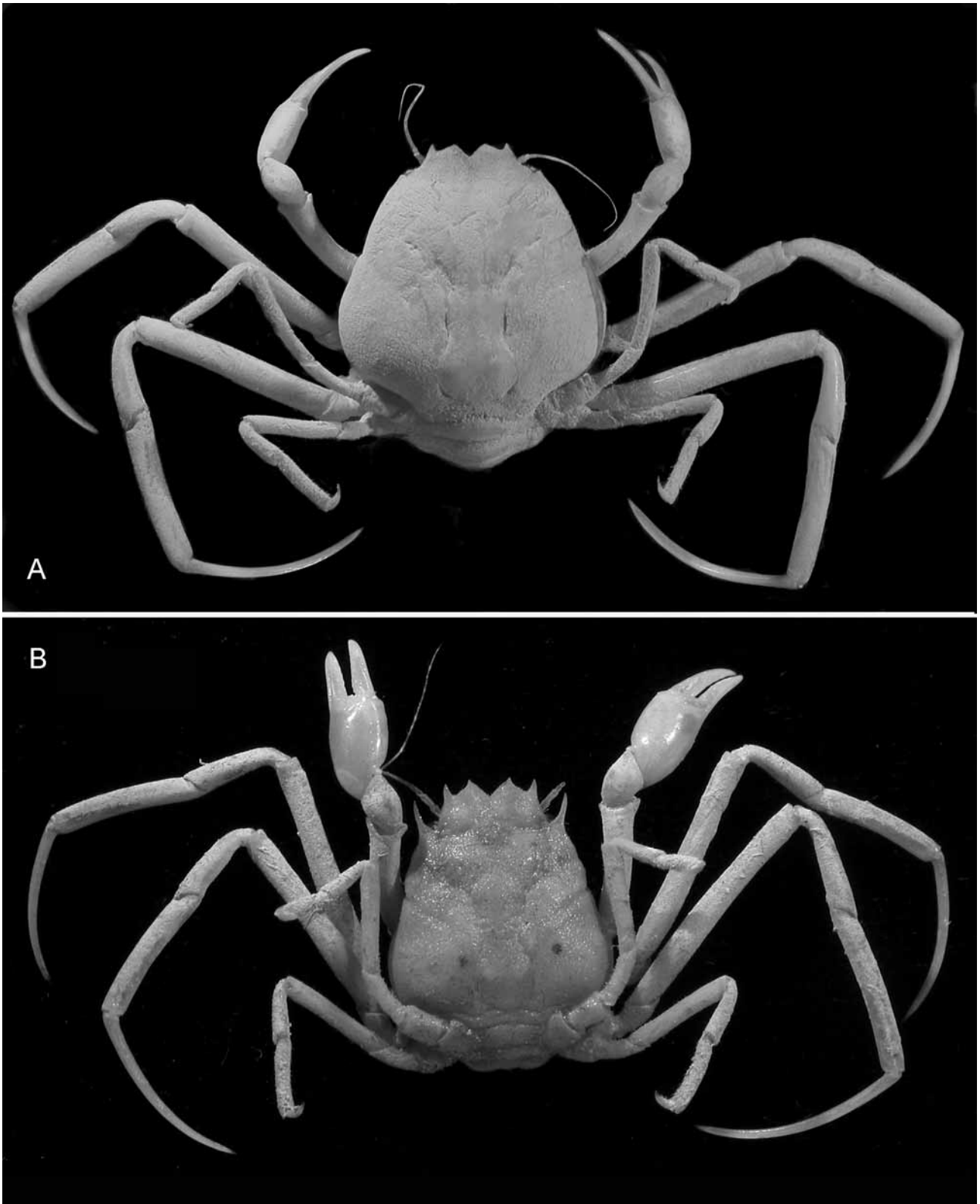


FIGURE 12. A, *Ethusina castro* **sp. nov.**, ovigerous female holotype, cl 14.1 mm, cw 14.3 mm (NIWA 6067). B, *Ethusina rowdeni* **sp. nov.**, male holotype, cl 9.6 mm, cw 9.3 mm (NIWA 6078).

Chelipeds equal in size and ornamentation; merus lightly pubescent, other segments smooth, glabrous, unarmed. Fingers straight, occlusal margins faintly sinuous; dactylus length 1.6 times dorsal margin of palm.

P2 and P3 long, slender, sparsely pubescent, otherwise smooth; dactyli broadly curved, with low longitu-

dinal midrib, slightly shorter than combined length of respective propodi and carpi. P2 merus 6.5 times as long as high, when folded reaching slightly beyond apices of frontal teeth. P3 longest, merus as long as carapace, 7.2 times as long as high.

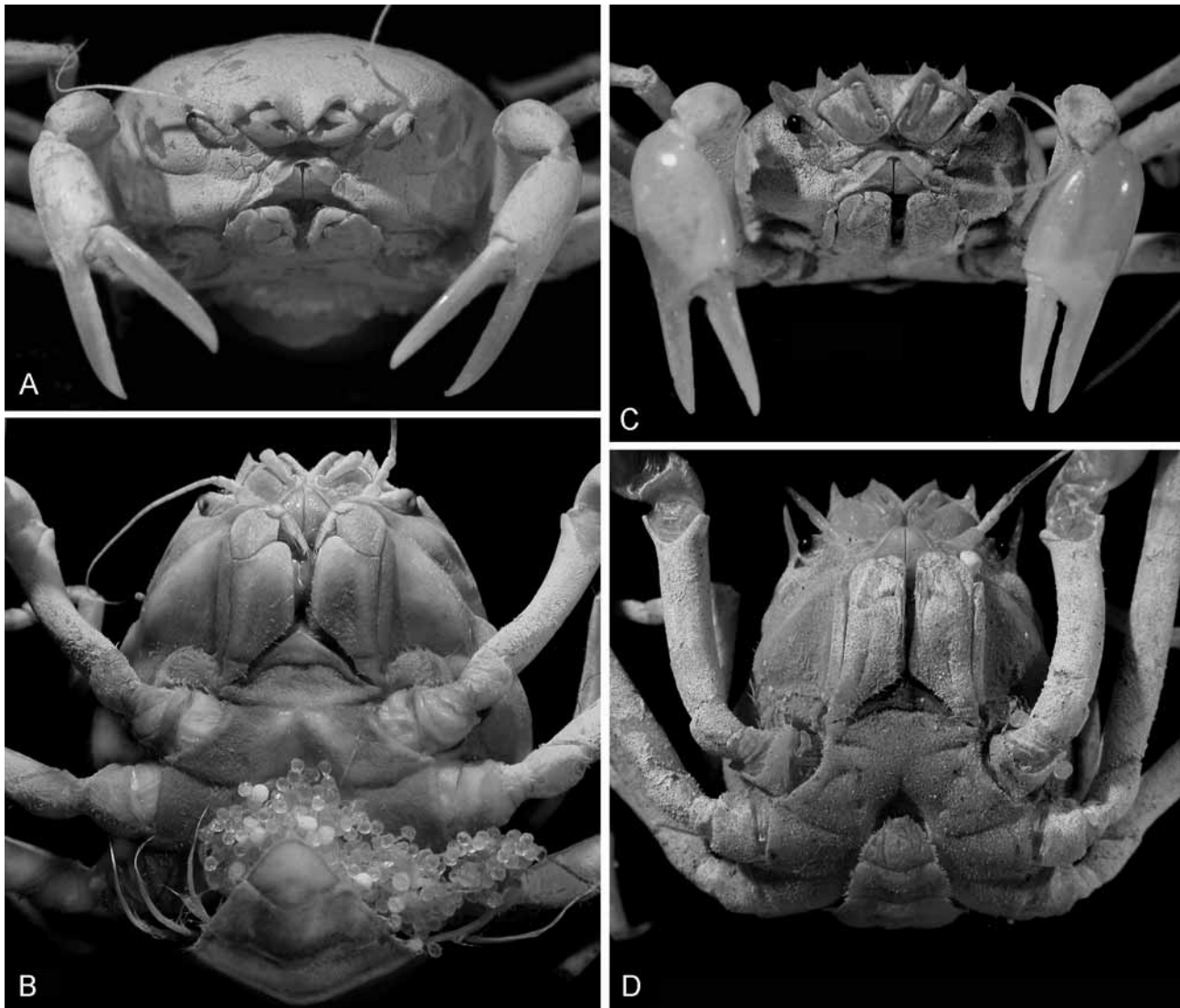


FIGURE 13. A–B *Ethusina castro* sp. nov., ovigerous female holotype, cl 14.1 mm, cw 14.3 mm (NIWA 6067). C–D *Ethusina rowdeni* sp. nov., male holotype, cl 9.6 mm, cw 9.3 mm (NIWA 6078). A, C, anterior. B, D, ventral.

P4 and P5 sparsely pubescent; longer than merus of P3; dactyli about half as long as propodi, with corneous apex and 5–7 obliquely inclined, spines on ventral margin. P5 merus, when folded against carapace, reaching anterior quarter of carapace.

Female abdomen sparsely pubescent, smooth; widest at somite 3; telson subtriangular, wider than long, margins straight, apex rounded. Egg diameter 0.5 mm.

Etymology. Named for fellow carcinologist, Peter Castro, for his contributions to the knowledge of Brachyura, especially Dorippidae; used a noun in apposition.

Remarks. *Ethusina castro* sp. nov. closely resembles *E. challengerii* (Miers, 1886) (type locality: Japan) and differs from other congeners in sharing the short, blunt outerorbital tooth, low, blunt submedian frontal teeth of the carapace, small, narrow cornea, and swollen, pyriform, relatively smooth carapace (only sparsely and microscopically granular) that is wider than long (Fig. 12A, 14A–B). The new species differs from *E. challengerii* in the angular rather than rounded sinus separating the submedian and lateral frontal teeth, angular

rather rounded apices of the submedian frontal teeth, in the laterally rather than anterolaterally directed eyes, which do not extend beyond the outerorbital teeth, and in lacking a spine on the basal antennular segment anterior to the articulation with the second segment. Spiridonov & Türkay (2007) reported *E. challengerii* from the Arabian Sea, noting that their females differed from the female holotype in having the lateral frontal teeth as wide as the submedian teeth (median teeth of Spiridonov & Türkay 2007) rather than markedly narrower. Though not discussed by Spiridonov & Türkay (2007), comparison of their figure 9a–b (female holotype of *E. challengerii*) with their figure 9c (Arabian Sea female) also appears to show the P2 merus of the holotype as considerably longer than that of the Arabian Sea female (distinctly overreaching rather than falling short of the carapace front). Moreover, the apex of the male G1 as figured by Spiridonov & Türkay (2007: fig. 10a) and Castro (2006: fig. 16c) appears to differ in shape, being bluntly angular versus rounded, respectively. The Arabian Sea specimens attributed to *Ethusina challengerii* by Spiridonov & Türkay (2007) should be re-examined; they could be referable to an undescribed species.

Ethusina castro also resembles *E. abyssicola* (Smith, 1884) and *E. alba* (Filhol, 1884) from the western and eastern Atlantic, respectively, in the short outer orbital teeth and arrangement of frontal carapace teeth. The submedian frontal teeth of *E. abyssicola*, however, are prominent and acute, rather than low and obtuse in *E. castro*. *Ethusina alba* is readily distinguished from *E. castro* by carapace proportions and surface ornamentation, being longer than wide rather than wider than long, and the coarsely rather than microscopically granular carapace surface.

Unfortunately, *E. castro* is known only from the ovigerous female holotype, so comparisons of gonopod morphology must await collection of males.

Distribution. Presently known only from Gisborne Knolls, northeastern New Zealand; 2672–2776 m.

***Ethusina rowdeni* sp. nov.**

(Figs 12B, 13C–D, 14F–L)

Type material. HOLOTYPE: NIWA 6078, male (cl 9.6 mm, cw 9.3 mm), Whakatane Seamount, 36°47.26–47.45'S, 177°28.17–28.12'E, 1292–1336 m, TAN0413/10, 8 Nov 2004.

Diagnosis. Carapace slightly broader than long; dorsal surface finely and densely granular. Median frontal sinus broad, V-shaped, wider than orbital and lateral frontal sinuses; submedian teeth obtusely triangular, apex sharp, mesial margins faintly convex, lateral margins slightly concave; lateral teeth, reaching anteriorly as far as apices of submedian teeth. Orbital sinus deep, V-shaped. Outerorbital tooth a slender spine, extending anteriorly to base of frontal median sinus. Eyes not extending laterally beyond outer orbital tooth. P2 and P3 long, slender, finely granular; meri exceeding 8.5 times as long as high. G1 apex rounded, aperture broad, elongate, almost half-length of narrow distal portion, slightly flared laterally. G2 apex sharp, pointed, inclined anterolaterally.

Description. Carapace slightly broader than long; dorsal surface finely and densely granular, sparsely setose. Mesogastric, urogastric, cardiac regions slightly elevated, urogastric region bordered by conspicuous lateral grooves; cervical groove shallow and partially visible; branchial grooves shallow but conspicuous. Branchial regions inflated laterally.

Front with broad, V-shaped median sinus, wider than orbital and lateral frontal sinuses; submedian teeth obtusely triangular, apex sharp, mesial margins faintly convex, lateral margins slightly concave; lateral teeth narrow, acute spines, reaching anteriorly as far as apices of submedian teeth. Orbital sinus deep, V-shaped, asymmetrical, mesial margins almost straight, lateral margins concave. Outer orbital tooth a slender spine, extending anteriorly to base of frontal median sinus.

Ocular peduncle immobile, longer than cornea, directed laterally. Eyes partially visible dorsally, not extending laterally beyond outerorbital tooth.

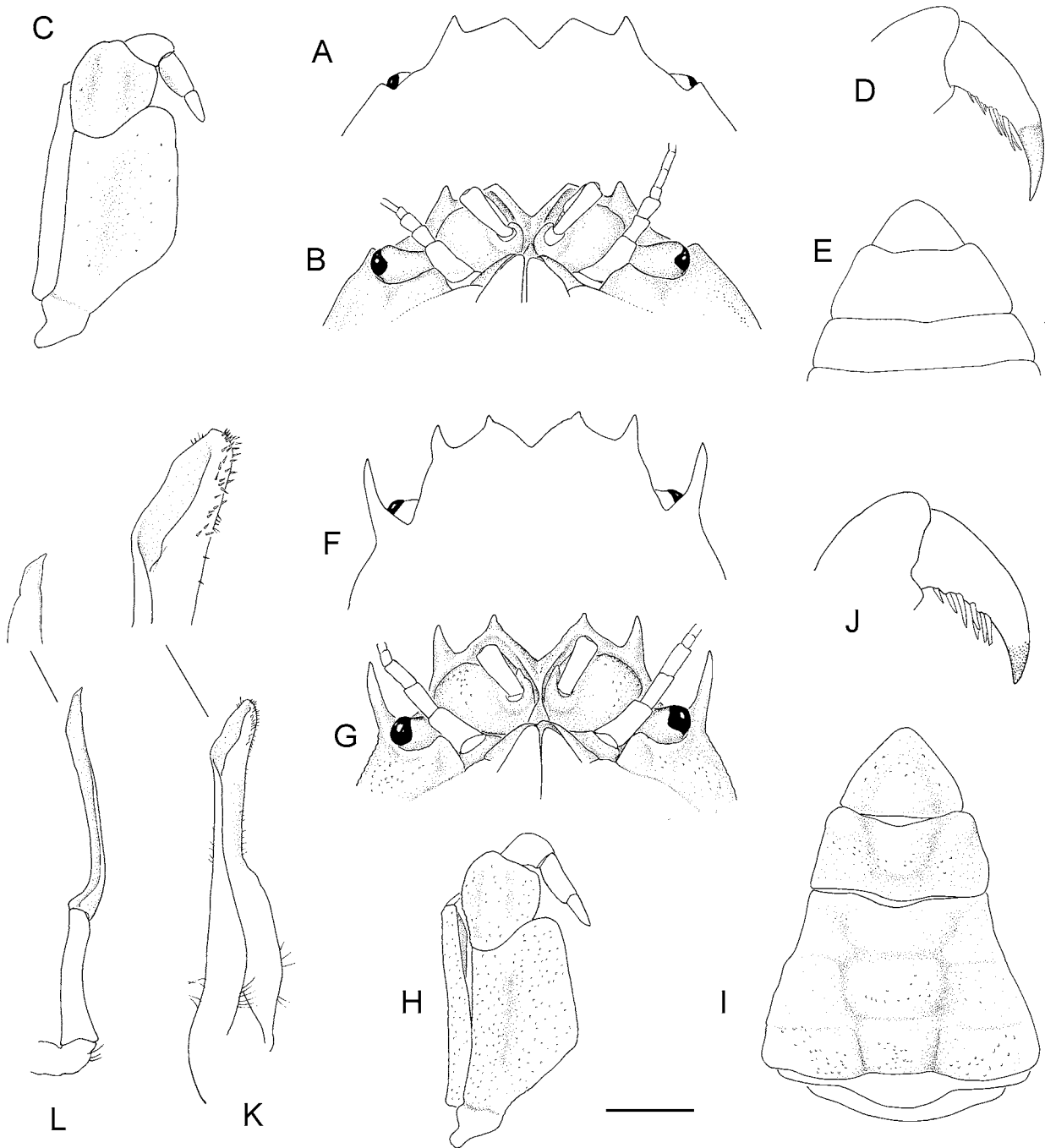


FIGURE 14. A–E, *Ethusina castro* sp. nov., ovigerous female holotype, cl 14.1 mm, cw 14.3 mm (NIWA 6067). F–L, *Ethusina rowdeni* sp. nov., male holotype, cl 9.6 mm, cw 9.3 mm (NIWA 6078). A, F, anterior carapace, dorsal view, dorsal. B, G, anterior carapace, ventral view. C, H, right third maxilliped. D, J, right P5 dactylus and propodus. E, I, abdomen. K, right G1, abdominal view. L, right G2, sternal view. Scale: A–B = 2.0 mm, D, J = 0.5 mm, E = 0.7 mm, C, F–G = 1.6 mm, I–H = 1.3 mm, L–K = 0.8 mm.

Anterior margin of endostome below posterior margin of basal antennular segment. Antennular basal segment sparsely granular, with short tooth anterior to articulation with segment 2.

Third maxilliped finely and densely granular, sparsely setose. Ischiobasis, with broad, shallow submedian groove; ischium and basis demarcated by shallow groove. Merus about half ischium length, longer than broad. Propodus, carpus and dactylus unarmed, sparsely setose. Dactylus slightly compressed. Exopod reaching midlength of endopod merus.

Chelipeds equal in size and ornamentation; merus and carpus finely granular, sparsely setose, other segments smooth, glabrous, unarmed. Palm slightly inflated. Fingers straight, occlusal margins faintly sinuous; dactylus length 1.1 times dorsal margin of palm.

P2 and P3 long, slender, finely granular, sparsely and finely setose; dactyli broadly curved, smooth, with longitudinal midrib, slightly shorter than combined length of respective propodi and carpi. P2 merus 8.8 times as long as high, when folded reaching beyond apices of frontal teeth by about 0.2 merus length. P3 longest, merus as long as carapace, 9.3 times as long as high.

P4 and P5 finely and sparsely setose; slightly longer than merus of P3; dactyli about as long as propodus, with corneous apex and 6 or 7 obliquely inclined spines on ventral margin. P5 merus, when folded against carapace, reaching anterior quarter of carapace.

Male abdomen sparsely and finely granular, finely and sparsely setose; fused somites 3–5 with proximal third more swollen than anterior; somite 6 subrectangular, half as long as wide; telson triangular, 1.4 times wider than long. G1 straight; distal 0.4 narrow, apex rounded; distomesial margin with short spines along tip; aperture broad, elongate, almost half-length of narrow distal portion, slightly flared laterally. G2 as long as G1; proximal segment straight, about 0.4 times total length of G2; distal portion flattened, with proximal bend, apex sharp, pointed, inclined anterolaterally.

Etymology. Named in honour of Ashley Rowden, for his contributions to the knowledge of New Zealand seamounts.

Remarks. *Ethusina rowdeni* **sp. nov.** is the second dorippid to be recorded from New Zealand. It closely resembles *E. huiliana* Castro, 2005 (French Polynesia) in lacking the orbital fissure, short ocular peduncles, four frontal spines, long, slender outer-orbital spines and long, slender P2 and P3 meri in which the former, when folded, extends anteriorly well beyond the frontal teeth. The new species differs from *E. huiliana* in the following features: the base of the median frontal sinus is at a similar level to that of the lateral frontal sinuses, rather than being considerably deeper; the median frontal sinus is wider than both the lateral and orbital sinuses, rather than being subequal to, and narrower, respectively; the inner margins of the lateral frontal sinuses are relatively straight, rather than strongly sinuous with a pronounced, proximal step (Fig. 14F); the P2 merus is more slender (length: height ratio 8.8 versus 7.5–8.2) (Fig. 12B); the G1 has a large and elongate, rather than small ovate aperture (Fig. 14K); the G1 apex is inclined laterally rather than mesially (Fig. 14L).

The two New Zealand species of *Ethusina* are readily distinguished by the length of the outerorbital tooth or spine: a small tubercle in *E. castro* versus a long spine in *E. rowdeni*.

Distribution. Whakatane Seamount, eastern New Zealand; 636–1336 m.

Family GERYONIDAE Colosi, 1923

Chaceon yaldwyni Manning, Dawson & Webber, 1990

(Figs 17E, 28E)

Chaceon sp. — Takeda in Amaoka *et al.* 1990: 376.

