

## On the crabs of the genus *Pseudozius* Dana, 1851 (Crustacea: Brachyura: Pseudoziidae) from Christmas Island and the Cocos (Keeling) Islands

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**Abstract.** Recent marine surveys in Christmas Island and the Cocos (Keeling) Islands yielded two species of *Pseudozius* Dana, 1851. *Pseudozius caystrus* (Adams & White, 1849) is briefly treated. *Pseudozius pacificus* Balss, 1938, is recorded for the first time from Christmas Island and the Indian Ocean.

**Key words.** Decapoda, Pseudozioidea, *Pseudozius*, Indian Ocean, Christmas Island

### INTRODUCTION

The Indo-Pacific genus *Pseudozius* Dana, 1851 (Brachyura: Pseudozioidea) is represented by three species: *Pseudozius caystrus* (Adams & White, 1849), the type species, *P. inornatus* Dana, 1852, and *P. pacificus* Balss, 1938 (viz. Guinot, 1968; Ng & Wang, 1994; Ng et al., 2008). Two species (*P. caystrus* and *P. pacificus*) were collected by the recent marine surveys conducted at Christmas Island and the Cocos (Keeling) Islands in 2010–2012 and are treated in this paper. The marine surveys were organised by the Raffles Museum of Biodiversity Research (Singapore) and the Queensland Museum (Brisbane), with support from the Australian authorities, particularly the Christmas Island Park Service.

All material examined are deposited in the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum (formerly Raffles Museum of Biodiversity Research), National University of Singapore. Measurements are shown as maximum carapace width (CW) by median carapace length (CL), in millimeters. The following abbreviations are used: I./Is. – island/islands, respectively; juv. – juvenile; ovig. – ovigerous; and stn – station.

For simplicity and uniformity, we use the alpha-numeric codes beginning with “CI1”, “CI2”, and “CI3” to denote Christmas Island stations for the three consecutive trips in 2010, 2011 and 2012, respectively. Likewise, “CK1” and “CK2” are used for Cocos (Keeling) stations for the years 2011 and 2012, respectively. Field labels accompanying

the actual specimens may vary only in the year-related station prefix, but not the actual number (e.g., the field label accompanying a specimen from stn CI2-09, may have been written as “CI-09-2011”, that is, station #09 in Christmas Island, collected in the year 2011). A detailed account of the stations is provided by Tan et al. (2014).

### SYSTEMATIC ACCOUNT

#### Superfamily PSEUDOZIOIDEA Alcock, 1898 Family PSEUDOZIIDAE Alcock, 1898

##### *Pseudozius caystrus* (Adams & White, 1849) (Fig. 1)

*Panopeus caystrus* Adams & White, 1849: 42, pl. 9 fig. 2  
*Pseudozius planus* Dana, 1852a: 81; 1852b: 233; 1855: pl. 13 fig. 6  
*Pseudozius microphthalmus* Stimpson, 1858: 35  
*Pseudozius caystrus*, Ward, 1934: 23; Tweedie, 1950: 123; Guinot, 1968: 330 (discussion); 1971: 1077; Serène, 1984: 313, figs. 242, 243, pl. 48 fig. B; Garth et al., 1987: 246, 259; Ng & Wang, 1994: 86, figs. 1–8; Morgan, 2000: 122 (table); Davie, 2002: 203; Ng et al., 2008: 180 (list)

**Material examined. Christmas I.:** 9 ♂, 9.1 × 5.6 mm – 16.3 × 10.1 mm, 5 ♀ (2 ovig.), 9.3 × 5.7 mm – 12.8 × 7.5 mm, 6 juv., not measured (ZRC), stn CI1-09; 1 ♂, 11.0 × 6.6 mm (ZRC), stn CI1-20[78]; 1 ♂, 21.3 × 12.8 mm, 3 ♀, 19.7 × 11.9 mm – 22.6 × 13.4 mm (ZRC), 11 ♂, 8.2 × 5.0 mm – 21.5 × 12.9 mm, 15 ♀, 8.8 × 5.4 mm – 22.2 × 13.3 mm (ZRC), stn CI2-03; 1 ♂, 12.3 × 7.4 mm, 4 ♀, 9.0 × 5.4 mm – 18.2 × 11.2 mm (ZRC), stn CI2-17; 1 ♂, 14.0 × 8.3 mm (ZRC), 1 ♂, 21.2 × 12.8 mm (ZRC), 1 ♀, 20.1 × 12.1 mm (ZRC), 1 ♀, 20.8 × 12.6 mm, 1 ♀, 24.0 × 13.6 mm, stn CI3-13.

