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Porcellanidae (Crustacea: Decapoda: Anomura) from Christmas and Cocos (Keeling) Islands

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Abstract. Eight porcellanid species are reported from Christmas Island and the Cocos (Keeling) Islands in the southeastern Indian Ocean, based on specimens collected by three expeditions to the islands from 2010 to 2012. Of them, five species are new local records: *Petrolisthes asiaticus* (Leach, 1820), *P. bispinosus* Borradaile, 1900, *P. fimbriatus* Borradaile, 1898, *P. pubescens* Stimpson, 1858, and *P. scabriculus* (Dana, 1852). *Petrolisthes bispinosus* and *P. fimbriatus* are reported for the first time from the Indian Ocean.

Key words. Crustacea, Decapoda, Porcellanidae, eastern Indian Ocean, new records

INTRODUCTION

The family Porcellanidae is a group of crab-shaped anomuran crustaceans and belongs to the superfamily Galatheoidea together with other three familes, Galatheidae, Munididae, and Munidopsidae (Ahyong et al., 2010). The porcellanids are commonly found in rocky and coral reefs of temperate and tropical coasts. The best known genus is probably *Petrolisthes* Stimpson, 1858, which is the most species-rich in the family with 107 species currently recognised (Osawa & McLaughlin, 2010; Osawa & Uyeno, 2013; Naderloo & Apel, 2014).

Although local porcellanid faunas in the Indian Ocean have been sporadically studied (e.g., Haig, 1965, 1966a, 1966b, 1983; Tirmizi et al., 1989; Hiller et al., 2010), many of these studies focused on the western areas such as the continental coasts from India to Iran, Madagascar, and Seychelles. For Christmas Island in the southeastern Indian Ocean, there are only three reports on porcellanids. In his list of decapod crustaceans from the island, Calman (1909) firstly recorded three species: *Petrolisthes coccineus* (Owen, 1839) with doubt, *Petrolisthes dentatus* (H. Milne Edwards, 1837), and *Pachycheles sculptus* (H. Milne Edwards, 1837). Johnson (1960) subsequently added *Neopetrolisthes ohshimai* Miyake, 1937a (as the genus *Petrolisthes* Stimpson, 1858) to the local fauna. Most recently, Orchard (2012) included *Petrolisthes lamarckii* (Leach, 1820) in his book "Crabs of Christmas Island". On the other hand, there are no reports on porcellanids from the Cocos (Keeling) Islands, which is the island group nearest to Christmas Island, albeit distant by about 900 km.

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This paper reports on porcellanids collected by three expeditions to Christmas and Cocos (Keeling) Islands from 2010 to 2012, carried out by staff of the Lee Kong Chian Natural History Museum (formerly Raffles Museum of Biodiversity Research), National University of Singapore, supported by staff of the Parks Australia and the Queensland Museum. The collection is small, but includes five species that represent new records from those islands.

The material examined is deposited in the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum, National University of Singapore. Carapace length (cl), an indication of specimen size, was measured along the dorsal midline from the tip of the rostrum to the posterior margin of the carapace. For the species reported in this paper, only original references, primary synonyms and regional reports are provided.

SYSTEMATIC ACCOUNT

Family PORCELLANIDAE Haworth, 1825

Neopetrolisthes maculatus (H. Milne Edwards, 1837)
(Fig. 1A, B)

Porcellana maculata H. Milne Edwards, 1837: 253 [type locality: New Ireland, by subsequent designation; see Haig (1965)]
Neopetrolisthes ohshimai Miyake, 1937a: 35, unnumbered fig. [type locality: Ishigaki Island, Ryukyu Islands]
Petrolisthes ohshimai – Johnson, 1960: 164

Material examined. Christmas Island: stn CI-DIV-10, off West White Beach, 10°27.733'S, 105°35.054'E, sand and gravel bottom, 29 January 2010, 1 male (cl 10.8 mm), ZRC 2013.0821; stn CI-D05-2011, off West White Beach, 10° 27.733'S, 105°35.054'E, 1–12.3 m depth, sand and gravel bottom, 25 March 2011, 1 ovigerous female (cl 11.4 mm), ZRC 2013.0822.

