

## *Neorhynchoplax venusta*, a new species of hymenosomatid crab (Crustacea: Decapoda: Brachyura) from Singapore

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**Abstract.** A new species of hymenosomatid crab is described from a reef in Chek Jawa in Pulau Ubin, Singapore. Superficially resembling the mangrove-dwelling *Neorhynchoplax mangalis* (Ng, 1988) from southern Peninsular Malaysia and Singapore, *N. venusta* n. sp. is easily distinguished by its unarmed ambulatory dactyli. It can be separated from all congeners with unarmed ambulatory dactyli in the Indo-West Pacific by its combination of rostral, carapace and ambulatory leg characters.

**Key words.** Hymenosomatidae, *Neorhynchoplax*, new species, taxonomy, Singapore

### INTRODUCTION

Members of the Indo-West Pacific hymenosomatid crab genus *Neorhynchoplax* Sakai, 1938, are characterised by their relatively narrow third maxillipeds which do not cover more than three-quarters of the buccal field when closed, the presence of a well developed rostrum, well developed eyes, position of the base of the antenna, a male pleotelson which is triangular, and a male first gonopod which has the distal part tapering and not armed with lobes and processes (cf. Ng & Chuang, 1996; Naruse & Ng, 2007a; Naruse et al., 2008b). The genus currently contains 31 species and includes freshwater, estuarine and mangrove species (Chuang & Ng, 1994; Ng & Chuang, 1996; Ng et al., 2008; Naruse et al., 2008a, b; Ng et al., 2011).

A new species, *Neorhynchoplax venusta*, collected from a coral reef in Singapore, a specimen of which was obtained during the Comprehensive Marine Biodiversity Survey (CMBS), a national project to provide a taxonomic baseline for the island's marine fauna. The abbreviations G1 and G2 are used for the male first and second gonopods, respectively. Measurements provided (in millimetres, including spines) are of the carapace width and length, respectively. The specimen is deposited in the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum (ex Raffles Museum of Biodiversity Research), National University of Singapore.

### TAXONOMY

#### Family Hymenosomatidae Macleay, 1838

#### Genus *Neorhynchoplax* Sakai, 1938

#### *Neorhynchoplax venusta* n. sp. (Figs. 1A, 2)

**Material examined.** Holotype, female (2.6 × 2.7 mm) (ZRC 2014.0258), station SW41, inside hole, sand-mud substrate with small stones, sea grass bed, Pulau Sekudu, off Chek Jawa, Pulau Ubin, Singapore, 1°24'19.8"N 103°59'15.1"E, coll. A Anker, yabby-pump, 19 October 2012.

**Comparative material.** *Neorhynchoplax mangalis*: 1 male (2.8 × 3.4 mm) (ZRC), Mandai mangroves, Singapore, coll. PKL Ng, 21 June 1990; 1 ovigerous female (2.7 × 3.3 mm) (ZRC), station SW110, Lim Chu Kang, Singapore, 1°26.772'N 103°42.509'E, coll. CMBS team, 28 October 2012; 1 male (3.5 × 4.0 mm) (ZRC), station SW136, Sungei Buloh, 1°26.753'N 103°43.836'E, coll. CMBS team, 30 October 2012; 1 male (2.8 × 3.3 mm) (ZRC), station SW106, Lim Chu Kang, Singapore, 1°26.772'N 103°42.509'E, coll. CMBS team, 27 October 2010. See also Ng & Chuang (1996: 59) for other material.