Chaceon yaldwyni Manning, Dawson & Webber, 1990: 602–606, figs 1–3 [type locality: NE of Chatham Islands, 43°40.4–26.6'S, 174°09.6–05.5'W]. — Ng & Manning 1998: 396 [key].

Material examined. *Otara Seamount*: NIWA 6716, 1 male (cl 55.2 mm, cw 71.3 mm), 36°55.81–57.09'S, 177°20.09–19.90'E, 1323–1346 m, TAN0413/41, 10 Nov 2004.

Remarks. The specimen is the smallest of the species recorded to date, with smallest previous record being the cl 72 mm, cw 92 mm female paratype. The P5 meral and propodal proportions are similar to those reported for the type material (Manning *et al.* 1990): merus length/height 5.06 (versus 5.11–5.25), propodus length/height 5.35 (versus 4.9).

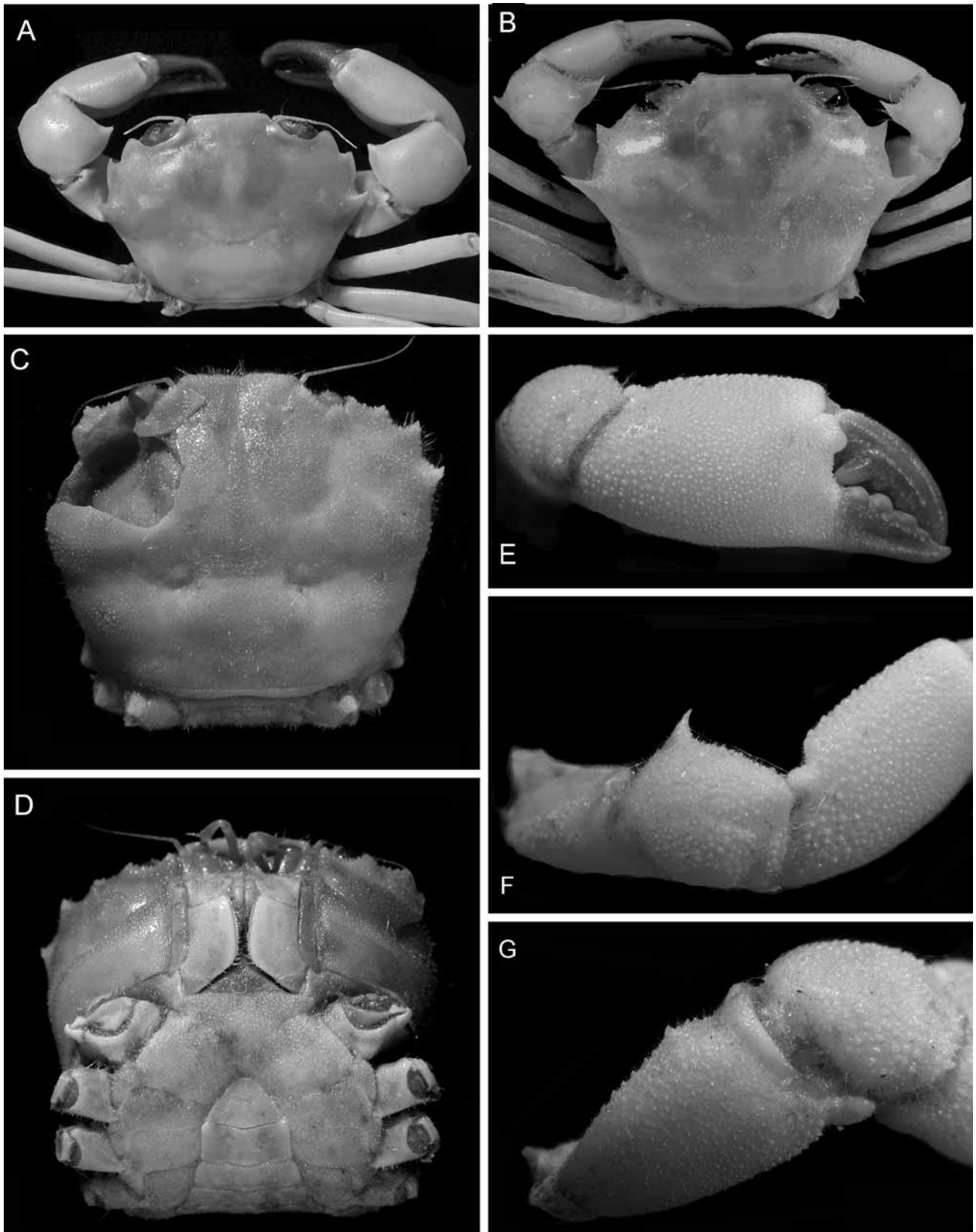


FIGURE 15. A, *Pycnoplax meridionalis* (Rathbun, 1923), male, cl 13.2 mm (NIWA 6643). B, *Pycnoplax victoriensis* (Rathbun, 1923), female, cl 10.5 mm (NIWA 29349). C–G, *Intesius richeri* Crosnier & Ng, 2004, female, cl 15.5 mm (NIWA 27549). C, carapace. D, ventral. E, right chela. F, right cheliped carpus. G, right cheliped merus and carpus.

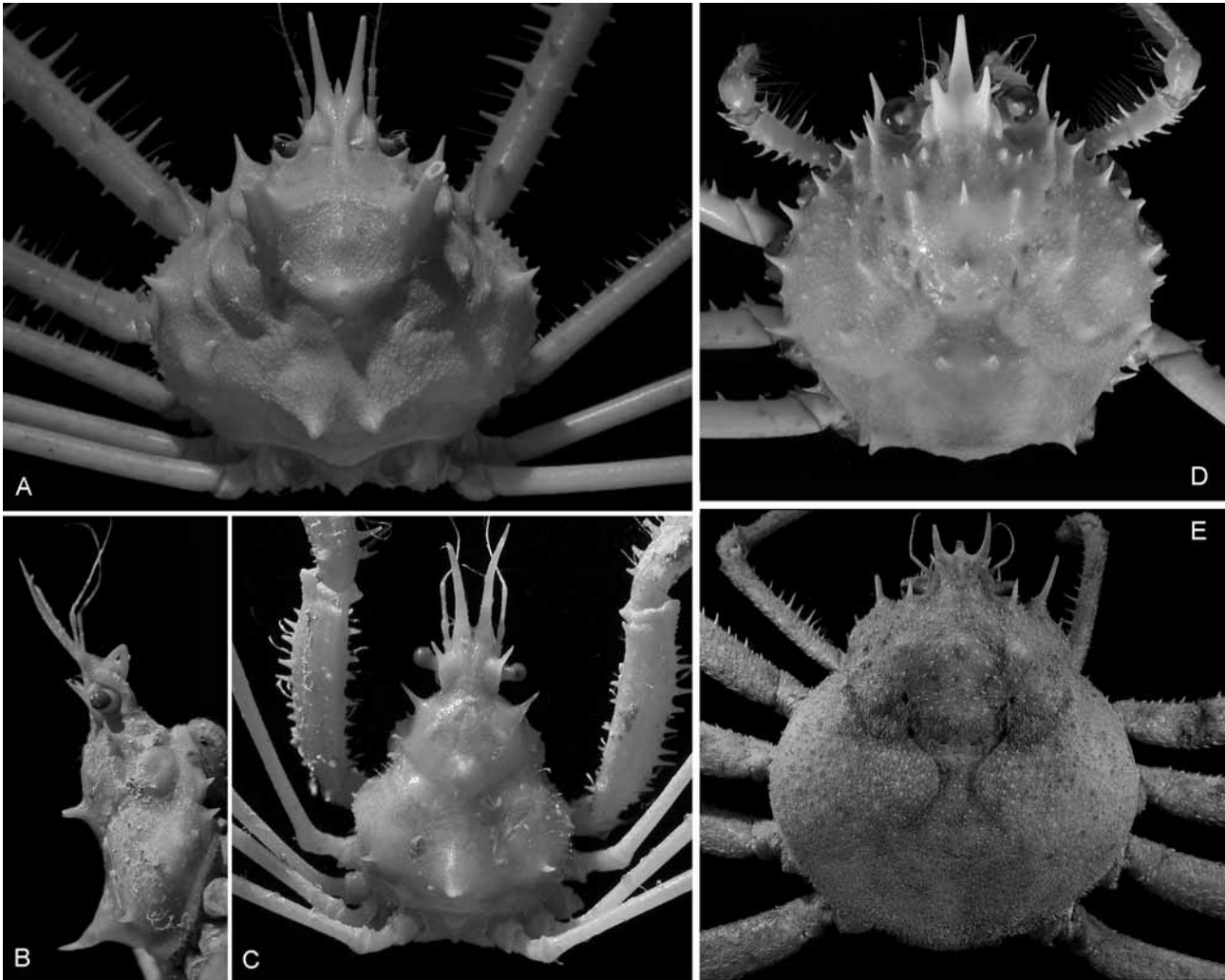


FIGURE 16. Carapace. A, *Cyrtomaia cornuta* Richer de Forges & Guinot, 1995, male, cl 46.9 mm (NIWA 14182), dorsal view. B–C, *Dorhynchus ramusculus* (Baker, 1906), male, cl 13.3 mm (NIWA 9941), right lateral and dorsal views. D, *Platymaia maoria* Dell, 1963, ovigerous female, cl 55.8 mm (NIWA 14191). E, *Vitjazmaia latidactyla* Zarenkov, 1994, ovigerous female, cl 72.0 mm (NIWA 16800).

Distribution. Eastern New Zealand, from the Chatham Rise, Louisville Ridge and Otara Seamount, Bay of Plenty; 962–1346 m.

Family GONEPLACIDAE MacLeay, 1838

Pycnoplax meridionalis (Rathbun, 1923)

(Figs 15A, 29A)

Carcinoplax meridionalis Rathbun, 1923: 99, pl. 18 [type locality: 28 km SE of Rame Head, Victoria, Australia]. — Griffin 1972: 84. — Griffin & Brown 1976: 255. — Poore *et al.* 1998: 68, 72. — Davie 2002: 194. — Poore 2004: 436, fig. 140c, pl. 24a.

Carcinoplax sp. — Clark & O'Shea 2001: 15.

Pycnoplax meridionalis. — Castro 2007: 661, 663, 669–671 [part, excluding Banks Peninsula specimens = *P. victorien-sis* (Rathbun, 1923)].

Material examined. *Rumble III Seamount*: NIWA 27544, 4 males (cl 9.1–14.5 mm), 35°44.38–44.29'S, 178°29.83–29.53'E, 382–207 m, hydrothermal vent, TAN0107/002, 19 May 2001; NIWA 27546, 1 female (cl 8.1 mm), 35°44.38–44.35'S, 178°29.85–29.44'E, 420–220 m, hydrothermal vent, TAN0107/005, 19 May 2001; NIWA 27554, 2 males (cl 5.9–9.2 mm), 35°44.31–43.95'S, 178°29.79–29.38'E, 939–300 m, TAN0107/122, 20 May 2001; NIWA 27545, 1 male (cl 13.4 mm), 35°44.26–44.37'S, 178°30.45–29.71'E, 1045–500 m, TAN0107/223, 23 May 2001; NIWA 27542, 4 males (cl 4.2–10.2 mm), 12 females (cl 3.8–11.0 mm), 35°44.35–44.23'S, 178°29.74–29.53'E, 500–200 m, TAN0107/224, 23 May 2001.

Rumble V Seamount: NIWA 27543, 3 males (cl 11.9–13.8 mm), 2 females (cl 6.9–10.2 mm), 36°08.35–08.32'S, 178°11.55–11.32'E, 440–370 m, TAN0107/229, 2 May 2001; NIWA 27555, 1 female (cl 11.4 mm), 36°08.29–08.67'S, 178°11.74–11.71'E, 730–470 m, TAN0107/324, 2 May 2001.

Off White Island: NIWA 34868, 1 male (cl 12.0 mm), 37°28.15–28.09'S, 177°06.70–06.57'E, 250–310 m, KAH9907/48, 5 Jun 1999.

Mahina Knoll: NIWA 6643, 5 males (7.3–13.2 mm), 4 females (cl 7.0–9.4 mm), 37°21.34–21.29'S, 177°05.98–06.22'E, 260–280 m, TAN0413/130, 14 Nov 2004.

Main Knoll: NIWA 29658, 1 male (cl 20.9 mm), 43°31.85'S, 179°37.75'W, 378–390 m, TAN0604/110, 7 Jun 2006.

Remarks. Castro (2007) recently transferred *Carcinoplax meridionalis* to a new genus, *Pycnoplax*. Two species of *Pycnoplax* are known from New Zealand waters, both described by Rathbun (1923) in from south-eastern Australia: *P. meridionalis* and *P. victoriensis*. Both species closely resemble each other, with *P. meridionalis* readily distinguished by the anteriorly recurved, rather than anterolaterally directed, second anterolateral carapace tooth, and in having the cheliped fingers entirely darkly pigmented (Figs 15A, 29A), or pigmented for the distal half or more in small females. The cheliped fingers of *P. victoriensis* are unpigmented, or at most, light brown at the tips (Figs 15B, 29B).

Pycnoplax meridionalis was collected together with *Mathildella mclayi* sp. nov. on Mahina Knoll. Several specimens were collected from active hydrothermal vents sites (NIWA 27544, 27546), the first records for the species from such habitats.

Distribution. Southern Australia (including Tasmanian seamounts) and New Zealand, from seamounts in Bay of Plenty and on the southern Kermadec Ridge; 126–1045 m (Rathbun 1923; this study).

Pycnoplax victoriensis (Rathbun, 1923)

(Figs 15B, 29B)

Carcinoplax victoriensis Rathbun, 1923: 101, pl. 19 [type locality: S of Gabo Island, Victoria, Australia]. — Dell 1960: 4, pl. 1; 1963a: 251–252, 253; 1963b: 49; 1968a: 25; 1968c: 234, 238. — Takeda & Miyake 1969: 158, 172–173, fig. 2. — Griffin & Brown 1976: 254–255. — McLay 1988: 258–260, fig. 57. — Takeda in Amaoka *et al.* 1990: 374. — Davie 2002: 194. — Poore 2004: 436, fig. 140d, pl. 24b. — Ah Yong *et al.* 2007: 146.

Carcinoplax sp. — Clark & O'Shea 2001: 15.

Pycnoplax meridionalis. — Castro 2007: 670 [part, Banks Peninsula specimens; not *P. meridionalis* (Rathbun, 1923)].

Pycnoplax victoriensis. — Castro 2007: 661, 663, 671–672.

Material examined. *Rumble III Seamount*: NIWA 27556, 1 male (cl 4.9 mm; 1 damaged), 35°44.38–44.46'S, 178°29.92–30.43'E, 420–220 m, TAN0107/50, 19 May 2001.

Mahina Knoll: NIWA 6739, 2 females (cl 8.0–8.8 mm), 37°20.92–20.82'S, 177°05.95–06.23'E, 500–463 m, TAN0413/125, 14 Nov 2004; NIWA 6740, 1 female (cl 8.7 mm), 37°19.51–19.62'S, 177°05.42–05.11'E, 638–542 m, TAN0413/127, 14 Nov 2004.

Tuatoru Seamount: NIWA 6738, 2 males (cl 9.5–10.8 mm), 37°28.25–28.41'S, 177°13.35–13.58'E, 207–216 m, TAN0413/85, 12 Nov 2004; NIWA 6736, 2 males (cl 9.8–10.4 mm), 37°27.63–27.91'S, 177°12.52–12.18'E, 464–473 m, TAN0413/72, 12 Nov 2004; NIWA 6737, 1 male (cl 5.2 mm), 37°28.84–28.64'S,

177°13.74–13.57'E, 454–317 m, TAN0413/76, 12 Nov 2004.

Ritchie Hill: NIWA 34969, 1 male (cl 10.5 mm), 39°28.24–27.28'S, 178°24.76–25.17'E, 865–741 m, KAH9907/40, 3 Jun 1999.

Builders Pencil cold seep: NIWA 29350, 2 females (cl 8.1–12.4 mm; smaller with rhizocephalan), 39°32.59–32.62'S, 178°20.17–19.72'E, 815–812 m, TAN0616/21, 5 Nov 2006.

Tims Bank, S of Ritchie Hill: NIWA 34971, 1 damaged male, 40°01.2'S, 178°04.09'E, 797–804 m, KAH9907/01, 1 Jun 1999.

Rock Garden cold seep: NIWA 29349, 1 female (cl 10.5 mm), 40°02.31–02.47'S, 178°08.58–08.62'E, 730–747 m, TAN0616/06, 4 Nov 2006.

Kereru cold seep, Uruti Ridge: NIWA 29353, 4 females (cl 8.0–12.3 mm), 41°17.32–17.17'S, 176°35.23–35.49'E, 731–720 m, TAN0616/70, 10 Nov 2006.

Western Uruti Ridge: NIWA 29352, 1 male (cl 9.9 mm), 1 female (cl 4.5 mm), 41°17.46–17.49'S, 176°32.88–33.12'E, 733–722 m, TAN0616/68, 10 Nov 2006.

Remarks. *Pycnoplax victoriensis* is the most common deepwater goneplacid in New Zealand waters, attaining at least 33 mm cl. It is recorded for the first time from a chemosynthetic habitat.

Distribution. Southern Australia and New Zealand, from Chalky Sound to the Chatham Rise, Challenger Plateau, the Bay of Plenty and Kermadec Ridge; 125–765 m (McLay 1988).

Family INACHIDAE MacLeay, 1838

Cyrtomaia cornuta Richer de Forges & Guinot, 1988

(Fig. 16A)

Cyrtomaia cornuta Richer de Forges & Guinot, 1988: 44, fig. 3A–C, pl. 2a–e [type locality: Northern Norfolk Ridge, S of New Caledonia]. — Webber & Richer de Forges 1995: 509–510. — Richer de Forges & Ng 2007: 62, 65–67, fig. 5A, C.

Material examined. *Main Cavalli Seamount*: NIWA 14182, 1 male (cl 46.9 mm), 34°04.32–04.74'S, 174°04.08–04.75'E, 630–560 m, KAH0204/21, 16 Apr 2002.

Off Coromandel Peninsula: NIWA 14189, 1 ovigerous female (cl 53.9 mm), 37°00.64'S–36°57.67'S, 176°16.38–17.07'E, 410 m, KAH9801/29, Z9013, 23 Jan 1998; NIWA 14194, 1 ovigerous female (cl 53.8 mm), 36°28.72–26.74'S, 176°13.36–12.97'E, 526–510 m, KAH0001/61, Z10010, 17 Feb 2000.

Off Great Barrier Island: NIWA 14188, 1 male (cl 46.8 mm), 36°00.88–02.89'S, 176°15.13–15.27'E, 482–474 m, KAH0001/64, Z10013, 18 Feb 2000.

Builders Pencil cold seep: NIWA 29389, 1 damaged male, 39°32.59–32.65'S, 178°20.19–19.62'E, 815–819 m, TAN0616/38, 6 Nov 2006.

Remarks. The specimens agree well in most respects with the type description and additional data provided by Richer de Forges & Ng (2007). Two males (NIWA 14182, 29389), however, have smooth, rather than finely granular P5 meri as reported by Richer de Forges & Webber (1995) for specimens from northern New Zealand. *Cyrtomaia cornuta* is readily distinguished from *C. lamellata* Rathbun, 1906, the only other congener known from New Zealand, by the long and slender, rather than minute rostral spines.

Distribution. New Caledonia and northern New Zealand; a first record of the species from a cold seep; 270–819 m.

***Dorhynchus ramusculus* (Baker, 1906)**

(Figs 16B–C)

Stenorhynchus ramusculus Baker, 1906: 104, pl. 1: figs 1, 1a [type locality: off Neptune Island, South Australia].

Achaeopsis thomsoni. — Rathbun 1918: 4 [not *A. thomsoni* (Thomson, 1873)].

Achaeopsis ramusculus. — Hale 1927: 124, fig. 121. — Griffin 1966: 24, 35–37. — Dell 1968c: 234, 238. — Griffin & Tranter 1986: 21. — McLay 1988: 116–117, fig. 25.

Archaeopsis (sic) ramusculus. — Dell 1968a: 23.

Archaeopsis (sic) thomsoni (?). — Clark & O'Shea 2001: 15 [not *A. thomsoni* (Thomson, 1873)].

Dorhynchus ramusculus. — Davie 2002: 293. — Poore 2004: 360, fig. 108h–j.

Material examined. *Seamount 441*: NIWA 3595, 1 ovigerous female (cl 8.2 mm), 34°03.30–03.09'S, 174°48.49–48.42'E, 910–820 m, KAH0204/52, 19 Apr 2002.

West Cavalli Seamount: NIWA 3593, 1 ovigerous female (cl 7.9 mm), 34°08.56–08.88'S, 173°57.12–57.27'E, 879–853 m, KAH0204/33, 17 Apr 2002; NIWA 3594, 1 ovigerous female (cl 10.8 mm), 34°09.85–09.84'S, 173°57.84–58.33'E, 820–805 m, KAH0204/40, 18 Apr 2002.

Rumble III Seamount: NIWA 34783, 1 female (cl 5.9 mm), 35°44.38–44.46'S, 178°29.92–30.43'E, 430–340 m, TAN0107/50, 19 May 2001.