Colour in life. Carapace and abdomen white, with numerous reddish purple or red spots; frontal and lateral regions with slightly or distinctly smaller spots than those on other regions; gastric and branchial regions with brown shades around spots. Ocular peduncles and third maxillipeds white, with few small, reddish purple or red spots. Chelipeds generally white, with small to moderately large, reddish purple or red spots on dorsal surfaces of merus, carpus and palm; carpus with spots slightly or distinctly larger on median part than on marginal parts, median part also with brown shades around spots; palm with small and moderately large, purple or red spots and bearing brown shades around spots on posterior half. Ambulatory legs white; merus with numerous small, reddish purple or red spots on proximal half to two-thirds of lateral surface.

Distribution. Widely distributed in the Indo-West Pacific. From east Africa to Christmas Island and Western Australia, Bismarck Archipelago, Queensland, Moluccas, Palau, Taiwan, southern Japan, New Caledonia, Marshall and Fiji Islands. Shallow subtidal; coral and rocky reefs, associated with large sea anemones (*Cryptodendrum*, *Entacmaea*, *Gyrostoma*, *Heteractis*, *Stichodactyla*), typically found in a heterosexual pair (Davie, 2002; Osawa & Chan, 2010; Poupin & Junker, 2010).

Remarks. As mentioned above, the two specimens examined have different colour and spot patterns. The colour of the spots of the female specimen (ZRC 2013.0822) is red, whereas that of the male (ZRC 2013.0821) is purple. The spots on the carapace, and carpus and palm of the cheliped are sparser, larger, and more irregular in the female than the male.

Although *N. ohshimai* Miyake, 1937 was described on the basis of a heterosexual pair of the uneven large blotch-pattern, there are intraspecific variations in the colour and size of the spots and *N. ohshimai* is now regarded as a junior synonym of *N. maculatus* (Haig, 1965, 1979; Osawa & Fujita, 2001). As shown in the larval study of *N. maculatus* by Fujita & Osawa (2003), differences in colouration are not related to each sex and a male/female pair of similar colouration has been found in a same host. The spot patterns of the present specimens from Christmas Island fall into the range of variation between the two colour forms of *N. maculatus* illustrated by Osawa & Chan (2010: figs. 65, 66).

Pachycheles spinipes (A. Milne-Edwards, 1873)
(Fig. 1C, D)

Porcellana spinipes A. Milne-Edwards, 1873: 262 [type locality: Upalu, Samoa]
Porcellana sollasi Whitelegge, 1897: 144, pl. 7, fig. 3, 3a [type locality: Funafuti Atoll, Ellice Islands]
? *Pachycheles sculptus* – Calman, 1909: 706

Material examined. Christmas Island: stn CI3-15, Flying Fish Cove, 10°25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 10 February 2012, 2 males (cl 2.0, 2.6 mm), ZRC 2013.0823; stn CI3-17, Flying Fish Cove, 10°25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 11 February 2012, 1 male (cl 2.5 mm), ZRC 2013.0824.

Colour in life. Carapace white with some dark red blotches and spots, or dark red with broad white stripe on midline. Abdomen white. Ocular peduncles white or pale red, corneas red. Third maxillipeds entirely white. Chelipeds dorsally mostly white, or red with white parts distally on palm and dactylus. Ambulatory legs generally dark red on lateral surface, with white bands on merus, carpus and propodus; merus with proximal and distal bands, proximal much broader than distal; carpus with narrow band distally; propodus with proximal and distal bands subequal in width; dactylus pale brown.

Distribution. Christmas Island, Nansha and Xisha Islands, Guam, Caroline, Loyalty Islands, and Ellice Islands, Samoa; coral reefs, 2–20 m (Osawa, 2007).

Remarks. Although Haig (1966c) treated the record of *Pachycheles sculptus* by Calman (1909) from Christmas Island as misidentification of *P. spinipes*, she or other subsequent authors never mentioned the reason of the identification in their publications. The present specimens confirm the occurrence of *P. spinipes* at Christmas Island. *Pachycheles spinipes* is unique in the genus in having the carapace with elevated squamae on the gastric region and chelipeds and ambulatory legs bearing strongly projecting, thorn-shaped tubercles (see Haig, 1966c; Osawa, 2007).

The specimens examined have two colour forms as shown in Fig. 1C, D. The possession of a median white stripe on the carapace and intraspecific variations of the colour pattern are also noted and illustrated by Haig (1965) and Osawa & Chan (2010) for other congeners, *P. johnsoni* Haig, 1965, *P. pisoides* (Heller, 1865), and *P. sculptus*.