**Diagnosis.** Carapace subcircular, slightly longer than wide, surrounded by a distinct, complete rim; grooves on dorsal surface distinct; dorsal surface gently depressed medially, smooth, flat (Fig. 2A). Rostrum distinctly tridentate, lateral teeth triangular with rounded tip; median tooth spatuliform, lateral margins subparallel, tip rounded (Fig. 2A). Anterolateral tooth arcuate, anterior third with low but visible lobe; junction of antero- and posterolateral margins with well developed sharp, anteriorly curved tooth on subbranchial region, just outside carapace rim; margins lined with numerous short setae (Fig. 2A). Infraorbital tooth short, sharp (Fig. 2A). Eye short, peduncle stout, well

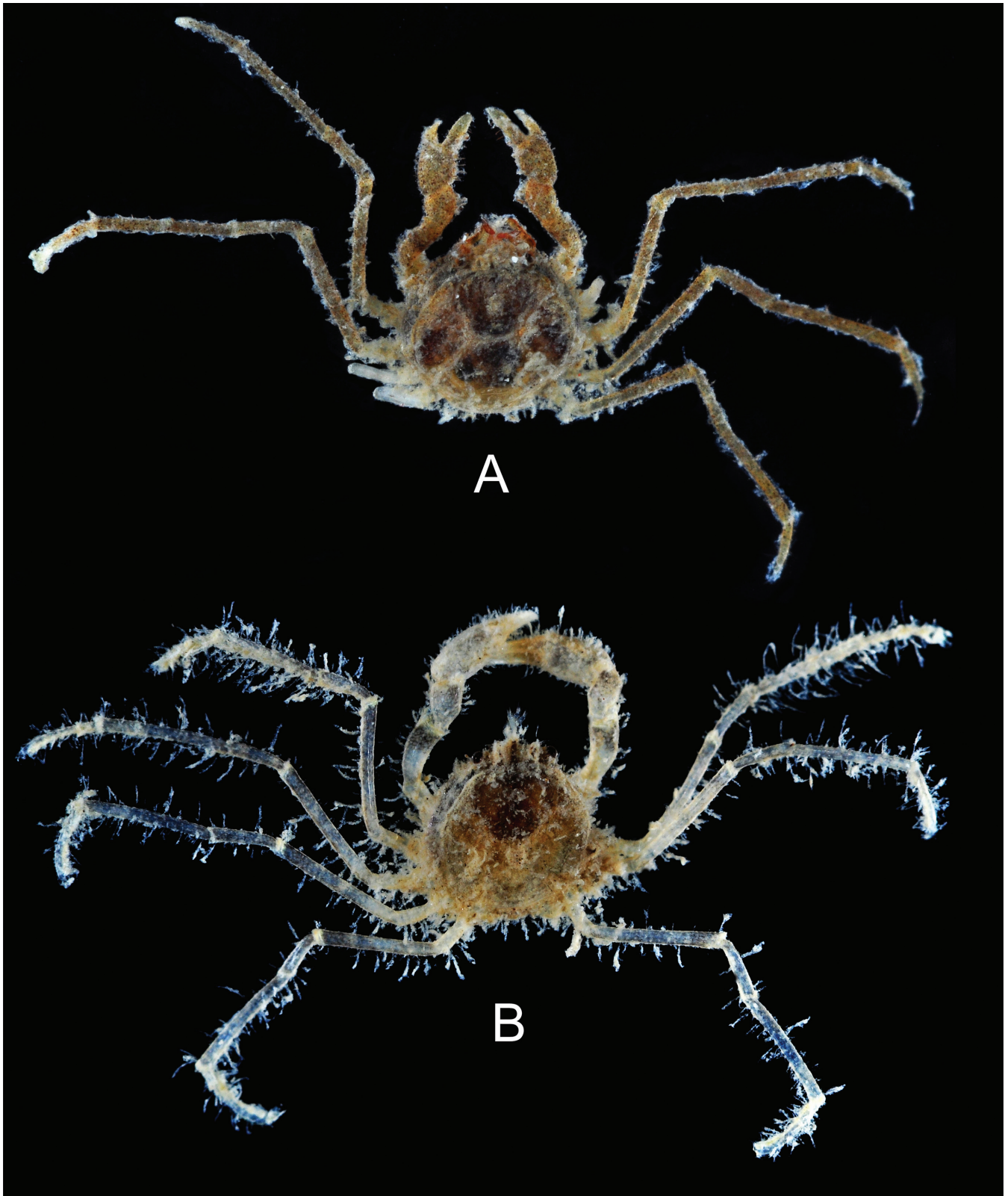


Fig. 1. Colours in life. A, *Neorhynchoplax venusta* n. sp., holotype female (2.6 × 2.7 mm) (ZRC 2014.0258), Singapore; B, *Neorhynchoplax mangalis*, male (2.8 × 3.3 mm) (ZRC), Singapore.

