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Deep-water crabs of the families Lyreididae, Raninidae, Calappidae, Ethusidae, and Leucosiidae (Crustacea: Brachyura) collected by the SJADES 2018 cruise in Indonesia, with a description of a new leucosiid species

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Abstract. This is a report on the diversity of the 'oxystomatous' deep-water crabs (Brachyura), of the families Lyreididae, Raninidae, Calappidae, Ethusidae, and Leucosiidae, which were collected during the SJADES 2018 cruise in the Sunda Strait and off the southwestern coast of Java, Indonesia. Twenty-four (24) species in 14 genera are recorded, of which one is new and described herein (Leucosiidae: *Oreotlos octavus*), and another 12 are recorded for the first time from Indonesia.

Key words. Decapoda, taxonomy, new species, new records, deep-sea expedition, Eastern Indian Ocean

INTRODUCTION

The South Java Deep-Sea Biodiversity Expedition (SJADES 2018) was a research collaboration between the Indonesian Institute of Sciences (LIPI) and the National University of Singapore (NUS) conducted from 23 March to 5 April 2018 in the Sunda Strait and southwestern coast of Java, aboard the LIPI research vessel, K/R *Baruna Jaya VIII*. Samples of the deep-sea benthos were taken at depths of approximately 90–2,100 m. SJADES 2018 is the most recent expedition in Indonesia to study the deep-sea fauna, with a focus on geographic and bathymetric gaps left by other previous expeditions such as the *Challenger* expedition (1872–1876), the *Siboga* expedition (1899–1900), the Th. Mortensen expedition (1922), the *Snellius* expeditions (1929–1930, 1984), the *Galathea* expedition (1950–1952), CORINDON expeditions (1980, 1981), and the KARUBAR expedition (1991), among others (Moosa, 1984, 1998; Crosnier et al., 1997; Ng & Rahayu, 2021).

The oxystomatous or 'sharp-mouthed' crabs collected by the SJADES 2018 cruise are reported herein. The term 'oxystomatous' (sharp-mouthed; sensu Oxystomata De Haan, 1833) is used here for convenience as a collective term for brachyuran families historically included in the superfamily (i.e., Raninidae De Haan, 1839, Calappidae De Haan, 1833, Ethusidae Guinot, 1977, and Leucosiidae Samouelle, 1819) which are superficially similar but unrelated phylogenetically. A total of 22 species of deep-water oxystomatous crabs were collected from the Indonesian seabed at a depth range of 92–1,539 m and from 32 out of the total 63 stations: viz. Lyreididae (2 spp.), Raninidae (2 spp.), Calappidae (1 sp.), Ethusidae (8 spp.), and Leucosiidae (9 spp., 1 of which is new); with 11 such species being recorded for the first time from Indonesia.

MATERIAL AND METHODS

Specimens examined are deposited in the Museum Zoologicum Bogoriense, Indonesian Institute of Sciences, Cibinong, Indonesia (MZB) and the Lee Kong Chian Natural History Museum, National University of Singapore (ZRC). Selected representative specimens were photographed fresh onboard the ship, and are indicated in the material examined as "with colour image". The measurements (in mm) are of the carapace width (CW) followed by the carapace length (CL). Unless otherwise indicated in the individual species accounts below, CW was measured across the widest breadth of the carapace and CL was measured along the median of the carapace from the tips of the frontal lobes to the posterior border of the carapace. The following abbreviations are used: P1, cheliped; P2–P5, first to fourth ambulatory leg, respectively; G1, first gonopod; G2, second gonopods; juv., juvenile; ovig., ovigerous; and stn, station. The station codes for this expedition use the prefixes CP and DW, which denote the sampling equipment used, i.e., French beam trawl (CP) and Warén dredge (DW) (see Chim et al., 2021). Sampling depths are provided in metres (m), and the station coordinates provided are from the point of first contact of the gear with the seabed to the point when recovery of the gear from the

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Fig. 1. Fresh colouration. *Lysirude channeri* (Wood-Mason, in Wood-Mason & Alcock, 1891), A, male, 18.0 × 31.3 mm; B, female, 11.6 × 22.1 mm (MZB), stn CP03; C, *Lyreidus brevifrons* Sakai, 1937, male, 23.9 × 42.6 mm (ZRC 2020.0744), stn CP50; D, *Raninoides longifrons* Chen & Türkay, 2001, female, 16.1 × 27.8 mm (ZRC 2020.0753), stn CP56; E, *Raninoides personatus* Henderson, 1888, male, 11.9 × 22.9 mm (ZRC 2020.0754), stn DW01; F, *Mursia australiensis* Campbell, 1971, juv. female, 19.5 × 13.0 mm (ZRC 2020.0755), stn CP02; G, *Ethusa abbreviata* Castro, 2005, ovig. female, 7.9 × 8.9 mm (ZRC 2020.0757), stn CP33; *Ethusa andamanica* Alcock, 1894; H, male, 7.4 × 8.4 mm (ZRC 2020.0759), stn CP07; I, female, 11.3 × 12.2 mm (w/ sacculinid) (ZRC 2020.0761), stn CP38. Photographs by Chan Tin-Yam (A–C, E, F, H) and JCE Mendoza (D, G, I).

seabed was initiated. Only chresonyms of Indonesian records are included in the synonymy.

TAXONOMIC ACCOUNT

Section PODOTREMATA Guinot, 1977

Superfamily Raninoidea De Haan, 1839

Family Lyreididae Guinot, 1993

Lyreidus De Haan, 1841

Lyreidus brevifrons Sakai, 1937
(Fig. 1C)

Material examined. 1 female (with colour image), 15.9 × 28.5 mm (MZB), stn CP33, western Java, south of Cilauteureum Bay, 7°42.912′S 107°36.559′E – 7°43.255′S 107°37.234′E, 525–312 m, coarse sand and mud, 29 March 2018; 3 males, 10.2 × 18.3 mm – 12.6 × 23.3 mm, 1 female, 15.3 × 27.9 mm (ZRC 2020.0743), stn CP33, western Java, south of Cilauteureum Bay, 7°42.912′S 107°36.559′E – 7°43.255′S 107°37.234′E, 525–312 m, coarse sand and mud, 29 March 2018; 2 females, 6.0 × 10.5 mm, 12.1 × 21.2 mm, 1 ovig. female, 15.1 × 25.6 mm (MZB), stn CP39, western Java, south of Cilacap, 8°15.885′S 109°10.163′E – 8°16.060′S 109°10.944′E, 528–637 m, mud, 30 March 2018; 1 male (with colour image) (ZRC 2020.0744), 23.9 × 42.6 mm, stn CP50, western Java, Pelabuhanratu Bay, 7°03.322′S 106°26.673′E – 7°03.762′S 106°26.334′E, 383–425 m, mud, 2 April 2018; 1 male, 20.5 × 37.2 mm, 1 female, 22.5 × 39.5 mm (ZRC 2020.0745), stn CP50, western Java, Pelabuhanratu Bay, 7°03.322′S 106°26.673′E – 7°03.762′S 106°26.334′E, 383–425 m, mud, 2 April 2018; 1 female, 15.8 × 28.9 mm (MZB), stn CP55, western Java, Pelabuhanratu Bay, 7°01.013′S 106°26.772′E – 7°01.116′S 106°26.421′E, 378–379 m, clay and mud, 3 April 2018.

Remarks. The present material from Indonesia agrees well with the published descriptions and illustrations of *Lyreidus brevifrons* Sakai, 1937 (type locality: Japan), which is relatively widespread in the deep seas of the Indo-West Pacific region (cf. Sakai, 1937; Griffin, 1970; Goeke, 1985; Ribes, 1989; Ahyong et al., 2009). This species can most reliably be distinguished from the similar and sympatric *L. tridentatus* De Haan, 1841, by the noticeable narrowing of the anterior carapace region, producing a distinctly concave anterolateral margin; the relatively narrower and longer exorbital teeth, which exceed the length of the rostrum; and the shape of the apical lobes of the male G1. This is the first record of this species in Indonesia.

Lysirude Goeke, 1985

Lysirude channeri (Wood-Mason, 1885)
(Figs. 1A, B, 3A–D)

Lysirude channeri, Goeke, 1985: 215, fig. 6.

Material examined. 1 male (with colour image), 18.0 × 31.3 mm, 1 female (with colour image), 11.6 × 22.1 mm (MZB), stn CP03, Sunda Strait, west of Sebesi Island, 6°08.941′S 105°14.817′E – 6°08.590′S 105°15.100′E, 398–283 m, very muddy with some clay, 24 March 2018; 1 male, 13.2 × 24.6 mm (ZRC 2020.0746), stn CP12, Sunda Strait, southeast of Tabuan Island, 5°52.252′S 104°66.786′E – 5°52.728′S 104°56.422′E, 615–698 m, mud, 25 March 2018; 1 female, 10.9 × 19.7 mm (MZB), stn CP22, western Java, south of Panaitan Island, 6°46.458′S 105°07.068′E – 6°47.450′S 105°07.613′E, 864–870 m, mud, 27 March 2018; 1 ovig. female, 16.0 × 28.4 mm (MZB), stn CP23, western Java, west of Tanjung Layar, 6°46.739′S 105°09.239′E – 6°45.924′S 105°08.360′E, 559–571 m, gravel with some mud, 27 March 2018; 1 female (with colour image) (ZRC 2020.0747), 18.1 × 30.9 mm, stn CP23, western Java, west of Tanjung Layar, 6°46.739′S 105°09.239′E – 6°45.924′S 105°08.360′E, 559–571 m, gravel with some mud, 27 March 2018; 1 male, 12.9 × 24.6 mm, 5 females 13.6 × 23.4 mm – 19.0 × 32.0 mm (ZRC 2020.0748), stn CP26, western Java, east of Tinjil Island, 6°57.221′S 105°54.754′E – 6°56.664′S 105°55.315′E, 517–727 m, mud, 28 March 2018; 3 males, 9.0 × 16.9 mm – 11.9 × 21.8 mm, 2 females, 15.5 × 27.1 mm, 18.0 × 31.7 mm, 3 ovig. females, 14.7 × 26.0 mm – 16.5 × 29.4 mm (ZRC 2020.0749), stn CP27, western Java, southeast of Tinjil Island, 6°58.624′S 105°53.745′E – 6°58.937′S 105°53.363′E, 481–557 m, gravel, 28 March 2018; 2 males, 12.4 × 23.3 mm, 15.0 × 27.2 mm, 2 females, 14.2 × 26.2 mm, 18.2 × 32.6 mm (ZRC 2020.0750), stn CP33, western Java, south of Cilauteureum Bay, 7°42.912′S 107°36.559′E – 7°43.255′S 107°37.234′E, 525–312 m, coarse sand and mud, 29 March 2018; 1 male, 10.2 × 19.2 mm (MZB), stn CP45, western Java, south of Pameungpeuk, 7°47.670′S 107°43.126′E – 7°47.151′S 107°43.595′E, 851–684 m, mud with small pieces of wood, 1 April 2018; 2 males, 12.9 × 24.2 mm, 14.9 × 28.2 mm (ZRC 2020.0751), stn CP50, western Java, Pelabuhanratu Bay, 7°03.322′S 106°26.673′E – 7°03.762′S 106°26.334′E, 383–425 m, mud, 2 April 2018; 2 males, 13.4 × 24.3 mm, 14.6 × 27.9 mm (ZRC 2020.0752), stn CP51, western Java, Pelabuhanratu Bay, 7°04.874′S 106°25.396′E – 7°05.348′S 106°25.044′E, 569–657 m, coarse sand, mud, and plastic trash, 2 April 2018.
[Note: For this species, the CW measurements were taken from the base of the second anterolateral spines; the CL measurements were taken from the tip of the rostrum to the posterior margin.]

Remarks. Wood-Mason (1885), in a letter to the Asiatic Society of Bengal, briefly described *Lyreidus channeri* from a single male dredged from the Bay of Bengal. He then provided a more detailed description and illustration of the same specimen (Wood-Mason, 1887a), and also described another, similar species based on a unique specimen from the Andaman Sea, *Lyreidus gracilis* Wood-Mason, 1887b. Alcock (1896), then in possession of additional material from the Bay of Bengal, Andaman Sea, and Sri Lanka, considered *L. gracilis* to be a junior synonym of *L. channeri*. This species was transferred by Goeke (1985) to a new genus *Lysirude*, together with *Raninoides nitidus* A. Milne-Edwards, 1880 (type species) and a new species, *Lysirude griffini*. Rozario

et al. (2016) provided a detailed re-description of *L. channeri* based on topotypic material from the Bay of Bengal. The Indonesian material matches the detailed description and illustration of the type by Wood-Mason (1887a: 206–208, pl. 1 figs. 1–6), and subsequent descriptions and illustrations by others (cf. Alcock & Anderson, 1895: pl. 73 figs. 1, 1a; Alcock, 1896; Rozario et al., 2016: figs. 2–4, 5B, 8, 9). The males tend to have longer spines on the carapace compared to the females, particularly the exorbital spines and the second anterolateral spines (Fig. 1A, B). We illustrate the G1 (Fig. 3A–C) to show some of the finer details of the distal tip, which are not evident in previous illustrations.

Lysirude channeri has been conflated with another undescribed species from the western Pacific (i.e., the Philippines and South China Sea; viz. Griffin, 1970: pl. 2 fig. B; Goeke, 1985: fig. 6a). Our morphological examination of the available material from the Bohol Sea, Philippines, has shown that they consistently have only a single long spine on the anterolateral carapace margin (vs. two, slightly shorter spines in *L. channeri* s. str.). Furthermore, the Philippine material can be distinguished from the Indonesian material by the absence of a subdistal tooth on the superior border of the cheliped manus (vs. present in *L. channeri* s. str.), and the relatively more slender ambulatory legs (vs. stouter in *L. channeri*). This undescribed species was independently determined very recently to be distinct from *L. channeri* by Takeda et al. (2021) using material collected from the Sulu Sea, Philippines, and given the name *Lysirude goekei* Takeda, Ohtsuchi & Komatsu, 2021. Takeda et al. (2021) likewise considered records of "*L. channeri*" from the western Pacific as *L. goekei* instead. As such, *L. channeri* is restricted to material reported from the Bay of Bengal, Andaman Sea, and Indonesia. *Lysirude channeri* has been previously reported from the Makassar Strait, off West Sulawesi, Indonesia (Goeke, 1985; CORINDON II, stn. 276, beam trawl, 450–395 m, 1 male, 1 female; 1°54.6′S, 119°13.8′E; see also Moosa, 1984). This is the first report of this species from the Sunda Strait and the southern coast of Java.

Family Raninidae De Haan, 1839

Raninoides H. Milne Edwards, 1837

Raninoides longifrons Chen & Türkay, 2001
(Figs. 1D, 2A–E)

Raninoides personatus, Goeke, 1985: 221, fig. 8. Not *Raninoides personatus* Henderson, 1888 (fide Chen & Türkay, 2001).

Material examined. 1 female (with colour image), 16.1 × 27.8 mm, 1 ovig. female, 20.8 × 34.6 mm (ZRC 2020.0753), stn CP56, western Java, Pelabuhanratu Bay, 7°00.299′S 106°27.247′E – 7°00.393′S 106°26.790′E, 183–255 m, mud, 3 April 2018.

Remarks. The present material, both female, one ovigerous and one non-ovigerous, belong to the genus *Raninoides* as they have the distal spine on the ischium of the P1 and spines on the sternal plate between the bases of the P1 and P2 (Fig. 2B; viz. Serène & Umali, 1972). They most closely agree with the description of *Raninoides longifrons* Chen & Türkay, 2001 (type locality: Hainan, China) particularly in the form of the lobes of the supraorbital margin (i.e., the margin of the median lobe is uniformly convex and does not have any tooth-like projection; Fig. 2A), the presence of a pair of subdistal spines on the cheliped carpus, and the presence of a wide tooth on the distal corner of the P2 and P3 carpi (Fig. 2D). The Indonesian material, however, differs from the types of *R. longifrons* in having a relatively shorter rostrum (see Fig. 2A; not twice as long as wide, cf. Chen & Türkay, 2001: fig. 1a), a slightly curved spine on the carapace anterolateral margin (see Fig. 2A; not a triangular tooth, cf. Chen & Türkay, 2001: fig. 1a), and more acutely pointed and distinctly curved spines on the sternal plate at the bases of the P1 and P2 (see Fig. 2B; not plainly triangular and straight, cf. Chen & Türkay, 2001: fig. 1g). The frontal region of the present material is also similar to that of *Raninoides crosnieri* Ribes, 1989 (type locality: Madagascar; see Ribes, 1989: fig. 1b), however, they have two carpal spines on their chelipeds (vs. one in *R. crosnieri*; cf. Ribes, 1989: fig. 1d), and the anterior margin of the P4 dactylus is straight (vs. concave in *R. crosnieri*; cf. Ribes, 1989: fig. 1g).

Goeke (1985) reported "*Raninoides personatus*" from the Philippines (MUSORSTOM I and II) and Indonesia (CORINDON II). These records were included in the synonymy for *R. longifrons* by Chen & Türkay (2001), although it does not seem that they examined the actual specimens, and probably based their decision on Goeke's figure of one of the specimens in his material examined. As Goeke (1985: fig. 8) was not clear about which specimen he illustrated, we cannot be completely certain of the conspecifity of Goeke's Philippine & Indonesian material with *R. longifrons* or with each other. As such, the identity of those, as well as of the present material, is provisional until they can be directly compared with the types of *R. longifrons*.

Raninoides personatus Henderson, 1888
(Figs. 1E, 2F–J, 3E, F)

Raninoides personatus Henderson, 1888: 27, pl. 2, fig. 5; Ihle, 1918: 317 (list).

Material examined. 1 male (with colour image), 11.9 × 22.9 mm (ZRC 2020.0754), stn DW01, Sunda Strait, 6°20.489′S 106°26.890′E – 6°20.431′S 105°26.214′E, 100–104 m, very muddy, 24 March 2018.