**Cocos (Keeling) Is.:** 1 ♂, 16.6 × 10.2 mm (ZRC), 1 ♂, 19.6 × 11.6 mm, 1 ♀, 16.5 × 10.1 mm (ZRC), stn CK1-08.

**Remarks.** Ng & Wang (1994) provided a detailed and extensive discussion of the somewhat convoluted taxonomy of *Pseudozius caystrus* (type locality: “Eastern seas”, viz.

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Adams & White, 1849). They also stabilised the species by formally selecting a lectotype from among the syntypes examined by Adams & White (1849), and, in the process, established both *Panopeus caystrus* Adams & White, 1849, and *Pseudozius planus* Dana, 1852a, as objective synonyms. Furthermore, they considered *Pseudozius microphthalmus* Stimpson, 1858, as a junior subjective synonym of *P. caystrus*. Ng & Wang (1994: figs. 1–8) also provided several detailed line drawings of the lectotype male and paralectotype female, as well as of specimens collected from Taiwan and Christmas Island.

Colour photographs of this species are provided here (Fig. 1) to show the variation in the live colouration of the specimens found on Christmas Island, which is also similar to that observed in the specimens from Cocos (Keeling) Islands. This species is widely distributed in the Indo-Pacific region (viz. Ng & Wang, 1994), including Christmas Island (Ward, 1934; Ng & Wang, 1994; Morgan, 2000) and the Cocos (Keeling) Islands (Tweedie, 1950), where it is one of the commonest crabs inhabiting the upper to middle intertidal zone.

***Pseudozius pacificus* Balss, 1938**

(Figs. 2, 3)

?*Pseudozius inornatus*, Dana, 1852b: 235; 1855: pl. 13 fig. 8a, b.  
Not *Pseudozius inornatus* Dana, 1852

*Pseudozius pacificus* Balss, 1938: 64, pl. 2 fig. 5; Guinot, 1968: 330 (discussion), fig. 12a, b; 1971: 1077; Garth et al., 1987: 246, 259; Ng & Wang, 1994: fig. 9a, b (corrected); Ng et al., 2008: 180 (list)

**Material examined. Christmas I.** 1 ♀, 6.4 × 3.9 mm (ZRC) stn. CI1-13(09), 1 juv. 3.6 × 2.4 mm (ZRC), stn. CI1-13(03); 1 ♂, 7.1 × 4.5 mm (ZRC), stn. CI1-13(18); 1 ♂, 8.7 × 5.4 mm (ZRC), stn. CI1-13(21); 1 ♀, 8.0 × 5.0 mm (ZRC), stn. CI1-31(179); 1 ♂, 7.2 × 4.7 mm (ZRC), stn. CI2-09(039); 1 ♂, 4.9 × 3.1 mm (ZRC), stn. CI2-13(05); 1 ♂, 11.1 × 7.0 mm, 1 ovig. ♀, 12.3 × 7.3 mm (ZRC), stn. CI2-17(074); 2 ♂, 9.4 × 5.9 mm, 10.1 × 6.4 mm, 3 ♀, 7.9 × 5.0 mm – 9.0 × 5.6 mm (ZRC), stn. CI2-17; 1 ♀, 10.6 × 6.8 mm, 1 ovig. ♀, 10.9 × 6.8 mm (ZRC), stn. CI2-22.

