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Spider crabs from the SJADES 2018 biodiversity cruise in Indonesia, with descriptions of one new genus and five new species, including one from Western Australia (Crustacea: Brachyura: Majoidea)

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Abstract. The epialtid, inachid, and oregoniid spider crab fauna collected by the joint Indonesian–Singaporean deep-sea biodiversity cruise, SJADES 2018, from the Sunda Strait (between the islands of Java and Sumatra) and southwestern Java are enumerated. Several rare species originally described from the Bay of Bengal or Andaman Sea were found: *Laubierinia globulifera* (Wood-Mason, in Wood-Mason & Alcock, 1891) and *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891 (Epialtidae); *Physachaeus tonsor* Alcock, 1895, and *Platymaia alcocki* Rathbun, 1918 (Inachidae); and *Pleistacantha pungens* (Wood-Mason, in Wood-Mason & Alcock, 1891) (Oregoniidae). A new genus and new species, *Chimaerodinia musica*, which is superficially similar to *Naxioides* A. Milne-Edwards, 1865, and *Samadinia* Ng & Richer de Forges, 2013, is described and discussed. Two new species of *Samadinia* are described (*S. jefrii* and *S. yoyoae*), as well as a new species of *Neophrys* Lee, Richer de Forges & Ng, 2019 (*N. neptunus*). A new species of *Samadinia* from Western Australia, *S. taylorae*, allied to *S. yoyoae*, new species, from SJADES 2018, is also described. *Physachaeus tonsor* is reported for the first time since its discovery and males were also obtained, allowing for a complete description. *Cyrtomaia pilosa* Ihle & Ihle-Landenberg, 1931, previously synonymised under *C. horrida* Rathbun, 1916, is here also shown to be a distinct species and is redescribed and figured.

Key words. deep-sea cruise, southern Java, western Australia, systematics, new records, new genera, new species

INTRODUCTION

In 2018, a joint deep-sea cruise to the Sunda Strait and southern Java was organised by the Indonesian Institute for Marine Sciences and the National University of Singapore as part of the 'RISING 50' celebrations to mark 50 years of bilateral relations between the Republic of Indonesia (RI) and Singapore (SING). The two-week expedition surveyed the benthic biodiversity of deeper waters off the south coast of Java and utilised the Indonesian research vessel *Baruna Jaya VIII* (see Ng & Rahayu, 2021).

Among the many specimens collected was a good series of majoid crabs, mostly belonging to the families Epialtidae and Inachidae, which included several new species as well as a new genus. The present paper reports on this fauna. All but three of the species recorded here are new records for Indonesia. *Cyrtomaia pilosa* Ihle & Ihle-Landenberg, 1931, a rare species that was described from the Moluccas, is reported for the first time from Java.

MATERIAL AND METHODS

The classification essentially follows that in Ng et al. (2008) for the family Epialtidae. With regard to the family Inachidae, we follow the suggestions of Marco-Herrero et al. (2013) who argued that five inachid genera, namely *Bothromaia* Williams & Moffitt, 1991, *Ergasticus* A. Milne-Edwards, 1882, *Parapleisticantha* Yokoya, 1933, *Pleistacantha* Miers, 1879, and *Pleisticanthoides* Yokoya, 1933, should be transferred instead to the subfamily Pleistacanthinae Števčić, 2005, in the family Oregoniidae. Števčić (2005: 95) had originally recognised the pleistacanthines as a tribe in the subfamily Inachinae.

Morphological terminology used follows Davie et al. (2015). The following abbreviations are used: coll. = collected by; G1 and G2 = male first and second gonopod, respectively; P2–P5 = second to fifth pereopods (first to fourth ambulatory legs), respectively; pcl = postrostral carapace length; SJADES 2018 = South Java Deep-Sea Biodiversity Expedition 2018; stn = station. Size measurements of specimens, in millimetres, are of maximum carapace length (excluding the pseudorostral

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spine) and maximum carapace width (measured at the base of the lateral spines or plates).