developed, visible dorsally; cornea large, pigmented (Fig. 2A). Third maxilliped longitudinally slender; covering ca. 75% of buccal field when closed; ischium shorter than subovate merus; exopod long, gently curved, tip reaching to distal margin of merus, flgellum long (Fig. 2B). Chelipeds elongate, equal; outer surfaces with scattered pubescence; merus long, unarmed but proximal margins gently crenulate; carpus subovate; fingers longer than palm, cutting edges with numerous small and large teeth (Fig. 2A, D). Ambulatory very long; articles slender; outer surfaces with scattered pubescence; dorsal and ventral margins of ischium, merus, carpus and propodus lined with numerous very short curved setae, with scattered longer setae; distal margin of merus with row of short setae; dactylus subcylindrical, distal part sharply tapering to sharp tip, lateral margins (except for distal part) lined with numerous very short curved setae and scattered longer setae, otherwise unarmed (Fig. 2A, E). Abdomen subovate, surface with scattered setae, denser along margins; with 4 parts; somites 1 and 2 free, longitudinally narrow, spanning width of thoracic sternum; somites 3–5

fused, with only lateral suture just visible, suture between somites 4 and 5 with submedian suture or hole; pleotelson broad, lateral margins sinuous (Fig. 2C).

**Etymology.** The name is derived from the Latin “venustus” for graceful; alluding to the long and delicate ambulatory legs of the species.

**Remarks.** *Neorhynchoplax venusta* n. sp. is superficially similar to *N. mangalis* (Ng, 1988) with regards to its carapace shape, presence of a lateral carapace tooth and elongate ambulatory legs. However, the structure of the ambulatory dactylus easily separates the two species – the ventral margin of *N. venusta* is unarmed while that of *N. mangalis* is lined with 2–5 teeth. The carapace shapes of the two species also differ. That of *N. mangalis* is distinctly longer than broad, the carapace appearing longitudinally ovate (Fig. 3). In *N. venusta*, these proportions are subequal and the carapace is almost round (Fig. 2A).