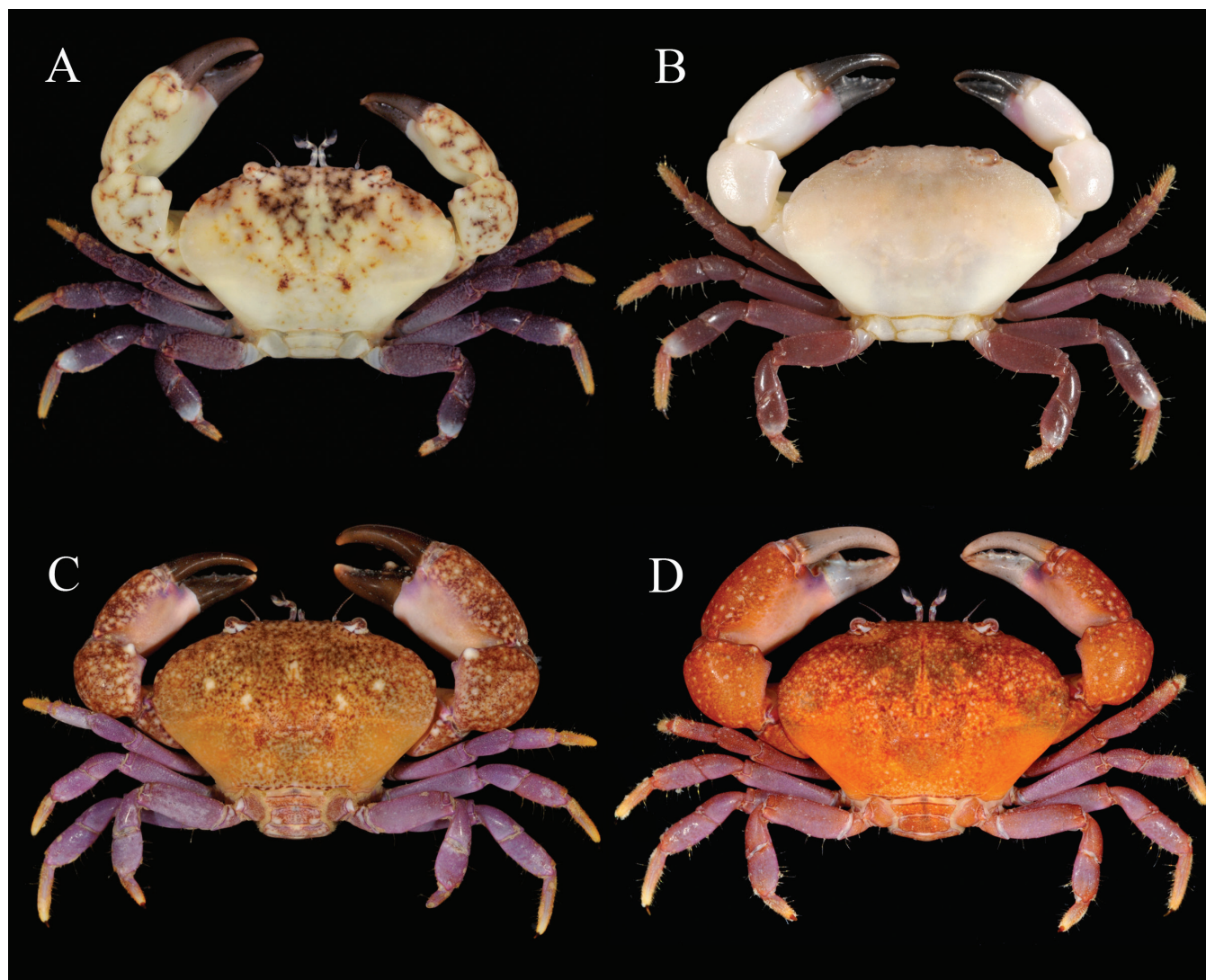


Fig. 1. Live colouration. *Pseudozius caystrus* (Adams & White, 1849): A, 1 ♂, 14.0 × 8.3 mm (ZRC), stn CI3-13; B, 1 ♂, 11.0 × 6.6 mm (ZRC), stn CI1-20(78); C, 1 ♀, 20.1 × 12.1 mm (ZRC), stn CI3-13; D, 1 ♀, 20.8 × 12.6 mm (ZRC), stn CI3-13.