Specimens examined are deposited in the Museum Zoologicum Bogoriense (MZB), Cibinong, Bogor, Indonesia; Natural Sciences Collections, Museum Victoria (MV), Melbourne, Australia; Zoological Survey of India (ZSI), Andamans, India; and the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum, National University of Singapore, Singapore.

SYSTEMATIC ACCOUNT

Superfamily Majoidea Samouelle, 1819

Family Epialtidae MacLeay, 1838

Crocydocinus Lee, Richer de Forges & Ng, 2019

Crocydocinus brevirostris (Doflein, 1904)

(Figs. 1A, 2A–C, 3A–D)

Hyastenus brevirostris Doflein, 1904: 85, 86, pl. 27 figs. 13, 14 (type locality: between Benkulen and Padang, southwest coast of Sumatra).

Crocydocinus brevirostris—Lee et al., 2019: 28, 29, figs. 13B, 15B, 17B. [new combination]

(For remaining synonymy, see Lee et al., 2019: 28)

Material examined. Indonesia: 1 ovigerous female (21.9 × 15.6 mm) [photographed] (ZRC 2020.0018), stn CP13, between Sumatra & Java, Sunda Strait, 6°00.521′S 104°49.410′E to 6°00.828′S 104°49.428′E, 1259–1268 m, coll. SJADES 2018, 26 March 2018. – 1 ovigerous female (25.0 × 17.6 mm) [photographed] (ZRC 2020.0019), stn CP27, east of Tinjil Island, Indian Ocean, 6°58.624′S 105°53.745′E to 6°58.937′S 105°53.363′E, 481–557 m, coll. SJADES 2018, 28 March 2018. – 1 female (10.3 × 7.0 mm), 1 ovigerous female (24.2 × 17.1 mm) (MZB Cru 5061), stn CP35, south of Tanjong Boyongkareuceng, Indian Ocean, 7°47.677′S 107°41.904′E to 7°47.681′S 107°42.477′E, 603–686 m, coll. SJADES 2018, 29 March 2018. – 2 males (18.5 × 13.1 mm, 17.8 × 12.7 mm), 1 female (16.8 × 12.1 mm) (MZB Cru 5062), stn CP47, south of Pameungpeuk, Indian Ocean, 7°47.972′S 107°45.298′E to 7°48.257′S 107°45.706′E, 476–530 m, coll. SJADES 2018, 1 April 2018. – 6 males (30.3 × 21.7 mm [photographed], 29.6 × 22.6 mm [photographed], 26.0 × 19.1 mm, 21.1 × 15.3 mm, 20.4 × 14.2 mm, 9.5 × 6.6 mm), 2 females (17.7 × 12.8 mm, 15.6 × 11.4 mm), 1 ovigerous female (21.8 × 16.2 mm) (ZRC 2020.0020), 1 male (22.5 × 15.6 mm), 4 females (22.6 × 15.8 mm; with *Sacculina*: 19.6 × 13.3 mm, 18.5 × 12.4 mm; with bopyrid: 15.2 × 12.7 mm), 3 ovigerous females (20.6 × 14.8 mm, 20.5 × 14.4 mm, 18.3 × 12.5 mm) (MZB Cru 5063), stn CP51, Pelabuhanratu Bay, Indian Ocean, 7°04.874′S 106°25.396′E to 7°05.348′S 106°25.044′E, 569–657 m, coll. SJADES 2018, 2 April 2018. – 2 males (22.2 × 16.1 mm, 19.5 × 13.5 mm), 1 ovigerous female (18.8 × 12.9 mm) (ZRC 2020.0021), stn CP33, south of Tanjong Boyongkareuceng, Indian Ocean, 7°42.912′S 107°36.559′E to 7°43.255′S 107°37.234′E, 312–525 m, coll. SJADES 2018, 29 March 2018. – 1 male (26.4 × 19.6 mm), 1 juvenile male (6.4 × 4.2 mm), 1 female (with bopyrid; 14.1 × 9.8 mm), 2 females (13.2 × 9.2 mm, 12.5 × 8.6 mm) [photographed] (ZRC 2020.0022), stn CP23, south of Panaitan Island, Sunda Strait, 6°46.739′S 105°09.239′E to 6°45.924′S 105°08.360′E, 559–571 m, coll. SJADES 2018, 27 March 2018. – 1 male (18.6 × 12.5 mm), 1 female (with bopyrid; 17.1 × 13.3 mm) (MZB Cru 5064), stn CP34, south of Tanjong Boyongkareuceng, Indian Ocean, 7°44.464′S 107°39.018′E to 7°44.575′S 107°39.447′E, 234–243 m, coll. SJADES 2018, 29 March 2019. – 1 female (14.8 × 9.9 mm), 1 ovigerous female (21.9 × 15.2 mm) (ZRC 2020.0023), stn CP48, south of Tanjong Gedeh, Java, Indian Ocean, 7°51.120′S 107°46.245′E to 7°51.718′S 107°46.375′E, 637–689 m, coll. SJADES 2018, 1 April 2018. – 1 juvenile female (9.3 × 6.2 mm) (MZB Cru 5065), stn DW32, south of Tanjong Boyongkareuceng, Indian Ocean, 7°42.583′S 107 34.535′E to 7°42.556′S 107°35.030′E, 805–977 m, coll. SJADES 2018, 29 March 2018. – 2 females (21.8 × 15.2 mm, 16.3 × 11.7 mm), 1 ovigerous female (11.9 × 8.3 mm) (MZB Cru 5066), stn CP53, Pelabuhanratu Bay, Indian Ocean, 7°09.610′S 106°18.632′E to 7°10.184′S 106°17.714′E, 1521–1714 m, coll. SJADES 2018, 2 April 2018. – 1 male (16.4 × 11.4 mm), 2 females (with *Sacculina*; 23.0 × 16.7 mm, 20.5 × 15.0 mm) (MZB Cru 5067), stn CP58, Pelabuhanratu Bay, Indian Ocean, 7°01.692′S 106°23.558′E to 7°01.997′S 106°23.258′E, 505–564 m, coll. SJADES 2018, 3 April 2018. For type and other material, see Lee et al. (2019).