Petrolisthes asiaticus (Leach, 1820)
(Fig. 1E)

Pisidia asiatica Leach, 1820: 54 [type locality: Isle of France (Mauritius)]
Petrolisthes leporinoides Ortmann, 1892: 263 [type locality: South Seas]
Petrolisthes yaeyamensis Miyake, 1937b: 157, unnumbered fig. [type locality: Ishigaki Island, Ryukyu Islands]

Material examined. Cocos (Keeling) Islands: stn CK-08, Trannies Beach, West Island, 12°08.507'S, 96°49.095'E, intertidal, sandy beach with coral rubbles, 20 March 2011, 4 males (cl 8.1–9.8 mm), 1 female (cl 6.9 mm), ZRC 2013.0825; stn CK-25, Off William Keeling Crescent, Settlement, West Island, 12°11.544'S, 96°49.884'E, intertidal, sandy beach to reef flat with sea grass beds and rocky bottom, 24 March 2011, 3 males (cl 3.9–6.6 mm), 1 female (cl 3.8 mm), 1 ovigerous female (cl 6.8 mm), ZRC 2013.0826; stn CK2-09, Westward reef flats, behind Tropika Restaurant, West Island, 12°11.297'S, 96°49.726'E, intertidal, exposed reef flats with sea grass patches, 6 February 2012, 1 male (cl 8.7 mm), 1 ovigerous female (cl 7.2 mm), ZRC 2013.0827;

stn CK2-21, Trannies Beach, West Island, 12°08.507'S, 96°49.095'E, intertidal, 11 February 2012, 1 juvenile (cl 2.9 mm), 1 male (cl 10.4 mm), 1 female (cl 8.4 mm), 1 ovigerous female (cl 6.6 mm), ZRC 2013.0828.

Colour in life. The colouration of the present material agrees well with that provided by Osawa & Chan (2010: fig. 86), although the ground colouration varies from brown to bluish brown.

Distribution. Widely distributed in the Indo-West Pacific. Indian Ocean: Seychelles, Mauritius, Gulf of Thailand, Sumatra, Moluccas. Pacific Ocean: Philippines, Guangxi Province in China, Taiwan, southern Japan (from Izu Islands to Ryukyu Islands), Mariana Islands, Palau, northern Australia, Caroline Islands, New Caledonia, Fiji, Tuvalu (Ellice Islands), Rotuma, Western Samoa, Phoenix Islands. Intertidal, found under rocks (Osawa & Chan, 2010). Now from the Cocos (Keeling) Islands in the southeastern Indian Ocean.

Remarks. The specimens examined agree well with the previous descriptions of *P. asiaticus* (e.g., Miyake, 1942; Kropp, 1984; Osawa & Chan, 2010).

Fig. 1. Entire animal in dorsal view, showing colouration in life. A, *Neopetrolisthes maculatus* (H. Milne Edwards, 1837), male (cl 10.8 mm), ZRC 2013.0821, stn CI-DIV-10; B, *Neopetrolisthes maculatus* (H. Milne Edwards, 1837), ovigerous female (cl 11.4 mm), ZRC 2013.0822, stn CI-D05-2011; C, *Pachycheles spinipes* (A. Milne-Edwards, 1873), male (cl 2.6 mm), ZRC 2013.0823, stn CI3-15; D, *Pachycheles spinipes* (A. Milne-Edwards, 1873), male (cl 2.0 mm), ZRC 2013.0823, stn CI3-15; E, *Petrolisthes asiaticus* (Leach, 1820), male (cl 8.7 mm), ZRC 2013.0827, stn CK2-09; F, *Petrolisthes fimbriatus* Borradaile, 1898, male (cl 4.1 mm), ZRC 2013.0834, stn CI3-15.

Petrolisthes asiaticus is the sole porcellanid species collected from the Cocos (Keeling) Islands, but it was not obtained by the present expeditions to Christmas Island.

The Futuna specimen referred to *P. haswelli* Miers, 1884 by Poupin & Junker (2010: 129, fig. a) actually belongs to *P. asiaticus* because it has the characteristic colouration of the latter species and a dorsomedian longitudinal crest of short ridges on the palm of the cheliped.

***Petrolisthes bispinosus* Borradaile, 1900**
(Fig. 2A, B)

Petrolisthes bispinosus Borradaile, 1900: 422 [type locality: Lifu, Loyalty Islands]

Material examined. Christmas Island: stn CI-D06-2011, Thunderdome Cave, 10°27.906'S, 105°36.465'E, 3–16.6 m depth, submarine cave, 26 March 2011, 1 female (cl 7.2 mm), ZRC 2013.0829.