Hikurangi margin: NIWA 14172, 2 males (pcl + 10 mm), 39°26.29–27.00'S, 178°20.70'E, 940–970 m, R440, 16 Jun 1990; NIWA 9941, 1 male (cl 13.3 mm), 38°46.00'S, 178°48.00'E, 913 m, E0719, 23 Mar 1967; NIWA 9939, 1 male (cl +10 mm), 1 ovigerous female (cl 9.6 mm), 38°46.00'S, 178°48.00'E, 913 m, E0719, 23 Mar 1967.

Ritchie Hill: NIWA 34972, 1 damaged male, 39°28.24–27.28'S, 178°24.76–25.17'E, 865–741 m, KAH9907/40, 3 Jun 1999.

Builders Pencil cold seep: NIWA 29382, 1 damaged female, 39°32.47–32.83'S, 178°19.90–19.95'E, 775–810 m, TAN0616/18, 5 Nov 2006; NIWA 29383, 2 males (cl 15.0 mm; 1 damaged), 39°32.59–32.62'S, 178°20.17–19.72'E, 815–812 m, TAN0616/21, 5 Nov 2006; NIWA 29384, 1 male (cl 10.7 mm, pcl 7.7 mm, cw 6.1 mm), 1 ovigerous female (pcl 7.8 mm, cw 6.5 mm), TAN0616/30; NIWA 29385, 1 ovigerous females (cl 9.6 mm), 39°32.59–32.65'S, 178°20.19–19.62'E, 815–819 m, TAN0616/38, 6 Nov 2006; NIWA 29386, 1 ovigerous females (cl +9.5 mm), 39°32.59–32.65'S, 178°20.19–19.62'E, 815–819 m, TAN0616/38, 6 Nov 2006.

Rock Garden cold seep: NIWA 29377, 1 damaged female, 40°02.31–02.47'S, 178°08.58–08.62'E, 730–747 m, TAN0616/06, 4 Nov 2006; NIWA 29378, 1 ovigerous female (cl 11.3 mm, pcl 8.8 mm), 40°02.31–02.47'S, 178°08.58–08.62'E, 730–747 m, TAN0616/06, 4 Nov 2006; NIWA 29379, 1 male (cl 13.6 mm), 1 female (12.7 mm), 40°02.35–02.41'S, 178°08.62–09.00'E, 764–766 m, TAN0616/07, 4 Nov 2006; NIWA 29380, 1 damaged male, 40°02.38–02.22'S, 178°08.55–08.86'E, 760–700 m, TAN0616/010, 4 Nov 2006.

Hihi cold seep, Uruti Ridge: NIWA, 2 females (cl 8.9–10.1 mm; smaller ovigerous), 41°17.71–17.65'S, 176°33.37–33.66'E, 730–747 m, TAN0616/67, 10 Nov 2006.

Wairarapa Seep, North Tower: NIWA 29388, 1 male (cl 11.0 mm), 41°46.95–46.83'S, 175°23.98–24.25'E, 1040–1053 m, TAN0616/79, 13 Nov 2006.

Remarks. The examined specimens of *D. ramusculus* include the first ever recorded from cold seeps. The New Zealand specimens agree well with Australian material (Baker 1906; Hale 1927; Griffin & Tranter 1986) in having parallel to slightly divergent rostral spines and usually a small tubercle or spine on each protogastric region of the carapace (becoming increasingly obsolete with increasing size, and absent in the largest specimens). The ventral ornamentation of the rostral spines ranges from 0–3 small spines on one or both sides.

Griffin & Tranter (1986) updated Griffin (1966) in providing more reliable criteria to distinguish *D. thomsoni* from *D. ramusculus*, and showed previous Australian records of the former (Rathbun 1918) to be based on the latter. Similarly, previous records of *D. thomsoni* from New Zealand (Clark & O'Shea 2001; Martin & Haney 2005) are based on *D. ramusculus*. Griffin & Tranter (1986) suggested that male cheliped length might

differ between *D. ramusculus* and *D. thomsoni* (1.8 versus more than 2.0 times cl), but cheliped length in males of the present series spans the range reported for both species.

Distribution. Southern Australia and northern New Zealand, from the Hikurangi Margin to Rumble III seamount, Bay of Plenty, and Cavalli seamounts; 340–1053 m.

Platymaia maoria Dell, 1963

(Fig. 16D)

Platymaia maoria Dell, 1963a: 247–251, figs 4–13 [type locality: ENE of Poor Knights Is., New Zealand]. — Griffin 1966: 24. — Dell 1968c: 238. — Guinot & Richer de Forges 1986: 109–112, fig. 9A–D, 10E–F, pl. 4: fig. A–B. — McLay 1988: 108–110, fig. 23. — Davie & Short 1989: 177, fig. 3C. — Takeda *in Amaoka et al.* 1990: 365. — Davie 2002: 296. — Naylor *et al.* 2005: 23. — Ahyong *et al.* 2007: 151.

Material examined. *Main Cavalli Seamount:* NIWA 3590, 2 damaged specimens, 34°04.32'S, 174°04.08'E, 630–560 m, KAH0204/21, 16 Apr 2002; NIWA 3591, 1 male (cl 8.4 mm), 34°07.21'S, 174°05.64'E, 554–540 m, KAH0204/27, 16 Apr 2002; NIWA 3592, 1 female (cl 18.3 mm), 34°04.46'S, 174°04.29'E, 622–590 m, KAH0204/18, 15 Apr 2002.

Knights Terrace: NIWA 14191, 1 ovigerous female (cl 55.8 mm), 34°57.61–57.63'S, 175°10.78–10.06'E, 581–553 m, KAH0204/02, 13 Apr 2002; NIWA 3589, 1 male (cl 8.9 mm), 34°57.81–57.44'S, 175°12.64–12.63'E, 614–602 m, KAH0204/01, 13 Apr 2002.

Remarks. *Platymaia maoria* is the only species of the genus presently known from off mainland New Zealand, though *P. wyvillethomsoni* Miers, 1886, was recently reported from the Kermadec Islands (Takeda & Webber 2006).

Distribution. Southern Australia and New Zealand, from Challenger Plateau, off Poor Knights Islands and the Cavalli seamounts; 270–950 m (Ahyong *et al.* 2007; this study).

Vitjazmaia latidactyla Zarenkov, 1994

(Fig. 16E)

Ewdawsonia profundorum Webber & Richer de Forges *in* Thompson, 1994: 168 [nomina nuda; inadvertent publication of manuscript names].

Vitjazmaia latidactyla Zarenkov, 1994: 121, figs 1B, 13B [type locality: Madagascar Ridge, 33°03'S, 44°33'E, 970–980 m]. — Webber & Richer de Forges 1995: 503, figs 1–3, 4A. — Naylor *et al.* 2005: 21–22. — Ahyong *et al.* 2007: 152.

Platymaia sp. — Clark & O'Shea 2001: 15.

Material examined. *Mercury Knoll:* NIWA 16800, 1 ovigerous female (cl 72.0 mm), 36°30.37–29.59'S, 176°30.97'E, 920–1053 m, KAH9907/51, 5 Jun 1999.

Rungapapa Seamount: NIWA 6759, 1 male (cl +41 mm), 37°33.22–33.18'S, 176°58.13–58.41'E, 190–154 m, TAN0413/118, 13 Nov 2004.

Ritchie Hill: NIWA 16798, 1 ovigerous female (cl 78.0 mm), 39°28.56–27.69'S, 178°25.29–26.05'E, 874–914 m, KAH9907/38, 3 Jun 1999.

Remarks. Webber & Richer de Forges (1995) reported *V. latidactyla* from numerous New Zealand localities (Chatham Rise and Challenger Plateau northwards) including Aotea Seamount (37°34'S, 172°05'E). Note that the unpublished manuscript name, *Ewdawsonia profundorum* Webber & Richer de Forges, was inadvertently used by Thompson (1994), rendering the name a *nomen nudum*. The history of *Ewdawsonia profundorum* is discussed by Webber & Richer de Forges (1995) under their account of *Vitjazmaia*.

Of the known deepwater New Zealand inachids, species of *Vitjazmaia* Zarenkov, 1994, *Cyrtomaia* Miers, 1886, and *Platymaia* Miers, 1886, are similar in their subglobular carapace and long ambulatory pereopods. *Vitjazmaia* resembles *Platymaia* and differs from *Cyrtomaia* in the flattened, rather than subcylindrical P3–5, and is easily distinguished from both by the dense covering of minute spinules over the entire surface of the carapace and pereopods (Fig. 16E). Species of *Platymaia* and *Cyrtomaia* bear prominent, isolated spines on the carapace and pereopods, but the overall surfaces are smooth or granular.

Distribution. Western Indian Ocean, southern Australia, and New Zealand from the Challenger Plateau and Chatham Rise north to the Wanganella Bank; 154–1300 m (Ahyong *et al.* 2007; this study).

Family LEUCOSIIDAE Samouelle, 1819

Bellidilia cheesmani (Filhol, 1886)

(Figs 17A–B)

Ebalia cheesmani Filhol, 1886: 407, pl. 43: figs 3–4 [type locality: Otago Heads, New Zealand]. — Richardson 1949: 56, fig. 50.

Ebalia laevis. — Dell 1960: 4; 1963b: 19; 1968c: 231, 233. — Bennett 1964: 9, 20–22, figs 1–4, 107. — Dell 1968a: 22. — Takeda & Miyake 1969: 157, 161–163, fig. 2. — McLay 1988: 94, fig. 18. — Takeda *in* Amaoka *et al.* 1990: 364. [Not *E. laevis* (Bell, 1855)].

Dittosa cheesmani. — Tan 1995: 473–474, figs 2, 4E–F.

Material examined. *Tumokemoke Seamount*: NIWA 6757, 2 females (cl 8.2–9.5 mm), 37°28.00–28.16'S, 176°54.91–54.87'E, 225–210 m, TAN0413/164, 15 Nov 2004; NIWA 6758, 1 male (cl 9.3 mm), 37°27.69–27.87'S, 176°54.81–54.85'E, 294–247 m, TAN0413/170, 16 Nov 2004.

Tuatoru Seamount: NIWA 6755, 1 ovigerous female (cl 8.8 mm), 37°28.58–28.40'S, 177°12.94–12.73'E, 180–179 m, TAN0413/93, 13 Nov 2004.

Rungapapa Seamount: NIWA 6756, 1 male (cl 7.3 mm), 37°33.41–33.18'S, 176°58.94–59.05'E, 266–197 m, TAN0413/97, 13 Nov 2004.

Remarks. Confusion has surrounded the identity of *B. cheesmani*, with most New Zealand records given as *Ebalia laevis* (Bell, 1855) (now in *Bellidilia*), a southern Australian species. Tan (1995) clarified the taxonomy of Bell's and Filhol's species, providing a redescription and figures of both under a new generic name, *Dittosa* Tan, 1995 (type species: *Philyra laevis* Bell, 1855). *Dittosa*, however, is a junior synonym of *Bellidilia* Kinahan, 1856 (type species: *Bellidilia undecimspinosa* Kinahan, 1856) because their respective type species are presently considered congeneric.

Distribution. Stewart Island to Little Barrier Island, including the Chatham Rise; 18–373 m (McLay 1988).

Ebalia tuberculosa (A. Milne-Edwards, 1873)

(Figs 17C–D)

Persephona tuberculosa A. Milne-Edwards, 1873: 10, 86 [type locality: Bass Strait, Australia].

Phlyxia granulosa Haswell, 1879: 54, pl. 6: fig. 3 [type locality: outside Sydney Heads, New South Wales, Australia].

Ebalia salamensis Doflein, 1904: 47, pl. 26: figs 1–3 [type locality: off Dar-es-Salaam, Tanzania, east Africa]

Nursia scandens Stebbing, 1920: 247, pl. 106a [type locality: Cove Rock, South Africa].

Nursia postulans Stebbing, 1921: 461, pl. 108 [type locality: Cape Natal, South Africa].

Ebalia japonica Rathbun, 1932: 37 [type locality: off Niigata Light, Japan].

Ebalia tuberculosa. — Miers 1885: 587; 1886: 305–306, pl. 25: fig. 1. — Bennett 1964: 9, 22. — Dell 1968a: 22; 1968c: 235, 238. — Davie 2002: 260. — Poore 2004: 336, fig. 98e.

Ebalia (Ebalia) tuberculosa. — Griffin 1972: 57–58.



FIGURE 17. A–B, *Bellidilia cheesmani* (Filhol, 1886): A, male, cl 9.3 mm (NIWA 6758); B, ovigerous female, cl 8.8 mm, NIWA 6755. C–D, *Ebalia tuberculosa* (A. Milne-Edwards, 1873): C, male, cl 9.5 mm (NIWA 6752); D, female, cl 8.5 mm (NIWA 6752). E, *Chaceon yaldwyni* Manning, Dawson & Webber, 1990, male, cl 55.2 mm (NIWA 6716).

Material examined. *Tumokemoke Seamount*: NIWA 6751, 4 males (cl 8.4–9.9 mm), 2 ovigerous females (cl 7.3–7.5 mm), 37°28.19–28.15'S, 176°55.15–54.94'E, 240–212 m, TAN0413/166, 15 Nov 2004; NIWA 6752, 3 males (cl 8.6–9.5 mm), 1 female (cl 8.5 mm), 37°28.02–28.13'S, 176°55.13–54.98'E, 232–218 m, TAN0413/161, 15 Nov 2004; NIWA 6753, 1 male (cl 8.8 mm), 37°27.69–27.87'S, 176°54.81–54.85'E, 294–247 m, TAN0413/170, 16 Nov 2004; NIWA 6745, 4 males (cl 7.6–10.1 mm), 1 ovigerous female (cl 8.4 mm), 37°28.36–28.22'S, 176°55.13–54.97'E, 260–219 m, TAN0413/152, 15 Nov 2004; NIWA 6746, 1 male (cl 10.1 mm), 37°28.27–28.20'S, 176°55.21–55.07'E, 262–230 m, TAN0413/162, 15 Nov 2004; NIWA 6747, 1 female (cl 7.0 mm), 37°28.04–28.11'S, 176°55.79–55.58'E, 315–283 m, TAN0413/163, 15 Nov 2004; NIWA 6748, 6 males (cl 7.2–9.2 mm), 4 females (cl 7.1–8.4 mm), 37°28.00–28.16'S, 176°54.91–54.87'E, 225–210 m, TAN0413/164, 15 Nov 2004; NIWA 6749, 2 males (cl 6.7–9.0 mm), 37°28.19–28.15'S, 176°55.15–54.94'E, 240–212 m, TAN0413/166, 15 Nov 2004; NIWA 6750, 2 males (cl 6.9–7.1 mm), 2 ovigerous females (cl 7.3–7.5 mm), 37°28.19–28.15'S, 176°55.15–54.94'E, 240–212 m, TAN0413/166, 15 Nov 2004.

Tuatoru Seamount: NIWA 6743, 1 ovigerous female (cl 7.3 mm), 37°28.30–28.49'S, 177°13.49–13.24'E, 218–220 m, TAN0413/84, 12 Nov 2004.

Rungapapa Seamount: NIWA 6744, 1 male (cl 6.2 mm, 37°32.03–32.36'S, 176°58.80–58.88'E, 219–176 m, TAN0413/101, 13 Nov 2004.

Remarks. The most significant morphological variations are the result of sexual dimorphism. The dorsal gastric and cardiac tubercles of males are blunt but prominent (obsolete in females), the posterior carapace margin bears two prominent projections, and the chelipeds of mature males are proportionally longer (merus as long as cl versus about half cl in females). The posterior carapace projections in females are apparently fused, forming a straight to faintly convex margin, an artefact of the swollen abdomen (Fig. 17C–D).

Distribution. South Africa to the Hawaiian Islands including southern Australia and New Zealand, from the Challenger Plateau and seamounts in the Bay of Plenty; 28–800 m (Poore 2004).

Family MAJIDAE Samouelle, 1819

Eurynome bituberculata Griffin, 1964

(Fig. 18A)

Eurynome bituberculata Griffin, 1964: 197–203, figs 1–11 [type locality: off Glen Burn, E Wairarapa coast, New Zealand]; 1966: 43–45, figs 6, 7, 20. — Griffin & Tranter 1986: 205–206. — McLay 1988: 102, fig. 21.

Material examined. *Off North Cape*: NIWA 34931, 1 ovigerous female (9.6 mm), 34°26.7'S, 173°07.5'E, 113–115 m, F932, 15 Oct 1968.

Poor Knights Islands: NIWA 34929, 1 ovigerous female (7.9 mm), 35°30.0'S, 174°43.0'E, 121 m, F75, 12 Nov 1964.

Tumokemoke Seamount: NIWA 9851, 1 male (cl 7.4 mm, cw 5.8 mm), 37°28.19–28.15'S, 176°55.15–54.94'E, 240–212 m, TAN0413/166, 15 Nov 2004.

Off Cape Egmont: NIWA 1710, 1 male paratype (cl 10.5 mm), 39°22'S, 171°50'E, 231–251 m, muddy sand and broken shell, B314, sample 4, 25 Oct 1960; NIWA 4233–4236, 4 male paratypes (cl 8.8–11.5 mm), 39°22'S, 171°50'E, 231–251 m, muddy sand and broken shell, B314, sample 5, 25 Oct 1960.

N of Cape Farewell: NIWA 34930, 12 males (cl 9.7–13.6 mm), 6 females (10.1–12.9 mm), 40°16'S, 172°32.29'E, 126–127 m, B686, 28 Oct 1962.

Remarks. *Eurynome bituberculata* is a distinctive but seldom reported species, so additional material is reported here to document its known range. The specimen of *E. bituberculata* from Tumokemoke Seamount, at 7.4 mm cl (Fig. 18A), is the smallest recorded to date, and agrees well in most respects with type and other material from northern New Zealand. The hepatic and lateral branchial spines of the 7.4 mm specimen are

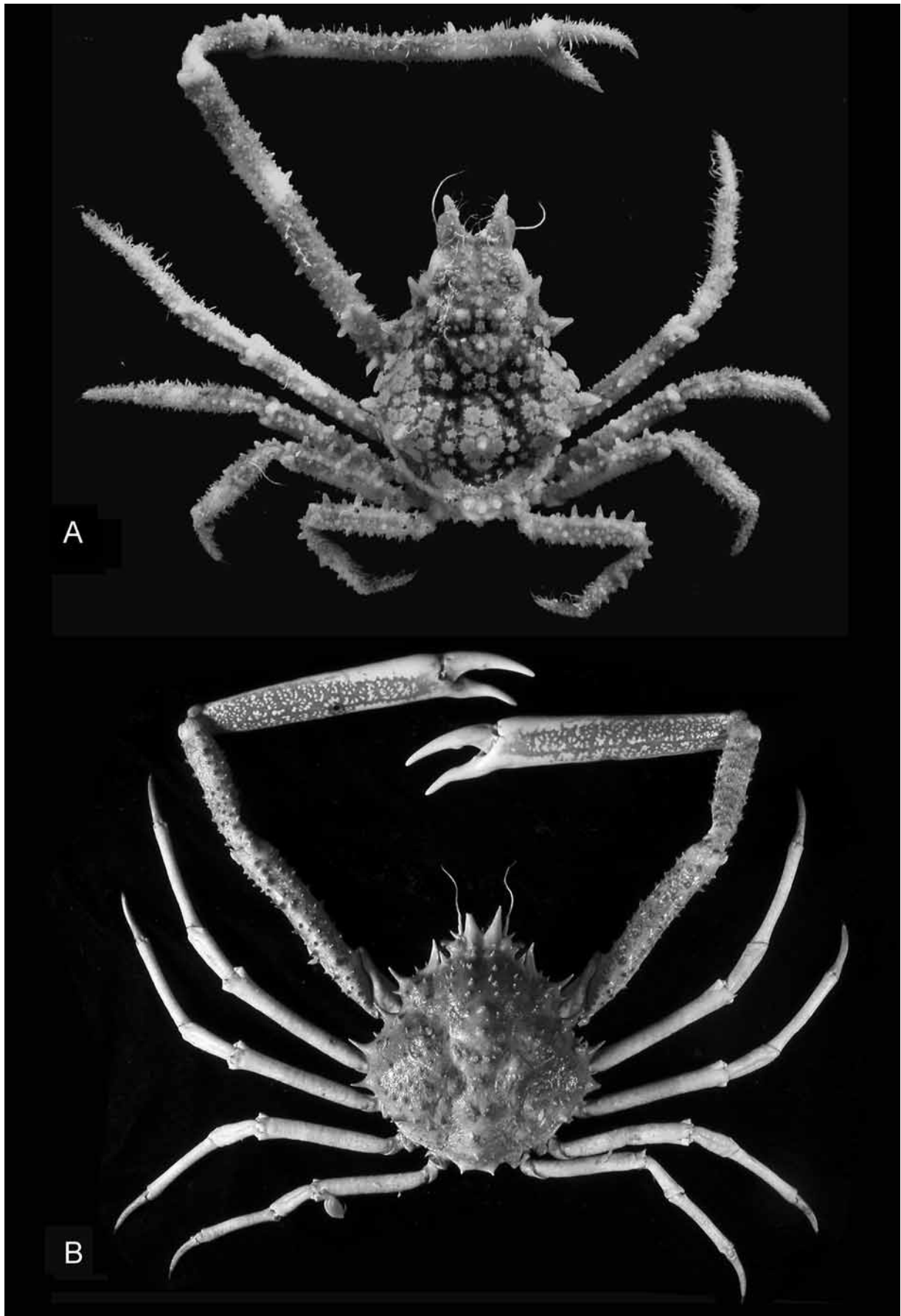


FIGURE 18. A, *Eurynome bituberculata* Griffin, 1964, male, cl 7.4 mm (NIWA 9851). B, *Leptomithrax garricki* Griffin, 1966, male, cl 98.0mm (NIWA 6735).

more pronounced and the margins of the dorsal tubercles are more acutely dentate than in larger specimens, which are differences associated with size. The anteromedial branchial region of *E. bituberculata* bears a group of four flat tubercles, of which the anterolateral tubercle is produced to a small upright spine in the 7.4 mm specimen — that spine generally becomes reduced or obsolete with increasing size, appearing at most as a small conical projection from the margin of the flattened tubercle. The inner margins of the rostral spines of the 7.4 mm specimen are granular or minutely serrate as in most other specimens. Although, the rostral spines of *E. bituberculata* were characterised as truncate, they are better described as tapering to a narrow, rounded apex. The slender rostral apices of most specimens are broken, appearing truncate. As reported by Griffin (1964), the chelipeds are significantly sexually dimorphic, up to 3.25 times carapace length in males, and no longer than the carapace in females.