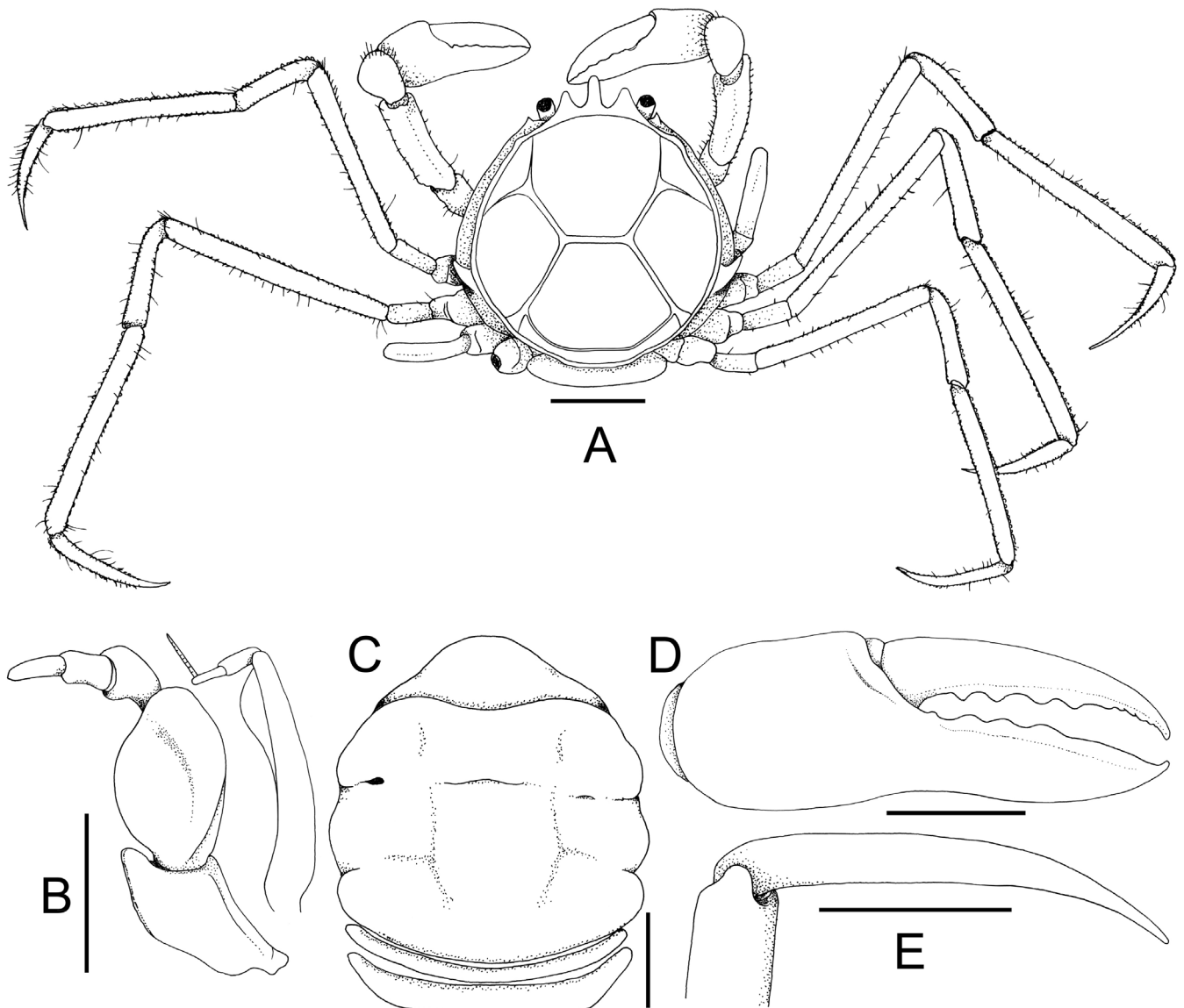


Fig. 2. *Neorhynchoplax venusta* n. sp., holotype female (2.6 × 2.7 mm) (ZRC 2014.0258), Singapore. A, overall dorsal view (setae on sides of carapace not drawn); B, left third maxilliped; C, outer surface of right chela; D, right second ambulatory dactylus; E, female abdomen. Setae not drawn for B–E. Scale bars = 1.0 mm [A]; 0.5 mm [B–E].

The setation on the ambulatory legs is different. While *N. mangalis* has numerous long setae which trap detritus, giving the animal a “furry” appearance in life (Fig. 1B), *N. venusta* has far fewer of these setae. Instead, *N. venusta* has numerous short hooked setae lining the margins of the articles which trap detritus much closer to the pereopods (Fig. 1A). As such, even before cleaning, the two species look different when alive. In life, the antennules and the distal parts of the third maxillipeds are orange in *N. venusta* (Fig. 1A), but are light brown to white in *N. mangalis* (Fig. 1B).

Most *Neorhynchoplax* species have at least one subterminal spine on their ambulatory dactylus. In addition to *N. venusta*, only nine other species have a completely unarmed ambulatory dactylus: *N. aspinifera* (Lucas, 1980) (Queensland, Australia),

*N. attenuipes* (Chopra & Das, 1930) (India), *N. demeloi* (Kemp, 1917) (India), *N. inermis* (Takeda & Miyake, 1971) (Palau), *N. falcifera* Naruse, Mendoza & Ng, 2008a (Bohol, Philippines), *N. pageti* Pretzmann, 1975 (Sri Lanka), *N. sinensis* (Shen, 1932) (China), *N. thorsborneorum* (Lucas & Davie, 1982) (Queensland Australia), and *N. tuberculata* (Chopra & Das, 1930) (India) (cf. Lucas, 1980; Ng et al., 1999; Naruse et al., 2008b).