Colour. Although the fresh colouration of the present specimen was not recorded, the colour pattern in preserved condition generally agrees with that of *P. bispinosus* provided by Haig & Kropp (1987), particularly in having reticulated markings on the carapace and chelipeds.

Distribution. Known from various tropical islands in the western Pacific: Mariana, Caroline, Marshall, Loyalty, Howland, Phoenix, and Society Islands, Samoa. Intertidal to a depth of 6 m; generally found under small blocks and boulders or on pieces of dead coral rubble (Haig & Kropp, 1987). The present specimen from Christmas Island represents the first record of *P. bispinosus* from the Indian Ocean.

Remarks. There were no illustrations of *P. bispinosus* until Haig & Kropp (1987) adequately redescribed the species. Although the present specimen agrees well with the Haig & Kropp's (1987) description, additional illustrations of the poorly known species are herein provided to show the specific colour pattern and some morphological characters on the carapace.

General morphology of the carapace and pereopods links *P. bispinosus* to *P. moluccensis* (De Man, 1888), but the armature on the carapace and ambulatory legs readily distinguishes the two species. The epibranchial spines on the carapace are two pairs in *P. bispinosus* (Fig. 2B), instead of one pair in *P. moluccensis*. The outer orbital angle is acutely pointed in *P. bispinosus* (Fig. 2B), but it is not produced in *P. moluccensis*. The ventral margin of the dactylus of each ambulatory leg is armed with four corneous spines in *P. bispinosus*, unlike only three spines in *P. moluccensis* (see Osawa & Chan, 2010: figs. 117, 118).

***Petrolisthes fimbriatus* Borradaile, 1898**
(Fig. 1F)

Petrolisthes lamarckii var. *fimbriatus* Borradaile, 1898: 466 [type locality: Rotuma, South Pacific]

Material examined. Christmas Island: stn CI-03, Ethel Beach, 10°27.805'S, 105°42.443'E, intertidal, limestone base rock, 22 January 2010, 1 male (cl 5.7 mm), 1 ovigerous female (cl 6.2 mm), ZRC 2013.0830; stn CI-09-2011, Ethel Beach, 10°27.805'S, 105°42.443'E, intertidal, limestone base rock, 21 March 2011, 1 male (cl 2.8 mm), ZRC 2013.0831; stn CI-17-2011, Waterfall Bay (Christmas Island Resort), 10°27.54'S, 105°42.30'E, intertidal, 23 March 2011, 1 juvenile (cl 2.0 mm), 2 ovigerous females (cl 5.4, 6.2 mm), ZRC 2013.0832; stn CI-27-2011, Waterfall Bay (Christmas Island Resort), 10°27.54'S, 105°42.30'E, intertidal, 25 March 2011, 1 male (cl 6.7 mm), ZRC 2013.0833; stn CI3-15, Flying Fish Cove, 10° 25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 10 February 2012, 1 male (cl 4.1 mm), 1 ovigerous female (cl 3.2 mm), ZRC 2013.0834; stn CI3-16, Flying Fish Cove, 10°25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 11 February 2012, 1 female (cl 4.3 mm), 1 ovigerous female (cl 5.7 mm), ZRC 2013.0835; stn CI3-17, Flying Fish Cove, Flying Fish Cove, 10°25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 11 February 2012, 1 juvenile (cl 1.6 mm), 6 males (cl 2.5–4.1 mm), 3 ovigerous females (cl 3.9–6.1 mm), ZRC 2013.0836; stn CI3-23, Waterfall Bay, 10°27.54'S, 105°42.30'E, intertidal, boulders, rocks and sand, with pools at low tide, and few live corals, 13 February 2012, 2 males (cl 5.9, 6.3 mm), 2 ovigerous females (cl 5.1, 6.7 mm), ZRC 2013.0837; stn CI3-25, Flying Fish Cove, 10°25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 14 February 2012, 1 female (cl 5.8 mm), ZRC 2013.0838.