Distribution. Northern New Zealand, from off the Wairarapa coast and Cape Farewell to North Cape; 73–280 m (McLay 1988; this study).

***Leptomithrax garricki* Griffin, 1966**

(Fig. 18B)

Leptomithrax garricki Griffin, 1966: 69–72, figs 14, 22, pl. 1–2 [type locality: off Kaikoura, New Zealand; 403 m]. — Dell 1968a: 24; 1968c: 233, 238. — Takeda & Miyake 1969: 158, 185–186, pl. 3B. — Griffin & Tranter, 1986: 209. — McLay 1988: 152, fig. 35. — Takeda in Amaoka *et al.* 1990: 367. — Naylor *et al.* 2005. — Ah Yong *et al.* 2007: 160.

Material examined. *Tuatoru Seamount*: NIWA 6735, 1 male (cl 98.0mm), 37°27.63–27.91'S, 177°12.52–12.18'E, 464–473 m, TAN0413/72, 12 Nov 2004.

Remarks. *Leptomithrax garricki* is one of the deepest living spider crabs in New Zealand waters with a bathymetric range that extends to at least 800 m (Griffin 1966). The species was figured in colour by Naylor *et al.* (2005) and Ah Yong *et al.* (2007). Note, however, that the text given in the account of *L. garricki* by Ah Yong *et al.* (2007: 160) is identical to that given under their account of *Leptomithrax longimanus* Miers, 1876 (see Ah Yong *et al.* 2007: 161); it was inadvertently duplicated during the production process.

Distribution. Bay of Plenty, south to Kaikoura and the Chatham Rise; 171–800 m (McLay 1988; Takeda in Amaoka *et al.* 1990; Naylor *et al.* 2005).

Family MATHILDELLIDAE Karasawa & Kato, 2003

***Intesius richeri* Crosnier & Ng, 2004**

(Figs 15C–G)

Pilumnoplax sp. — Clark & O'Shea, 2001: 15. — Martin & Haney 2005: 451, 495.

Intesius richeri Crosnier & Ng, 2004: 266–271, figs. 2, 3A, 4A–B, 5 [type locality: Norfolk Rise, S of New Caledonia, 23°40'S, 167°42'E, 443–460 m].

Material examined. *Rumble III Seamount*: NIWA 27549, 1 female (cl 15.5 mm), 35°44.38–44.35'S, 178°29.85–29.44'E, 220–420 m, hydrothermal vent, TAN0107/005, 19 May 2001.

Remarks. The single damaged specimen of *Intesius richeri* represents the first record of the species outside the type locality, and the first record of the genus from New Zealand and a hydrothermal vent site. It agrees well in most respects with the description of the holotype, differing most obviously in having slightly more acute posterior anterolateral spines and a sharper inner carpal spine on the cheliped. Both of these differences probably reflect allometric change, with the New Zealand specimen measuring half the size of the male

holotype (cl 15.5 versus 31.8 mm). Moreover, the New Zealand specimen is a juvenile, having rudimentary sternal gonopores, a functional abdominal locking system, and a narrow, male-like abdomen. The telson of the juvenile female is similar to that of the male holotype (length: width ratio 1.51 versus 1.58 and 2.26 versus 2.18, respectively). At 15.5 mm cl, the close resemblance of the juvenile female abdomen to the male form (Crosnier & Ng 2004: fig. 4B) necessitates examination of the pleopods and gonopores for sex determination.

Distribution. Norfolk Rise, south of New Caledonia, and now from Rumble III seamount, southern Kermadec Ridge, New Zealand; 220–460 m (Crosnier & Ng 2004; this study).

***Mathildella mclayi* sp. nov.**

(Figs 19–21, 29C)

Pilumnoplax sp. — Clark & O’Shea 2001: 15. — Martin & Haney 2005: 451, 495.

Type material. HOLOTYPE: NIWA 6772, male (cl 13.6 mm, cw 17.5 mm), Mahina Knoll, 37°21.04–21.26’S, 177°05.96’E, 434–472 m, TAN0413/173, 16 Nov 2004. PARATYPES: NIWA 6768, 1 female (cl 6.3 mm, cw 8.2 mm), 37°20.41–20.26’S, 177°06.69–06.81’E, 335–275 m, TAN0413/129, 14 Nov 2004; NIWA 34978, 1 ovigerous female (cl 13.5 mm, cw 17.9 mm), Mahina Knoll, 37°21.04–21.26’S, 177°05.96’E, 434–472 m, TAN0413/173, 16 Nov 2004; NIWA 6769, 2 females (cl 4.1–11.9 mm, cw 5.0–15.3 mm), Mahina Knoll, 37°21.34–21.29’S, 177°05.98–06.22’E, 260–280 m, TAN0413/130, 14 Nov 2004; NIWA 6771, 1 female (cl 10.1 mm, cw 13.1 mm), Mahina Knoll, 37°21.35–21.21’S, 177°06.09–06.08’E, 259–294 m, TAN0413/140, 14 Nov 2004.

Other material examined. *Rumble V seamount, southern Kermadec Ridge:* NIWA 27553, 1 male (cl 10.0 mm, cw 13.5 mm), 36°08.35–08.08’S, 178°11.76–11.95’E, 672–367 m, TAN0107/235, 24 May 2001.

Diagnosis. Carapace frontal margin undivided or with indistinct median notch. First (outerorbital) and second anterolateral teeth similar, rounded, fused basally, demarcation varying from distinct U-shaped notch to shallow concavity. Third anterolateral tooth a prominent, anteriorly recurved spine; lateral margin convex. Fourth tooth smaller than second tooth, triangular, broad, apex acute. Fifth tooth minute, blunt, separated from third tooth by shallow notch. Male telson triangular, apex rounded, lateral margins straight; proximal margin wider than distal margin of somite 6. G1 aperture with slightly flared margins; outer proximal margin sinuous but not stepped; distal mesial margin broadly but noticeably convex. Chelipeds fingers black; pigmentation on pollex extending slightly onto manus. P5 dactylus slightly longer than propodus dorsal margin.

Description. Carapace subhexagonal, 1.3 times wider than long; dorsal surface finely granular; regions ill-defined; epigastric, protogastric, hepatic and epibranchial regions slightly swollen; cardiac region flat; with low transverse depression across midlength. Front subtruncate in dorsal view, bimarginate, formed by distinct transverse anterior groove; faintly convex, granular, undivided or with indistinct median notch. Supraorbital margin low; margin with V-shaped notch slightly laterad to midlength. First (outerorbital) and second anterolateral teeth similar, rounded, fused basally, demarcation varying from distinct U-shaped notch to shallow concavity. Third anterolateral tooth a prominent, anteriorly recurved spine; lateral margin convex. Fourth tooth smaller than second tooth, triangular, broad, apex acute. Fifth tooth minute, blunt, separated from fourth tooth by shallow notch. Suborbital margin granular; with blunt inner tooth, visible dorsally. Eyestalks with row of granules on inner distal margin. Suborbital, pterygostomial and sub-branchial regions finely granular. Posterolateral and posterior carapace margins broadly curved to almost straight.

Thoracic sternum surfaces finely punctate. Sternites 2 and 3 well demarcated. Sternites 3 and 4 fused, sutures visible laterally. Press-button of abdominal locking mechanism positioned near posterior margin of sternite 5 occluding with socket on abdominal somite 6. Anterior end of sternoabdominal cavity reaching beyond midlength of sternite 4. Sutures 4/5 and 5/6 medially interrupted. Suture 6/7 and 7/8 entire. Sternites 7 and 8 with median groove. Female gonopore on sternite 5; orifice simple.

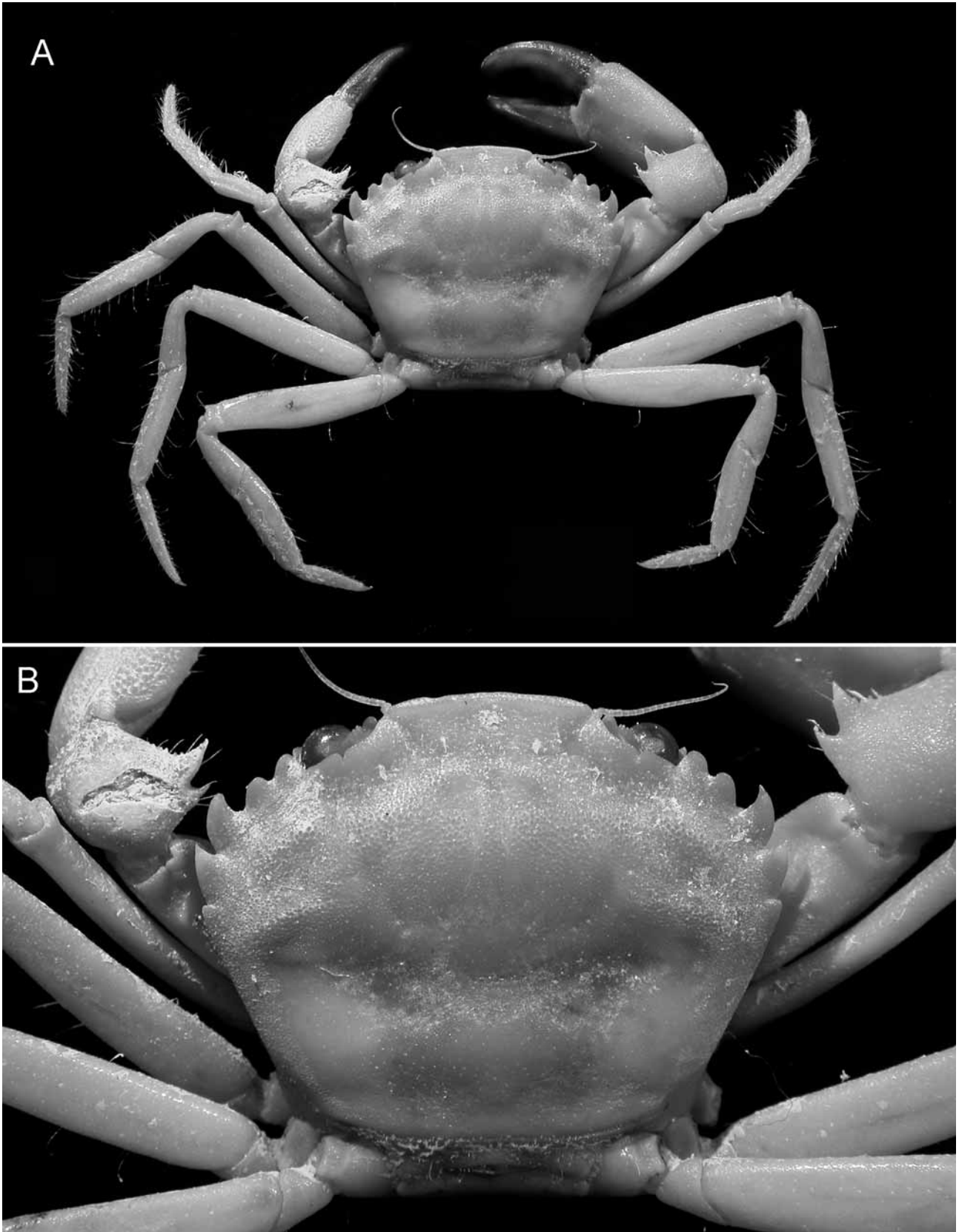


FIGURE 19. *Mathildella mclayi* sp. nov., male, cl 13.6 mm, cw 17.5 mm (NIWA 6772). A, dorsal habitus. B, carapace, dorsal view.

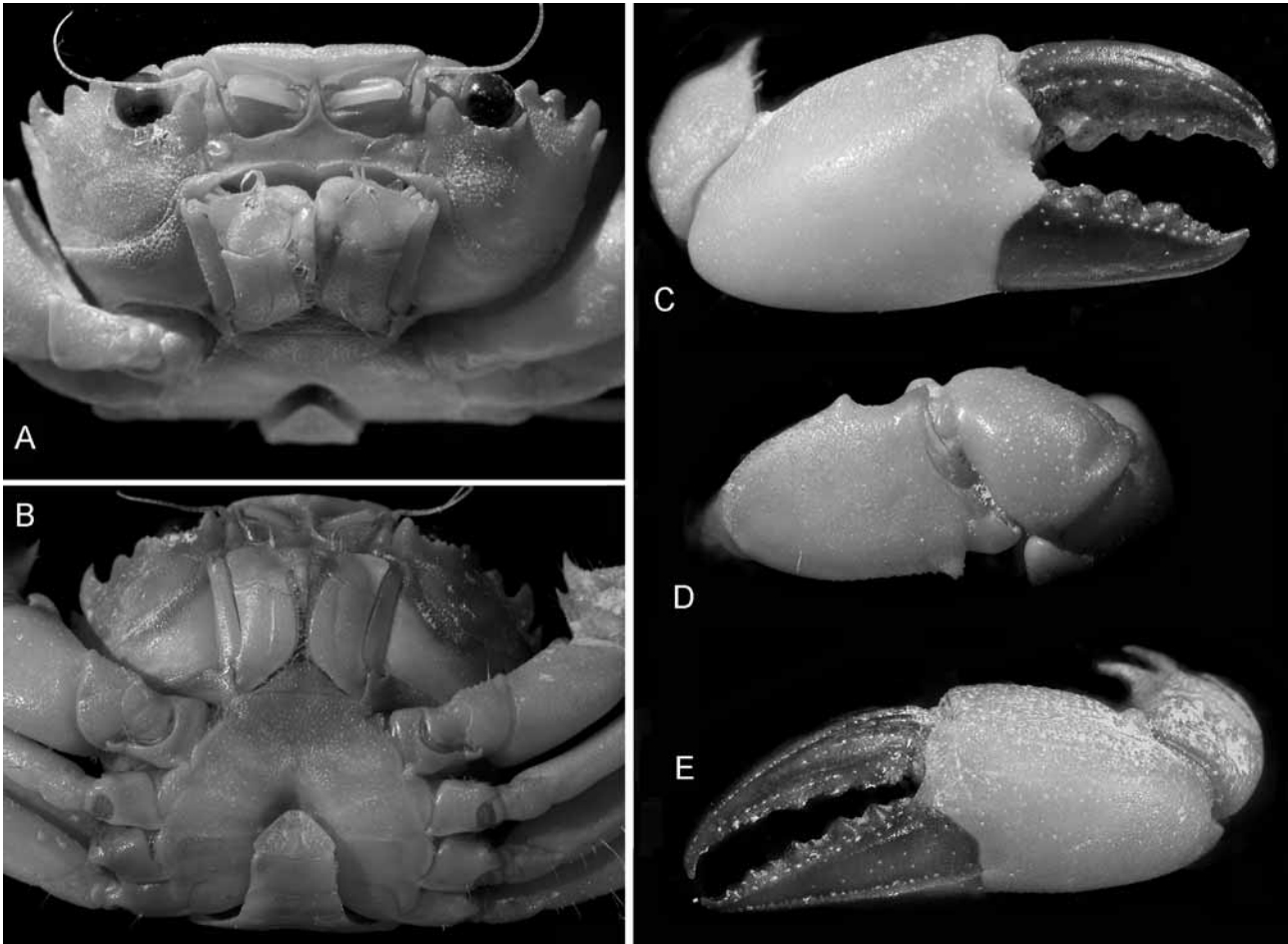


FIGURE 20. *Mathildella mclayi* sp. nov., male, cl 13.6 mm, cw 17.5 mm (NIWA 6772). A, anterior. B, ventral. C, right chela. D, right cheliped carpus and merus. E, left chela.

Male abdomen with 6 free somites and telson; surface sparsely pitted; lateral margins concave. Somite 1 broad, slender, shortest medially, lateral margins reaching base of P5 coxae. Somite 2 subrectangular, narrower than somite 1. Somite 3 transversely subtrapezoid, lateral margins angular. Somites 2 and 3 completely filling space between P5 coxae, concealing sternite 8. Somites 4–6 becoming progressively narrower and longer. Telson triangular, broader than long, apex rounded, lateral margins straight; proximal margin wider than distal margin of somite 6. G1 with stout, swollen proximal portion and slender distal portion, medially curving gently outwards towards apex; aperture with slightly flared margins; outer proximal margin sinuous but not stepped; margins of distal one-fifth lined with small spinules; distomesial margin broadly convex. G2 sinuous, longer than G1, apex tapering to sharp point, distal portion shorter than proximal portion.

Female abdomen broad; of 6 free somites and telson; lateral margins convex; surface sparsely pitted. Somite 1 broad, slender, shortest medially, lateral margins reaching base of coxae of fifth ambulatory legs. Somite 2 subrectangular, narrower than somite 1; lateral margins straight. Somite 3 transversely similar to somite 2 but lateral margins bluntly angular. Somites 1–3 entirely covering space between P5 coxae, sternite 8 not visible. Somites 4–6 becoming progressively narrower and longer. Telson broader than long, rounded.

Third maxilliped minutely punctate; merus subpentagonal, anteroexternal angle rounded; ischium subrectangular, with submedian sulcus; exopod stout, apex with small distal tooth, reaching to distal edge of merus. Lateral surfaces of endostome each with single longitudinal carina.

Chelipeds (P1) unequal. Merus relatively short, trigonal; dorsal margin with convex granular ridge bearing small subdistal spine or tubercle; inner distal margin with flat, rounded lobe at articulation with carpus;

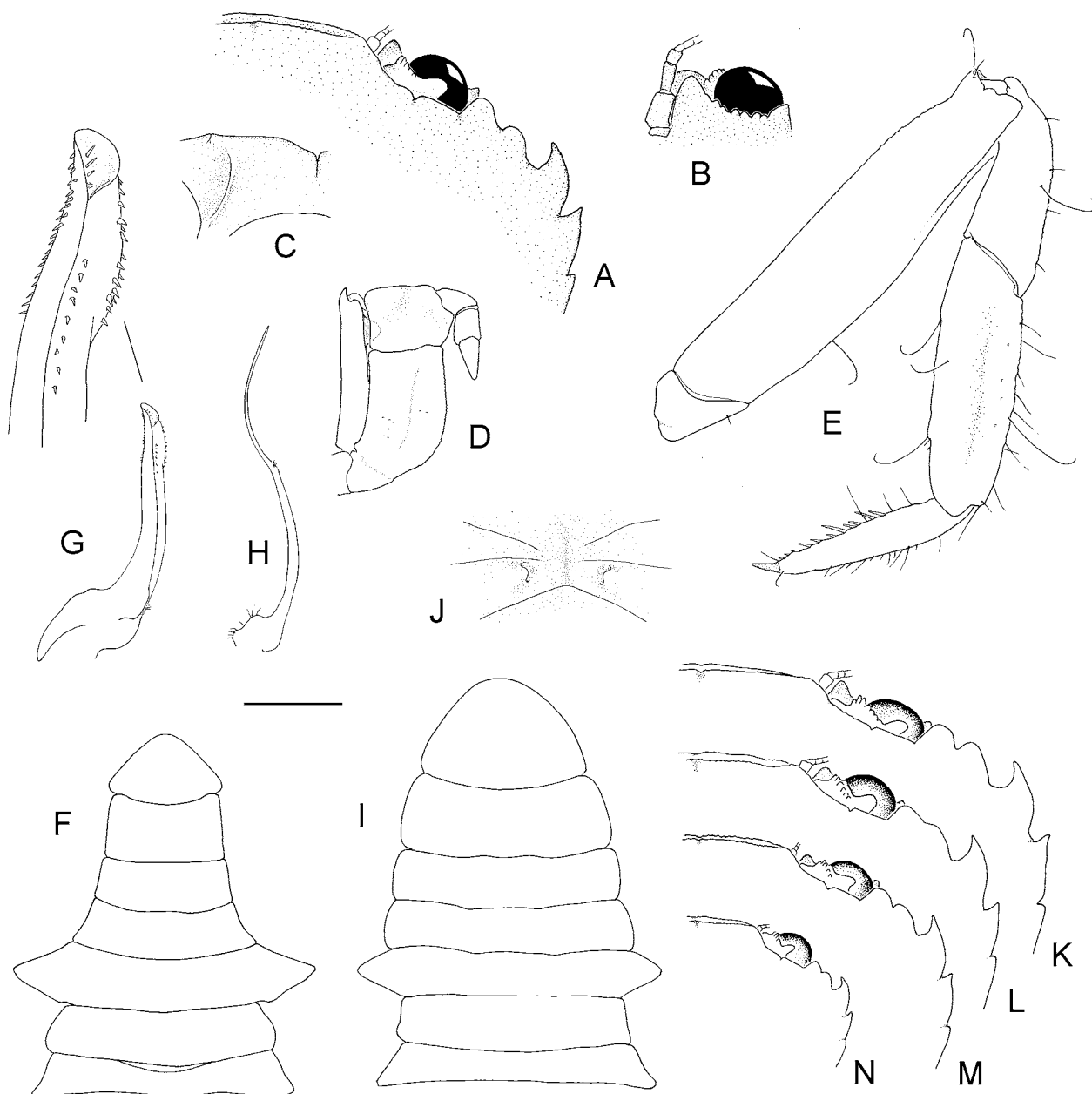


FIGURE 21. *Mathildella mclayi* sp. nov. A–H, male holotype, cl 13.6 mm, cw 17.5 mm (NIWA 6772). I–K, ovigerous female paratype, cl 13.5 mm, cw 17.9 mm (NIWA 34978). L, female paratype, cl 11.9 mm, cw 15.3 mm (NIWA 6769). M, female paratype, cl 10.1 mm, cw 13.1 mm (NIWA 6771). N, female paratype, cl 6.3 mm, cw 8.2 mm (NIWA 6768). A, K–N, carapace outline, right anterior and anterolateral margin. B, suborbital margin, ventral. C, endostome, right half. D, right third maxilliped. E, right P5. F, I, abdomen. G, right G1, abdominal view. H, right G2, abdominal view. J, female gonopores. Scale A–B, D–F, I–N = 2.5 mm, C = 1.6, G–H = 1.3 mm.

distoventral margin with blunt tooth or tubercle; surfaces otherwise appearing smooth but microscopically granular. Carpus with 2 distinct spines on inner distal margin; surface granular; with shallow transverse subdistal sulcus between articular condyles. Major palm stout, unarmed, dorsal surface granular, other surfaces smooth; dorsal margin as long as fingers; fingers with slight gape; occlusal margins bluntly dentate, apices simple, crossing; fingers pigmented black throughout length; pigmentation on pollex extending slightly onto manus. Minor palm rugose to finely granular, more pronounced dorsally; fingers about 1.5 times as long as dorsal margin of palm; occlusal margins bluntly dentate, apices simple, crossing; fingers pigmented black throughout length; pigmentation on pollex extending slightly onto manus; dactylus with dorsal ridge; pollex with shallow submarginal sulcus.