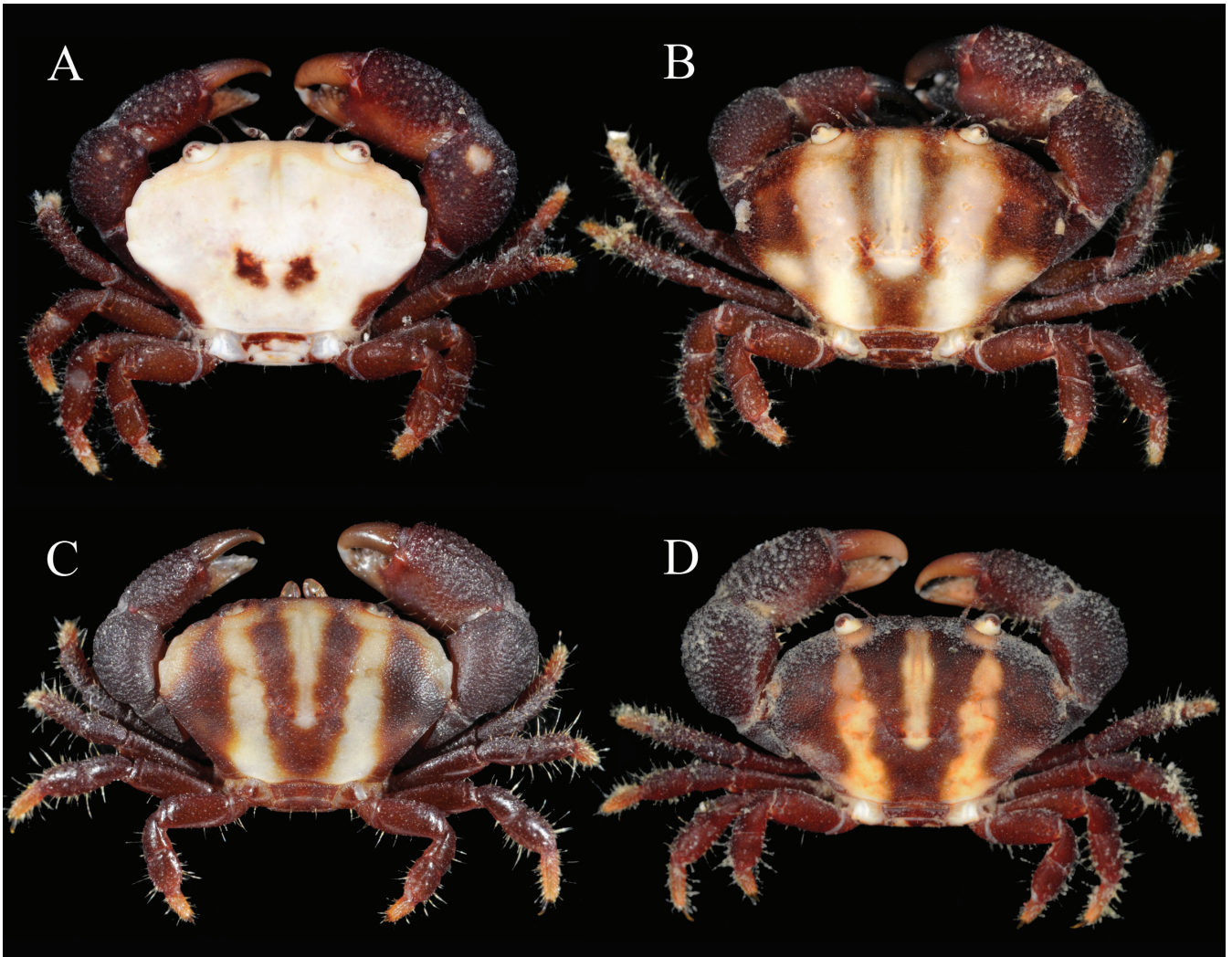


Fig. 2. Live colouration. *Pseudozius pacificus* Balss, 1938: A, 1 ♂, 4.9 × 3.1 mm (ZRC), stn. CI2-13(05); B, 1 ♂, 7.2 × 4.7 mm (ZRC), stn. CI2-09(039); C, 1 ♂, 7.1 × 4.5 mm (ZRC), stn. CI1-13(18); D, 1 ♂, 11.1 × 7.0 mm (ZRC), stn. CI2-17(074).