Remarks. The present material, a single male specimen, matches the published descriptions and illustrations of *Raninoides personatus* Henderson, 1888 (type locality: Ambon) (viz. Henderson, 1888; Chopra, 1933; Serène & Umali, 1972; Ribes, 1989). This species can be readily distinguished from its congeners by the relatively broad but pointed teeth on the sternal plate between the bases of P1 and P2 (Fig. 2G), by the lobulation of the frontal and supraorbital margin (Fig. 2F), and by the morphology of the

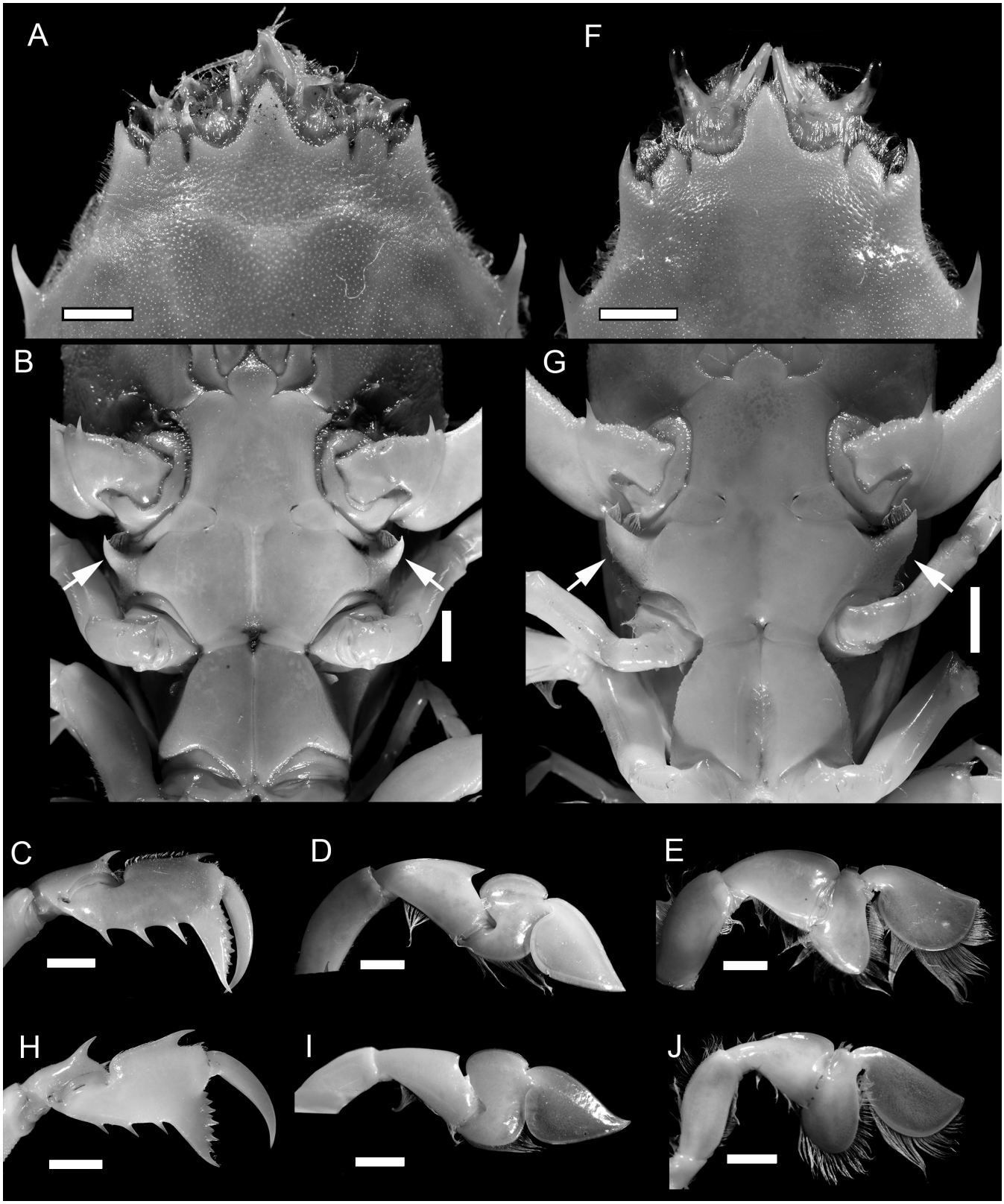

Fig. 2. A–E, *Raninoides longifrons* Chen & Türkay, 2001, female, 16.1 × 27.8 mm (ZRC 2020.0753), stn CP56; F–J, *Raninoides personatus* Henderson, 1888, male, 11.9 × 22.9 mm (ZRC 2020.0754), stn DW01. A, F, anterior region of carapace, dorsal view; B, G, sternal plate, ventral view (white arrows indicating sternal spines between bases of P1 and P2); C, H, right chela, external view; D, I, right P3, dorsal view; E, J, right P4, dorsal view. Scale bars = 2.0 mm.

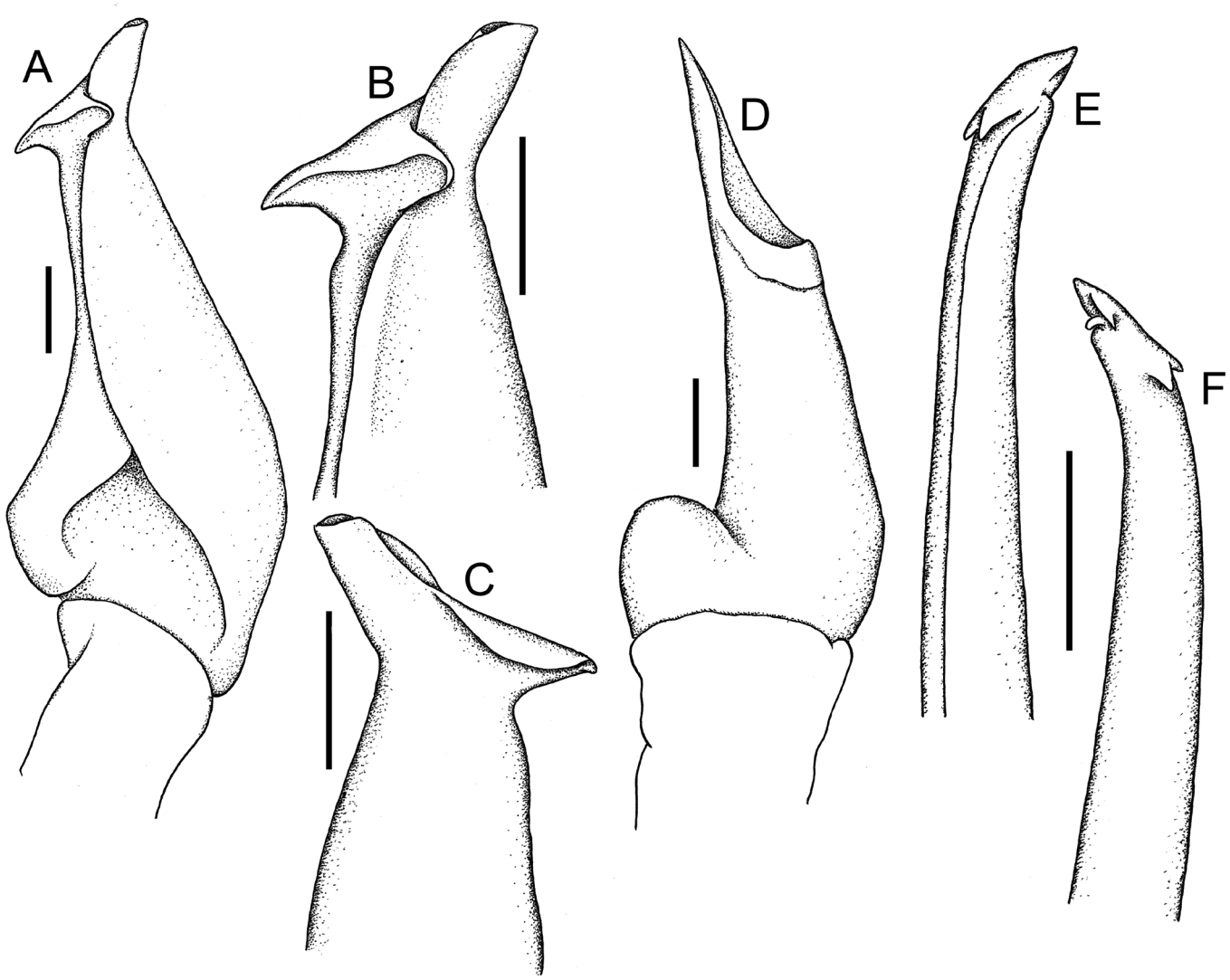

Fig. 3. A–D, *Lysirude channeri* (Wood-Mason, 1885), male, 15.0 × 27.2 mm (ZRC 2020.0750), stn CP33: A, left G1, pleonal view; distal tip of G1, B, pleonal view, C, sternal view; D, left G2, pleonal view. E, F, *Raninoides personatus* Henderson, 1888, male, 11.9 × 22.9 mm (ZRC 2020.0754), stn DW01: distal tip of G1, E, pleonal view, F, sternal view. Scale bars: A–F = 0.5 mm.

male G1 (Fig. 3E, F). As mentioned in the Remarks for the preceding species, the previous record of *R. personatus* from Indonesia by Goeke (1985: 221, fig. 8) was subsequently considered to be *R. longifrons* by Chen & Türkay (2001). As such, this is only the second record of this species from Indonesia since it was described from Ambon in 1888.

Section EUBRACHYURA Saint Laurent, 1980

Superfamily Calappoidea De Haan, 1833

Family Calappidae De Haan, 1833

***Mursia* Desmarest, 1823**

***Mursia australiensis* Campbell, 1971**
(Fig. 1F)

Material examined. 1 juv. female (with colour image), 19.5 (14.0 without lateral spines) × 13.0 mm (ZRC 2020.0755), stn CP02, Sunda Strait, southwest of Rakata Island, 6°16.066′S 105°15.053′E – 6°14.668′S 105°15.256′E, 257–281 m, very muddy with some clay, 24 March 2018; 1 juv. female (with colour image), 17.5 (12.6 without lateral spines) × 11.6 mm (ZRC 2020.0756), stn CP34, western Java, south of Tanjung Boyongkareuceng, 7°44.464′S 107°39.018′E – 7°44.575′S 107°39.447′E, 243–234 m, gravel with pieces of wood, 29 March 2018.

Remarks. Both specimens collected were small, immature females but their morphology matched most closely with the description of *Mursia australiensis* Campbell, 1971, particularly in the general outline and orientation of the carapace lateral spine which is directed laterally and slightly posteriorly, as well as in having three spines on the posterior margin of the cheliped merus, with the distalmost spine nearly as long as the lateral spine of the carapace. Furthermore, the Indonesian material also had a single fissure on the supraorbital margin, a V-shaped suborbital sinus, and a tridentate posterior carapace margin wherein the median tooth is smaller than the lateral teeth (cf. Campbell, 1971: fig. 1, pl. 2 figs. A, B; Galil, 1993: figs. 1d, 2g, h, 11). The live colouration of the specimens from Indonesia mostly agrees with published figures (Miyake, 1983: pl. 8 fig. 5;

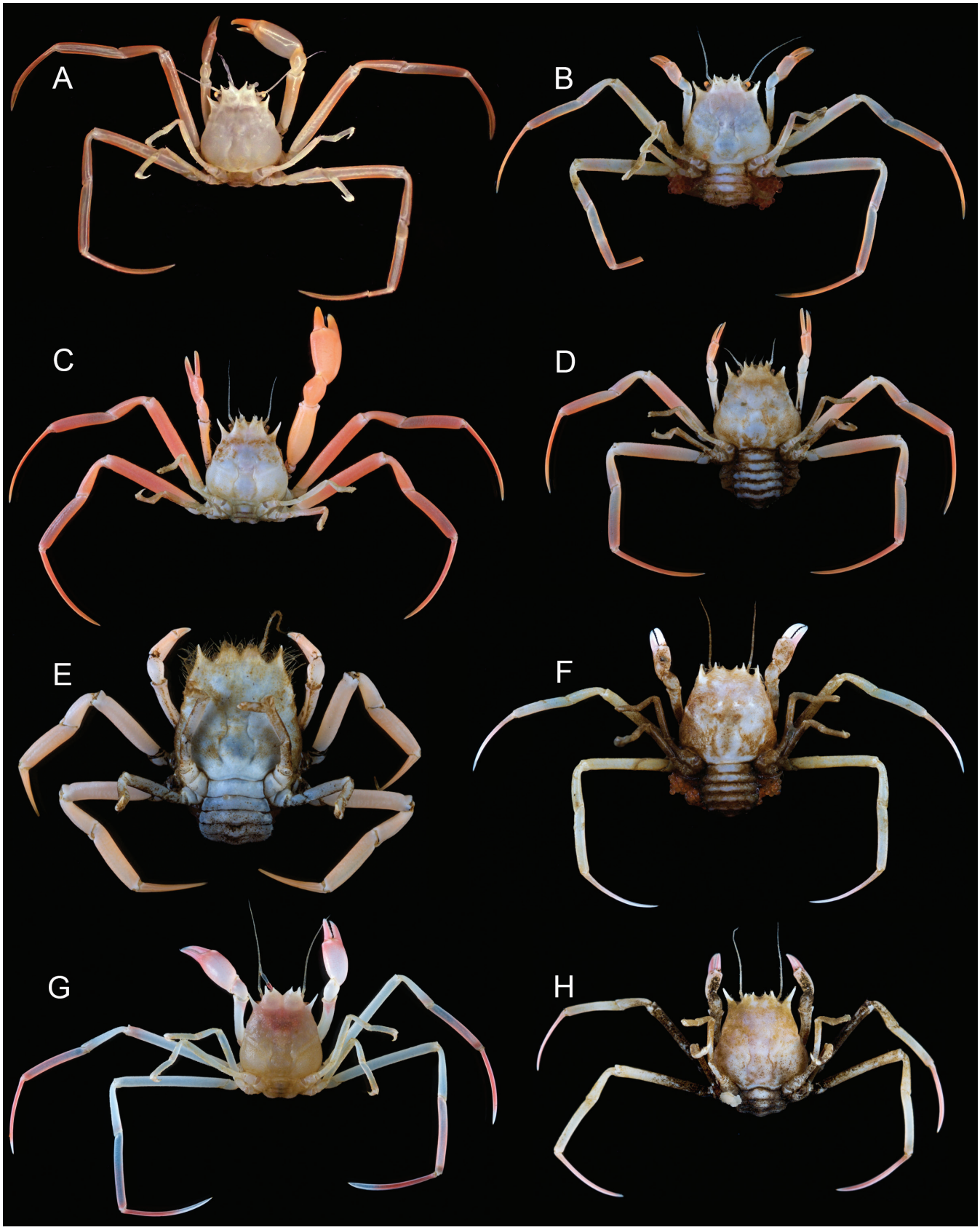

Fig. 4. Fresh colouration. *Ethusa exophthalma* (Castro, 2005), A, male, 6.1 × 6.7 mm (MZB), stn CP51; B, ovig. female, 7.1 × 7.2 mm (ZRC 2020.0762), stn CP10; *Ethusa indica* Alcock, 1894, C, male, 9.9 × 10.3 mm (ZRC 2020.0772), stn CP18; D, ovig. female, 11.0 × 11.2 mm (ZRC 2020.0771), stn CP13; E, *Ethusa hirsuta* McArdle, 1900, ovig. female, 11.9 × 13.0 mm (ZRC 2020.0770), stn CP08; F, *Ethusina ciliacirrata* Castro, 2005, ovig. female, 8.9 × 9.2 mm (ZRC 2020.0774), stn CP13; G, *Ethusina paralongipes* Chen, 1993, male, 7.0 × 8.0 mm (ZRC 2020.0775), stn CP44; H, *Ethusina robusta* (Miers, 1886), female, 13.6 × 13.9 mm (ZRC 2020.0776), stn CP14. Photographs by Chan Tin-Yam (B–H) and JCE Mendoza (A).