Colour in life. Carapace and abdomen brown, with numerous pale blue spots and some dark brown spots. Ocular peduncles white with brown blotch on anterior part. Third maxillipeds generally brown, with pale blue markings on ischium and merus; propodus and dactylus orange. Chelipeds brown, with numerous pale blue spots on dorsal surface; carpus and palm with some dark brown and orange spots; distal tip of fixed finger orange; dactylus orange on proximal part of cutting edge and distal tip. Ambulatory legs greenish brown on lateral surface, with irregular pale blue spots on merus and carpus; propodus reddish brown, with white bands on submedian and distal parts; dactylus white, with pale red blotch medially

Distribution. Nansha and Xisha Islands, Philippines, New Guinea, New Caledonia, Caroline, Marshall, Ellice, Tonga, and Phoenix Islands. Intertidal, underneath rocks on reef flats (Osawa, 2007). The present material from Christmas Island represents the first record of *P. fimbriatus* from the Indian Ocean.

Remarks. As discussed by Osawa (1998), *P. fimbriatus* is closely allied to *P. obtusifrons* Miyake, 1937c (as *P. varicolour* Osawa, 1998), but is best distinguished from the latter by the convex instead of subparallel, median

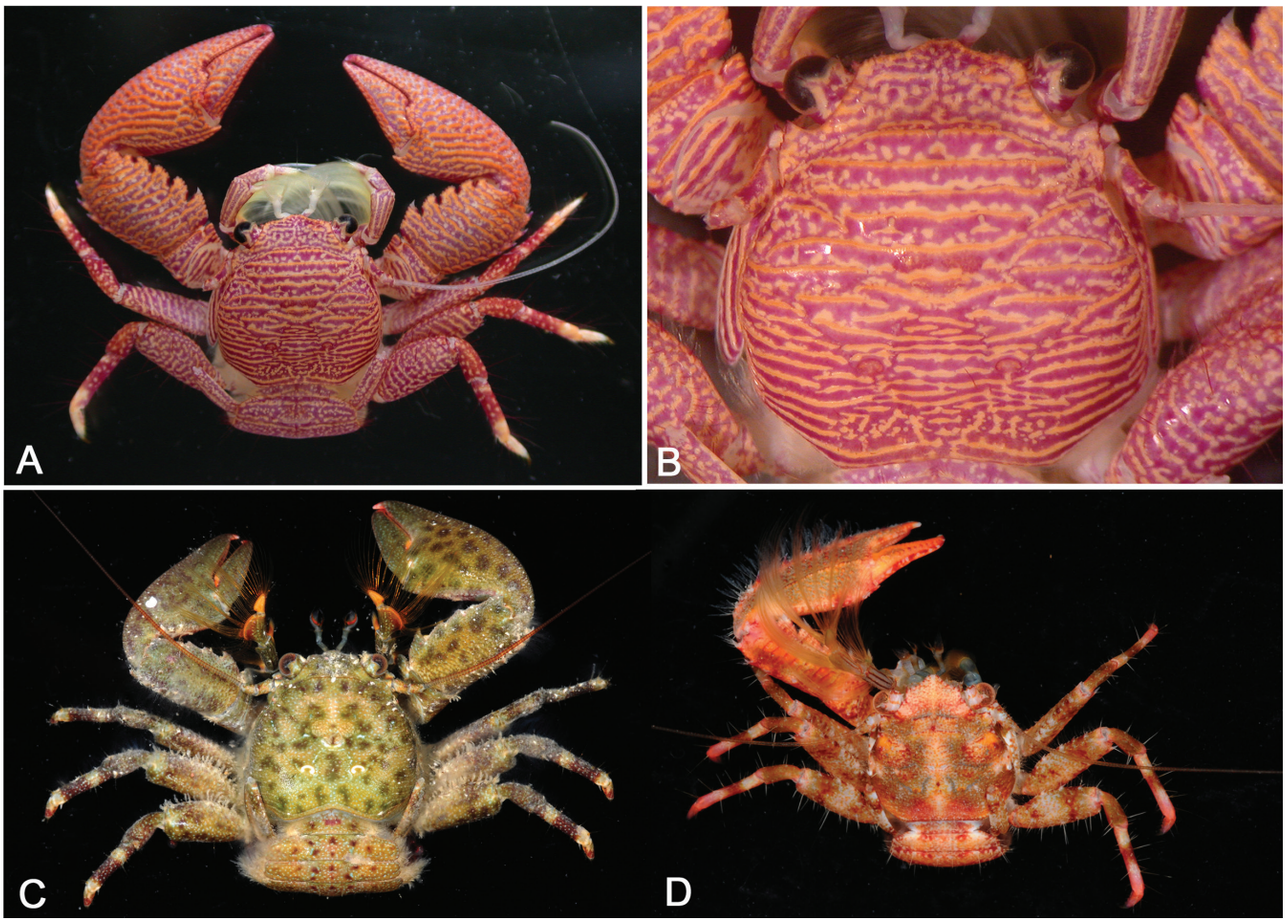

Fig. 2. Entire animal in dorsal view, showing colouration in preservative (A) or life (C, D). A, *Petrolisthes bispinosus* Borradaile, 1900, female (cl 7.2 mm), ZRC 2013.0829, stn CI-D06-2011; B, same, showing carapace enlarged; C, *Petrolisthes lamarckii* (Leach, 1820), ovigerous female (cl 10.2 mm), ZRC 2013.0840, stn CI-09-2011; D, *Petrolisthes scabriculus* (Dana, 1852), ovigerous female (cl 5.6 mm), ZRC 2013.0842, stn CI-D12-2011.

branchial margins of the carapace. For fresh colouration, *P. fimbriatus* differs from *P. obtusifrons* in that the pale blue or white markings on the carapace and chelipeds are generally uniform and rounded rather than irregular-shaped, although the ground colour of the latter species is variable (see Osawa & Chan, 2010: fig. 119; Osawa & McLaughlin, 2010: fig. 2C). The colouration of the present material of *P. fimbriatus* agrees well with that of the Futuna specimen provided by Poupin & Junker (2010: 127, fig. a).

***Petrolisthes lamarckii* (Leach, 1820)**
(Fig. 2C)

Pisidia lamarckii Leach, 1820: 54 [type locality: not specified]