Ambulatory legs (P2–5) relatively long, slender, relative lengths P4>P3>P5>P2; P4 longest (2.65–2.75 cl); P4 ischiomerus slightly longer than cl (1.08–1.14 cl); segments sparsely setose, dorsal margins finely granular (more prominent with increasing size). Dactyli sparsely setose, ventral margins with corneous robust setae, dorsal margin with few small corneous setae, apex corneous. P2–5 dactyli elongate, flattened, almost straight; relative lengths P4>P3>P2>P5. P5 dactylus slightly longer than propodus dorsal margin; 2/3 as long as P4 dactylus.

Etymology. Named for Colin McLay, for his contributions to Indo-Pacific carcinology.

Remarks. *Mathildella mclayi* **sp. nov.** is the first representative of the genus from New Zealand waters. It most closely resembles *M. maxima* Guinot & Richer de Forges, 1981b (Japan, Loyalty Islands, New Caledonia, French Polynesia) in the combination of the broadly convex versus straight frontal margin with at most a shallow rather than distinct median notch, and in the sinuous rather than stepped mid-outer margin of the G1 (Fig. 21G). *Mathildella mclayi* differs from *M. maxima* in the extent of black pigmentation of the cheliped pollex (Fig. 20 D–E), which does not extend onto the manus (versus extending well onto the manus in *M. maxima*), in having a more distinctly triangular male telson (with straight rather than convex lateral margins) that is wider rather than narrower than the distal margin of the sixth abdominal somite (Fig. 20B, 21F), in the length of the P5 dactyli (longer rather than shorter than the propodus dorsal margin; Fig. 21E) and in the morphology of the male G1 (Fig. 21G). In the *M. maxima*, the distomedial margin is relatively straight and the margin of the G1 aperture is distinctly flared forming a prominent lip. The G1 of *M. mclayi* has instead a low convex ‘lobe’ on the mesiodistal margin and lacks the distinct distal flaring of the G1 in *M. maxima*. Like *M. rubra* Ng & Ho, 2003 (Philippines), *M. mclayi* is readily distinguished from *M. serrata* (Sakai, 1974) (Japan, Taiwan, Philippines) and *M. kyushupalauensis* Takeda & Watabe, 2004 (Japan), in having the black pigmentation of the cheliped pollex extending only slightly, rather than prominently onto the manus. *Mathildella mclayi* is readily distinguished from *M. rubra* by the sharper, more prominently falcate, third and fourth anterolateral carapace teeth and proportionally longer P5 dactyli, which are slightly longer rather than shorter than the dorsal margin of the respective propodi.

Ng & Ho (2003) emphasised the degree of demarcation between the first and second anterolateral teeth in distinguishing species of *Mathildella*, whether fused or distinctly separated. The degree of fusion/separation appears to be stable in most species of the genus (*M. serrata*, *M. rubra*, *M. kyushupalauensis*), but is apparently variable in *M. maxima* (see Takeda & Watabe 2004), as it is in *M. mclayi*. In *M. mclayi*, the first and second anterolateral teeth are widely separated in the holotype (Fig. 21A), shallowly demarcated in one paratype (female, NIWA 6769), and intermediate in the remaining paratypes (Fig. 21K–N). The third anterolateral tooth is always the most prominent with a convex outer margin and sharp apex, but the size of the fourth anterolateral tooth is apparently size related, ranging from a low but distinct tooth in the smallest specimens (NIWA 6771, 27553) to a prominent tooth of similar size to the preceding tooth in the largest specimen (holotype, NIWA 6772). As observed by Ng & Chan (2000), the granulation of the dorsal margins of the ambulatory legs is size related, becoming more pronounced with increasing size.

Of the known deepwater Brachyura from New Zealand, *M. mclayi* could be confused with *Neopilumnoplax nieli* **sp. nov.**, *Pycnoplax meridionalis* (Rathbun, 1923) and *P. victoriensis* (Rathbun, 1923). The two species of *Pycnoplax* are readily distinguishable from *M. mclayi* by the presence of only two rather than four anterolateral teeth behind the outerorbital tooth. Additionally, the most common *Pycnoplax* in New Zealand waters, *P. victoriensis*, has pale rather than black cheliped fingers (Fig. 15B, 29B). The strong similarity between *Mathildella* and *Neopilumnoplax* means that *M. mclayi* is most likely to be confused with *N. nieli*. The two species are readily distinguished by the epibranchial ornamentation of the carapace (a slight swelling in *M. mclayi*; a distinct ridge in *N. nieli*; Fig. 19B, 22B); the carination of the endostome (one lateral carinae in *M. mclayi*; two in *N. nieli*; Fig. 21C, 24C); and overall colouration in which *M. mclayi* is uniformly deep orange rather than diffusely pale orange (Fig. 29C–D).

Distribution. Presently known only from seamounts on the southern Kermadec Ridge, northeastern New Zealand; 259–672 m.

***Neopilumnoplax nieli* sp. nov.**

(Figs 22–24, 29D)

Pilumnoplax heterochir. — Rathbun 1923: 99, pl. 17: figs. 1–2. [Not *P. heterochir* Studer, 1883].

Neopilumnoplax heterochir. — Griffin & Brown 1976: 255. — Poore 2004: 437. [Not *N. heterochir* (Studer, 1883)].

Pilumnoplax sp. — Clark & O’Shea 2001: 15. — Martin & Haney 2005: 451, 495.

Type material. HOLOTYPE: NIWA 29364, male (cl 14.7 mm, cw 19.0 mm), Builders Pencil cold seep, 39°32.47–32.83’S, 178°19.90–19.95’E, 775–810 m, TAN0616/18, 5 Nov 2006.

PARATYPES: *Builders Pencil cold seep*: NIWA 29361, 2 males (cl 4.1–7.2 mm, cw 5.2–9.6 mm), 2 females (cl 6.4–7.3 mm, cw 8.3–9.5 mm), 39°32.47–32.83’S, 178°19.90–19.95’E, 775–810 m, TAN0616/18, 5 Nov 2006; NIWA 29365, 2 males (cl 6.3–7.3 mm, cw 7.9–9.3 mm), 4 females (cl 6.4–9.5 mm, cw 8.1–12.5 mm), 3 ovigerous females (largest, cl 13.0 mm, cw 17.0 mm; others damaged), 39°32.59–32.62’S, 178°20.17–19.72’E, 815–812 m, TAN0616/21, 5 Nov 2006; NIWA 29366, 5 males (cl 8.3–13.1 mm, cw 10.9–17.8 mm), 3 females (cl 7.0–10.0 mm, cw 9.1–13.5 mm; largest ovigerous), 39°32.82–32.64’S, 178°19.71–19.92’E, 810–786 m, TAN0616/25, 5 Nov 2006; NIWA 29367, 1 female (cl 11.8 mm, cw 15.8 mm), 39°32.82–32.64’S, 178°19.71–19.92’E, 810–786 m, TAN0616/25, 5 Nov 2006; NIWA 29370, 2 males (cl 11.2–11.6 mm, cw 8.3–9.5 mm), 1 ovigerous female (cl 10.6 mm, cw 14.9 mm), 1 female (cl 6.5 mm, cw 8.1 mm; with rhizocephalan), 39°32.61–32.68’S, 178°20.11–19.69’E, 810–817 m, TAN0616/32, 6 Nov 2006; NIWA 29371, 8 males (cl 6.3–12.2 mm, cw 8.0–15.6 mm), 6 ovigerous females (cl 9.9–12.0 cw 12.9–15.8 mm), 6 females (cl 5.9–10.1 mm, cw 7.5–13.5 mm; largest with rhizocephalan), 39°32.59–32.65’S, 178°20.19–19.62’E, 815–819 m, TAN0616/38, 6 Nov 2006; ZRC 2008.0006, 3 males (cl. 5.1–10.9 mm, cw. 6.2–14.0 mm), 4 females (cl. 3.7–9.0 mm, cw. 4.1–11.4 mm), 39°32.71–33.01’S, 178°19.83–19.90’E, 790–815 m, TAN0616/30, 6 Nov 2006.

Other material examined. *Seamount 441*: NIWA 3588, 2 males (cl 5.3–10.8 mm, cw 6.4–14.6 mm), 34°02.55–02.95’S, 174°49.02–48.70’E, 880–792 m, KAH0204/47, 19 Apr 2002.

Main Cavalli Seamount: NIWA 3584, 2 damaged males, 2 females (cl 7.3–9.7 mm, cw 9.6–12.4 mm; smaller ovigerous), 34°07.15–07.03’S, 174°09.15–08.89’E, 800–670 m, KAH0204/07, 14 Apr 2002; NIWA 3585, 1 female (cl 5.0 mm, cw 6.0 mm), 34°06.91–06.84’S, 174°08.70–08.59’E, 640–610 m, KAH0204/08, 14 Apr 2002.

West Cavalli Seamount: NIWA 3586, 1 male (cl 5.0 mm, cw 6.1 mm), 1 female (cl 7.8 mm, cw 9.8 mm), 34°09.72–10.09’S, 173°57.70–57.97’E, 810–780 m, KAH0204/32, 17 Apr 2002;

South Cavalli Seamount: NIWA 3587, 1 male (cl 8.9 mm, cw 10.8 mm), 34°15.94–15.67’S, 174°06.19–06.16’E, 850–840 m, KAH0204/44, 18 Apr 2002.

SE of Brothers Seamount: NIWA 34928, 1 ovigerous female (cl 8.8 mm, cw 12.0 mm), 35°01.99’S, 179°15.89’E, 788–803 m, J660, 5 Sep 1974.

Rumble III Seamount: NIWA 27547, 4 males, 3 females, 35°44.31’S, 178°29.79’E, 939–280 m, TAN0107/122, Z10776, 20 May 2001.

Rumble V Seamount: NIWA 27551, 1 female (cl 7.3 mm, cw 9.8 mm), 36°08.35’S, 178°11.55’E, 750–670 m, TAN0107/229, Z10810, 24 May 2001; NIWA 27552, 1 male (cl 7.5 mm, cw 10.0 mm), 36°08.29’S, 178°11.75’E, 730–470 m, TAN0107/324, Z10818, 24 May 2001.

Whakatane Seamount: NIWA 6763, 1 male (cl 14.9 mm, cw 19.3 mm), 1 female (cl 11.4 mm, cw 14.9 mm), 36°48.77’S, 177°27.99’E, 897 m, TAN0413/5, 7 Nov 2004; NIWA 6764, 1 female (cl 12.1 mm, cw 16.3 mm), 37°48.77–48.55’S, 177°27.98–27.76’E, 899–900 m, TAN0413/6, 8 Nov 2004.

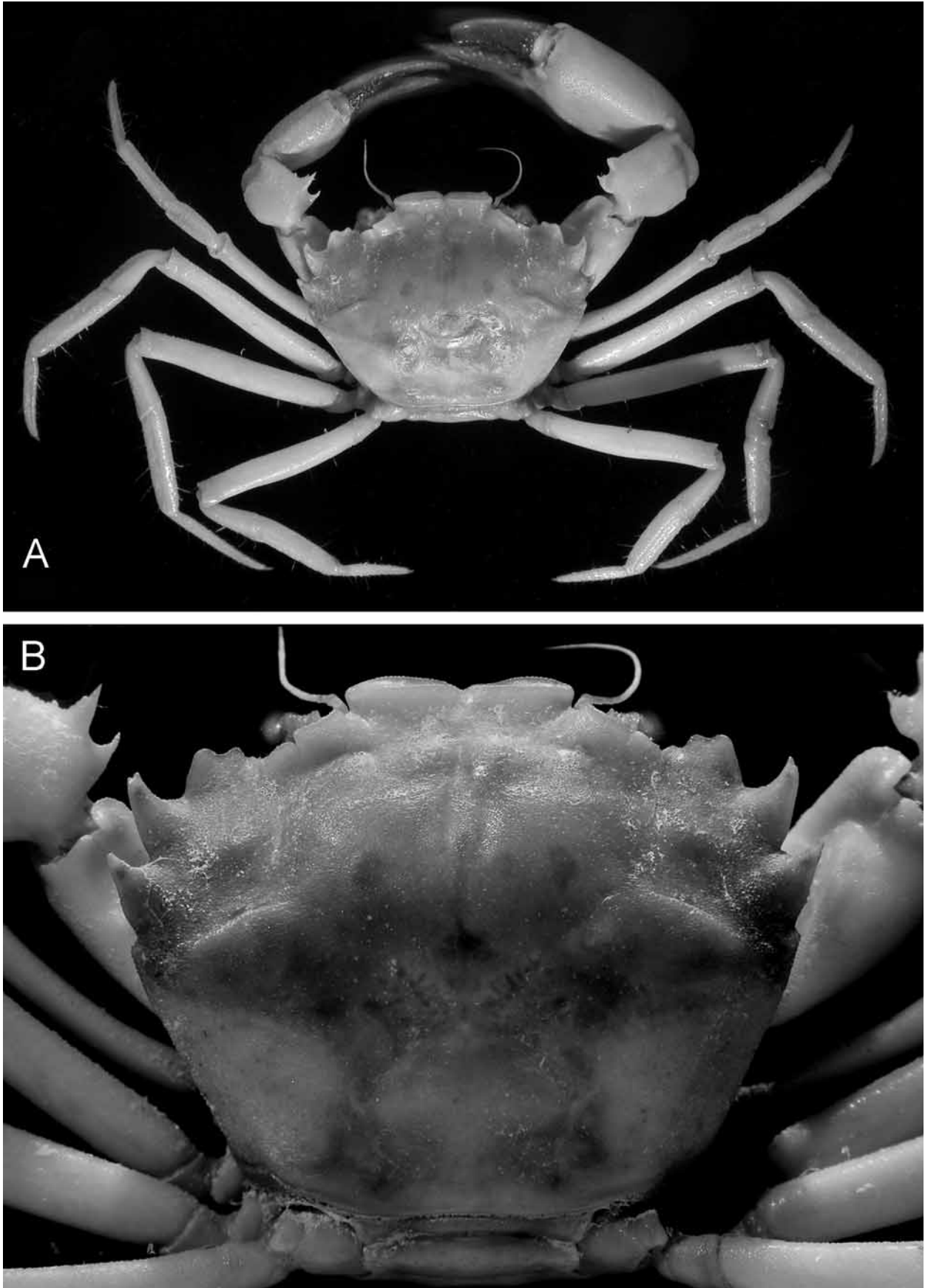


FIGURE 22. *Neopilumnoplax nieli* sp. nov., male holotype, cl 14.7 mm, cw 19.0 mm (NIWA 29364). A, dorsal habitus. B, carapace, dorsal view.

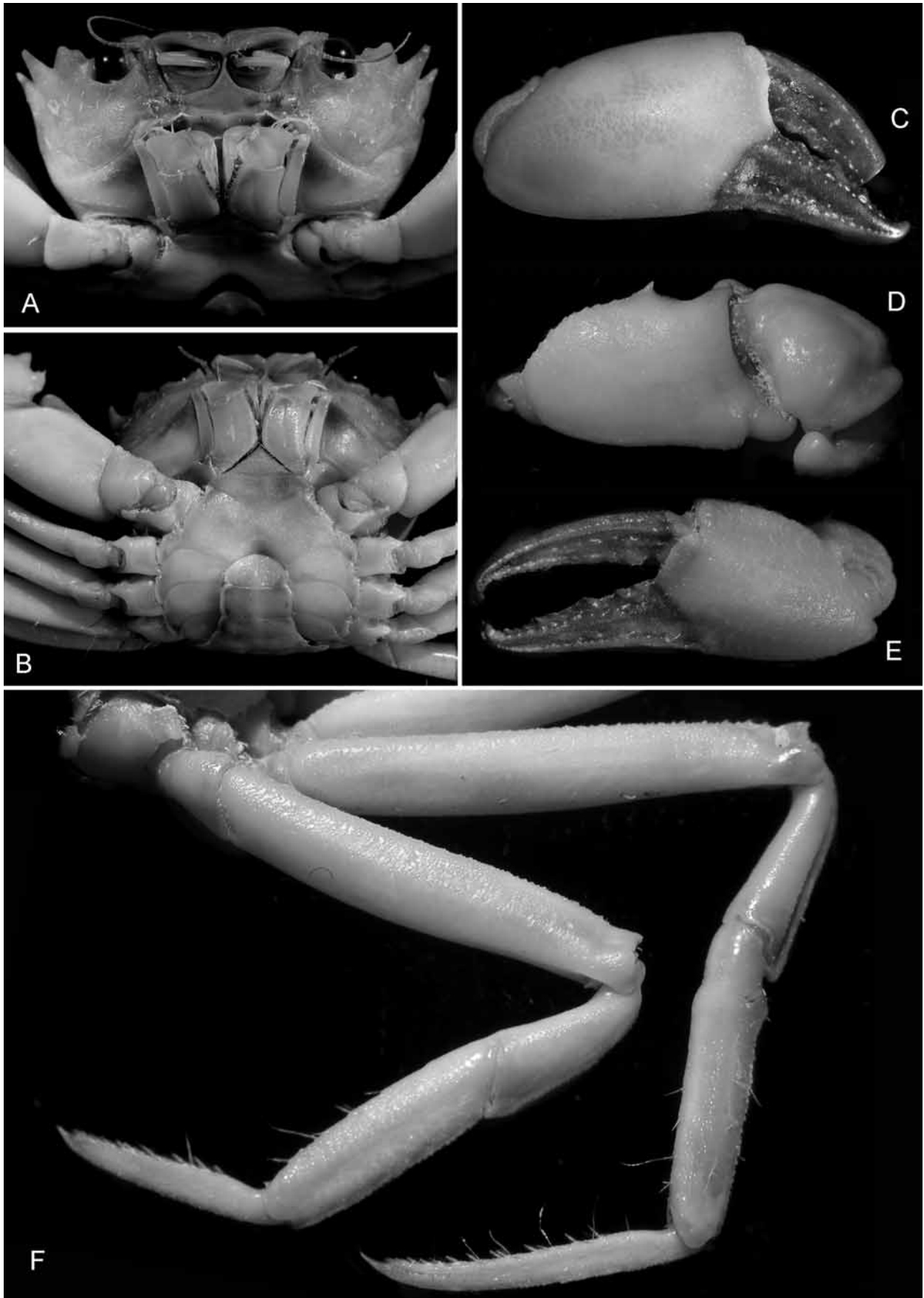


FIGURE 23. *Neopilumnoplax nieli* sp. nov., male holotype, cl 14.7 mm, cw 19.0 mm (NIWA 29364). A, anterior. B, ventral. C, right chela. D, right cheliped carpus and merus. E, left chela. F, right P4–5.

Nukuhou Seamount: NIWA 6765, 1 male (cl 11.9 mm, cw 15.6 mm), 37°12.47–12.64'S, 177°14.65–14.55'E, 900–720 m, TAN0413/45, 10 Nov 2004; NIWA 6766, 2 males (cl 8.7–9.4 mm, cw 11.1–11.8 mm), 37°12.55–12.96'S, 177°14.26–14.21'E, 910–701 m, TAN0413/59, 11 Nov 2004; NIWA 6767, 1 male (cl 11.2 mm, cw 14.4 mm; with rhizocephalan), 1 ovigerous female (cl 8.7–9.8 mm, cw 12.5 mm), 37°13.45–13.17'S, 177°14.05–14.26'E, 693–698 m, TAN0413/63, 11 Nov 2004.