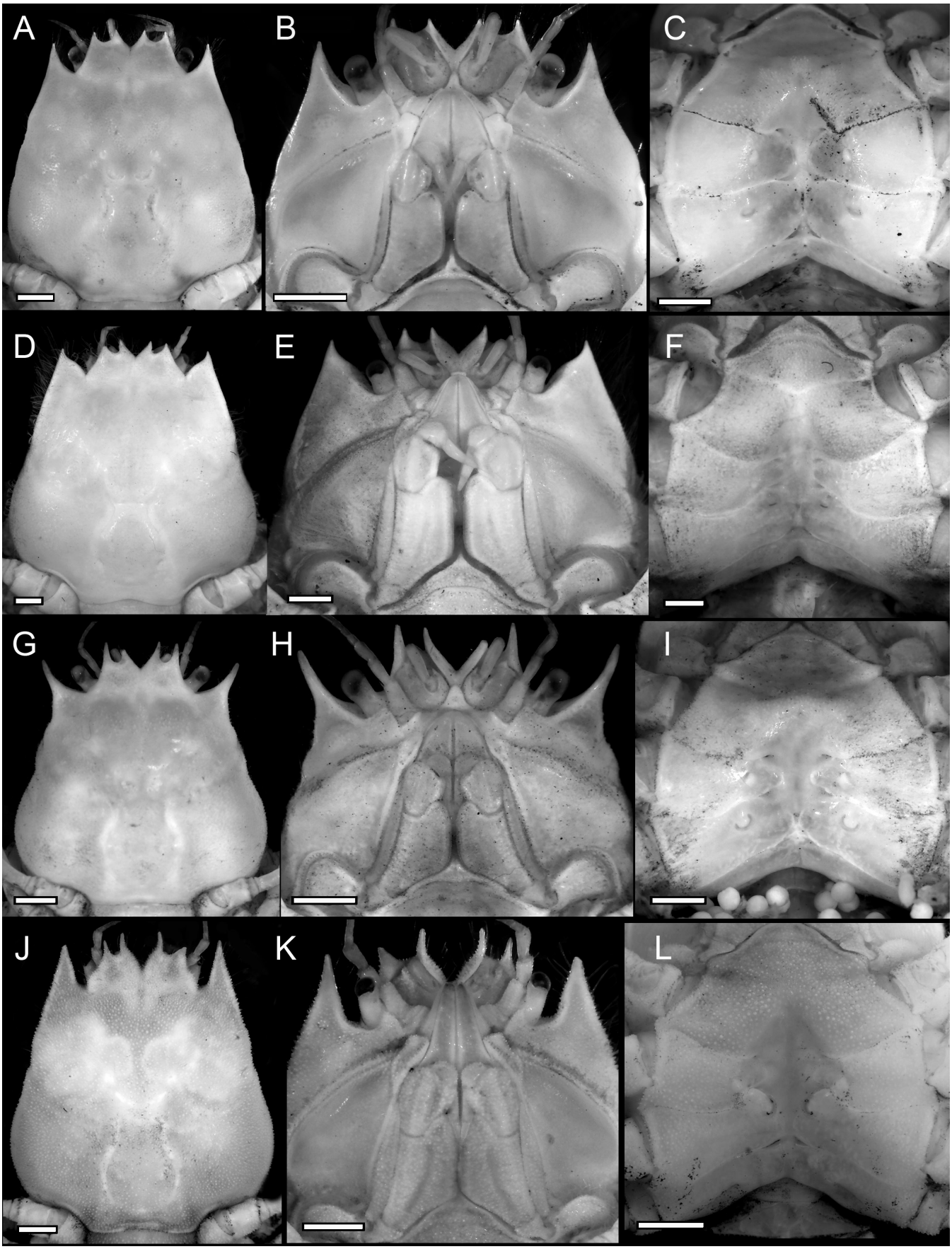

Fig. 5. A–C, *Ethusa abbreviata* Castro, 2005, ovig. female, 7.9 × 8.9 mm (ZRC 2020.0757), stn CP33; D–F, *Ethusa andamanica* Alcock, 1894, female, 11.3 × 12.2 mm (w/ sacculinid) (ZRC 2020.0761), stn CP38; G–I, *Ethusa exophthalma* (Castro, 2005), ovig. female, 7.1 × 7.2 mm (ZRC 2020.0762), stn CP10; J–L, *Ethusa granulosa* Ihle, 1916, female, 7.7 × 8.8 mm (ZRC 2020.0769), stn CP07. A, D, G, J, carapace, dorsal view; B, E, H, K, fronto-oral field, antero-ventral view; C, F, I, L, sterno-pleonal cavity and vulvae, ventral view. Scale bars = 1.0 mm.

Galil, 1993: fig. 11) in the general colour pattern, particularly in having the large tubercles on the dorsal carapace surface basally cream or tan, and the smaller granules reddish-orange, although the inner surface of the cheliped palm has a much larger patch of reddish-orange (Fig. 1F). *Mursia australiensis* has been previously recorded from Cape Morton, Queensland, Australia (type locality) as well as from New Caledonia, and possibly Japan (Galil, 1993). This is the first record for this species in Indonesia.

Superfamily Dorippoidea MacLeay, 1838

Family Ethusidae Guinot, 1977

***Ethusa* Roux, 1830**

***Ethusa abbreviata* Castro, 2005**
(Figs. 1G, 5A–C)

Ethusa sexdentata, Chen, 1985: 185, figs. 5, 6, pl. 2 figs. 1, 2; 1997: 622, in part. Not *E. sexdentata* Stimpson, 1858 [fide Castro, 2005].
Ethusa abbreviata Castro, 2005: 510.

Material examined. 1 ovig. female (with colour image), 7.9 × 8.9 mm (ZRC 2020.0757), stn CP33, western Java, south of Cilauteureum Bay, 7°42.912′S 107°36.559′E – 7°43.255′S 107°37.234′E, 525–312 m, coarse sand and mud, 29 March 2018; 1 ovig. female, 10.6 × 11.2 mm (ZRC 2020.0758), stn CP56, western Java, Pelabuhanratu Bay, 7°00.299′S 106°27.247′E – 7°00.393′S 106°26.790′E, 183–255 m, mud, 3 April 2018.

Remarks. The present material most closely matches the descriptions and illustrations of *Ethusa abbreviata* Castro, 2005 (type locality: Vanuatu) (viz. Chen, 1985: 185, figs. 5, 6, pl. 2 figs. 1, 2, as *E. sexdentata*; Castro, 2005: 510, fig. 2). The anterior border of the endostome is situated posterior to the level of the posterior margins of the antennular fossae (Fig. 5B). The condition of the endostome was used as a diagnostic character for distinguishing this species from the similar *E. hirsuta* McArdle, 1900, viz. "The most significant difference is that the anterior border of the endostome of the new species extends far below the antennular fossae of the basal antennular articles" (Castro, 2005: 512). It needs to be used with care, however, as the judgment of the endostome position depends upon the degree of tilting of the specimen by the observer (in the present work, the specimen was tilted such that the plane of the antennular-buccal field was perpendicular to the observer's line of sight). Nonetheless, this position was still lower compared to the other species of *Ethusa* in the present collection. Castro (2005) also distinguished *E. abbreviata* from the similar *E. sexdentata* Stimpson, 1858, by the more slender base of the exorbital teeth, the broader, U-shaped orbital sinus, the narrower posterior region and less inflated branchial region of the carapace, and the shorter anterior border of the endostome in the former. Thus, he considered Chen's (1985, 1997) records of *E. sexdentata* from the Philippines and the Tanimbar Islands to be of *E. abbreviata* instead. Likewise, the present material have the exorbital teeth moderately wide at the base and drastically narrowed at the distal half, directed upward, and not exceeding the tips of the frontal teeth (Fig. 5A). The P2, P3 are relatively short and stout (P2 L/W ratio = 4.5), with the distal tip of the P2 merus only slightly exceeding the tip of the exorbital tooth when the P2 is folded against the carapace. The vulvae (Fig. 5C) are small, oval, flat, and spaced widely apart, with their apertures oriented toward the posterior.

Ethusa abbreviata has been previously reported from Vanuatu, New Caledonia, the Philippines, and the Tanimbar Islands, in Indonesia (Castro, 2005). It is now also known from southwestern Java.

***Ethusa andamanica* Alcock, 1894**
(Figs. 1H, I, 5D–F, 7C–E, 8A–D)

Material examined. 1 male (with colour image), 7.4 × 8.4 mm (ZRC 2020.0759), stn CP07, Sunda Strait, between Tabuan Island and Sumatra, 5°44.678′S 104°51.151′E – 5°44.917′S 104°52.061′E, 379–409 m, coarse sand, gravel, rubble, and wood, 25 March 2018; 1 female, 15.9 × 15.6 mm (anterior region damaged) (ZRC 2020.0760), stn CP07, Sunda Strait, between Tabuan Island and Sumatra, 5°44.678′S 104°51.151′E – 5°44.917′S 104°52.061′E, 379–409 m, coarse sand, gravel, rubble, and wood, 25 March 2018; 1 female, 9.9 × 10.5 mm (MZB), 2 females 11.3 × 12.2 mm (w/ sacculinid, with colour image), 12.8 × 13.7 mm (with colour image) (ZRC 2020.0761), stn CP38, western Java, south of Cilacap, 8°13.038′S 109°07.689′E – 8°13.150′S 109°08.216′E, 290–295 m, 30 March 2018.

Remarks. *Ethusa andamanica* was described by Alcock (1894) from a single male specimen from the Andaman Sea, with other specimens collected and discussed subsequently (Alcock, 1896, 1899; Kemp & Sewell, 1912), and the first illustration provided (Alcock & Anderson, 1895). Castro (2005) clarified the taxonomy of this species as well as its range (i.e., Andaman Sea and Nicobar Islands), suggesting that records of this species from Japan and the Gulf of Aden should be re-checked. Castro (2005) also illustrated a small female "type" from the collections of the H.M.S. *Investigator* deposited in the Natural History Museum, London.

The material from Indonesia agrees well with the description of *E. andamanica*, and the intact females (Figs. 1I, 5D–F), in particular, closely match the illustration by Alcock & Anderson (1895: pl. 14 fig. 8), viz. the exorbital teeth do not surpass the frontals anteriorly, the orbital sinus is narrow and V-shaped, with a fissure at its lowest point, and the P2, P3 are not setose (Castro, 2005). The vulvae are small, oval, and relatively close to each other, with the vulvar cover flat and the openings directed directly posteriad (Fig. 5F). Among the material is a small male, which nonetheless has well-developed gonopods, illustrated here (Figs. 7C–E, 8A–D). The gonopods of *E. andamanica* have not been figured previously. The G1 is similar to that of *E. crassipodia* Castro, 2005, described from the Solomon Islands, in general form, although the positioning of the subdistal aperture and

its surroundings differs considerably (cf. Castro, 2005: fig. 6C). It is also similar to that of *E. orientalis* Miers, 1886, but can easily be distinguished by the more slender G1 without the subdistal, laterally extended flange in the latter (cf. Castro, 2005: fig. 14B). The G2 of these three species have the same general shape and proportions (cf. Castro, 2005: figs. 6D, 14C).

There is considerable variability in the frontal and exorbital dentition of the present material. In the sole male specimen, the frontal teeth project the furthest relative to the exorbitals, compared to the larger female specimens. Furthermore, it differs from the females in having a wider V-shaped median sinus separating the frontal lobes and having the tips of the frontal teeth directed more laterally (Figs. 5D, 7C). Nonetheless, all have the characteristic sinuous inner margin of the exorbital tooth. Recently, Padate et al. (2020: 5, fig. 4a–d) reported a rather large female specimen (carapace length: 30.6 mm) of *E. andamanica* from the Andaman Sea. This specimen had the lateral margin of the exorbital teeth curving inward at the tips rather than continuing the line of the carapace anterolateral margin, and the posterior branchial regions much swollen. A similar condition of the exorbital tooth was observed in the largest (but damaged) female from Indonesia. As all other specimens of this species reported hitherto were small, it is hard to discount that there could be drastic changes in the carapace morphology as individuals grow larger. Further sampling in the type locality and adjacent regions will be needed to ascertain such ontogenetic variability. This is the first record of this species in Indonesia.

Ethusa exophthalma (Castro, 2005)

(Figs. 4A, B, 5G–I, 8E–G)

Material examined. 1 ovig. female (with colour image), 7.1 × 7.2 mm (ZRC 2020.0762), stn CP10, Sunda Strait, Sumatra, south of Umbar Bay, 5°45.399′S 104°56.098′E – 5°46.183′S 104°56.565′E, 429–446 m, very little mud and clay, with large piece of sunken wood, 25 March 2018; 1 female (with colour image), 8.5 × 9.1 mm (MZB), stn CP22, western Java, south of Panaitan Island, 6°46.458′S 105°07.068′E – 6°47.450′S 105°07.613′E, 864–870 m, mud, 27 March 2018; 1 ovig. female (with colour image), 7.1 × 7.4 mm (ZRC 2020.0763), stn CP26, western Java, east of Tinjil Island, 6°57.221′S 105°54.754′E – 6°56.664′S 105°55.315′E, 517–727 m, mud, 28 March 2018; 1 ovig. female, 7.0 × 7.4 mm (ZRC 2020.0764), stn CP39, western Java, south of Cilacap, 8°15.885′S 109°10.163′E – 8°16.060′S 109°10.944′E, 528–637 m, mud, 30 March 2018; 1 ovig. female 6.4 × 6.5 mm (ZRC 2020.0765), stn CP45, western Java, south of Pameungpeuk, 7°47.670′S 107°43.126′E – 7°47.151′S 107°43.595′E, 851–684 m, mud with small pieces of wood, 1 April 2018; 2 males, 6.0 × 6.6 mm, 5.4 × 5.7 mm, 1 ovig. female, 7.2 × 7.3 mm (ZRC 2020.0766), stn CP48, western Java, south of Tanjung Gedeh, 7°51.120′S 107°46.245′E – 7°51.718′S 107°46.375′E, 689–637 m, mud, 1 April 2018; 1 ovig. female, 9.2 × 9.4 mm (ZRC 2020.0767), stn CP50, western Java, Pelabuhanratu Bay, 7°03.322′S 106°26.673′E – 7°03.762′S 106°26.334′E, 383–425 m, mud, 2 April 2018; 1 male (with colour image), 6.1 × 6.7 mm, 1 female, 6.9 × 7.0 mm, 2 ovig. females, 6.8 × 6.9 mm, 8.4 × 8.6 mm (MZB), stn CP51, western Java, Pelabuhanratu Bay, 7°04.874′S 106°25.396′E – 7°05.348′S 106°25.044′E, 569–657 m, coarse sand, mud, and plastic trash, 2 April 2018; 1 female, 5.7 × 6.1 mm, 1 ovig. female, 7.3 × 7.7 mm (MZB), stn CP55, western Java, Pelabuhanratu Bay, 7°01.013′S 106°26.772′E – 7°01.116′S 106°26.421′E, 378–379 m, clay and mud, 3 April 2018.

Remarks. Castro (2005) described *Ethusina exophthalma* from several specimens collected from Fiji. Castro (2020) reported additional specimens from Papua New Guinea, the Philippines, the Solomon Islands, and Vanuatu, and transferred this species to the genus *Ethusa*, remarking that although the basal segments of the antennules were large, they were not greatly swollen so as to push the eyes laterally, a diagnostic feature of the genus *Ethusina*. Castro (2020) also remarked that the eyes of *E. exophthalma* are relatively long and mobile, in contrast with the short and immobile eyes of *Ethusina* spp. The present material from Indonesia agrees well with the description and illustrations of *E. exophthalma*. The basal segments of the antennules are enlarged, but not inflated, and the eyes are long and motile. In the females, the vulva is small, the vulvar cover is somewhat inflated, and the opening is directed posteromesially (Fig. 5I). In the males, the G1 morphology varies slightly from that of the holotype in having the apical lobe more pointed (Fig. 8E, F) rather than rounded (cf. Castro, 2005: fig. 21C). In the SJADES cruise, this species was collected together with, and could be mistaken for juveniles of, the much larger *E. indica* Alcock, 1894. The present batch of specimens from Indonesia consisted of several ovigerous females, all of which were much smaller than adult *E. indica*, suggesting that *E. exophthalma* reaches maturity at a smaller size. Furthermore, adults of *E. exophthalma* tend to have relatively longer and more slender chelipeds and ambulatory legs; the males have a shorter and stouter G1, with a pronounced subdistal and laterally directed flange; and the females have the vulvae opening posteromesially rather than posterolaterally as in *E. indica* (see below). This is the first record of this species in Indonesia.

Ethusa granulosa Ihle, 1916

(Figs. 5J–L, 7A, B, F–H, 8H–K)

Ethusa granulosa Ihle, 1916: 143, fig. 76; Castro, 2005: 522.

Material examined. 2 males, 5.1 × 6.0 mm (w/ sacculinid), 5.9 × 6.6 mm, 1 female, 8.3 × 8.1 mm, 2 ovig. females, 6.7 × 6.7 mm, 6.6 × 7.4 mm (ZRC 2020.0768), stn CP07, Sunda Strait, between Tabuan Island and Sumatra, 5°44.678′S 104°51.151′E – 5°44.917′S 104°52.061′E, 379–409 m, coarse sand, gravel, rubble, and wood, 25 March 2018; 4 males, 5.3 × 6.3 mm – 6.4 × 6.9 mm, 2 females, 5.6 × 6.2 mm, 7.7 × 8.8 mm, 1 ovig. female, 7.6 × 8.5 mm (posterior broken) (ZRC 2020.0769), stn CP07, Sunda Strait, between Tabuan Island and Sumatra, 5°44.678′S 104°51.151′E – 5°44.917′S 104°52.061′E, 379–409 m, coarse sand, gravel, rubble, and wood, 25 March 2018; 1 male, 5.6 × 6.3 mm, 3

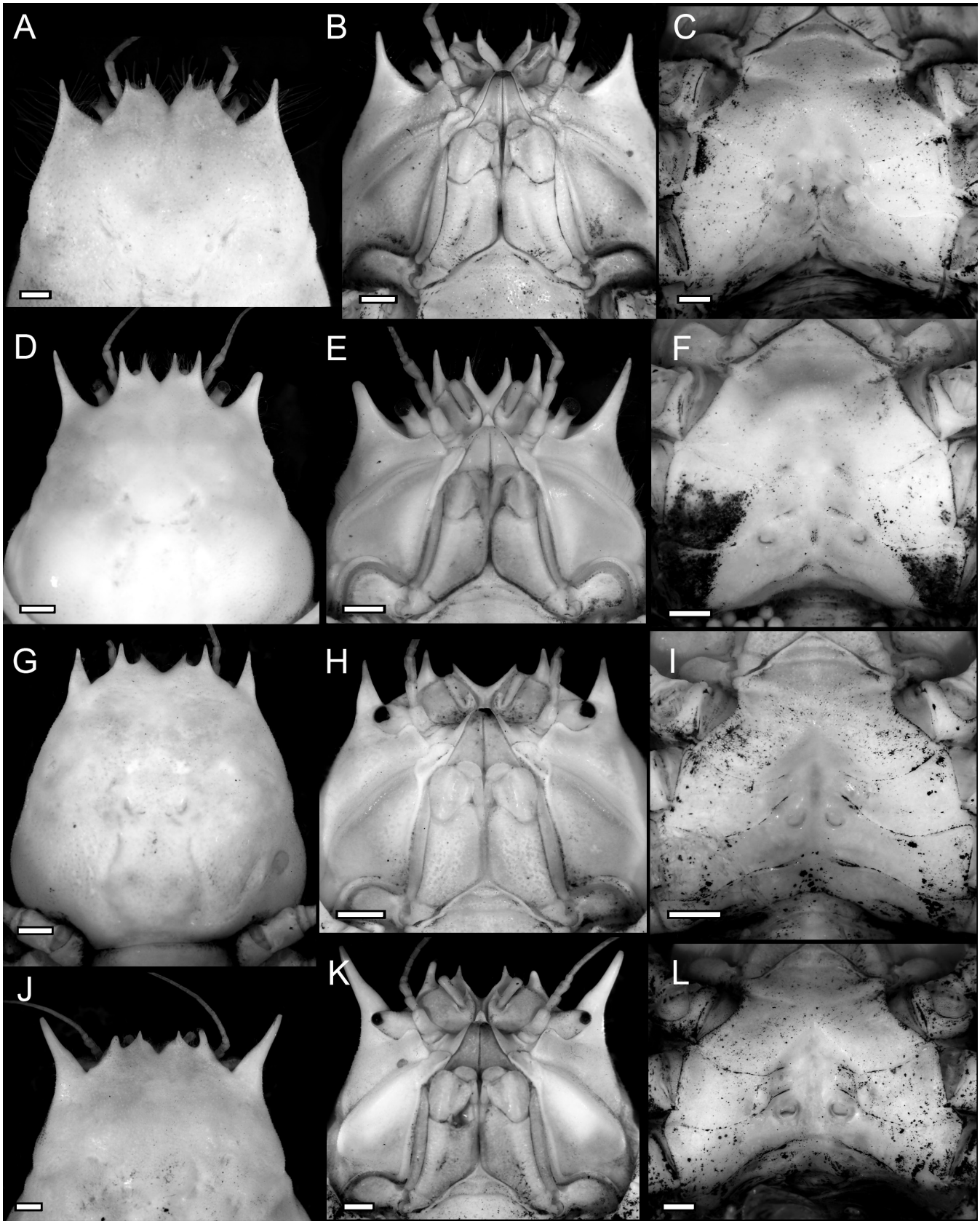

Fig. 6. A–C, *Ethusa hirsuta* McArdle, 1900, ovig. female, 11.9 × 13.0 mm (ZRC 2020.0770), stn CP08; D–F, *Ethusa indica* Alcock, 1894, ovig. female, 11.0 × 11.2 mm (ZRC 2020.0771), stn CP13; G–I, *Ethusina ciliacirrata* Castro, 2005, ovig. female, 8.9 × 9.2 mm (ZRC 2020.0774), stn CP13; J–L, *Ethusina robusta* (Miers, 1886), female, 13.6 × 13.9 mm (ZRC 2020.0776), stn CP14. A, D, G, J, carapace, dorsal view; B, E, H, K, fronto-oral field, antero-ventral view; C, F, I, L, sterno-pleonal cavity and vulvae, ventral view. Scale bars = 1.0 mm.