Porcellana dentata H. Milne Edwards, 1837: 251 [type locality: Java]
Porcellana pulchripes White, 1847: 129 [nomen nudum]
Porcellana speciosa Dana, 1852: 417 [type localities: Drummond Island, Kingsmills Group; Wake Island; Mangsi Islands, Philippines; Raraka, Tuamotu Archipelago]
Porcellana bellis Heller, 1865: 76 [type locality: Nicobar]
Petrolisthes dentatus – Calman, 1909: 706
Petrolisthes lamarckii – Orchard, 2012: 57

Material examined. Christmas Island: stn CI-31, Ethel Beach, 10°27.805'S, 105°42.443'E, intertidal, limestone base rock, 2 February 2010, 1 male (cl 10.7 mm), 2 females (cl 4.6, 11.4 mm), 1 ovigerous female (cl 9.5 mm), ZRC 2013.0839; stn CI-09-2011, Ethel Beach, 10°27.805'S, 105°42.443'E, intertidal, limestone base rock, 21 March 2011, 1 ovigerous female (cl 10.2 mm), ZRC 2013.0840.

Colour in life. Based on an ovigerous female (cl 10.2 mm, ZRC 2013.0840) from stn CI-09-2011. Carapace greenish brown, with irregular-shaped dark brown blotches symmetrically arranged and with numerous white spots. Abdomen brown, with irregular transverse line of reddish brown blotches on each segment and covered with white spots. Ocular peduncles greenish brown. Third maxillipeds greenish brown dark greenish brown; dactylus and ventral margin of propodus orange. Chelipeds greenish brown with irregular dark brown blotches on dorsal surface; tips of fingers and proximal end of cutting edge of dactylus pinkish orange. Ambulatory legs generally greenish brown with numerous white spots on lateral surface; merus and carpus with irregular dark brown blotches; propodus dark reddish brown, with white bands proximally and distally; dactylus red, with proximal white patch.

Distribution. Throughout the tropical Indo-West Pacific, westward to eastern African coast and Red Sea, eastward

to Line and Tuamotu Islands; intertidal, found under rocks (Osawa & Chan, 2010).

Remarks. Calman (1909) listed *Petrolisthes dentatus* from Christmas Island. Kropp (1984) mentioned that a photograph of the type of *Porcellana dentata* shows four fairly well-developed teeth on the dorso-anterior margin of the carpus of the cheliped which the late Janet Haig informed him is suggestive of *Petrolisthes haswelli*. Nevertheless, as noted by Osawa & Chan (2010), this feature can be present in *P. lamarckii*.