While some species like *N. aspinifera*, *N. attenuipes*, *N. falcifera*, *N. inermis* and *N. sinensis* (cf. Chopra & Das, 1930: text fig. 10; Shen, 1932: text fig. 33; Takeda & Miyake, 1971: fig. 1d; Naruse et al., 2008b: fig. 7a, d) have relatively long ambulatory legs, these are proportionately not as long as *N. venusta* (Fig. 1A, 2A). *Neorhynchoplax demeloi*, *N.*

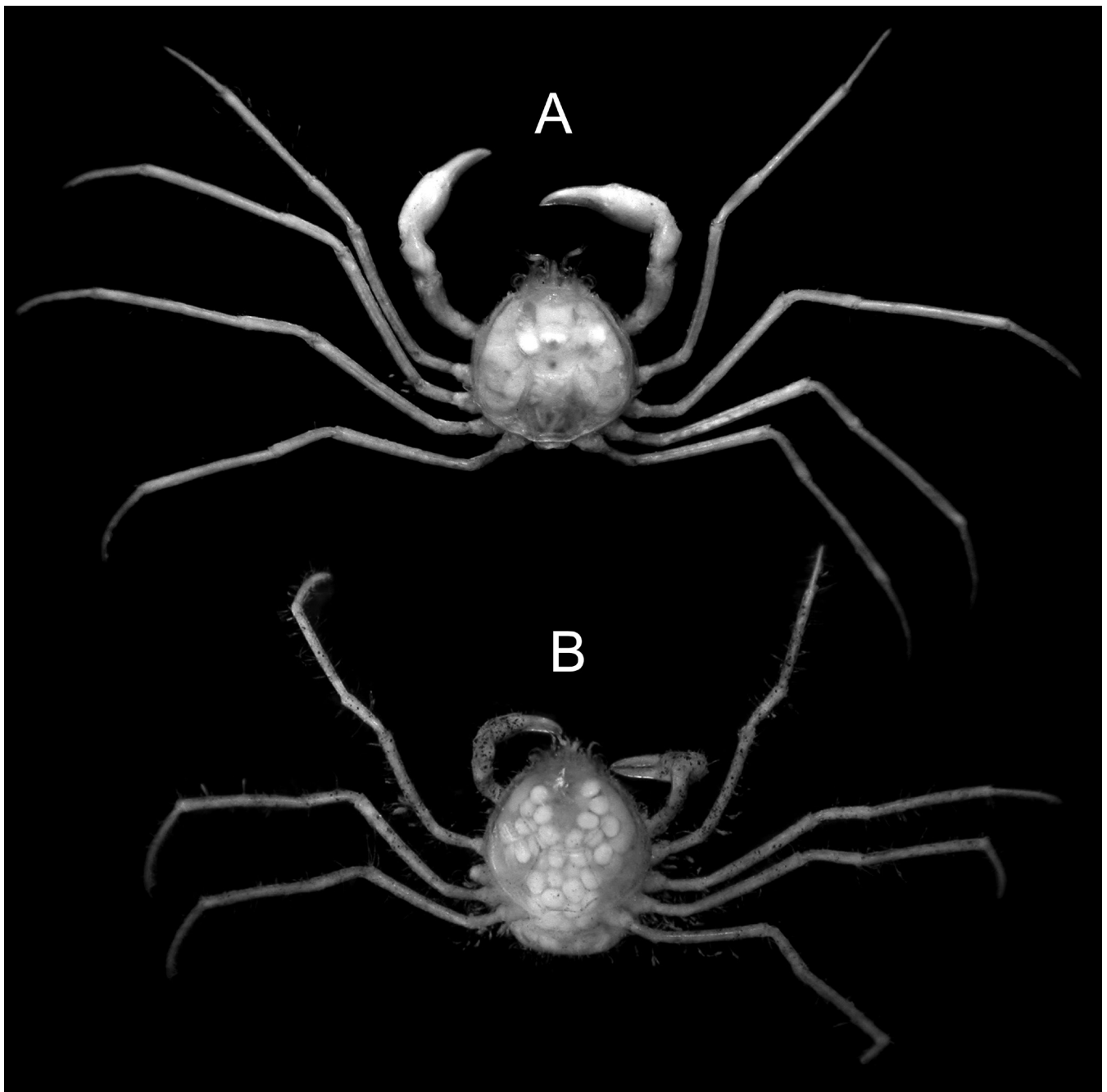


Fig. 3. *Neorhynchoplax mangalis*, overall dorsal views. A, male (2.8 × 3.4 mm) (ZRC), Singapore; B, ovigerous female (2.7 × 3.3 mm) (ZRC), Singapore.



*pageti*, *N. thorsborneorum* and *N. tuberculata* have even shorter ambulatory legs. The rostrums of *N. demeloi* and *N. thorsborneorum* (cf. Kemp, 1917: fig. 6; Lucas & Davie, 1982: fig. 1) are unusual in that they are very low and lobiform, not dentiform like *N. venusta* (Fig. 2A). While *N. venusta* has a prominent lateral carapace tooth (Fig. 2A), *N. aspinifera*, *N. demeloi*, *N. inermis*, *N. sinensis* and *N. thorsborneorum* do not, with the lateral carapace margin unarmed (cf. Kemp, 1917: fig. 6; Shen, 1932: text fig. 33; Takeda & Miyake, 1971: fig. 1a; Lucas, 1980: fig. 3L; Lucas & Davie, 1982: fig. 1). *Neorhynchoplax tuberculata*, *N. attenuipes* and *N. pageti* are unusual in having tubercles on the gastric and cardiac regions (cf. Chopra & Das, 1930: text figs. 6, 7, 10; Pretzmann, 1975: pl. 1 figs. 1, 2); in *N. venusta*, the surface of the carapace is completely smooth (Fig. 2A). *Neorhynchoplax inermis* is also diagnostic in having only a single rostral tooth (cf. Takeda & Miyake, 1971: fig. 1A) compared to three in *N. venusta* (Fig. 2A).