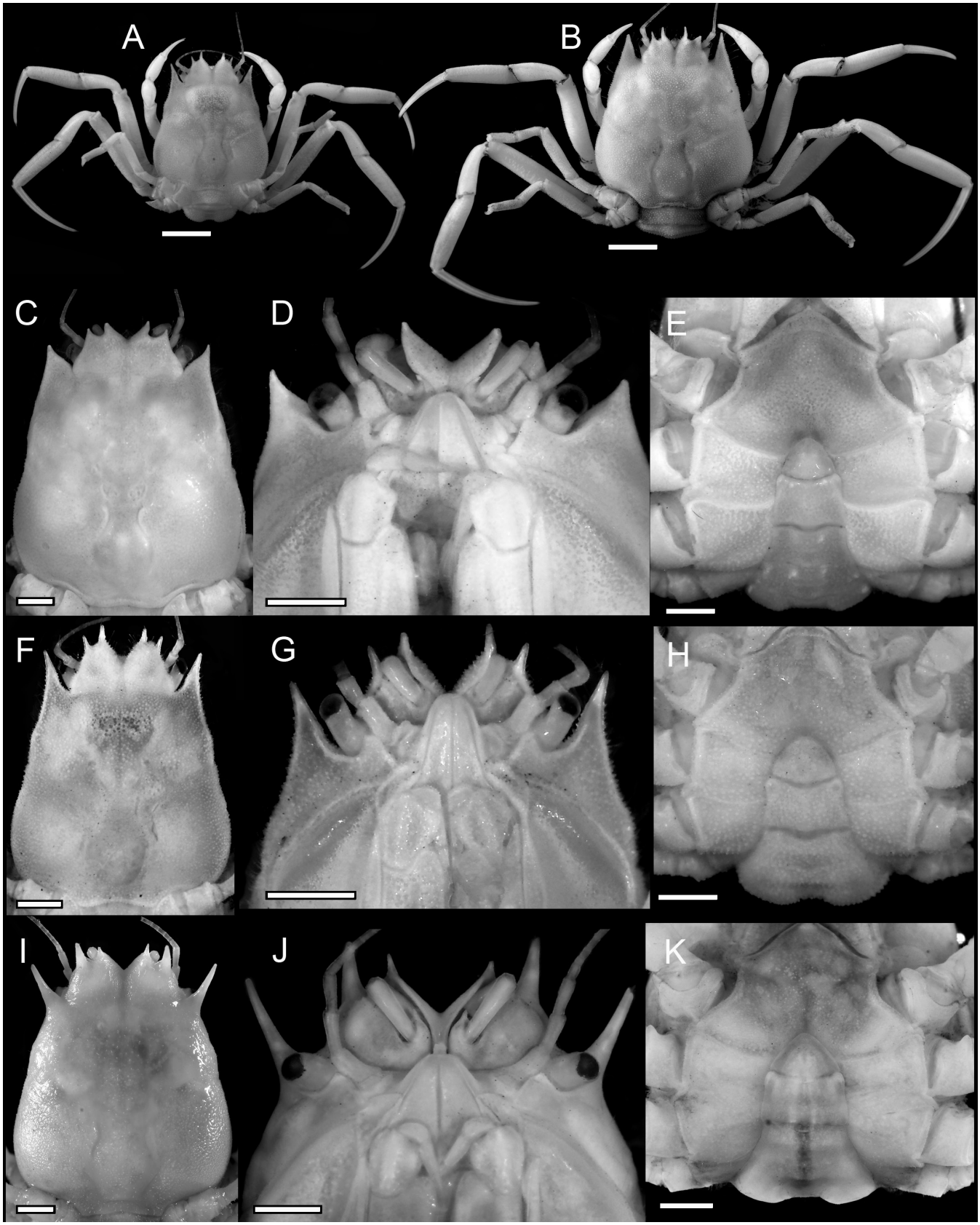

Fig. 7. *Ethusa granulosa* Ihle, 1916: A, F–H, male, 5.3 × 6.3 mm (ZRC 2020.0769), stn CP07; B, female, 7.7 × 8.8 mm (ZRC 2020.0769), stn CP07; C–E, *Ethusa andamanica* Alcock, 1894, male, 7.4 × 8.4 mm (ZRC 2020.0759), stn CP07; I–K, *Ethusina paralongipes* Chen, 1993, male, 7.0 × 8.0 mm (ZRC 2020.0775), stn CP44. A, B, dorsal habitus; C, F, I, carapace, dorsal view; D, G, J, fronto-oral field, antero-ventral view; E, H, K, thoracic sternum and pleon, ventral view. Scale bars: A, B = 2.0 mm; C–K = 1.0 mm.

females, 7.4 × 8.4 mm – 8.3 × 9.4 mm, 1 ovig. female, 7.6 × 8.5 mm (MZB), stn CP08, Sunda Strait, between Tabuan Island and Sumatra, 5°45.126′S 104°51.080′E – 5°45.225′S 104°51.710′E, 425–442 m, coarse sand, gravel, and rubble, 25 March 2018; 1 ovig. female, 7.8 × 8.8 mm (MZB), stn CP38, western Java, south of Cilacap, 8°13.038′S 109°07.689′E – 8°13.150′S 109°08.216′E, 290–295 m, 30 March 2018.

Remarks. *Ethusa granulosa* was described and illustrated by Ihle (1916) based on four female specimens collected from the Lesser Sunda (Roti I.) and Raja Ampat (Kofiau I.) archipelagoes in Indonesia. Chen (1993) subsequently reported this species from New Caledonia, providing details on the male characters for the first time. Castro (2005) re-examined the types and selected the ovigerous female from Roti I. to be the lectotype. This species has been subsequently recorded from Japan, Papua New Guinea, the Solomon Islands, Vanuatu, and Wallis & Futuna (viz. Nagai, 1995; Chen, 2000; Marumura & Kosaka, 2003; Castro, 2005, 2020). The present material agrees well with the descriptions and illustrations for this species (viz. Ihle, 1916: fig. 76; Chen, 1993: fig. 5; Castro, 2005: fig. 33A), particularly in the conspicuously granulose carapace, the narrow, mostly straight exorbital teeth, the anteriorly projecting frontal teeth, and the relatively short legs (Figs. 5J, 7A, B, F). The G1 and G2 (Fig. 8H–K) agree well with that illustrated by Chen (1993: fig. 5f–i) for a male from New Caledonia, although the suture/joint in the mid-length of G1 is not evident. The vulvae (Fig. 5L) are large and close together near the midline of the thoracic sternum, with the openings directed mesially and slightly posteriad. Castro (2005) commented that the anterior border of the endostome just reaches the posterior border of the antennular fossae in all specimens he examined, which included the types, except for a dry specimen from Japan which had it projecting further towards the anterior. We found this latter condition to be the case in the present specimens as well (Fig. 5K, 7G), suggesting variability of this character in this species.

In Indonesia, *E. granulosa* is here recorded only for the second time in more than a hundred years, this time from the southwestern coast of Java and the Sunda Strait.

Ethusa hirsuta McArdle, 1900
(Figs. 4E, 6A–C)

Ethusa makasarica Chen, 1993: 327, fig. 9.
Ethusa hirsuta, Ihle, 1916: 142, 151; Castro, 2005: 524, fig. 11 (distribution map).

Material examined. 1 ovig. female, 11.9 × 13.0 mm (ZRC 2020.0770), stn CP08, Sunda Strait, between Tabuan Island and Sumatra, 5°45.126′S 104°51.080′E – 5°45.225′S 104°51.710′E, 425–442 m, coarse sand, gravel, and rubble, 25 March 2018.

Remarks. The present material, a single ovigerous female, agrees well with the description and illustrations of *Ethusa makasarica* Chen (1993: 327, fig. 9) (type locality: Makassar Strait, Indonesia). Castro (2005) examined Chen's types and considered this species a junior synonym of *E. hirsuta* McArdle, 1900 (type locality: Gulf of Mannar), although the types of *E. hirsuta* were not available for examination, and remarked that only a detailed examination of the type material will definitely resolve this taxonomic issue. To date, the types of *E. hirsuta* (or any material from the type locality) have neither been re-examined nor re-figured since 1905. Comparing the present ovigerous female to the figure of the syntype female from the Gulf of Mannar (cf. Alcock & McArdle, 1902: pl. 59 fig. 2), the following differences are observed: 1) the exorbital teeth are much narrower and pointed (vs. more widely triangular in the syntype); 2) the orbital sinuses are more U-shaped (vs. more V-shaped in the syntype); and 3) the carapace and pereopods are glabrous except for a fringe of stiff setae on the frontal and anterolateral margins of the carapace (vs. distinctly setose carapace & pereopods in the syntype). On the other hand, the non-type male from Sri Lanka (cf. Alcock & McGilchrist, 1905: pl. 72 fig. 1) has a similar exorbital dentition and setation pattern to the present specimen. For the moment, we follow Castro (2005) in considering the present material as conspecific with *E. hirsuta*, until such time that the type material can be re-examined and compared. Furthermore, as noted by Castro (2005), the anterior portion of the endostome is also projecting beyond the posterior margin of the antennular fossae in the present specimen (Fig. 6B). The vulvae are notable in having the anterolateral margin and the adjacent portion of the sternum projecting upward and away from the sternal surface, with the plane of vulvar cover nearly perpendicular to the sternal plane, and the openings oriented postero-mesially (Fig. 6C), but see Castro (2020).

Ethusa hirsuta has been reported from the Gulf of Mannar and the southeastern coast of Sri Lanka, as well as from Papua New Guinea, the Solomon Islands, and Vanuatu (Castro, 2005, 2020). In Indonesia it has been reported from Timor (Ihle, 1916) and the Makassar Strait (Chen, 1993), and now also from the Sunda Strait (present study).

Ethusa indica Alcock, 1894
(Figs. 4C, D, 6D–F, 8L, M)

Ethusa indica, Ihle, 1916: 138, 151; Chen, 1993: 317 (key), 324; 1997: 618; Castro, 2005: 527, fig. 12 (map).

Material examined. 1 ovig. female (with colour image), 11.0 × 11.2 mm (ZRC 2020.0771), stn CP13, Sunda Strait, 6°00.521′S 104°49.410′E – 6°00.828′S 104°49.428′E, 1259–1268 m, mud and plastic trash, 26 March 2018; 1 male (with colour image), 9.9 × 10.3 mm (ZRC 2020.0772), stn CP18, Sunda Strait, 6°10.758′S 105°05.589′E – 6°11.587′S 105°05.735′E, 1060–1073 m, gravel, plastic trash, and sunken wood, 26 March 2018; 1 male, 9.7 × 10.2 mm, 2 ovig. females, 10.4 × 11.2 mm, 10.3 × 11.1 mm (MZB), stn CP18, Sunda Strait, 6°10.758′S 105°05.589′E – 6°11.587′S 105°05.735′E, 1060–1073 m, gravel, plastic trash, and sunken wood, 26 March 2018; 1 ovig. female, 9.7 × 9.6 mm (MZB), stn CP28, western Java, southeast of Tinjil Island, 7°00.194′S 105°54.624′E – 6°59.778′S 105°55.224′E, 957–1022 m, coarse sand and some mud, 28 March 2018; 1 male, 7.5 × 7.9 mm, 1 female, 9.9 × 10.2 mm (w/ sacculinid), 2 ovig.

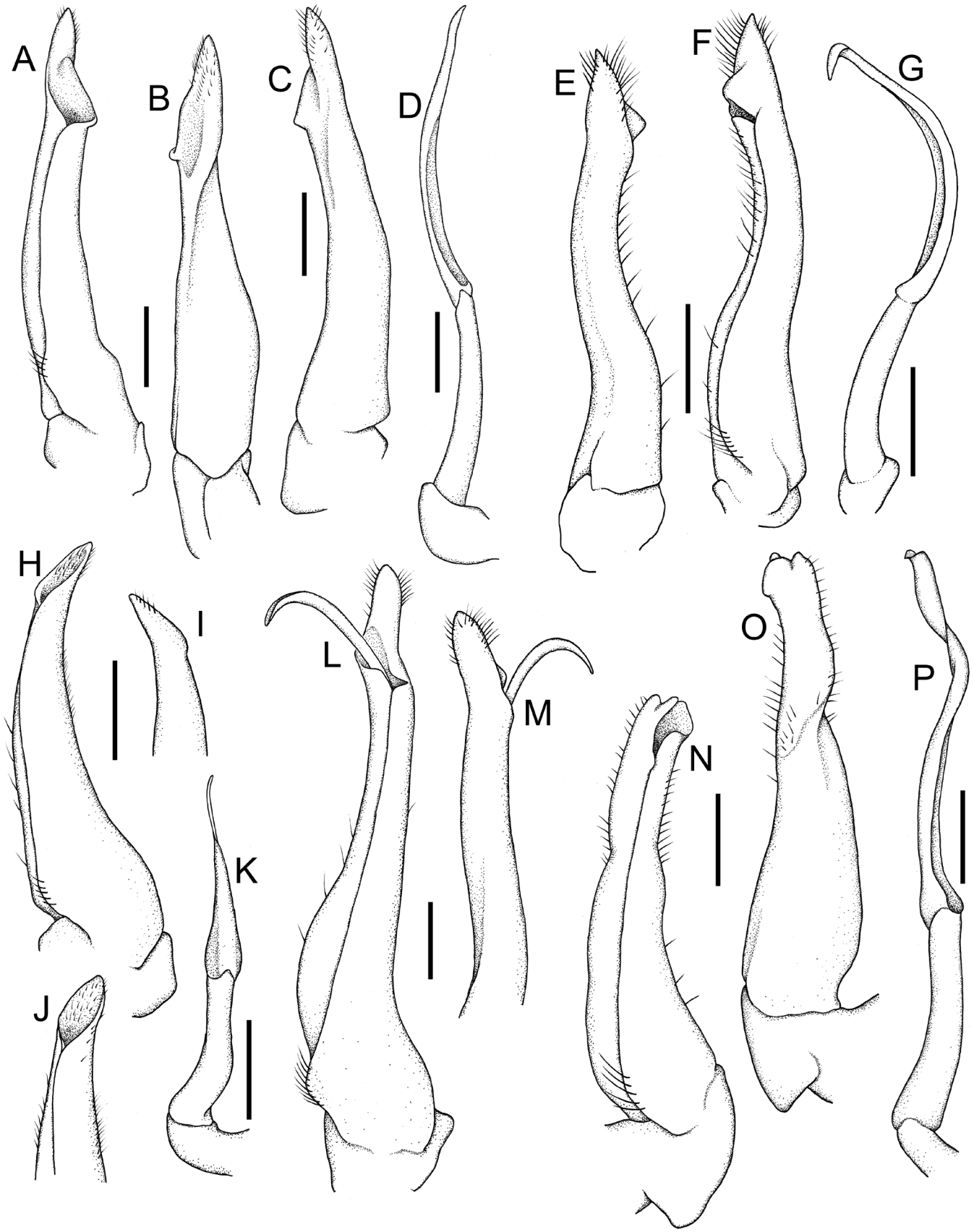

Fig. 8. Gonopods. A–D, *Ethusa andamanica* Alcock, 1894, male, 7.4 × 8.4 mm (ZRC 2020.0759), stn CP07; E–G, *Ethusa exophthalma* (Castro, 2005), male, 6.0 × 6.6 mm (ZRC 2020.0766), stn CP48; H–K, *Ethusa granulosa* Ihle, 1916, male, 5.3 × 6.3 mm (ZRC 2020.0769), stn CP07; L, M, *Ethusa indica* Alcock, 1894, male, 9.9 × 10.3 mm (ZRC 2020.0772), stn CP18; N–P, *Ethusina paralongipes* Chen, 1993, male, 7.0 × 8.0 mm (ZRC 2020.0775), stn CP44. A, F, H, L, N, left G1, pleonal view; B, left G1, lateral view; C, E, O, left G1 sternal view; I, M, distal tip of left G1, sternal view; J, distal tip of G1, mesial view; D, G, K, P, left G2. Scale bars = 0.5 mm.