**Remarks.** *Pseudozius pacificus* was originally described by Balss (1938) from Jaluit, in the Marshall Islands. The description and photographs provided by Balss (1938: 64, pl. 2 fig. 5) match the present specimens from Christmas Island. A figure of the G1 provided by Guinot (1968: fig. 12), who studied the type material deposited in the Munich Museum, further confirms their identity. The greatly flared, funnel-shaped distal tip of the G1 (Fig. 3), described by Guinot (1968: 331) as “entouré d’un lobe formant un sorte de collerette”, distinguishes this species from its congeners, *P. caystrus* and *P. inornatus*, which have the G1 much narrower distally (cf. Guinot, 1968: figs. 13, 14; Ng & Wang, 1994: figs. 1c–e, 4b–e, g, h, 8). The live colouration of *P. pacificus* is also recorded here for the first time (Fig. 2). The pattern on the carapace agrees with the illustration by Dana (1855: pl. 13 fig. 8a, b) of a specimen collected from Charlotte’s Island (Kingsmill Group), but which was lost in the shipwreck of the USS *Peacock*. Dana (1852b: 235) tentatively identified this specimen as a species he was describing at the time, *Pseudozius inornatus*. Subsequently, however, Balss (1938) considered this particular specimen as conspecific with a new species of *Pseudozius* he was describing, *P. pacificus*, and listed it in the synonymy for this species.

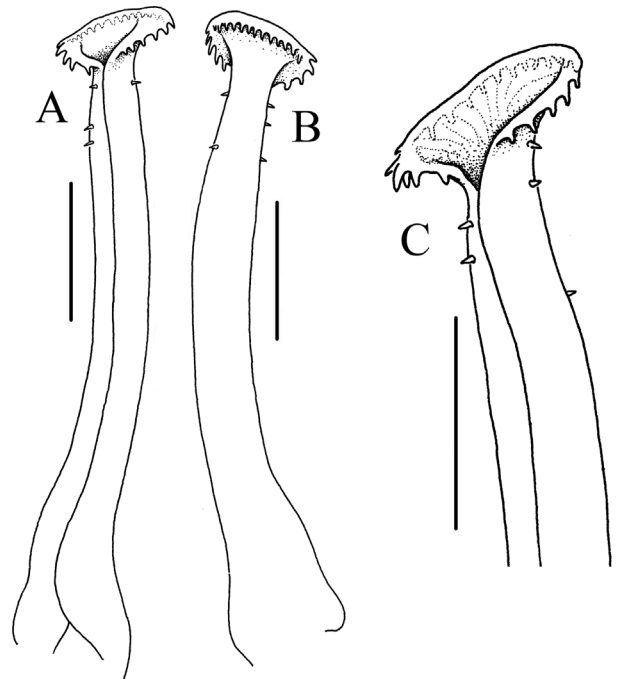


Fig. 3. Left G1. *Pseudozius pacificus* Balss, 1938: A, B, 1 ♂, 4.9 × 3.1 mm (ZRC), stn. CI2-13(05), C, 1 ♂, 11.1 × 7.0 mm (ZRC), stn. CI2-17(074).

This is the first record of *P. pacificus* outside of the Marshall Islands (cf. Balss, 1938; Garth et al., 1987), and also the first such record in the Indian Ocean. In Christmas Island, it was collected among pebbles and rocks in the intertidal zone, like *P. caystrus*, but was relatively less common and less conspicuous. This species has not been found on Cocos (Keeling) Islands thus far.

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