Mahina Knoll: NIWA 6770, 1 male, 1 female, 1 indet., 37°18.97–18.72'S, 177°04.49–04.47'E, 495–466 m, TAN0413/138, 14 Nov 2004; NIWA 6773, 1 male (cl 11.3 mm, cw 8.6 mm), 37°20.09–20.03'S, 177°04.58–04.98'E, 502–430 m, TAN0413/174, 16 Nov 2004; NIWA 6774, 1 male (cl 12.0 mm, cw 15.7 mm), 2 ovigerous females (cl 9.2–11.8 mm, cw 11.8–16.1 mm), 37°18.72–18.73'S, 177°03.94–04.26'E, 725–550 m, TAN0413/177, 16 Nov 2004.

Ritchie Hill: NIWA 34970, 3 males (cl 7.5–10.0 mm), 5 females (cl 8.3–8.5 mm; largest ovigerous, 2 with rhizocephala), 39°28.24–27.28'S, 178°24.76–25.17'E, 865–741 m, KAH9907/40, 3 Jun 1999.

Rock Garden cold seep: NIWA 29354, 2 males, 3 females, 40°02.31–02.47'S, 178°08.58–08.62'E, 730–747 m, TAN0616/06, 4 Nov 2006; NIWA 29357, 2 males, 1 female, 40°02.35–02.41'S, 178°08.62–09.00'E, 764–766 m, TAN0616/07, 4 Nov 2006; NIWA 29358, 1 male (cl 6.9 mm, cw 8.2 mm), 40°02.37'S, 178°08.61'E, 748 m, TAN0616/09, 4 Nov 2006; NIWA 29359, 2 females (cl 6.4–9.6 mm, cw 8.0–12.6 mm), 40°02.38–02.22'S, 178°08.55–08.86'E, 760–700 m, TAN0616/10, 4 Nov 2006; NIWA 29360, 6 males (cl 4.8–8.9 mm, cw 5.7–11.5 mm), 6 females (cl 4.9–10.3 mm, cw 5.9–13.5 mm; 5 largest ovigerous), 40°02.41–02.65'S, 178°08.67–08.91'E, 749–787 m, TAN0616/12 SEL, 4 Nov 2006; NIWA 29363, 1 female (cl 5.8 mm, cw 7.3 mm), 40°02.41–02.65'S, 178°08.67–08.91'E, 749–787 m, TAN0616/12 GVVVL, 4 Nov 2006.

Hihi cold seep, Uruti Ridge: NIWA 29373, 4 males, 2 females, 41°17.71–17.65'S, 176°33.37–33.66'E, 730–747 m, TAN0616/67, 10 Nov 2006.

Kereru cold seep, Uruti Ridge: NIWA 29376, 1 male (cl 8.0 mm, cw 10.2 mm), 2 ovigerous females (cl 10.6–12.7 mm, cw 14.0–17.3 mm), 41°17.32–17.17'S, 176°35.23–35.49'E, 731–720 m, TAN0616/70, 10 Nov 2006.

Scroll Seamount: NIWA 29639, 1 male (cl 11.1 mm, cw 14.2 mm), 1 female (cl 12.6 mm, cw 16.6 mm), 42°47.09'S, 179°59.77'W, 917–1082 m, TAN0604/07, 28 May 2006.

Diabolical Seamount: NIWA 29651, male (cl 15.0 mm, cw 19.7 mm), 42°47.33'S, 179°59.11'W, 960–1036 m, TAN0604/98, 4 Jun 2006.

Ghoul Seamount: NIWA 29660, 1 female (cl 10.9 mm, cw 13.9 mm), 42°47.85'S, 179°59.26'E, 970–1040 m, TAN0604/111, 7 Jun 2006; NIWA 27548, 1 male (cl 14.5 mm, cw 18.3 mm), 42°48.14–48.29'S, 179°59.27–59.30'E, 1013–931 m, TAN0104/115, 17 Apr 2001.

Cascade site, S of Tasmania: NMV J55302, 6 males (cl 5.9–10.1 mm, cw 7.5–12.5 mm), 7 females (cl 8.0–13.8 mm, cw 10.3–18.3 mm), 43°55.24–55.47'S, 150°27.53–28.21'E, SS0207/077-012, 10 Apr 2007; NMV J55643, 3 males (cl 8.3–9.6 mm, cw 11.1–12.8 mm), 6 females (cl 6.4–12.7 mm, cw 8.2–16.9 mm), 43°55.24–55.47'S, 150°27.53–28.21'E, SS0207/077-012, 10 Apr 2007.

Western Australia, Australia: NMV J55720, 1 fragmented male (cw 13.3 mm), off Albany, 35°26.03–26.15'S, 118°21.00–21.04'E, 900–915 m, sled, SS10/2005 044, R. Wilson et al., 25 Nov 2005.

Diagnosis. Carapace epibranchial ridge well-defined; front divided medially by distinct cleft; first (outer-orbital) and second anterolateral teeth fused basally, demarcated by shallow concavity in juveniles but becoming confluent with increasing size. Second anterolateral tooth blunt, apex rounded, subtruncate or emarginate. Third anterolateral tooth larger than fourth tooth, both produced as anteriorly recurved spines, apices sharp. Fourth tooth separated from adjacent tubercle by shallow notch. Sternite 8 visible laterally between abdominal somites 2 and 3. G1 mesial margin lined with small spinules on distal third. Major cheliped smooth, without prominent granules or tubercles (at most finely granular in juveniles). Minor cheliped palm rugose to finely granular, not coarsely granular.

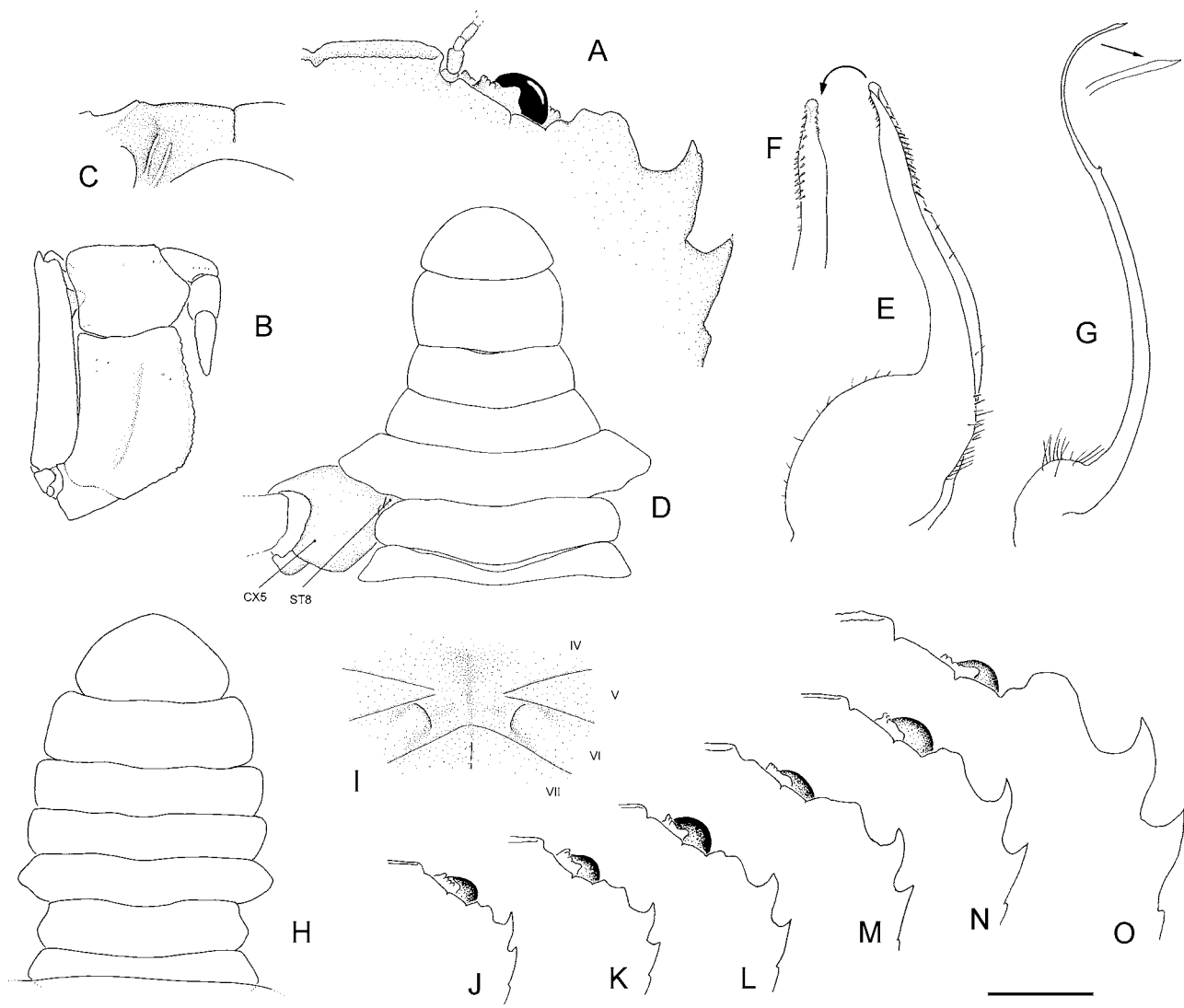


FIGURE 24. *Neopilumnoplax nieli* sp. nov. A–G, male holotype, cl 14.7 mm, cw 19.0 mm (NIWA 29364). H–I, female paratype, cl 11.8 mm, cw 15.8 mm (NIWA 29367). J, female paratype, cl 5.9 mm, cw 7.5 mm (NIWA 29371). K, female paratype, cl 7.0 mm, cw 9.1 mm (NIWA 29366). L, male paratype, cl 8.3 mm, cw 10.9 mm (NIWA 29366). M, ovigerous female paratype, cl 10.0 mm, cw 13.1 mm (NIWA 29366). N, ovigerous female, cl 10.3 mm, cw 13.5 mm (NIWA 29360). O, male, cl 15.0 mm, cw 19.7 mm (NIWA 29651). A, J–O, carapace outline, right anterior and anterolateral margin. B, right third maxilliped. C, endostome, right half. D, H, abdomen. E–F, right G1, abdominal view and sternal view of apex. G, right G2, abdominal view. I, female gonopores. Scale A, D, H–O = 2.5 mm; B, C = 2.0 mm; E, G = 0.8 mm. CX5 = coxa of P5. ST8 = sternite 8.

Description. Carapace subhexagonal, 1.3 times wider than long; dorsal surface microscopically rugose, appearing smooth; regions ill-defined; epigastric regions low, slightly swollen; protogastric and hepatic regions slightly swollen, separated by shallow furrow; cardiac region flat; epibranchial ridge well-defined. Front subtruncate in dorsal view, bimarginate, formed by distinct transverse anterior groove; margins gently convex, faintly granular, divided medially by distinct cleft. Supraorbital margin low, separated from front by distinct sinus or notch; margin with fissure or V-shaped notch laterad to midlength. First (outerorbital) anterolateral tooth low, blunt. First and second anterolateral teeth fused basally, demarcated by shallow concavity in juveniles but becoming confluent with increasing size. Second anterolateral tooth blunt, apex rounded, subtruncate or emarginate. Third anterolateral tooth larger than fourth tooth, both produced as anteriorly recurved spines. Fourth tooth separated from adjacent tubercle by shallow notch. Suborbital margin granular; with

blunt inner tooth, visible dorsally. Eyestalks with row of granules on inner distal margin. Suborbital, pterygostomial and sub-branchial regions finely granular. Posterolateral and posterior carapace margins almost straight.

Thoracic sternum microscopically granular and finely punctate. Sternites 2 and 3 well demarcated. Sternites 3 and 4 fused, sutures visible laterally. Press-button of abdominal locking mechanism positioned near posterior margin of sternite 5. Anterior end of sternoabdominal cavity reaching midlength of sternite 4. Sutures 4/5 and 5/6 medially interrupted. Suture 6/7 and 7/8 complete. Sternites 7 and 8 with median groove. Female gonopore on sternite 5; orifice simple, without cover.

Male abdomen with 6 free somites and telson; surface sparsely pitted; lateral margins concave. Somite 1 broad, slender, shortest medially, lateral margins reaching base of P5 coxae. Somite 2 subrectangular, slightly narrower than somite 1. Somite 3 transversely subtrapezoid, lateral margins angular. Sternite 8 visible laterally between somites 2 and 3. Somites 4–6 becoming progressively narrower and longer. Telson semicircular. G1 with stout, swollen proximal portion and slender distal portion, medially curving outwards sinuously to open tip; lateral surfaces of distal tenth lined with small spinules; distal third of mesial margin lined with small spinules. G2 sinuous, longer than G1, apex tapering to sharp point; distal portion about half as long as proximal portion.

Female abdomen broad; with 6 free somites and telson; lateral margins convex; surface sparsely pitted. Somite 1 broad, slender, shortest medially, lateral margins reaching base of P5 coxae. Somite 2 subrectangular, slightly narrower than somite 1; lateral margins obtusely rounded. Somite 3 transversely similar to somite 2 but lateral margins bluntly angular. Somites 1–3 entirely covering space between P5 coxae, sternite 8 not visible. Somites 4–6 becoming progressively narrower and longer. Telson broader than long, rounded.

Third maxilliped minutely and sparsely granular; merus subpentagonal, anteroexternal angle rounded; ischium subrectangular, with submedian sulcus; exopod stout, with small distal tooth, reaching to distal edge of merus. Lateral surfaces of endostome each with pair of longitudinal carinae.

Chelipeds (P1) unequal. Merus relatively short, trigonal; dorsal margin with convex granular ridge bearing small subdistal spine or tubercle; inner distal margin with flat, rounded lobe at articulation with carpus; surfaces otherwise appearing smooth but microscopically granular. Carpus with 2 distinct spines on inner distal margin; surface granular; with shallow transverse subdistal sulcus between articular condyles. Major palm stout, unarmed, surfaces smooth, without prominent granules or tubercles (at most finely granular in juveniles); dorsal margin slightly shorter than fingers; fingers with slight gape; occlusal margins bluntly dentate, apices simple, crossing; fingers pigmented black throughout length; pigmentation on pollex extending slightly onto manus. Minor palm rugose to finely granular, more pronounced dorsally; fingers about 1.5 times as long as dorsal margin of palm; occlusal margins bluntly dentate, apices simple, crossing; fingers pigmented black throughout length; pigmentation on pollex extending slightly onto manus; dactylus with dorsal ridge; pollex with shallow submarginal sulcus.

Ambulatory legs (P2–5) relatively long, slender, relative lengths $P4 > P3 > P2 > P5$; P4 longest (2.26–2.59 cl); P4 ischiomerus subequal to cl (0.98–1.09 cl); segments sparsely setose, finely granular, with granulation most pronounced on dorsal margins, becoming finely serrate distally. Dactyli sparsely setose, ventral margin with corneous robust setae, dorsal margin with few small corneous setae, apex corneous. P2–5 dactyli elongate, flattened, almost straight; relative lengths $P4 > P3 > P2 > P5$. P5 dactylus slightly longer than propodus dorsal margin; faintly deflected dorsad; two-thirds as long as P4 dactylus.

Etymology. Named for fellow carcinologist, Niel Bruce, for his contributions to Indo-Pacific carcinology.

Remarks. Serène *in* Guinot (1969) included three species his new genus *Neoplimumoplax*: *N. heterochir* (Studer, 1883) (type locality: southwestern Africa), *N. americana* (Rathbun, 1898) (type locality: Gulf of Mexico, off Georgia, U.S.A), and *N. sinclairi* (Alcock & Anderson, 1899) (type locality: off the Travancore coast, India). Tavares & Guinot (1996) added a fourth species, *N. gervaini* Tavares & Guinot, 1996 (type locality: Guadeloupe, Caribbean Sea). *Neoplimumoplax nieli* **sp. nov.** is the first Pacific representative of the

genus and most closely resembles *N. heterochir*, with which it has been misidentified in records from southeastern Australia (Rathbun 1923; Griffin & Brown 1976; Poore 2004). The single record of *N. heterochir* from the South China Sea (Serène & Lohavanijaya 1973) is based on a species of *Mathildella*, probably *M. serrata* (Sakai, 1974) (Guinot & Richer de Forges 1981b).

Neopilumnoplax nieli and *N. heterochir* are readily distinguished by the form of the anterolateral carapace teeth, rugosity of the cheliped palms and spination of the G1. In *N. heterochir*, the second and third anterolateral teeth are triangular in small specimens, but by 13 mm cl, become blunt and obtuse (see Guinot & Richer de Forges 1981a: pl. 3 fig. 1, 1a; specimen 13 x 17.2 mm but miscaptioned as 11.5 x 15 mm). In contrast, the second and third anterolateral teeth of *N. nieli* are acute spines with anteriorly recurved apices (especially for the second), even in the largest specimens (Fig. 24A, J–O). The cheliped palms of *N. nieli* are smoother than in *N. heterochir*. The minor cheliped of *N. nieli* is somewhat rugose or finely granular rather than being covered with prominent granules in as *N. heterochir*. Similarly, the major cheliped palm of *N. nieli* is smooth (or at most finely granular in juveniles) rather than distinctly granular proximally as in *N. heterochir*. The mesial margin of the G1 in *N. nieli* is lined with spines along the distal half of the slender distal portion (Fig. 24E–F), rather than the distal third in *N. heterochir*. *Neopilumnoplax nieli* can be distinguished from *N. americana* by the prominent rather than obsolete epibranchial ridge (Fig. 22B), and from *N. sinclairi* and *N. gervaini* by the blunt and indistinct, rather than spiniform last anterolateral tooth (Fig. 24A).

Neopilumnoplax nieli reaches a maximum size of at least 15.0 mm cl. Females are ovigerous by 7.3 mm cl and males have well-developed gonopods by 6.3 mm cl. Apart from typical sexually dimorphic features (such as abdomen shape), the present series of *N. nieli* is morphologically uniform, including the presence of two inner carpal cheliped spines, even in the smallest specimen (male paratype, 4.1 x 5.2 mm, NIWA 29361). The shape and acuteness of the anterolateral carapace spines may exhibit significant allometric variation in many gonoplacids, but in *N. nieli*, the second and third anterolateral carapace spines are sharp and well-developed irrespective of size. The only significant variation is in the form of the first anterolateral tooth, which becomes confluent with the outerorbital tooth with increasing size; the apex ranging from a rounded to blunt-subtruncate or emarginate lobe (Fig. 24A, J–O). Five specimens were infected by rhizocephala (male, NIWA 6767; female, NIWA 29370; female, NIWA 29371; two females, NIWA 34970).

Pilumnoplax incerta Cano, 1889 (type locality: unknown; male holotype 6.5 x 8.0 mm), known only from the type description was reported by Cano to closely resemble *N. heterochir*, differing chiefly by its smooth rather than granular chelipeds. By implication, *P. incerta* should also resemble *N. nieli*, particularly in view of the smooth chelipeds in contrast to *N. heterochir*. *Pilumnoplax incerta*, however, was described and figured as having a single inner carpal spine and as such, cannot be identified as *N. nieli*, nor any species of *Neopilumnoplax*, all of which bear two inner carpal spines. Also, *Pilumnoplax* Stimpson, 1858 (type species *Pilumnoplax sulcatifrons* Stimpson, 1858) is a junior subjective synonym of *Eucrate* de Haan, 1835 (type species: *Cancer (Eucrate) crenatus* de Haan, 1835), to which Cano's species does not correspond. Thus, the generic position of *Pilumnoplax incerta* is unclear, but it is perhaps referable to *Machaerus* Leach, 1814, or *Thalassoplax* Guinot, 1969. In particular, the respective type species of both of these genera, *M. oxyacanthus* (Monod, 1956) (from off West Africa) and *T. angusta* Guinot, 1969 (from off Florida), generally resemble Cano's figure, and most importantly, have a single inner carpal spine and an enlarged, pointed, penultimate anterolateral tooth on the carapace.

Neopilumnoplax nieli appears to be common on seamounts and cold seeps off eastern New Zealand, where it can be sympatric with *Pycnoplax victoriensis* (Rathbun, 1923), and *Dorhynchus ramusculus* (Baker, 1906).

Distribution. Presently known only from New Zealand, southeastern and southwestern Australia; 275–810 m; 232–494 m (Rathbun 1923). The known New Zealand range includes cold seeps and seamounts between the southern Kermadec Ridge and Chatham Rise.

Family PARTHENOPIDAE MacLeay, 1838

Garthambrus tani sp. nov.

(Figs 25–27)

Tutankhamen sp. — Clark & O’Shea 2001: 15. — Martin & Haney 2005: 451, 497.

Type material. HOLOTYPE: NIWA 6776, 1 male (cl 13.6 mm, cw 18.2 mm), Tumokemoke Seamount, 37°27.95–27.97’S, 179°57.28–57.05’E, 474–435 m, TAN0413/168, 15 Nov 2004;

PARATYPES: NIWA 34979, 1 male (cl 13.4 mm, cw 17.8 mm), 1 ovigerous female (cl 8.2 mm, cw 11.7 mm), off Curtis Island, Kermadec Islands, 30°17.59’S, 178°25.30’W, 398–412 m, stn K840, 28 Jul 1974.