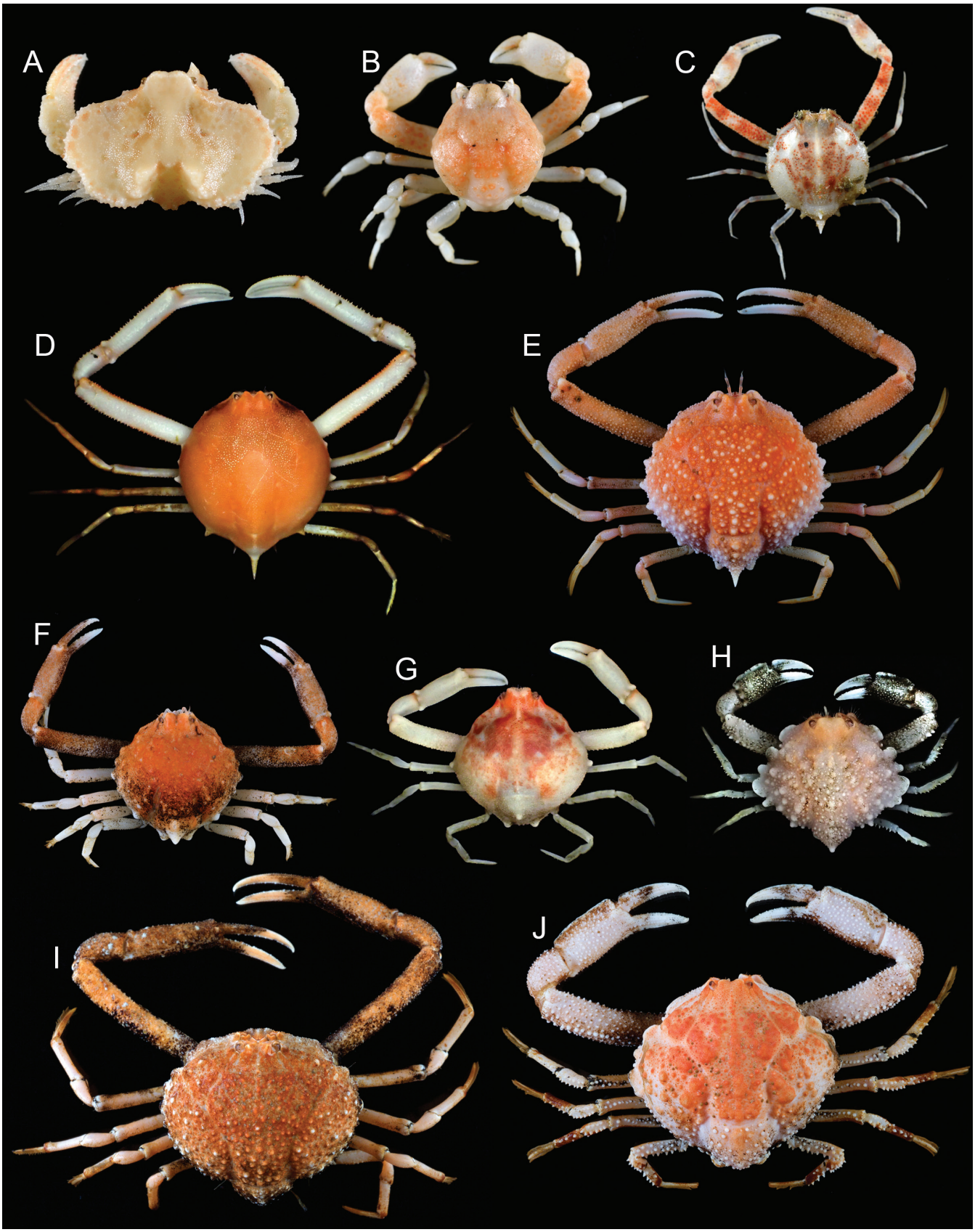

Fig. 9. Fresh colouration. A, *Oreotlos octavus*, new species, holotype, male, 7.7 × 5.0 mm (MZB Cru 5240), stn DW16; B, *Ihleus lanatus* (Alcock, 1896), male, 7.7 × 8.1 mm (ZRC 2020.0780), stn DW16; C, *Arcania* aff. *brevifrons* Chen, 1989, juv. female, 6.2 × 7.0 mm (ZRC 2020.0777), stn DW16; D, *Parilia pattersoni* Ng, Devi & Kumar, 2018, juv. male, 19.5 × 22.2 mm (ZRC 2020.0781), stn CP56; E, *Tanaoa pustulosus* (Wood-Mason, in Wood-Mason & Alcock, 1891), female, 31.6 × 30.2 mm (ZRC 2020.0789), stn CP51; F, *Tanaoa nanus* Galil, 2003, male, 17.9 × 18.1 mm (ZRC 2020.0783), stn CP07; G, *Toru pilus* (Tan, 1996), male, 12.0 × 12.2 mm (ZRC 2020.0791), stn CP20; H, J, *Urashima lamellidentatus* (Wood-Mason, 1892), H, juv. female 15.7 × 13.9 mm (ZRC 2020.0794), stn CP55; J, female, 42.8 × 39.0 mm (ZRC 2020.0793), stn CP50; I, *Tanaoa retpela* Galil & Ng, 2015, female, 43.1 × 40.6 mm (ZRC 2020.0790), stn CP50. Photographs by Chan Tin-Yam (E, F, I, J) and JCE Mendoza (A–D, G, H).

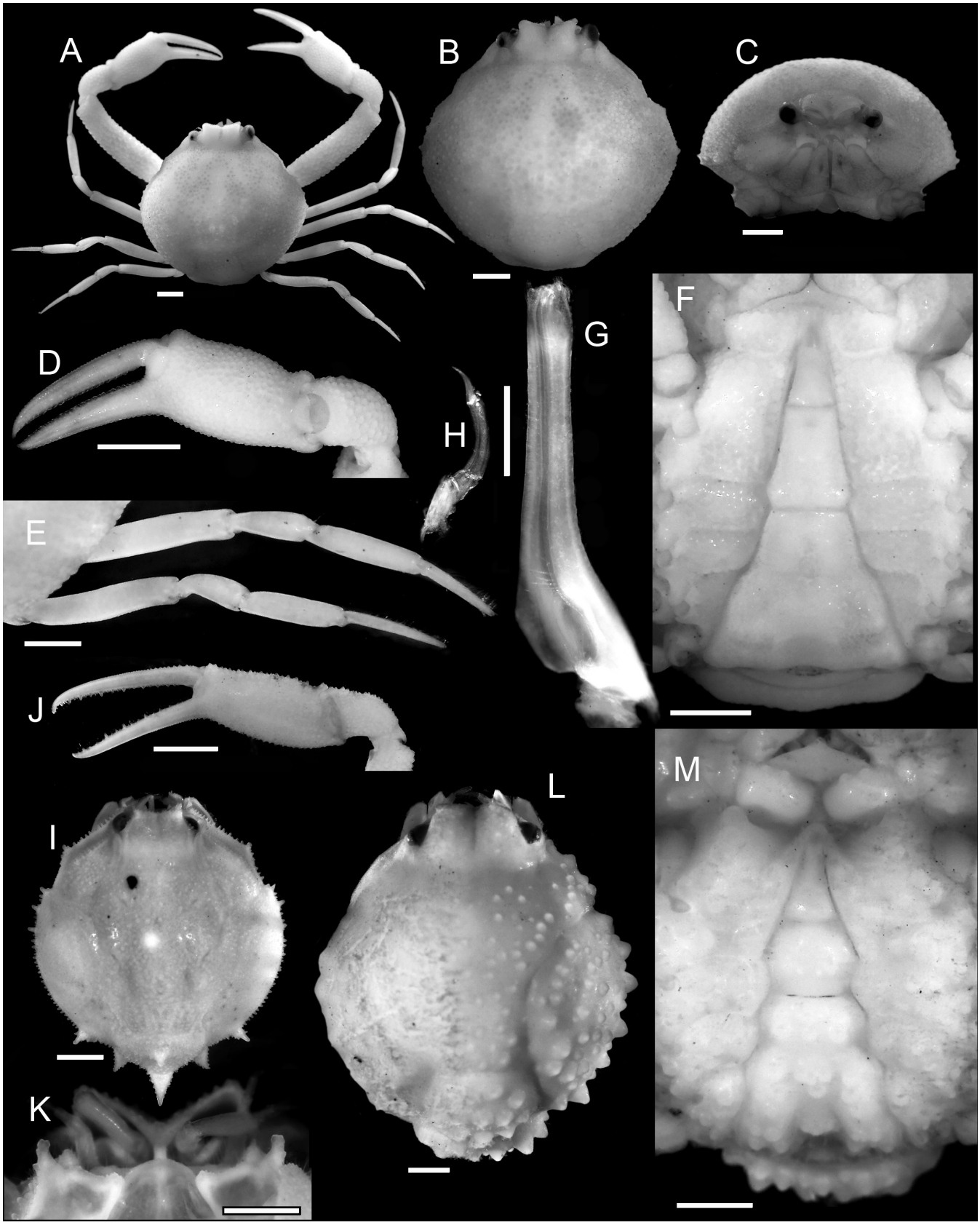

Fig. 10. A–H, *Ebalia serenei* Chen, 1989, male, 7.3 × 6.8 mm (ZRC 2020.0778), stn DW16; I–K, *Arcania* aff. *brevifrons* Chen, 1989, juv. female, 6.2 × 7.0 mm (ZRC 2020.0777), stn DW16; L, M, *Ihleus lanatus* (Alcock, 1896), male, 7.7 × 8.1 mm (ZRC 2020.0780), stn DW16. A, dorsal habitus; B, I, L, carapace, dorsal view; C, carapace, frontal view; D, J, left chela, external view; E, right P4 and P5, dorsal view; F, M, pleon, ventral view; G, left G1, pleonal view; H, left G2, pleonal view; K, anterior buccal region, ventral view. Scale bars: A–F, I, J, L, M = 1.0 mm; G, H, K = 0.5 mm.

females, 10.6 × 10.8 mm, 10.2 × 10.8 mm (ZRC 2020.0773), stn CP52, western Java, Pelabuhanratu Bay, 7°07.740′S 106°23.719′E – 7°07.819′S 106°23.580′E, 1156–1124 m, mud, sunken wood, and plastic trash, 02 April 2018.

Remarks. *Ethusa indica* was previously described by Alcock (1894) from the Bay of Bengal (fide Huys et al., 2014: Appendix 2). It has been subsequently reported across the Indo-West Pacific region, from the Gulf of Aden and the Red Sea to Vanuatu and Tonga, and a taxonomic synopsis has been provided previously by other workers (e.g., Chen, 1985; Castro, 2005, 2020; Spiridonov & Türkay, 2007). The species has also been reported previously from Indonesia: from Bali, Flores, and Sumbawa (Ihle, 1916), the Kai and Tanimbar Islands (Chen, 1997), and from the Makassar Strait and the Moluccas (Castro, 2005). The present material from the Sunda Strait & southwestern Java are morphologically typical of the species (cf. Alcock & Anderson, 1895: pl. 14 fig. 2; Chen, 1985: figs. 8, 9a–d, pl. 1 fig. 1), and the G1 and G2 (Fig. 8L, M) are quite similar to that illustrated by Chen (1985: fig. 9e, f) from a male from the Philippines. The G1 of the Indonesian and Philippine material differs from that illustrated by Spiridonov & Türkay (2007: fig. 2a, b), from a small male from the Gulf of Aden, in being stouter and having a longer and more spatuliform apex. The vulvae (Fig. 6F) are relatively small, oval, flat, and widely spaced apart in the thoracic sternum, with the openings oriented postero-laterally.

Ethusina Smith, 1884

Ethusina ciliacirrata Castro, 2005
(Figs. 4F, 6G–I)

Material examined. 1 ovig. female (with colour image), 8.9 × 9.2 mm (ZRC 2020.0774), stn CP13, 1259–1268 m, Sunda Strait, 6°00.521′S 104°49.410′E – 6°00.828′S 104°49.428′E, 1259–1268 m, mud and plastic trash, 26 March 2018.

Remarks. *Ethusina ciliacirrata* was described by Castro (2005) from a few specimens from Vanuatu and New Caledonia. The present specimen closely resembles the female paratype of *E. ciliacirrata* (MNHN-IU-2008-11886) from New Caledonia, based on a comparison to a photograph of this specimen in the database of the Museum national d'Histoire naturelle, Paris (MNHN, 2020a). The exorbital teeth are comparatively longer in the Indonesian specimen, but all other visible features agree well with the type material. In both females, the exorbital teeth are relatively narrower compared to those of the male holotype from Vanuatu, and the long hairs on the frontal margins are sparser and not as conspicuous (cf. Castro, 2005: fig. 18). The vulvae are moderately large, oval and situated close together in the sternum, with the openings oriented toward the posterior (Fig. 6I).

Besides Vanuatu and New Caledonia, *E. ciliacirrata* has also been reported from the Coral Sea and southwestern Australia (Ahyong & Farrelly, 2018). This is the first record of this species from Indonesia.

Ethusina paralongipes Chen, 1993
(Figs. 4G, 7I–K, 8N–P)

Material examined. 1 male (with colour image), 7.0 × 8.0 mm (ZRC 2020.0775), stn CP44, western Java, south of Pangandaran, 8°10.065′S 108°37.439′E – 8°09.802′S 108°37.145′E, 1013–970 m, mud with pieces of wood, 31 March 2018.

Remarks. Chen (1993) described *Ethusina paralongipes* based on one male and one female collected from New Caledonia. Ng & Ho (2003) described a similar species from Taiwan, *E. saltator*, based on one male. Subsequently, Castro (2005) synonymised the two species after examining their type material. The present material from Indonesia most closely resembles the description and illustrations of *E. saltator* (cf. Ng & Ho, 2003: 81, figs. 14, 15), particularly in the form of the frontal teeth, where the lateral teeth are much longer than the mesial teeth (Fig. 7I; cf. Ng & Ho, 2003: figs. 14B, 15A) (vs. lateral teeth only slightly longer than mesial teeth; cf. Chen, 1993: fig. 18a); and of the gonopods, wherein the G1 is more slender with a slight twist and distinct indentation at its mid-length, and blunter and multi-lobate at the distal tip (Fig. 8N, O; cf. Ng & Ho, 2003: fig. 15G–I) (vs. relatively shorter and stouter, without any sign of twisting, and with a small apical projection; cf. Chen, 1993: fig. 18d), and the G2 terminal segment is nearly twice as long as the subterminal segment (Fig. 8P; cf. Ng & Ho, 2003: fig. 15J) (vs. terminal segment only slightly longer than subterminal segment; cf. Chen, 1993: fig. 18e). For the moment, however, as we are unable to examine all of the relevant type material, we have followed the synonymisation by Castro (2005). This is the first record of this species in Indonesia.

Ethusina robusta (Miers, 1886)
(Figs. 4H, 6J–L)

Ethusina investigatoris, Ihle, 1916: 146, 151; Chen, 1997: 624. Not *E. investigatoris* Alcock, 1896 (fide Castro, 2005).

Material examined. 1 female (with colour image), 13.6 × 13.9 mm (ZRC 2020.0776), stn CP14, Sunda Strait, 6°08.044′S 104°50.086′E – 6°08.518′S 104°49.879′E, 1528–1539 m, mud, sunken wood, and plastic trash, 26 March 2018.

Remarks. Miers (1886) described *Ethusa* (*Ethusina*) *gracilipes* var. *robusta* from four females collected from the Arafura Sea, west of the island of New Guinea. Since then, it was variously confused with other species of *Ethusina* until it was recognised as a distinct species by Chen (1986) (see Castro, 2005 for taxonomic synopsis). Castro (2005) stabilised the taxonomy of this species by selecting a female lectotype (cf. Castro, 2005: fig. 25A), and also illustrating the gonopods of a male specimen from the Solomon Islands, which is just on the eastern side of the island of New Guinea (cf. Castro, 2005: fig. 25B, C).