The present specimens all were collected from Ethel Beach, and have the following characters: the rostrum is weakly trilobate; a pair of the epigastric spines are small or well-developed; the carpus of each cheliped is armed with four or five teeth on the dorso-anterior margin, the distal-most tooth is occasionally obsolete. The female (cl 11.4 mm, ZRC 2013.0839) from stn CI-31 differs from the other specimens examined in the colouration of the chela and the armature of the second pereopod (first ambulatory leg). The chela of the female has a row of orange spots along the anterior margin, but such a row of spots is absent in the other specimens. The merus of the second pereopod of the female is armed with a more strongly developed spine at the ventrolateral distal end than that of the other specimens, and the carpus bears a small dorsodistal spine which is absent in the others. These characters of the single female agree with those of one of two forms of *P. lamarckii* reported by Osawa & Chan (2010: figs. 109–111, 113d–f).

As mentioned above, the colouration in life was recorded only for an ovigerous female (cl 10.2 mm, ZRC 2013.0840) from stn CI-09-2011. The overall colour is brighter and the dark brown blotches on the carapace are larger than those reported by Osawa & Chan (2010: figs. 109–111).

Petrolisthes pubescens Stimpson, 1858

Petrolisthes pubescens Stimpson, 1858: 228 [type locality: Foukow Bay (= Naze Bay), Amami-Oshima, Ryukyu Islands]

Material examined. Christmas Island: stn CI3-16, Flying Fish Cove, 10°25.791'S, 105°40.028'E, intertidal, coralline rocks, large boulders, mixed with coral rubble and sand, and few live corals, 11 February 2012, 1 ovigerous female (cl 8.7 mm), ZRC 2013.0841.

Colour. Although the fresh colouration of the present specimen was not recorded, the colour pattern in preserved condition generally agrees with that of *P. pubescens* provided by Osawa & Chan (2010: fig. 121) and Osawa & McLaughlin (2010: fig. 2D).

Distribution. Red Sea, Mauritius, Moluccas, Taiwan, southern Japan, Ryukyu Islands, Queensland, New Caledonia and Marquesas Islands. Intertidal to shallow subtidal, found under rocks and corals (Osawa & Chan, 2010). Now from Christmas Island in the southeastern Indian Ocean.

Remarks. The present specimen agrees well with the published descriptions of *P. pubescens* (e.g., Kropp, 1986; Osawa & Chan, 2010).

Petrolisthes scabriculus (Dana, 1852)

(Fig. 2D)

Porcellana scabricula Dana, 1852: 424 [type locality: Sulu Sea]

Material examined. Christmas Island: stn CI-D12-2011, Thunderdome Cave, 10°27.906'S, 105°36.465'E, 3–16.6 m depth, submarine cave, 28 March 2011, 1 ovigerous female (cl 5.6 mm), ZRC 2013.0842; stn CI-D14-2011, Perpendicular Wall, 10°26.722'S, 105°33.641'E, reef slope and crest, 29 March 2011, 1 female (cl 4.5 mm), ZRC 2013.0843; stn CI-D15-2011, Boat Cave, 10°26.722'S, 105°33.641'E, reef slope and crest, 29 March 2011, 1 juvenile (cl 2.3 mm), 2 males (cl 4.6, 5.7 mm), 2 ovigerous females (cl 4.9, 5.2 mm), ZRC 2013.0844; stn CI-D17-2011, Thunderdome Cave, 10°27.906'S, 105°36.465'E, 3–16.6 m depth, submarine cave, 30 March 2011, 1 male (cl 5.4 mm), 1 female (cl 3.3 mm), ZRC 2013.0845; stn CI-D18-2011, Rhoda Wall, off Rhoda Beach., 10°27.729'S, 105°37.283'E, 5–16 m depth, reef slope and crest, 30 March 2011, 1 male (cl 5.3 mm), 1 female (cl 3.8 mm), ZRC 2013.0846.

Colour in life. The colouration of the specimens examined agrees well with that of *P. scabriculus* provided by Osawa & Chan (2010: fig. 123).

Distribution. Gulf of Thailand, Philippines, Indonesia, New Guinea, western and eastern Australia, Nansha Islands in the South China Sea, Taiwan, Ryukyu Islands, New Caledonia, Loyalty Islands. Shallow water to a depth of 55 m, often associated with corals (Osawa & Chan, 2010). Now from Christmas Island in the southeastern Indian Ocean.

Remarks. The present specimens agree well with the published descriptions and illustrations of *P. scabriculus* (e.g., Nakasone & Miyake, 1968; Osawa, 2007; Osawa & Chan, 2010). As mentioned above, *Petrolisthes scabriculus* is known as a shallow subtidal species, although many of the congeners usually inhabit intertidal region.

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