Diagnosis. Carapace subpentagonal, 1.3 times wider than long; dorsal surface densely covered with coarse granules and stalked, stellate tubercles (tubercles on highest surfaces of mesogastric, epibranchial and cardiac regions generally flatter than surrounding tubercles). Protogastric region with paired, blunt upright tubercles. Cardiac region with prominent median tubercle. Epibranchial and mesobranchial regions with prominent upright tubercle posteriorly. Anterior branchial margin broadly convex, with 8–10 well-spaced, secondarily tuberculate or spinulate teeth. Lateral angle acute of carapace produced to a slender, granular point. Cheliped surfaces covered with small granules; propodus dorsal margin with 10–12 prominent, tuberculate teeth. P2–5 laterally compressed, surfaces smooth or finely granular near distal ventral margins; merus dorsal margin cristate on P2, partially cristate and partially tuberculate on P3–5; propodi dorsal margin cristate on P2–5; dactyli shorter than propodi, finely setose. Male G1 stout, aperture ovate; distal quarter with small spinules. G2 distal section as long as proximal section, with ‘twist’ at midlength, apex spiniform.

Description. Carapace subpentagonal, 1.3 times wider than long; dorsal surface densely covered with coarse granules and stalked, stellate tubercles (tubercles on highest surfaces of mesogastric, epibranchial and cardiac regions tending flatter). Rostrum with blunt, tapering apex, horizontal; lateral, proximal lobes blunt. Surface of frontal region with median concavity. Protogastric region raised, with pair of blunt, upright tubercles. Meso- and metagastric regions inflated. Cardiac and intestinal region fused into inflated, upraised prominence, with blunt, conical, upright tubercle and low tubercle (indistinct in female) on posterior slope. Epibranchial region with prominent, inflated, oblique swelling, posteriorly with conical, upright tubercle. Mesobranchial region inflated, lower than epibranchial regions, with blunt upright tubercle. Outerorbital margin granular but unarmed. Supra orbital margin lined with subglobular granules. Suborbital margin granular, with blunt, granular, mesial tooth. Hepatic margin with blunt, tuberculate tooth. Anterior branchial margin broadly convex, with 8–10 well-spaced, triangular, secondarily tuberculate or spinulate teeth, decreasing in size posteriorly. Lateral angle acute, produced to a slender, granular point. Posterior branchial margin concave, granular, with blunt, subdistal tooth. Posterior margin tuberculate, with 3 blunt, tuberculate lobes, lateral lobes larger than median lobe. Pterygostomial, sub-branchial and suborbital regions densely granular, most simple, but some stalked and stellate. Subhepatic region excavate. Pterygostomial ridge prominent, cristate, coarsely tuberculate.

Eyestalks with small, globular granules; as wide as cornea. Epistome with median proximal pit and 4 pits along distal margin; surface with sparse, flattened granules, otherwise smooth. Basal antennular segment granular. First free antennal segment wider than long. Second free antennal segment petagonal, granular (immobile though not fused to epistome and suborbital margins). Third and fourth free antennal segments slender, smooth.

Third maxilliped ischiobasis subrectangular, mesial margin smooth, straight, median surface with broad longitudinal groove, surface covered with rounded granules, tending acute towards lateral margins. Merus broadly ovate, about half-length of ischiobasis; with 2 broad, deep concavities; surface irregular, eroded, with coarse tubercles (some stalked) and prominent central compound tubercle. Carpus, propodus and dactylus

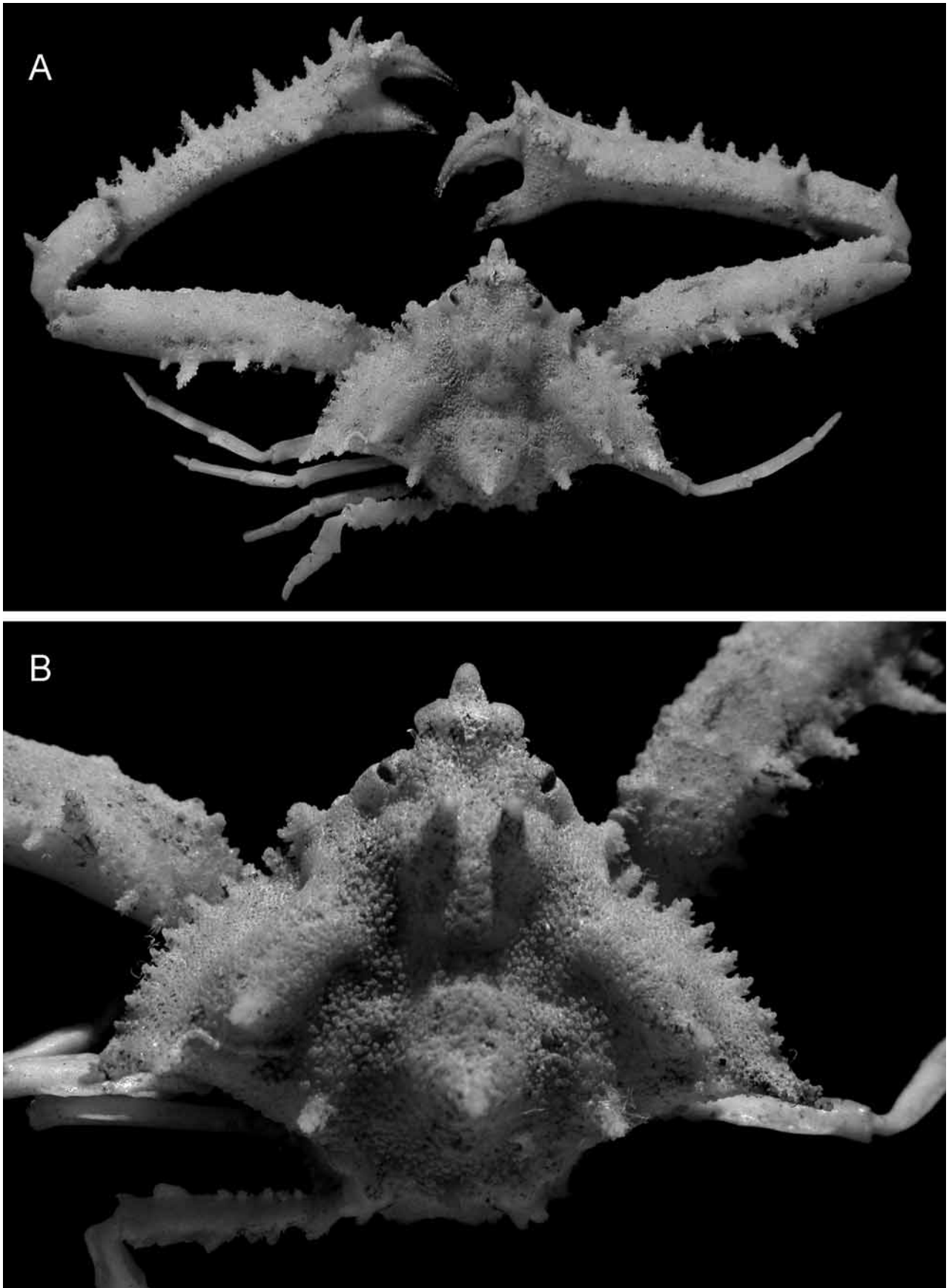


FIGURE 25. *Garthambrus tani* sp. nov., male holotype, cl 13.6 mm, cw 18.2 mm (NIWA 6776). A, dorsal habitus. B, carapace, dorsal view.

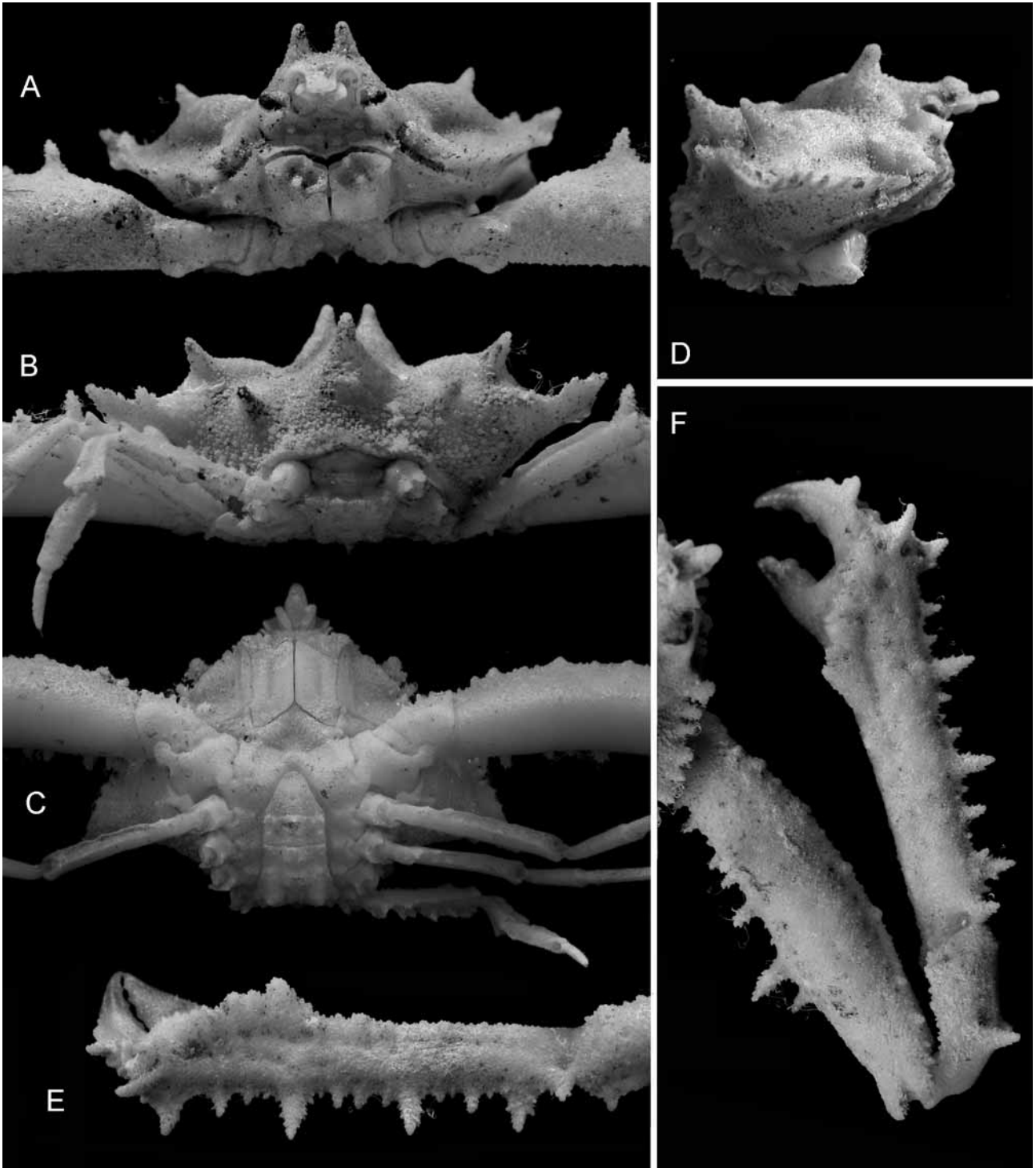


FIGURE 26. *Garthambrus tani* **sp. nov.**, male holotype, cl 13.6 mm, cw 18.2 mm (NIWA 6776). A, anterior. B, posterior. C, ventral. D, carapace, right lateral view. E, left chela, oblique anterior view. F, right cheliped.

smooth, concealed by ischium and merus when folded. Exopod dorsal surface coarsely granular, apex not exceeding distal margin of ischium.

Thoracic sternites densely covered with small, round granules; sternites 3–4 with broad, V-shaped depression, with compound tubercle near articulation with cheliped basis; sternite sutures 4/5 and 5/6 medially interrupted; sternite suture 6/7 complete; sternite 8 with median groove; sternite 5 ‘press-button’ positioned anteriorly in both sexes.

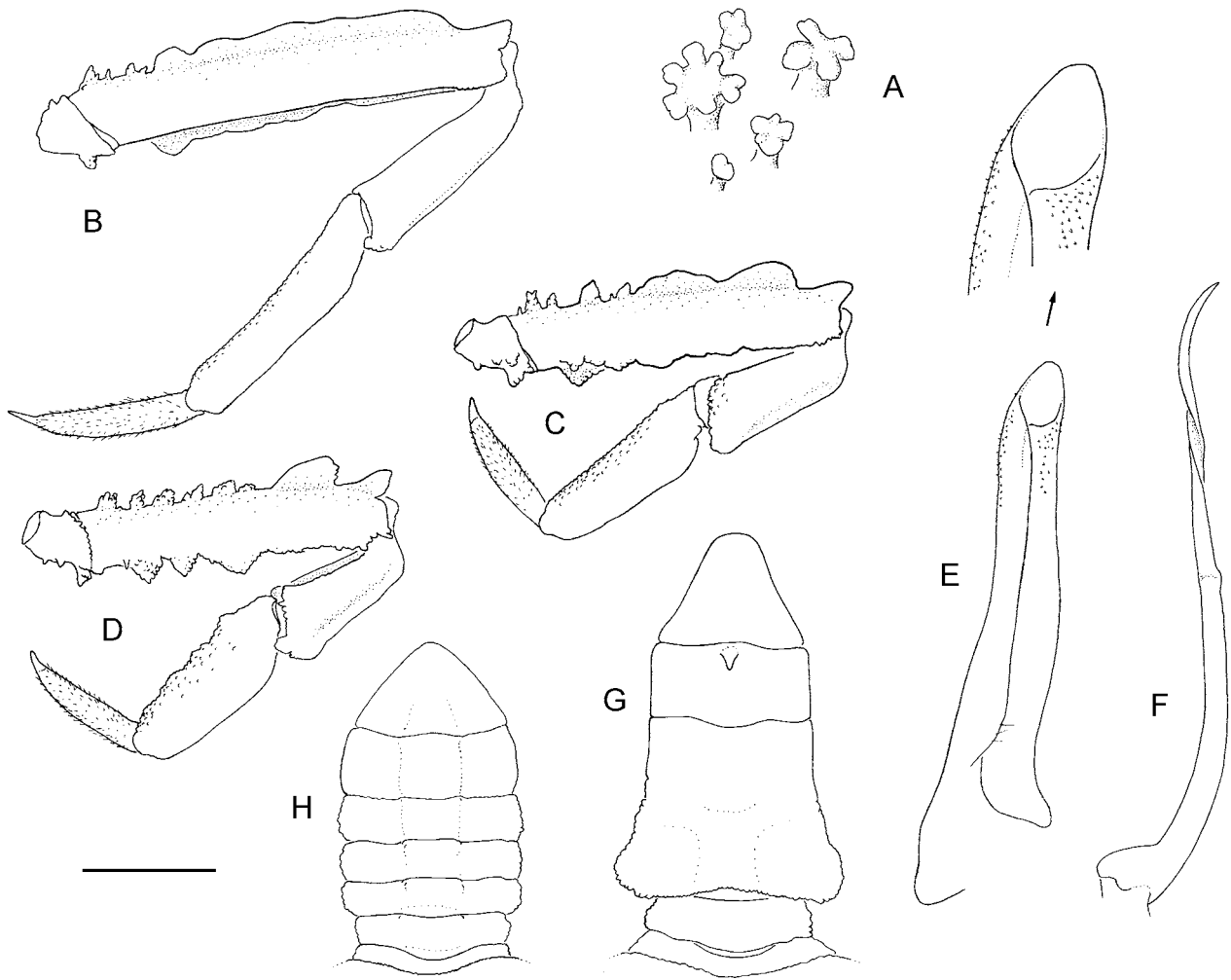


FIGURE 27. *Garthambrus tani* sp. nov.. A–G, male holotype, cl 13.6 mm, cw 18.2 mm (NIWA 6776). H, ovigerous female paratype, cl 8.2 mm, cw 11.7 mm (NIWA 34979). A, stalked stellate tubercles (right anterior branchial region). B, right P2. C, right P4. D, right P5. E, right G1, abdominal view. F, right G2, abdominal view. G, male abdomen. H, female abdomen. Scale A = 0.2 mm, B–D, G–H = 2.0 mm, E–F = 0.8 mm.

Chelipeds subequal, right chela slightly larger, more robust than left; about 3 times carapace length in males, 2 times carapace length in female; surfaces covered with small granules. Ischium anterior margin with 5 or 6 irregular teeth. Merus subtriangular in cross-section; inner margin with 10–12, low, irregular teeth and tubercles; proximal 2/3 of outer margin with acute tubercles and 7 or 8 irregular, conical, tuberculate teeth, longest tooth near meral midlength; dorsal surface with upright tooth near dorsal margin at proximal 1/3 of merus. Carpus surfaces evenly granular, inner margin tuberculate, outer margin with 2 prominent teeth proximal to midlength and smaller distal tooth. Propodus subtrigonal in cross-section; inner margin irregularly tuberculate, distally with slightly flattened, dentate crest; outer margin with 10–12 prominent, tuberculate teeth, of which 4 are about twice as long as remainder; distal margin near dactylar articulation with coarse tubercles and prominent tooth. Fingers coarsely granular, shorter than 1/3 palm length, distal half to third dark brown; occlusal margins of left chela thin, blade-like, occluding; occlusal margins of right chela, blunt, slightly molariform or evenly curved, gaping. Dactylus slightly curved, with low longitudinal carina; dorsal margin tuberculate, with 2 rounded, laterally compressed crests, proximal distinctly larger. Pollex slightly shorter than dactylus, tuberculate.

Ambulatory legs decreasing in length posteriorly; laterally compressed; P2 longest; meri, carpi and propodi laterally compressed, surfaces smooth or finely granular near distal ventral margins; dactyli shorter than propodi, finely setose with corneous apex. P2 merus dorsal margin cristate, except for coarsely dentate proximal fifth; merus ventral margin bicristate; carpus and propodus dorsal margins cristate, unbroken. P3–4 meri dorsal margin cristate distally, coarsely dentate and tuberculate proximally; meri ventral margin with 2 rows of short, irregular crista, laminar teeth and tubercles; carpi and propodi dorsal margins cristate, unbroken. P5 merus dorsal margin cristate distally, coarsely dentate and tuberculate proximally; merus ventral margin with 2 rows of short, irregular crista, laminar teeth and tubercles; carpus and propodus dorsal margins cristate, unbroken.

Male abdomen narrow; surface eroded, rugose, granular; fused somites 3–5 forming subquadrate plate, widest at somite 3, narrowing to somite 5. Somite 6 rectangular, as wide as somite 5; with distal median spine. Telson triangular, 1.3 times wider than long, apex rounded, margins slightly concave; surface granular.

Female abdomen broad, margins convex, widest at somite 5; surface covered with rounded granules, otherwise unarmed; telson triangular, 1.6 times wider than long, apex rounded.

G1 stout, tubular, slightly curved, apex rounded, not inclined mesially, aperture ovate; distal quarter with small spinules; reaching slightly beyond anterior margin of sternite 5. G2 about 1.1 times as long as G1; distal section as long as proximal section, broadly curved distally, with ‘twist’ at midlength, apex spiniform. Female gonopore on sternite 6 simple, subcircular, aperture closed by soft, flap ‘articulating’ along lateral margin of gonopore.

Etymology. Named for Swee Hee Tan, for his very useful advice and considerable expertise in the Parthenopidae.

Remarks. *Garthambrus tani* sp. nov. is the first parthenopid to be identified from New Zealand waters, although Takeda & Webber (2006) mentioned the presence of an undetermined species each of *Platylambrus* Stimpson, 1871 and *Tutankhamen* Rathbun, 1925 from the Kermadec Islands, of which the latter may be referable to *G. tani*. *Garthambrus tani* approaches *G. stellata* (Rathbun, 1906) (Taiwan, Hawaii, and French Polynesia) in the dense covering of stellate tubercles on the carapace (Fig. 27A) and swollen, peaked metabranchial regions (Fig. 25B). The new species is readily distinguished from *G. stellata*, however, by having smaller, less prominent carapace tubercles, shape of the G1 and ornamentation of the chelipeds and walking legs. The aperture of the G1 of *G. tani* is ovate rather than narrowly tapering and the apex is not inclined medially (compare Fig. 27E with Ng & Tan 1999: fig. 6A–B). The chelipeds of *G. tani* are comparatively smoother than in *G. stellata*, having an even scattering of small tubercles (Fig. 26E–F) rather than the dense, coarse tubercles that cover all surfaces (in addition to the tuberculate or dentate margins present in both species). Similarly, the ambulatory legs of *G. tani* have smooth, rather than densely granular lateral surfaces; and smooth or slightly irregular, rather than tuberculate or prominently dentate, dorsal and ventral margins of the carpi and propodi (Fig. 27B–D).

The specimens agree well in most respects. The female differs from males in having shorter chelipeds, less gaping right cheliped fingers, in having lower teeth along the inner margin of the cheliped merus and a less distinct tubercle on the posterior slope of the cardiac-intestinal region. The former two differences are likely to be attributable to sexual dimorphism, whereas the latter two differences are probably related to allometry. Females evidently mature at a small size, with the 8.2 mm cl female paratype carrying numerous ‘black-eyed’ stage eggs of 0.4 mm diameter.

In their brief outline of the fauna of New Zealand seamounts and hydrothermal vents, Clark & O’Shea (2001) mentioned the presence of *Tutankhamen* sp. (based on the holotype of *G. tani*), which Martin & Haney (2005) interpreted to originate from a hydrothermal vent. The type locality of *G. tani*, Tumokemoke Seamount, however, is not currently known to be an active hydrothermal vent site.

Distribution. Presently known only from Tumokemoke Seamount and the Kermadec Islands, New Zealand; 398–474 m.

Family PLAGUSIIDAE Dana, 1851

Miersiograpsus australiensis Türkay, 1978

(Fig. 5D)

Litocheira kingsleyi. — Griffin & Brown 1976: 255–256 [Not *L. kingsleyi* (Miers, 1885)].