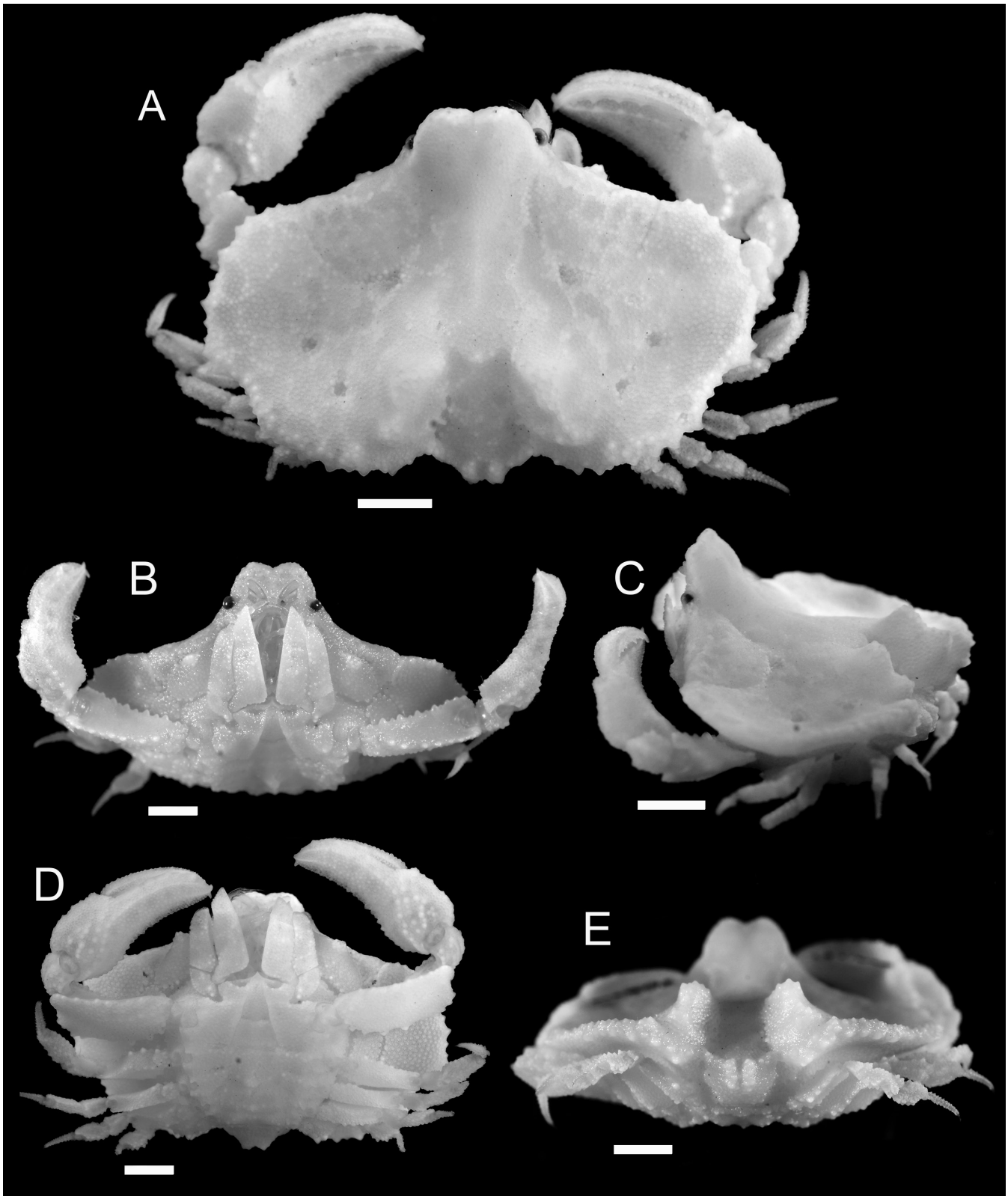

Fig. 11. *Oreotlos octavus*, new species, holotype, male, 7.7 × 5.0 mm (MZB Cru 5240), stn DW16, Sunda Strait, Indonesia. A, dorsal habitus; B, anteroventral view; C, laterodorsal view; D, ventral view; E, posterior view. Scale bars = 1.0 mm.

Alcock (1896) described *Ethusa* (*Ethusina*) *investigatoris* based on an unspecified number of specimens from the Bay of Bengal and the Laccadive Sea. Since then, this species has been reported from Indonesia (Ihle, 1916; Chen, 1997), the East China Sea (Chen, 1986; Chen & Sun, 2002), and the South China Sea (Chen & Xu, 1991). Ng & Ho (2003) described several new species of *Ethusina* from the waters off Taiwan, including *E. alcocki*. In the synonymy for this species, they included the record of *E. investigatoris* by Chen & Xu (1991) from the South China Sea. Castro (2005) re-examined the type and non-type material of *E. alcocki* and *E. robusta* (Miers, 1886), as well as material previously

reported as *E. investigatoris*, except for the types and the material reported by Chen (1986), Chen & Xu (1991) and Chen & Sun (2002). From this, he considered *E. alcocki* and *E. investigatoris* to be junior subjective synonyms of *E. robusta*. We believe, however, that the matter is far from resolved. For one, there are clear differences in the G1 morphologies of the relevant material reported thus far. The gonopods of *E. robusta* (cf. Castro, 2005: fig. 25B, C) are quite different from those reported as "*E. investigatoris*" from the East and South China Seas (Chen, 1986: fig. 70; Chen & Xu, 1991: fig. 9-2, 9-3; Chen & Sun, 2002: fig. 107-5), wherein the G1 of *E. robusta* is much shorter and stouter, and has a relatively more pointed distal tip, whereas in "*E. investigatoris*", the G1 is longer and more slender, with a noticeable twist along the mid-length, and the distal tip is blunter. Furthermore, based on the drawing of the syntype of *E. investigatoris* (cf. Alcock & McGilchrist, 1905: pl. 72 fig. 3) the orbital sinus is much narrower than that of *E. robusta*. All of the relevant material, including the type or topotypic material of *E. investigatoris*, will have to be gathered and compared with each other in order to fully resolve this taxonomic issue.

For the moment, we consider the present female specimen to be identical to *E. robusta* as it closely matches the published descriptions and figures for this species (cf. Miers, 1886: pl. 29 fig. 2; Castro, 2005: fig. 25). This species has been reported in Indonesia previously, from the south of Sulawesi (Ihle, 1916) and the Tanimbar Islands (Chen, 1997) as *E. investigatoris*, but Castro (2005) considered these to be *E. robusta* instead after a re-examination of the material. The vulvae (Fig. 6L) are large and spaced closely together on the sternum, and slightly raised from the sternal surface, with the openings directed toward the posterior.

Superfamily Leucosioidea Samouelle, 1819

Family Leucosiidae Samouelle, 1819

***Arcania* Leach, 1817**

***Arcania* aff. *brevifrons* Chen, 1989**
(Figs. 9C, 10I–K)

Arcania brevifrons, Galil, 2001: 172.

Material examined. 1 juv. female (with colour image), 6.2 × 7.0 mm (ZRC 2020.0777), stn DW16, Sunda Strait, seamount reef, 6°09.803′S 104°57.976′E – 6°09.606′S 104°58.208′E, 103–92 m, gravel, sand, and some mud, 26 March 2018.

Remarks. The present specimen is a small, juvenile female, which is probably most similar to *Arcania brevifrons* Chen, 1989, first described from the Philippines. The three pairs of spines of anterolateral margins of the carapace are not yet fully formed, but two pairs of posterolateral spines and one median posterior spine (the largest) are already well defined (Fig. 10I). The intestinal region also has the spine anterior to the median posterior spine (Fig. 10I). Spines on the anterior border of the pterygostome are also present but small (Fig. 10K) (cf. Chen, 1993: fig. 8, pl. 5 fig. 6; Galil, 2001: fig. 1A). This species has been previously recorded from Indonesia (Makassar Strait and Aceh), as well as from Fiji, the Seychelles, Madagascar, and even the Mediterranean Sea (Galil, 2001; Galil et al., 2017).

Some similarities in live colouration, carapace spination, and cheliped and walking leg proportions (Fig. 9C) were observed between the present specimen and published figures of certain species of *Myra* Leach: e.g., a juvenile female *M. tumidospina* Galil from the Philippines (Galil & Ng, 2007: fig. 3A), and a juvenile female *M. curtimana* Galil from Papua New Guinea (Galil & Ng, 2015: fig. 3F). Both these specimens, however, only have a pair of posterolateral spines and a more elongated carapace while the present specimen has two pairs of posterolateral spines and a more circular carapace outline.

***Ebalia* Leach, 1817**

***Ebalia serenei* Chen, 1989**
(Fig. 10A–H)

Material examined. 4 males, 6.2 × 5.6 mm – 7.3 × 6.8 mm, 2 females, 3.2 × 2.9 mm, 4.8 × 4.4 mm (ZRC 2020.0778), stn DW16, Sunda Strait, seamount reef, 6°09.803′S 104°57.976′E – 6°09.606′S 104°58.208′E, 103–92 m, gravel, sand, and some mud, 26 March 2018; 1 male, 6.1 × 5.7 mm, 1 female, 5.9 × 5.2 mm (ZRC 2020.0779), stn DW17, Sunda Strait, seamount reef, 6°07.333′S 105°00.762′E – 6°07.221′S 105°00.865′E, 448–469 m, gravel, coral, and small rocks, 26 March 2018.

Remarks. The present specimens (Fig. 10A–H) agree well with the description and illustrations of Chen (1989: 189, figs. 31a, b, 32a, b, pl. 5 figs. 2, 4); the only variance is that the ambulatory dactyli of the present material are variably subequal in length to or longer than the propodi (vs. ambulatory dactyli longer than propodi, cf. Chen, 1989: 189). This species was previously known only from the type locality, Philippines (Chen, 1989), and is reported here for the first time from Indonesia.

***Ihleus* Ovaere, 1989**

***Ihleus lanatus* (Alcock, 1896)**
(Figs. 9B, 10L, M)

Randallia lanata, Ihle, 1918: 248.

Material examined. 2 males, 3.7 × 3.8 mm, 7.7 × 8.1 mm (with colour image) (ZRC 2020.0780), stn DW16, Sunda Strait, seamount reef, 6°09.803′S 104°57.976′E – 6°09.606′S 104°58.208′E, 103–92 m, gravel, sand, and some mud, 26 March 2018.

Remarks. *Randallia lanata* was described from the Andaman Sea (Alcock, 1896) based on at least one male and one female specimen. It was subsequently recorded from Indonesia and Japan (Ihle, 1918; Sakai, 1937, 1976; Miyake, 1983). Ovaere (1989) established a new genus, *Ihleus*, for

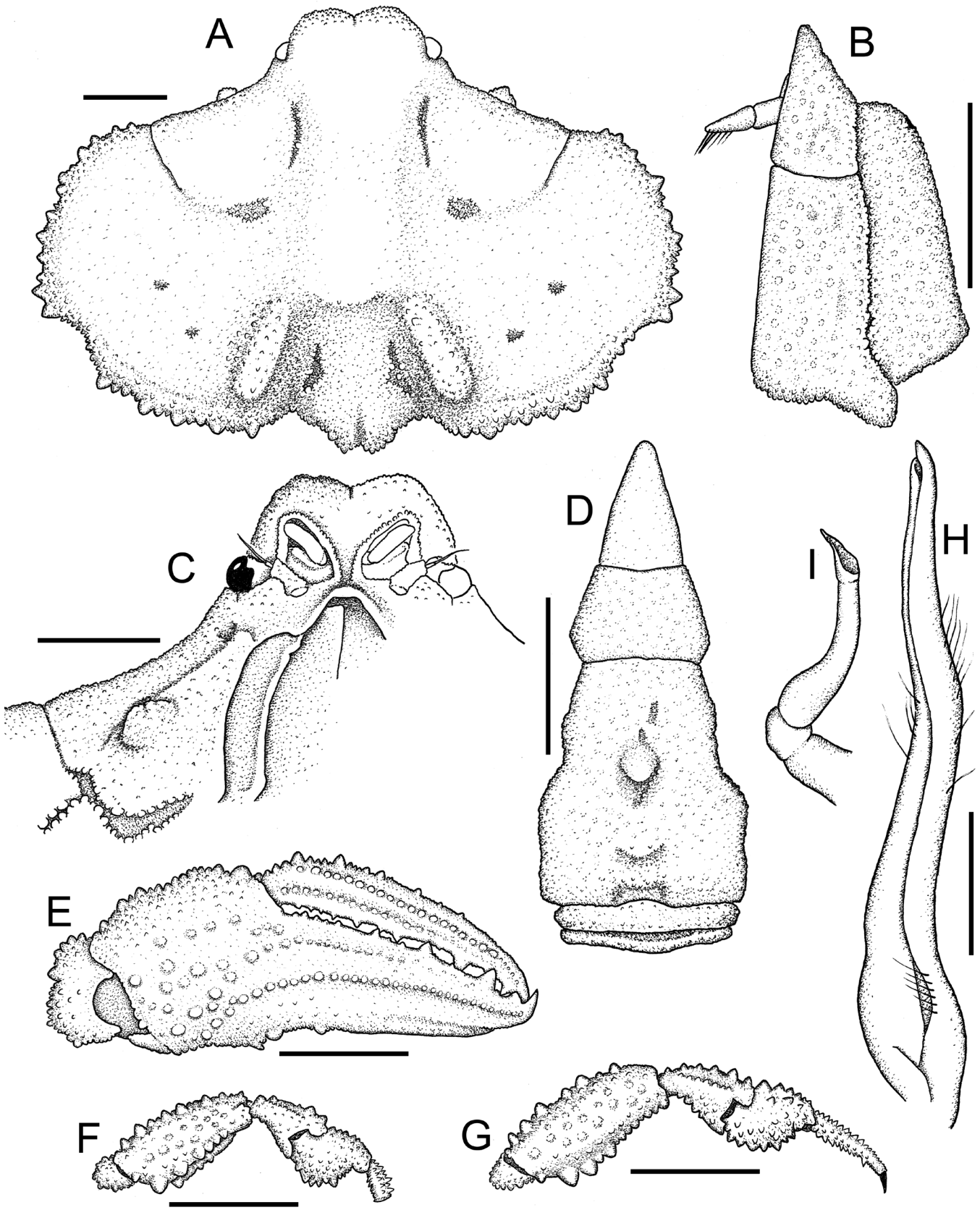

Fig. 12. *Oreotlos octavus*, new species, holotype, male, 7.7 × 5.0 mm (MZB Cru 5240), stn DW16, Sunda Strait, Indonesia. A, carapace, dorsal view; B, left third maxilliped, external view; C, fronto-buccal area, antero-ventral view; D, pleon, ventral view; E, right chela, external view; F, right P5 (distal tip of dactylus broken off), dorsal view; G, right P4, dorsal view; H, left G1, pleonal view; I, left G2, pleonal view. Scale bars: A–G = 1.0 mm; H, I = 0.5 mm.

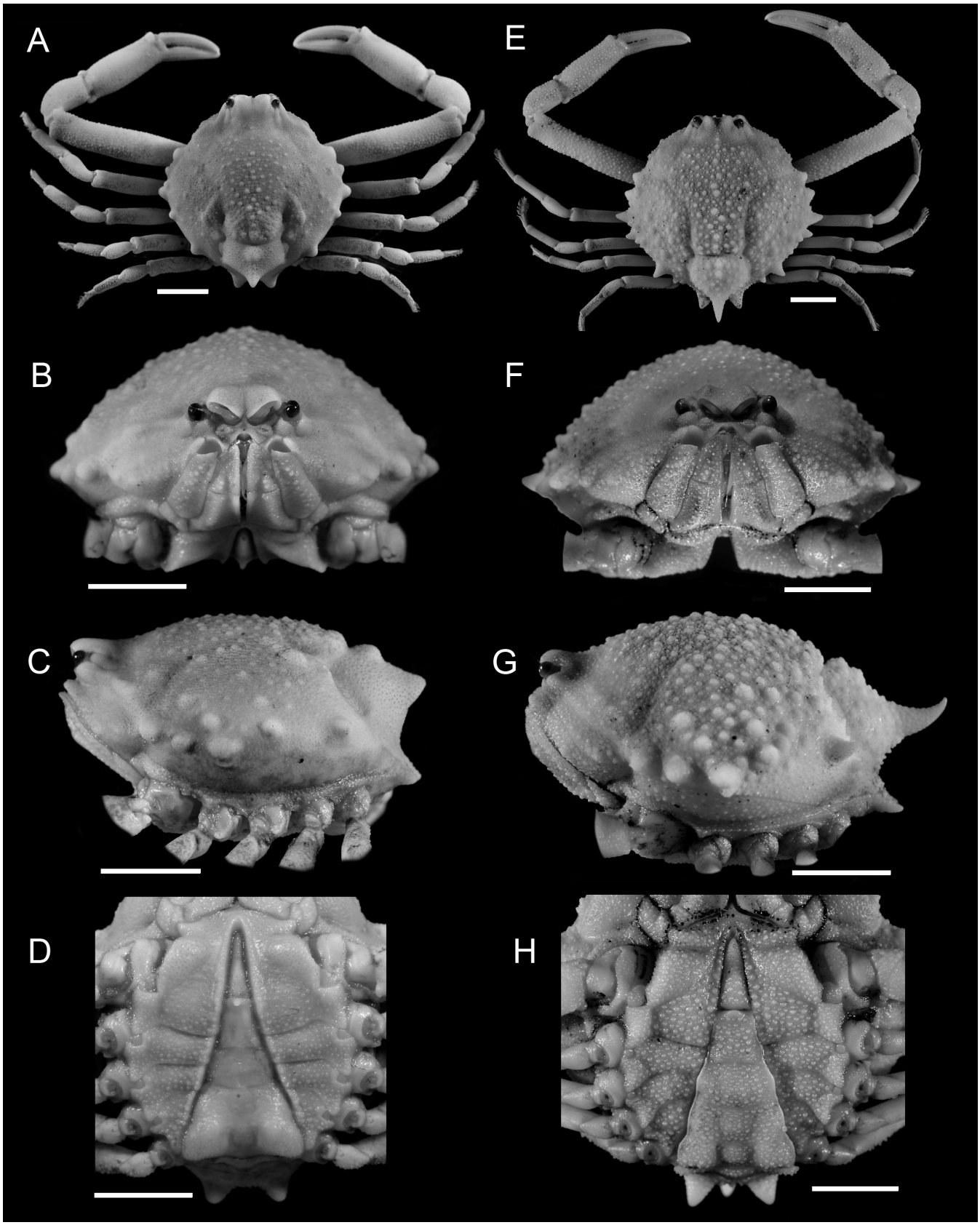

Fig. 13. A–D, *Tanaoa nanus* Galil, 2003, male, 18.6 × 19.1 mm (ZRC 2020.0785), stn CP08; E–H, *Tanaoa pustulosus* (Wood-Mason, in Wood-Mason & Alcock, 1891), male, 22.7 × 21.3 mm (ZRC 2020.0788), stn CP51. A, E, dorsal habitus; B, F, carapace, frontal view; C, G, carapace, lateral view; D, H, thoracic sternum and pleon, ventral view. Scale bars = 5.0 mm.