The female type specimen is not fully mature as its abdomen is not fully rounded and not very swollen, as is typical for other *Neorhynchoplax* species. Members of this genus practice ovovivipary, possessing an internal brood cavity with relatively large eggs that hatch inside the body (Fig. 3B) (see Ng & Chuang, 1996; Ng et al., 2011). The structure of the female abdomen, however, is typical for other *Neorhynchoplax* species, with somites 3–5 fused, although the lateral parts of the sutures are still visible (Fig. 2E).

Six other species of hymenosomatid crabs are known from Singapore: *Haliscarcinus coralicola* (Rathbun, 1909), *Crustaenia palawanensis* (Serène, 1971), *Neorhynchoplax mangalis* (Ng, 1988), *Elamena globosa* Chuang & Ng, 1991, *Elamena mendosa* Chuang & Ng, 1991, and *Elamenopsis rotunda* Naruse & Ng, 2007 (cf. Ng & Chuang, 1996; Naruse & Ng, 2007b).

**Ecology.** The single specimen of *N. venusta* was obtained from a sandy-muddy burrow in a seagrass bed by a yabby-pump, on a small island covered by reef at low tide. It appears to be an intertidal reef species. Two other intertidal reef species are known from Singapore, *Crustaenia palawanensis* and *Haliscarcinus coralicola*, although they have not been collected together as yet. The closely related *N. mangalis* is only known from intertidal mangroves.

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