Miersiograpsus australiensis Türkay, 1978: 138, figs 4–6 [type locality: E of Brush Island, New South Wales, Australia, 35°34'S, 150°45'E]. — Crosnier 2001: 795, figs. 8, 9. — Davie 2002: 438.

Material examined. *Rock Garden cold seep*: NIWA 29390, 1 male (cl 11.4 mm, cw 11.8 mm), 1 female (cl 11.2 mm, cw 11.5 mm), 40°02.41–02.65'S, 178°08.67–08.91'E, 749–787 m, TAN0616/12, 4 Nov 2006.

Remarks. *Miersiograpsus australiensis* is recorded for the first time from New Zealand waters. Previous records are from southeastern Australia (35°34'S) and New Caledonia (Türkay 1978; Crosnier 2001), so the present specimens also represent the southernmost records and the first records outside the Tasman Sea. *Miersiograpsus australiensis*, with a New Zealand–Australian distribution, has been misidentified as its southern African congener, *M. kingsleyi* (Miers, 1885) (Griffin & Brown 1976, as *Litocheira*). The distributions of *Miersiograpsus* species parallel those of *Neopilumnoplax heterochir* (Studer, 1883) and *N. nieli* **sp. nov.**, from southwestern Africa and New Zealand–Australia, respectively.

Distribution. Southeastern Australia, New Caledonia and now from eastern New Zealand; 441–787 m.

Family PORTUNIDAE Rafinesque, 1815

Ovalipes molleri (Ward, 1933)

(Fig. 5B)

Aeneacancer molleri Ward, 1933: 381, pl. 23: fig. 11 [type locality: S of Montague Island, New South Wales, Australia]. — McNeill 1953: 93, pl. 7: figs 1–2.

Ovalipes molleri. — Stephenson & Rees 1968: 237–239, fig. 1H, 2G, 3G, 4G, pl. 37A, 40B, 41B, 42H. — McLay 1988: 210, fig. 46. — Davie 2002: 460–461. — Naylor *et al.* 2005: 26–27. — Ahyong *et al.* 2007: 173.

Ovalipes ?molleri. — Clark & O'Shea 2001: 15.

Material examined. *Main Cavalli Seamount*: NIWA 3582, 2 males (cl 25.0 mm; 1 damaged), 34°04.32–04.74'S, 174°04.08–04.75'E, 630–560 m, KAH0204/21, 16 Apr 2002; NIWA 3583, 5 males (cl 9.6–19.8 mm), 34°07.21–06.75'S, 174°05.64–06.01'E, 554–540 m, KAH0204/27, 16 Apr 2002.

Knights Terrace: NIWA 3581, 1 male (cl 18.0 mm), 1 female (cl 31.0 mm), 34°57.81–58.44'S, 175°12.64–12.63'E, 614–602 m, KAH0204/01, 13 Apr 2002.

Rumble III Seamount: NIWA 13161, 1 male (cl 48.6 mm), 35°44.03'S, 178°26.06'E, 216–460 m, KAH0011/21, 2 Nov 2000.

Rangatira Knoll: NMNZ Cr7223, 1 male (cl 75.6 mm), 37°16.5'S, 176°52.6'E, 238 m, gill net, FV *Francis*, O. Pool.

Louisville Ridge: NMNZ, 1 ovigerous female (cl 42.0 mm), 38°26.1'S, 167°59'W, trip 823, tow 66, FV *Will Watch*, B. Rowe, 13 Jan 1995.

Reserve Bank, Chatham Rise: NIWA 13151, 1 male (cl 43.2 mm), 43°35'24''S, 179°44'36''E, 395 m, N0873, 18 Dec 1976.

Remarks. Apart from *O. molleri*, two other species of *Ovalipes* are known from New Zealand waters: *O. catharus* (White, 1843) (mainland) and *O. elongatus* Stephenson & Rees, 1968 (Kermadec Islands), both from shallow water. The dorsal spines on the cheliped dactyli (Fig. 5B) and iridescent sheen on the carapace and pereopods immediately distinguish *O. molleri* from *O. catharus* and *O. elongatus*. The only other New Zealand brachyuran with an iridescent dorsal sheen, the portunid, *Nectocarcinus bennetti* Takeda & Miyake, 1969, differs in lacking a row of dorsal spines on the cheliped dactyli, and in bearing four instead of five ante-

rolateral carapace spines. Additionally, *N. bennetti* generally lives at shallower depths: 20–480 m, but usually at 60–180 m (McLay 1988; Ah Yong *et al.* 2007). *Ovalipes molleri* is the only portunid presently known from New Zealand seamounts.

Distribution. Eastern Australia and New Zealand, from the Chatham Rise to the Louisville Ridge, outer Bay of Plenty and Cavalli seamounts; 70–630 m (Ah Yong *et al.* 2007; this study).

Family XANTHIDAE MacLeay, 1838

Miersiella haswelli (Miers, 1886)

(Figs 5F, 29E–F)

Medaeus haswelli 1886: 117, pl. 11: fig. 2 [type locality: Twofold Bay, New South Wales, Australia; 274.5 m]. — McNeill 1953: 94–95, pl. 7: figs 3–4.

Miersiella haswelli. — Guinot 1967: 359–362, figs 17–20. — Davie 1997: 365; 2002: 536. — Poore 2004: 472, fig. 150f. — Takeda & Webber 2006: 208–210, fig. 9B.

Material examined. *Mahina Knoll*: NIWA 6760, 2 males (cl 6.7–7.8 mm), 2 females (cl 6.9–7.1 mm; larger ovigerous), 37°21.34–21.29'S, 177°05.98–06.22'E, 260–280 m, TAN0413/130, 14 Nov 2004.

Remarks. Takeda & Webber (2006) recently reported *M. haswelli* from the Kermadec Islands at depths of 135–201 m. As reported by McNeill (1953), the granulation on the outer surface of the palms is more rugose in the females than in males. The present specimens, the first from off mainland New Zealand, were collected together with *Pycnoplax meridionalis* (Rathbun, 1923), and *Mathildella mclayi* **sp. nov.**

Distribution. Northeastern Indian Ocean, Christmas Island, Philippines, Japan, New Caledonia, south-eastern Australia, the Kermadec Islands, Norfolk Ridge and now from off mainland New Zealand; 80–527 m.

Family XENOGRAPSIDAE Ng, Davie, Schubart & Ng, 2007

Xenograpsus ngatama McLay, 2007

(Fig. 5E)

Xenograpsus ngatama McLay, 2007: 15–20, figs 6A–F, 7A–E, 8A–B, 9A–B [type locality: Macauley Caldera, Kermadec Islands]. — Ng *et al.* 2007: 239, 241, fig. 2C.

Material examined. *NW of Kermadec Ridge*: NIWA 18014, 2 males (cl 15.5–16.7 mm), 25°53.41–53.61'S, 177°11.10–11.07'E, 136–236 m, TAN0411/10, 4 Oct 2004.

Macauley Caldera, Kermadec Islands: NIWA 18013, male holotype (cl 15.6 mm), 30°02.06'S, 181°17.36'E, 161 m, KOK0505/43, 15 Apr 2005; NIWA 18020, female paratype (cl 11.7 mm), 30°02.01'S, 181°17.37'E, 156 m, KOK0505/49, 17 Apr 2005; NIWA 18021, 5 males (cl 10.5–14.2 mm), 30°02.01'S, 181°17.37'E, 156 m, KOK0505/49, 17 Apr 2005; NIWA 18022, male paratype (cl 19.0 mm), 30°02.16'S, 181°17.63'E, 109 m, KOK0505/45, 16 Apr 2005.

Brothers Seamount: NIWA 27854, 1 male (cl 25.9 mm), 1 damaged male, 1 damaged female, 35°44.22–44.04'S, 178°29.72–29.63'E, 270–239 m, TAN0107/128, 21 May 2001.

Remarks. *Xenograpsus ngatama* was described in detail by McLay (2007) from material collected at hydrothermal vents along the Kermadec Ridge including Brothers Seamount and the Macauley Caldera. Although initially placed in the Varunidae, Ng *et al.* (2007) placed *Xenograpsus* and its three known species in a new family, Xenograpsidae.

Distribution. Outer Bay of Plenty to northwest of the Kermadec Ridge (25°53'S); 139–270 m.

Discussion

The deepwater brachyuran fauna of seamounts and chemosynthetic habitats from the vicinity of mainland New Zealand is considerably richer than previously known, comprising 30 species representing 18 families and 26 genera. Two of these species were only recently described: *Gandalfus puia* McLay, 2007, and *Xenograpsus ngatama* McLay, 2007, from volcanic seamounts on the southern Kermadec Ridge. Additionally, *Euryxanthops chiltoni* Ng & McLay, 2007, and *Medaeops serenei* Ng & McLay, 2007, were recently described from Macauley caldera, located further to the north in the Kermadec Islands. Note also that *Macrophthalmus hirtipes* (Heller, 1862), a shore or near shore species, was collected from a shallow-water (30–40 m) hydrothermal vent off Whale Island, Bay of Plenty (Kamenev *et al.* 1993). As a shallow water species, *M. hirtipes* is not further discussed here.

Of the 30 species recorded, 8 species from 5 families are new to science: *Cyonomus clarki* is closest to the southeastern Australian species, *C. soela* Ahyong & Brown, 2003, and is the third species of the genus known from New Zealand. *Dicranodromia delli* is the first homolodromiid to be described from New Zealand waters, with closest morphological affinities to *D. spinulata*, from New Caledonia and now also New Zealand. *Trichopeltarion janetae* is closest to the extinct *T. greggi* Dell, 1969, from the Miocene of New Zealand, but also closely resembles *T. wardi* Dell, 1968b from southeastern Australia. *Ethusina rowdeni* **sp. nov.** and *E. castro* **sp. nov.** are closest to *E. challengerii* (widespread Indo-Pacific) and *E. huilianae* (French Polynesia), respectively, representing the first records of Dorippidae from New Zealand. *Mathildella mclayi* is the first representative of the genus from New Zealand and is closest to the widespread western Pacific species, *M. maxima* Guinot & Richer de Forges, 1981. *Neopilumnoplax nieli* most closely resembles *N. heterochir* (Studer, 1883) from western and southern Africa, and is the only known Pacific representative of the genus. *Garthambrus tani* (Parthenopidae) is the first parthenopid known from New Zealand, and is closest to *G. stellata* (Rathbun, 1906) from the northern and central Pacific. *Dicranodromia spinulata* (as already noted), *Intesius richeri* Crosnier & Ng, 2004 (Mathildellidae) and *Miersiograpsus australiensis* Türkay, 1978 (Plagusidae) are recorded for the first time from New Zealand. *Intesius richeri* was known from New Caledonia, and *M. australiensis* from New Caledonia and southeastern Australia. *Cyonomus aequilonius* Dell, 1971, previously known only from a single specimen from the Bay of Plenty, is now known to range at least as far south as the Chatham Rise. *Miersiella haswelli* (Miers, 1886) is recorded for the first time from off mainland New Zealand, though it is already known from the Kermadec Islands (Takeda & Webber 2006).

The majority of brachyurans from New Zealand seamounts and chemosynthetic habitats are ‘typical’ deepwater forms, though *Ovalipes*, *Ebalia* and *Bellidilia* comprise primarily shallow water species. Thirteen species are presently unique to New Zealand; seven species are shared only with eastern Australia, and an additional two species occur in both Australia and New Caledonia. Three species are shared only with New Caledonia, one ranges northwards to Indonesia and four have wide Indo-West Pacific ranges. At species level, a large proportion of the seamount and seep brachyurans (43%) are apparent New Zealand endemics, with strongest affinities with the eastern Australian fauna (37%), corroborating trends observed for the overall New Zealand crab fauna by Dell (1968c). At the generic level, however, congeners of most species reported herein occur widely in the Indo-West Pacific (including eastern Australia and New Caledonia), suggesting that the New Zealand seamount and seep brachyuran fauna is extension of the tropical Indo-West Pacific fauna. Exceptions are *Miersiograpsus australiensis* and *Neopilumnoplax nieli*, whose nearest congeners occur off temperate southern to southwestern Africa.

Of the known New Zealand seamount and cold-seep brachyurans, only *Gandalfus puia* and *Xenograpsus ngatama* are obligate hydrothermal vent associates, with these species belonging to clades that have apparently evolved in conjunction with these unusual habitats (McLay 2007; Ng *et al.* 2007). Other species have more generalised habitat preferences, so the presence of several other species at hydrothermal vents (e.g., *Pycnoplax meridionalis*, *Intesius richeri*) or cold seeps (e.g., *Cyrtomaia cornuta*, *Dorhynchus ramusculus*, *Pycno-*

plax victoriensis, *Neopilumnoplax nieli*, *Trichopeltarion janetae*) can be regarded as incidental associations. Other New Zealand deepwater crabs, presently known only from typical shelf habitats, can be expected to also occur on seamounts. Nevertheless, that 33% (10 of 30 species) of the known New Zealand seamount and cold-seep brachyurans have only been recently discovered (i.e., McLay 2007; this study) indicates that species richness is probably strongly underestimated. Most specimens were collected via trawls and coarse mesh sleds, so future sampling on complex substrates, using finer mesh gear or traps will no doubt yield additional species.

Key to deepwater Brachyura known from New Zealand seamounts and chemosynthetic habitats

1. Carapace distinctly elongated, pod-shaped, almost twice as long as wide. (Fig. 1E, 28F) *Lyreidus tridentatus*
- Carapace wider than long or little longer than wide 2
2. Carapace subglobular and without spines 3
- Carapace shaped otherwise; if rounded in dorsal outline, surface with spines 4
3. Posterior projection of carapace not protruding posteriorly beyond adjacent projections. (Fig. 17C–D)
- *Ebalia tuberculosa*
- Posterior projection of carapace protruding posteriorly beyond adjacent projections. (Fig. 17A–B).....
- *Bellidilia cheesmani*
4. P5 markedly shorter than P2–3, and usually held above carapace. P5 dactylus shorter than 1/3 length of P2–3 dactyli 5
- P5 not markedly shorter than P2–3, not held above carapace. P5 dactylus length at least 2/3 length of P2–3 dactyli 12
5. Carapace almost square 6
- Carapace longitudinally ovate, rectangular or trapezoid 7
6. Rostrum shorter than eyes. (Fig. 1D, 6)..... *Cymonomus clarki*
- Rostrum longer than eyes. (Fig. 1F) *Cymonomus aequilonius*
7. Frontal region of carapace with slender median spine and pair of long, antler like spines, one at each anterolateral angle. P4 as long as P3. (Fig. 1A) *Dagnaudus petterdi*
- Frontal region of carapace with two broad trianguliform lobes; without antler like spine at each anterolateral angle. P4 less than half-length of P3 8
8. Frontal region of carapace between eyes with 2 elongate, triangular lobes 9
- Frontal region of carapace between eyes with 4 variously shaped lobes 11
9. Dactyli of first 2 walking legs (P2–3) longer than propodi. P4–5 dactyli and propodi forming chela. (Fig. 1B) *Homolodromia kai*
- Dactyli of first 2 walking legs (P2–3) shorter than propodi. P4–5 dactyli and propodi forming subchela ..
- 12
10. Carapace evenly and densely covered with minute spinules. P2–3 propodus length less than 7 times height. (Fig. 1C)..... *Dicranodromia spinulata*
- Carapace densely covered with minute spinules except in central region, which is smooth or granular. P2–3 propodus length exceeding 10 times height. (Fig. 2–4)..... *Dicranodromia delli*
11. Outer margin of orbit with long spine. (Fig. 12B, 13C–D, 14F–L)..... *Ethusina rowdeni*
- Outer margin of orbit with small tubercle. (Fig. 12A, 13A–B, 14A–E, 28A–B)..... *Ethusina castro*
12. Carapace subquadrate or almost square; lateral margins parallel..... 13
- Carapace otherwise 14
13. Carapace outerorbital angle produced to a slender spine. (Fig. 5D)..... *Miersiograpsus australiensis*

- Carapace outerorbital angle blunt. (Fig. 5E).....	<i>Xenograpsus ngatama</i>
14. Last pair of legs forming flattened swimming paddles. Carapace with iridescent sheen. (Fig. 5B)	<i>Ovalipes molleri</i>
- Last pair of legs similar to preceding legs, not forming flattened swimming paddles. Carapace without iridescent sheen	15
15. Carapace transversely subtriangular to pentagonal. (Fig. 25–27)	<i>Garthambrus tani</i>
- Carapace neither subtriangular nor transversely pentagonal	16
16. Marginal spines of carapace secondarily spinose	17
- Marginal spines of carapace, if present, simple, with smooth or granular margins	18
17. Lateral spine of carapace much longer than other marginal spines. Median frontal lobe similar to laterals, triangular. (Fig. 5A, 28D).....	<i>Trichopeltarion fantasticum</i>
- Lateral spine of carapace similar to other marginal spines. Median frontal lobe broader than laterals, apex rounded. (Fig. 7–11)	<i>Trichopeltarion janetae</i>
18. Eyes highly reduced, fused to orbits, immovable. Carapace margins unarmed (Fig. 5C)	<i>Gandalfus puia</i>
- Eyes well developed, movable. Carapace margins with 2 or more teeth or spines	19
19. Carapace frontal margin straight or slightly curved, unarmed or with small protrusions but without long spines or long teeth	20
- Carapace frontal margin composed of spines or teeth.....	26
20. Carapace frontal margin with four small teeth, one at each lateral margin and a median pair. (Fig. 17E, 28E).....	<i>Chaceon yaldwyni</i>
- Carapace frontal margin without teeth.....	21
21. Cheliped with 1 spine on inner margin of carpus	22
- Cheliped with 2 spines on inner margin of carpus.....	25
22. Carapace surface and outer surface of major cheliped palm granular, rough.....	23
- Carapace surface and outer surface of major cheliped palm smooth	24
23. Carapace regions well marked by network of distinct grooves. Male abdomen with somites 3–5 fused. (Fig. 5F, 29E–F).....	<i>Miersiella haswelli</i>
- Carapace regions faintly marked, without distinct grooves. Male abdomen with 7 freely articulating somites. (Fig. 15C–G).....	<i>Intesius richeri</i>
24. Second anterolateral spine of carapace recurved anteriorly. Fingers of cheliped black. (Fig. 15A, 29A) ...	<i>Pycnoplax meridionalis</i>
- Second anterolateral spine of carapace directed anterolaterally. Fingers of cheliped completely unpigmented or brown at tips. (Fig. 15B, 29B).....	<i>Pycnoplax victoriensis</i>
25. Carapace without epibranchial ridge. Endostome with 1 carina at each lateral margin. (Fig. 19–21, 29C) .	<i>Mathildella mclayi</i>
- Carapace with prominent epibranchial ridge. Endostome with 2 carinae at each lateral margin. (Fig. 22–24, 29D).....	<i>Neopilumnoplax nieli</i>
26. Carapace frontal margin with pair of flattened, triangular teeth separated by broad V- or U-shaped concavity	27
- Carapace frontal margin with 2 or 3 slender spines.....	28
27. Carapace surface covered with flattened, stellate tubercles. Adults not exceeding 15 mm carapace length. (Fig. 18A)	<i>Eurynome bituberculata</i>
- Carapace surface covered with simple tubercles or spines. Adults exceeding 50 mm carapace length. (Fig. 18B)	<i>Leptomithrax garricki</i>
28. Carapace pyriform. (Fig. 16B–C).....	<i>Dorhynchus ramusculus</i>
- Carapace circular or subcircular in outline	28
29. Last 3 pairs of walking legs (P3–5) flattened	29

- Last 3 pairs of walking legs (P3–5) subcylindrical. (Fig. 16A)..... *Cyrtomaia cornuta*
- 30. Carapace surface densely covered with small spines and short, fine setae. (Fig. 16E).....
 *Vitjazmaia latidactyla*
- Carapace surface with several isolated spines, otherwise granular. (Fig. 16D)..... *Platymaia maoria*

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FIGURE 28. A–B, *Ethusina castro* **sp. nov.**, ovigerous female holotype, cl 14.1 mm (NIWA 6067), dorsal and ventral views. C, *Trichopeltarion fantasticum* Richardson & Dell, 1964, female, cl 53.1 mm (NIWA 6754). D, *Trichopeltarion janetae* **sp. nov.**, male, cl 27.9 mm (NIWA 29650). E, *Chaceon yaldwyni* Manning, Dawson & Webber, 1990, 1 male, cl 55.2 mm (NIWA 6716). F, *Lyreidus tridentatus* De Haan, 1841, male, cl 38.5 mm (NIWA 6720). Photo credits: R. Stewart (A–C, E–F), C. Marriot (D).



FIGURE 29. A, *Pycnoplax meridionalis* (Rathbun, 1923), male, cl 20.9 mm (NIWA 29658). B, *Pycnoplax victoriensis* (Rathbun, 1923), male, cl 10.4 mm (NIWA 6736). C, *Mathildella mclayi* **sp. nov.**, female paratype, cl 11.9 mm (NIWA 6769). D, *Neopilumnoplax nieli* **sp. nov.**, male paratype, cl 15.0 mm (NIWA 29651). E, *Miersiella haswelli* (Miers, 1886), male, cl 7.8 mm (NIWA 6760). F, *Miersiella haswelli* (Miers, 1886), ovigerous female, cl 7.1 mm (NIWA 6760). Photo credits: C. Marriot (A, D), R. Stewart (B–C, E–F).