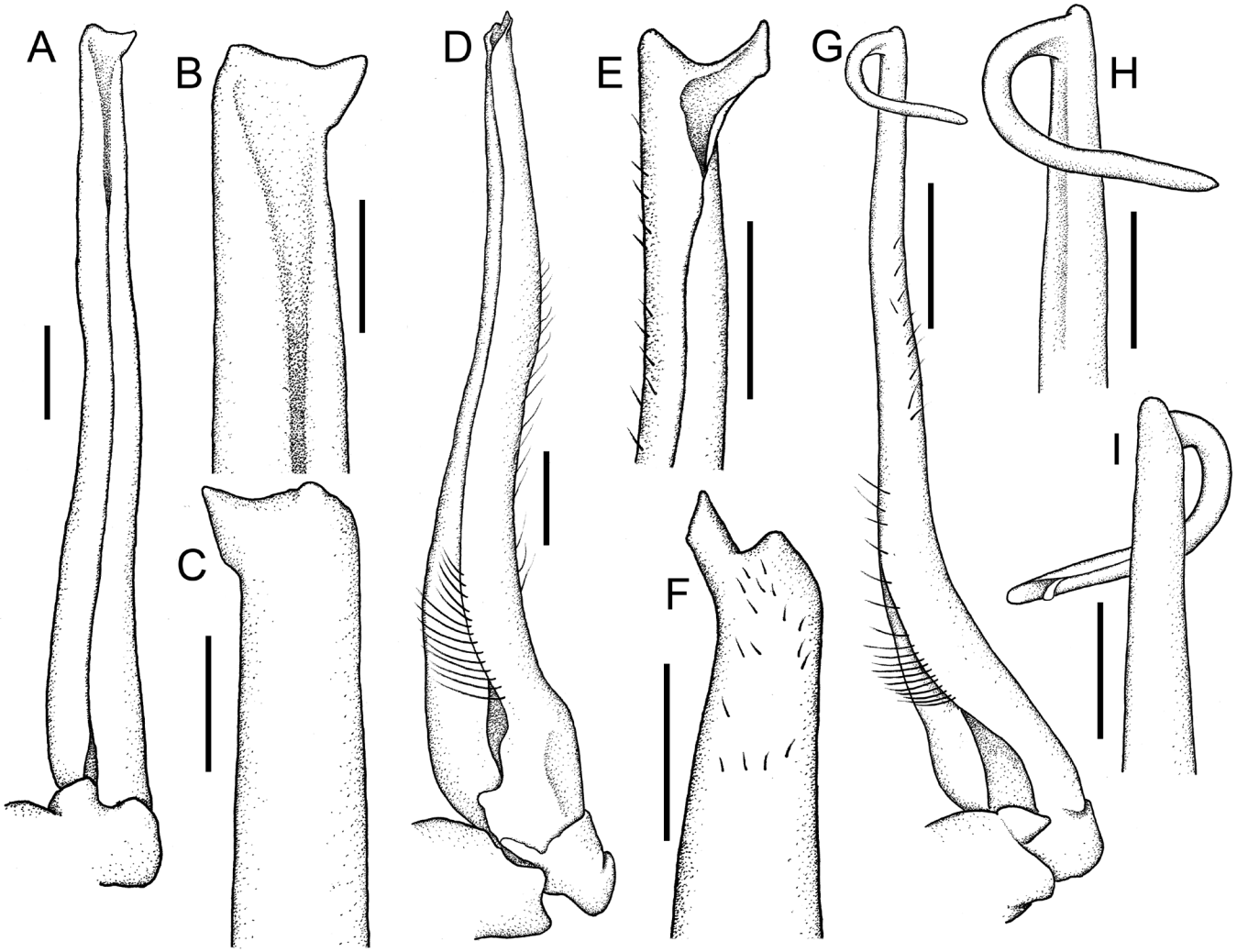

Fig. 14. Gonopods. A–C, *Tanaoa pustulosus* (Wood-Mason, in Wood-Mason & Alcock, 1891), male, 22.7 × 21.3 mm (ZRC 2020.0788), stn CP51; D–F, *Tanaoa nanus* Galil, 2003, male, 18.6 × 19.1 mm (ZRC 2020.0785), stn CP08; G–I, *Toru pilus* (Tan, 1996), male, 12.0 × 12.2 mm (ZRC 2020.0791), stn CP20. A, D, G, left G1, pleonal view; B, E, H, distal tip of left G1, pleonal view; C, F, I, distal tip of left G1, sternal view. Scale bars: A, D, G = 1.0 mm; B, C, E, F, H, I = 0.5 mm.

this species (together with *Randallia villosa* Chen, 1989), and reported additional material from Papua New Guinea. Differences between *I. lanatus* and *I. villosus* were clearly presented, with illustrations of the carapace sculpturing without the tomentum. The present material agrees well with the description and illustrations of *Ihleus lanatus* (cf. Alcock, 1896: 193; Alcock & Anderson, 1897: pl. 30 fig. 5; Ovaere, 1989: figs. 1a, 2a). The whole body and the pereopods were covered in a translucent tomentum, which needed to be removed to reveal the underlying diagnostic sculpture (Fig. 10L). The record of "*Randallia lanata*" by Tan (1996: 1053, fig. 8g–l) from the Philippines, is probably of *I. villosus*, instead. In Indonesia, *I. lanatus* has been previously reported from the Sape Strait, the Molo Strait, between the islands of Wowoni and Buton, Banda Island, and the Kai Islands (Ihle, 1918); and now it is also known from the Sunda Strait.

Oreotlos Ihle, 1918

Oreotlos octavus, new species
(Figs. 9A, 11, 12)

Material examined. Holotype, male (with colour image), 7.7 × 5.0 mm (MZB Cru 5240), stn DW16, Sunda Strait, seamount reef, 6°09.803′S 104°57.976′E – 6°09.606′S 104°58.208′E, 103–92 m, gravel, sand, and some mud, 26 March 2018.

Description. Carapace (Figs. 9A, 11A, C, E, 12A) inversely cardioid in outline, 1.54 times wider than long, dorsal regions poorly defined; surface appearing smooth to unaided eye, but regularly granulate under the microscope, granules on carapace arranged regularly and packed closely resembling a cobbled surface, with a repeating pattern (i.e., one large central granule surrounded by 10 or so smaller granules); longitudinal cavity on region posterior to orbit present; median longitudinal ridge wide, indistinct; hepatic regions convex; branchial regions depressed, concave, with three lacunae on each side; posterior (cardiac, intestinal) regions depressed, bounded on either side by high, conspicuous,

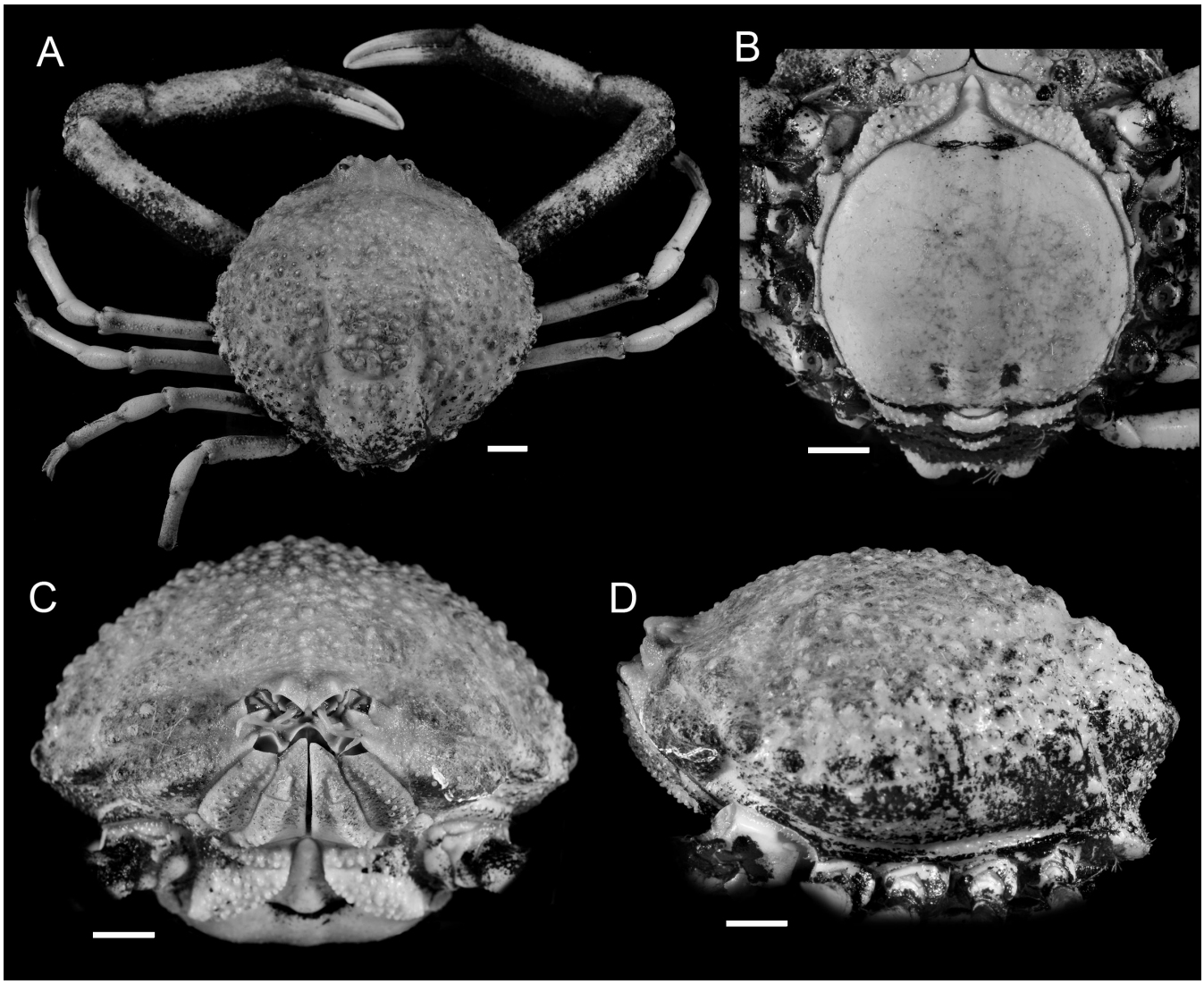

Fig. 15. *Tanaoa retpela* Galil & Ng, 2015, female, 43.1 × 40.6 mm (ZRC 2020.0790), stn CP50. A, dorsal habitus; B, pleon, ventral view; C, carapace, frontal view; D, carapace, lateral view. Scale bars = 5.0 mm.

longitudinal ridges topped with granules; deep longitudinal cavity on either side of intestinal region, along mesial margins of the high longitudinal ridges. Frontal region upswept, giving anterior-posterior axis of carapace a distinctly concave aspect; front produced, slightly bilobate with shallow median cleft, margin of frontal lobe convex; orbits short, supraorbital margin granulate, infraorbital margin granulate with one short, inconspicuous fissure; anterolateral margin of carapace distinctly concave, without any large granules or small teeth; with distinct fissure lateral to hepatic region and extending into branchial region, this fissure also continued and visible ventrally; lateral (branchial) margin convex, lined with large conical tubercles and granules, forming a swollen rim, distinguished from posterolateral margin by a sharp angle followed by a concavity; posterolateral margins slightly convex, also with tuberculate and granulate margins forming a swollen rim, distinguished from posterior margin by deep concavity; posterior margin projecting outwards, bilobate, lobes separated by moderately deep groove. Subhepatic region with granular ridge running parallel to anterolateral margin of carapace, laterally along ridge is a large granular tubercle which projects outward and is visible from dorsal view. Epistome with posterior margin continuously concave. Endostome smooth, with complete, well-developed endostomial crest (Fig. 11C).

Eyes (Fig. 11C) relatively small, but with well developed corneas which can be seen projecting from small orbits in dorsal view, eyestalks short, distal boundary with corneas lined with small granules. Basal segment of antennule occupying only half of antennular fossa when antennule is folded, anterior and lateral margins of fossa with raised rim. Antennae small, basal segment subrectangular, forming part of posterior wall of antennular fossa, antennal flagellum short and fine, antennal gland small, nearly indiscernible. Third maxillipeds (Fig. 11B) covered with fine granules as on carapace; merus with pointed apex, lateral margin with obtuse angle about halfway down from apex; ischium 1.57 times longer than merus along inner margin; palp folding into buccal (inner) surface of merus, articles cylindrical, dactylus with distal setae; exopod slightly narrower than ischium.

Pereopods when folded are obscured from dorsal view by carapace. Chelipeds (P1; Figs. 9A, 11, 12E) symmetric,

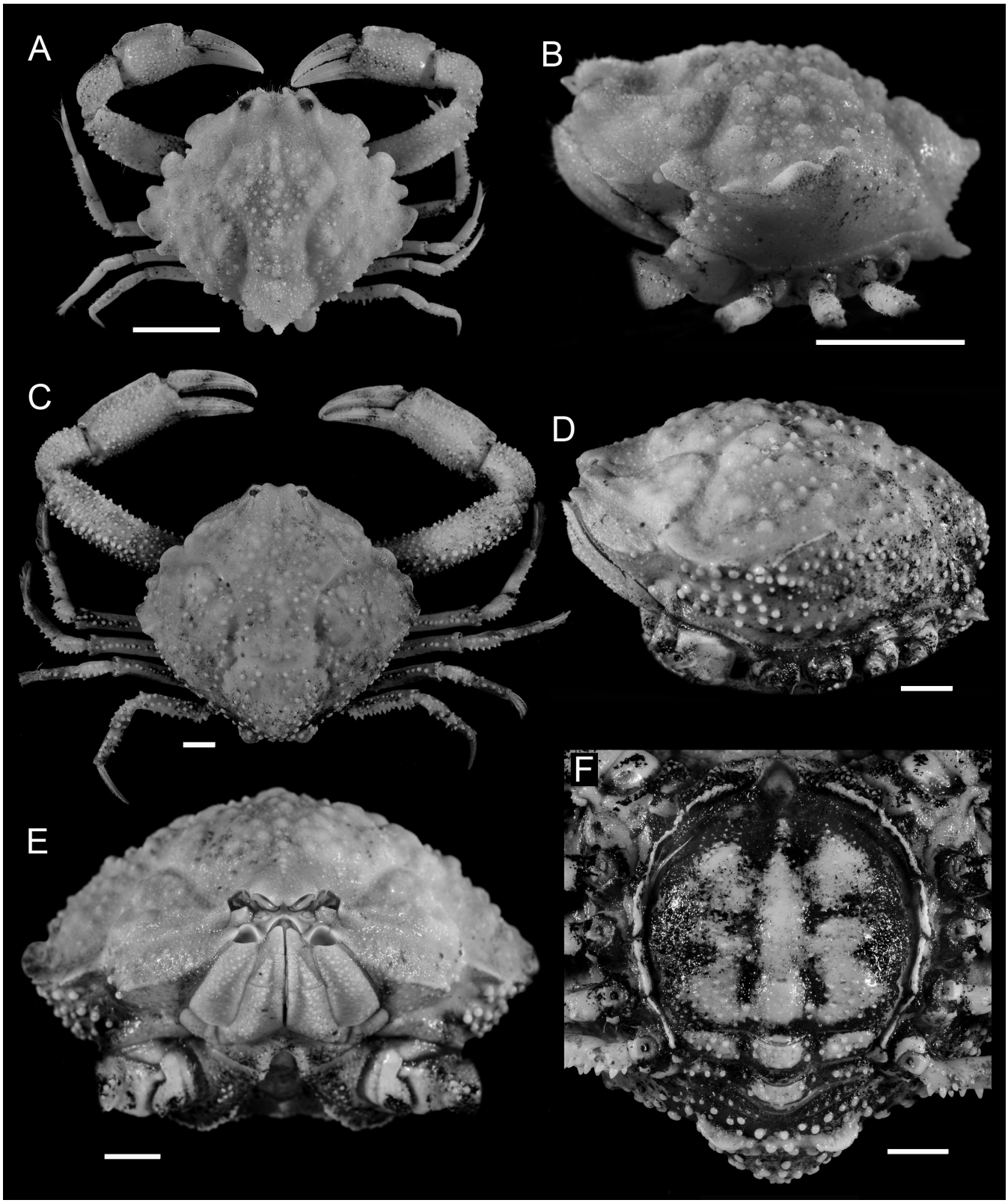

Fig. 16. *Urashima lamellidentatus* (Wood-Mason, 1892). A, B, juv. female 15.7 × 13.9 mm (ZRC 2020.0794), stn CP55; C–F, female, 42.8 × 39.0 mm (ZRC 2020.0793), stn CP50. A, C, dorsal habitus; B, D, carapace, lateral view; E, carapace, frontal view; F, pleon, ventral view. Scale bars = 5.0 mm.

surfaces granular; fingers flattened to form spatulate structure when occluded together, with pointed, recurved tips crossing each other; dactylus 1.53 times longer than upper margin of palm, upper margin of dactylus granulate, larger granules proximally, external surface with two rows of conical granules; fixed finger nearly twice as wide as dactylus, external surface with at least two longitudinal rows of conical granules, the most prominent and complete row extending throughout its length and well into the palm; cutting edges of both fingers with denticulate teeth; inner surface of palm with oblique ridge of large granules; margins of merus and carpus lined by sharp pointed granules. Ambulatory legs (P2–P5; see Figs. 11, 12F, G) short, P3, P4 longest; anterior and posterior margins of meri lined with large conical granules, proximal half with larger granules; margins of carpus similarly lined with conical granules, dorsal surface with submarginal row of smaller granules; posterior margin of propodus with clump of large, pointed granules; dactylus long, narrow, covered with small pointed granules, and terminating distally in a single chitinous claw.

Thoracic sternum (Fig. 11B, D) granulate, thoracic sutures separating sternites 4/5, 5/6, 6/7, and 7/8 visible, with deep cavities on either side of thoracic sternite 3, flanking tip of sterno-pleonal cavity; sterno-pleonal cavity long, deep, anterior tip reaching to anterior limit of sternite 3. Male pleon (Fig. 12D) similarly granulate, narrowly triangular; telson acutely triangular, height 1.5 times basal width; pleonal somite 6 subhexagonal, lateral margins with angular protrusions near base; pleonal somites 3–5 fused, lateral margins with distinct angular shoulder at level of somite 4, large granular median tubercle at junction of somites 4 and 5. Pleonal somites 1, 2 granular, short, thin.

G1 (Fig. 12H) slender and sinuous, tubular, tapering to a point, 2.8 times longer than G2, distal half with sparse setae, apex simple, pointed, aperture subdistal, laterally oriented. G2 (Fig. 12I) short; terminal segment 0.28 times total length, shaped like a spathe, proximal portion wide and cupuliform, distal portion narrow and pointed; subterminal segment cylindrical.

Etymology. The new species is named after the research vessel on which the SJADES 2018 cruise was conducted, the K/R *Baruna Jaya VIII*. The epithet *octavus* (L. eighth), alludes to the ship being the eighth such ship bearing the name *Baruna Jaya*, and used here as a noun in apposition.

Remarks. *Oreotlos octavus*, new species, is an unusual member of the genus primarily due to the morphology of the carapace. It is most similar to *O. etor* Tan & Richer de Forges, 1993, known from the Chesterfield Islands, New Caledonia (type locality), as well as the Ryukyu Islands, Japan, and Wonad Island, Papua New Guinea (Takeda & Komatsu, 2005; Galil & Ng, 2015) in having a truncate, well-produced front and a distinctly concave post-orbital carapace margin; a thin fissure on the anterolateral margin that extends into the anterior branchial region; a pair of obliquely oriented granular ridges on the posterior section of the carapace, flanking a median posterior depression; a male pleon with lateral margins of somite 6 projecting and angular; and a G1 that is relatively slender and sinuous.

The new species can be distinguished from *O. etor*, however, by the following features: the hepatic margin of the carapace is slightly concave in dorsal view (Figs. 11A, 12A) (vs. slightly convex or with small projection in *O. etor*; cf. Tan & Richer de Forges, 1993: fig. 2A; Tan & Ng, 1995: fig. 18A; Takeda & Komatsu, 2005: fig. 1B; Galil & Ng, 2015: fig. 7H; MNHN, 2020b: images of types); the lateral and posterolateral carapace margins have a more serrated appearance due to the occurrence of large conical granules (Figs. 11A, 12A) (vs. lateral and posterolateral margins appearing finely granular; cf. Tan & Richer de Forges, 1993: fig. 2A; Tan & Ng, 1995: fig. 18A; Takeda & Komatsu, 2005: fig. 1B; Galil & Ng, 2015: fig. 7H); the subhepatic region (pterygostome) has a large granular tubercle, which can be visible from dorsal view (Figs. 11A, 12A, C) (vs. no such tubercle in *O. etor*; cf. Tan & Richer de Forges, 1993: fig. 2A; Tan & Ng, 1995: fig. 18A; Galil & Ng, 2015: fig. 7H; MNHN, 2020b: images of types; but see Takeda & Komatsu, 2005: fig. 1B); the lateral margin of the male pleon has a distinct shoulder at the level of somite 4 (Fig. 12D) (vs. absent in *O. etor*; cf. Tan & Richer de Forges, 1993: fig. 2F; Tan & Ng, 1995: fig. 18F); and the G2 terminal segment is relatively shorter, 0.28 times total length (Fig. 12I) (vs. G2 terminal segment relatively longer, 0.46 times total length; cf. Tan & Richer de Forges, 1993: fig. 2E; Tan & Ng, 1995: fig. 18E).

Parilia Wood-Mason in Wood-Mason & Alcock, 1891

Parilia pattersoni Ng, Devi & Kumar, 2018
(Fig. 9D)

Parilia alcocki, Doflein, 1904: 44, pl. 14 figs. 8, 9. Not *P. alcocki* Wood-Mason, in Wood-Mason & Alcock, 1891.
Parilia pattersoni, Ng et al., 2018: 305, figs. 1D, 2C, 3D, 4G, H, 5G–I, 6D, 7G, H, 8N–S, 9E, F.

Material examined. 1 juv. male (with colour image), 19.5 × 22.2 mm (ZRC 2020.0781), stn CP56, western Java, Pelabuhanratu Bay, 7°00.299′S 106°27.247′E – 7°00.393′S 106°26.790′E, 183–255 m, mud, 3 April 2018.

Remarks. The present material, a juvenile male, has the diagnostic features of *Parilia pattersoni* Ng, Devi & Kumar, 2018 (type locality: Tamil Nadu, India), particularly the spinulous chelipeds and ambulatory legs (Fig. 9D). In their revision of the genus *Parilia*, Ng et al. (2018) provided detailed descriptions and illustrations of *P. pattersoni* on the basis of several adult specimens, and clearly distinguished this species from similar congeners such as *P. alcocki* and *P. major*. This is the first report of a small juvenile of *P. pattersoni*. The morphology of the young male is quite similar to that of the adult, except that the carapace has a narrower, more oval outline with a much longer posterior median spine, and much shorter chelipeds (Fig. 9D). The inverted-L shape of the distal tip of the G1 is already formed, although the the flaring of the lobes and serration of their margins are not yet evident.

Parilia pattersoni has previously been recorded from Indonesia, specifically from Nias I., Sumatra, as "*P. alcocki*" by Doflein (1904) (also see Ng et al., 2018). It is now also known from Pelabuhanratu Bay, in southwestern Java.

Tanaoa Galil, 2003

Tanaoa nanus Galil, 2003
(Figs. 9F, 13A–D, 14D–F)

Randallia pustulosa, Ihle, 1918: 246. Not *Randallia pustulosa* Wood-Mason, in Wood-Mason & Alcock, 1891.
Tanaoa nanus Galil, 2003: 403, figs. 1C, 3E, F.

Material examined. 2 males, 11.4 × 11.3 mm, 18.0 × 18.1 mm, 3 females, 13.0 × 12.7 mm, 13.3 × 13.0 mm, 14.6 × 14.3 mm (MZB), 16 males, 6.5 × 6.0 mm – 17.4 × 17.7 mm, 12 females, 11.1 × 10.7 mm – 18.6 × 17.9 mm, 1 ovig. female, 19.8 × 19.1 mm (ZRC 2020.0782), 1 male, 17.9 × 18.1 mm (with colour image) (ZRC 2020.0783), stn CP07, Sunda Strait, between Tabuan Island and Sumatra, 5°44.678′S 104°51.151′E – 5°44.917′S 104°52.061′E, 379–409 m, coarse sand, gravel, rubble, and wood, 25 March 2018; 2 males, 17.1 × 17.2 mm, 19.4 × 20.4 mm, 1 ovig. female, 16.2 × 16.1 mm (MZB), 12 males, 11.2 × 10.7 mm – 19.0 × 19.6 mm, 13 females (6 with sacculinids), 13.3 × 13.1 mm – 20.3 × 19.8 mm, 2 ovig. females, 15.4 × 14.9 mm, 16.5 × 16.0 mm (ZRC 2020.0784), 19 males, 10.4 × 10.5 mm – 19.2 × 19.7 mm, 21 females (7 with sacculinids), 10.6 × 10.3 mm – 20.0 × 19.8 mm, 1 ovig. female, 19.5 × 19.1 mm (ZRC 2020.0785), stn CP08, Sunda Strait, between Tabuan Island and Sumatra, 5°45.126′S 104°51.080′E – 5°45.225′S 104°51.710′E, 425–442 m, coarse sand, gravel, and rubble, 25 March 2018; 1 ovig. female, 18.9 × 18.5 mm (ZRC 2020.0786), stn CP09, Sunda Strait, between Tabuan Island and Sumatra, 5°44.960′S 104°52.731′E – 5°44.960′S 104°52.731′E, 377 m, mud and clay, 25 March 2018.

Remarks. *Tanaoa nanus* was described by Galil (2003) based on a holotype male from Vanuatu, and a paratype male from Kalimantan, Indonesia (which had been previously reported by Ihle (1918) as *Randallia pustulosa*), and she also examined several other conspecific specimens from Vanuatu, Indonesia, Wallis I., and New Caledonia. This species was also subsequently reported from the Solomon Islands (Galil, 2007). The present material agrees well with the description and illustrations in Galil (2003: 403, figs. 1C, 3E, F). *Tanaoa nanus* was the most abundant species of Leucosiidae collected by SJADES 2018, and these from only two stations in the Sunda Strait. In Indonesia, it has been previously recorded in Kaniungan I., East Kalimantan, and the Tanimbar Islands (Galil, 2003).

Tanaoa pustulosus (Wood-Mason, in Wood-Mason & Alcock, 1891)
(Figs. 9E, 13E–H, 14A–C)

Material examined. 1 male (with colour image), 14.7 × 14.4 mm (MZB), stn CP33, western Java, south of Cilauteureum Bay, 7°42.912′S 107°36.559′E – 7°43.255′S 107°37.234′E, 525–312 m, coarse sand and mud, 29 March 2018; 1 male, 15.3 × 14.6 mm, 1 female, 9.7 × 9.5 mm (MZB), stn CP39, western Java, south of Cilacap, 8°15.885′S 109°10.163′E – 8°16.060′S 109°10.944′E, 528–637 m, mud, 30 March 2018; 1 male, 14.3 × 13.8 mm (ZRC 2020.0787), stn CP47, western Java, south of Pameungpeuk, 7°47.972′S 107°45.298′E – 7°48.257′S 107°45.706′E, 530–476 m, coarse sand, 1 April 2018; 1 male, 22.7 × 21.3 mm (ZRC 2020.0788), stn CP51, western Java, Pelabuhanratu Bay, 7°04.874′S 106°25.396′E – 7°05.348′S 106°25.044′E, 569–657 m, coarse sand, mud, and plastic trash, 2 April, 2018; 1 female (with colour image), 31.6 × 30.2 mm (ZRC 2020.0789), stn CP51, western Java, Pelabuhanratu Bay, 7°04.874′S 106°25.396′E – 7°05.348′S 106°25.044′E, 569–657 m, coarse sand, mud, and plastic trash, 2 April 2018.

Remarks. The present material agrees well with the description and illustration of *Randallia pustulosa* (Wood-Mason, in Wood-Mason & Alcock, 1891: 266; Wood-Mason, 1892: pl. 5 fig. 4; Alcock, 1896: 196; 1899: 27), which was previously described from the Andaman and Laccadive seas. Doflein (1904: 42, pl. 14 figs. 1–5) reported this species from the coast of Somalia (three females), although one other female from off SW Greater Nicobar I. was very likely misidentified (see Doflein, 1904: pl. 14 fig. 6; Galil, 2003: 406). Ihle (1918) also reported "*Randallia pustulosa*" from Kaniungan I., in Kalimantan, Indonesia, but this has since been correctly identified as a different congener, *Tanaoa nanus* (see Remarks for previous species). *Randallia pustulosa* has also been reported from various locations in the western Pacific (Sakai, 1976; Yaldwyn & Dawson, 1976; Chen, 1989; Ikeda, 1998; Ng et al., 2001; Chen & Sun, 2002). In her revision of the genus *Randallia*, Galil (2003) placed *R. pustulosa* in a new genus, *Tanaoa*, as its type species, along with two other species. In it, she treated *T. pustulosus* as widespread in the Indo-West Pacific region, and also considered *R. vitjazi* Zarenkov, 1994, from seamounts in the western Indian Ocean as a junior subjective synonym. To illustrate *T. pustulosus*, however, Galil (2003: figs. 1D, 3G, H) used specimens from the Philippines and Japan, rather than material closer to the type locality in the eastern Indian Ocean. More recently, Padate et al. (2020: fig. 6A–H) provided photographs of the adult male morphology based on topotypic specimens collected from the the Andaman Sea and the Bay of Bengal. From these it can be observed that the morphology of the east Indian material of *T. pustulosus* differs significantly from that of the west Pacific exemplars, particularly in the degree of granulation of the dorsal carapace (more granular in the Indian Ocean specimens, cf. Figs. 9C, 13E, F), the length of the posterior median spine (shorter in the Indian Ocean specimens, for which the difference is more pronounced in males, cf. Fig. 13F), and the shape of the distal tip of the G1 (shorter, wider lateral process, cf. Fig. 14A–C). This we have confirmed further by comparing our Indonesian specimens with material from Japan, the Philippines, and Taiwan deposited in the Lee Kong Chian Natural History Museum (ZRC, Singapore). It will be necessary to recognise the western Pacific forms of *T. pustulosus* as a distinct species, and this will be done in a separate paper. For the moment,

Tanaoa pustulosus should be restricted to material from the eastern Indian Ocean, including the present material from SW Java, Indonesia. This is the first record of this species from Indonesia.

***Tanaoa retpela* Galil & Ng, 2015**
(Figs. 9I, 15)

Material examined. 1 female (with colour image), 43.1 × 40.6 mm (ZRC 2020.0790), stn CP50, western Java, Pelabuhanratu Bay, 7°03.322′S 106°26.673′E – 7°03.762′S 106°26.334′E, 383–425 m, mud, 2 April 2018.

Remarks. The present material, a single female specimen (Fig. 9I, 15), agrees well with the description and illustrations of *Tanaoa retpela* Galil & Ng, 2015, originally described from Papua New Guinea (cf. Galil & Ng, 2015: 463, figs. 5A, 14, 15F–K). The distinctions made by Galil & Ng (2015) to distinguish this species from similar congeners such as *T. distinctus* (Rathbun), *T. serenei* Richer de Forges, and *T. kuka* Galil & Ng, as far as it applies to the female morphology, were also observed in the present specimen (see also Ng & Richer de Forges, 2007). This is only the second record of this species, and the first record for Indonesia.

***Toru* Galil, 2003**

***Toru pilus* (Tan, 1996)**
(Figs. 9G, 14G–I)

Material examined. 1 male (with colour image), 12.0 × 12.2 mm (ZRC 2020.0791), stn CP20, Sunda Strait, southwest of Panaitan Island, 6°42.320′S 105°08.682′E – 6°42.879′S 105°09.018′E, 325–362 m, mud, gravel, and plastic trash, 27 March 2018; 1 ovig. female (with colour image), 12.1 × 11.6 mm (ZRC 2020.0792), stn CP38, western Java, south of Cilacap, 8°13.038′S 109°07.689′E – 8°13.150′S 109°08.216′E, 290–295 m, 30 March 2018.

Remarks. Tan (1996) described *Randallia pila* from the Philippines, based on two specimens (male & female). Galil (2003) in her revision of the genus *Randallia*, transferred this species to its own genus, *Toru* (type species: *Randallia granuloides* Sakai), along with three other species. She also concluded that the cheliped supposedly belonging to the male holotype illustrated by Tan (1996: fig. 8b), with its relatively long articles and with the fingers less than half the length of the palm, was already detached from the holotype and did not belong to it. Indeed, other male specimens have relatively shorter chelipeds, with the fingers proportionally longer (more than half the length of the palm) (cf. Galil, 2003: fig. 2B; Galil & Ng, 2015: fig. 5B). The present material (Fig. 9G) from Indonesia agrees well with the description and illustrations of *T. pilus*. The G1 conforms more to the illustration of Galil (2003: fig. 5A, B) where the apical process projects laterally and the distal portion loops back and crosses the main longitudinal axis of the G1 (Fig. 14G–I). This is a new record of *T. pilus* for Indonesia, and the first record of the genus *Toru* in the Indian Ocean.

***Urashima* Galil, 2003**

***Urashima lamellidentatus* (Wood-Mason, 1892)**
(Figs. 9H, J, 16)

Material examined. 1 female (with colour image), 42.8 × 39.0 mm (ZRC 2020.0793), stn CP50, western Java, Pelabuhanratu Bay, 7°03.322′S 106°26.673′E – 7°03.762′S 106°26.334′E, 383–425 m, mud, 2 April 2018; 1 juv. female (with colour image), 15.7 × 13.9 mm (ZRC 2020.0794), stn CP55, western Java, Pelabuhanratu Bay, 7°01.013′S 106°26.772′E – 7°01.116′S 106°26.421′E, 378–379 m, clay and mud, 3 April 2018.

Remarks. *Randallia lamellidentata* was named and illustrated by Wood-Mason (1892) on the basis of a juvenile male collected from the Andaman Sea (cf. Wood-Mason, 1892: pl. 5 fig. 5). Subsequently, a detailed description of the type was provided by Alcock (1894: 404), and later treatments of this species by him (Alcock, 1896: 195; 1899: 26) indicate more than one male specimen were examined from the Andaman Sea. Kemp & Sewell (1912) reported ten more specimens (9 males, 1 ovigerous female) from the Travancore coast ("stn. 391"), in southwestern India. Galil (2003) transferred *R. lamellidentata* to a new genus, *Urashima*, together with its type species, *R. pustuloides* Sakai. She also reported that *U. lamellidentatus* was also found in the Maldives, although our check of the literature has so far not found any indication of this. Padate et al. (2020) are credited as the first to report the adult male morphology of *U. lamellidentatus*, based on a large male collected from the Andaman Sea (cf. Padate et al., 2020: fig. 6H–N). While the juvenile morphology (as in the holotype; cf. Wood-Mason, 1892: pl. 5 fig. 5; Galil, 2003: fig. 2E) features a more angular outline as well as a more pronounced lamellar dentition of the anterolateral and posterior carapace margins, the outline of the carapace becomes rounder and more globose and the extent and size of these lamellar teeth are proportionally reduced in the adult (cf. Padate et al., 2020: fig. 6i). The present material from Indonesia, a juvenile female (Figs. 9H, 16A, B) and an adult female (Figs. 9J, 16C–F), agrees well with published descriptions and illustrations. This comprises the first record of this species from Indonesia.

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