Diagnosis. Carapace pyriform, covered with dense layer of short setae (Figs. 1A, 2A). Pseudorostral spines short, diverging in V-shape. Supraorbital eave fused with carapace; pre-orbital angle weak; post-orbital lobe cup-like, forming protective cup. Carapace with regions well-defined; hepatic region swollen with distinct spine medially, directed outwards; gastric region swollen, 1 mesogastric granule medially, 1 metagastric granule; 1 urogastric granule; cardiac region swollen, with large granule, with median gastric ridge; lateral branchial lobe directed outwards; epibranchial region swollen, form large granule; posterior region of carapace with intestinal granule medially (Figs. 1A, 2A). Basal antennal article slightly longer than broad, margin rounded, fused with carapace. Buccal frame covered by third maxiliped; distal angle slightly protruded. Pterygostomial region with 3 granules on outer margin (Fig. 2B). Chelipeds slender, strong, covered with setae; propodus longer than fingers, flattened laterally with margins carinate; merus triangular in cross-section, margins carinate. Ambulatory legs covered in setae, lateral margins with long setae, smooth when denuded. Male pleon with 6 free somites and telson (Fig. 2B). Adult female pleon rounded with all somites free (cf. Lee et al., 2019: fig. 15B). G1 straight, with slight subdistal constriction, distally with slightly rounded angle on upper edge near distal sharp tip (Fig. 3A–D).

Colouration. Carapace light brown, chelipeds pinkish-red, and ambulatory legs brownish-pink (Fig. 1A).

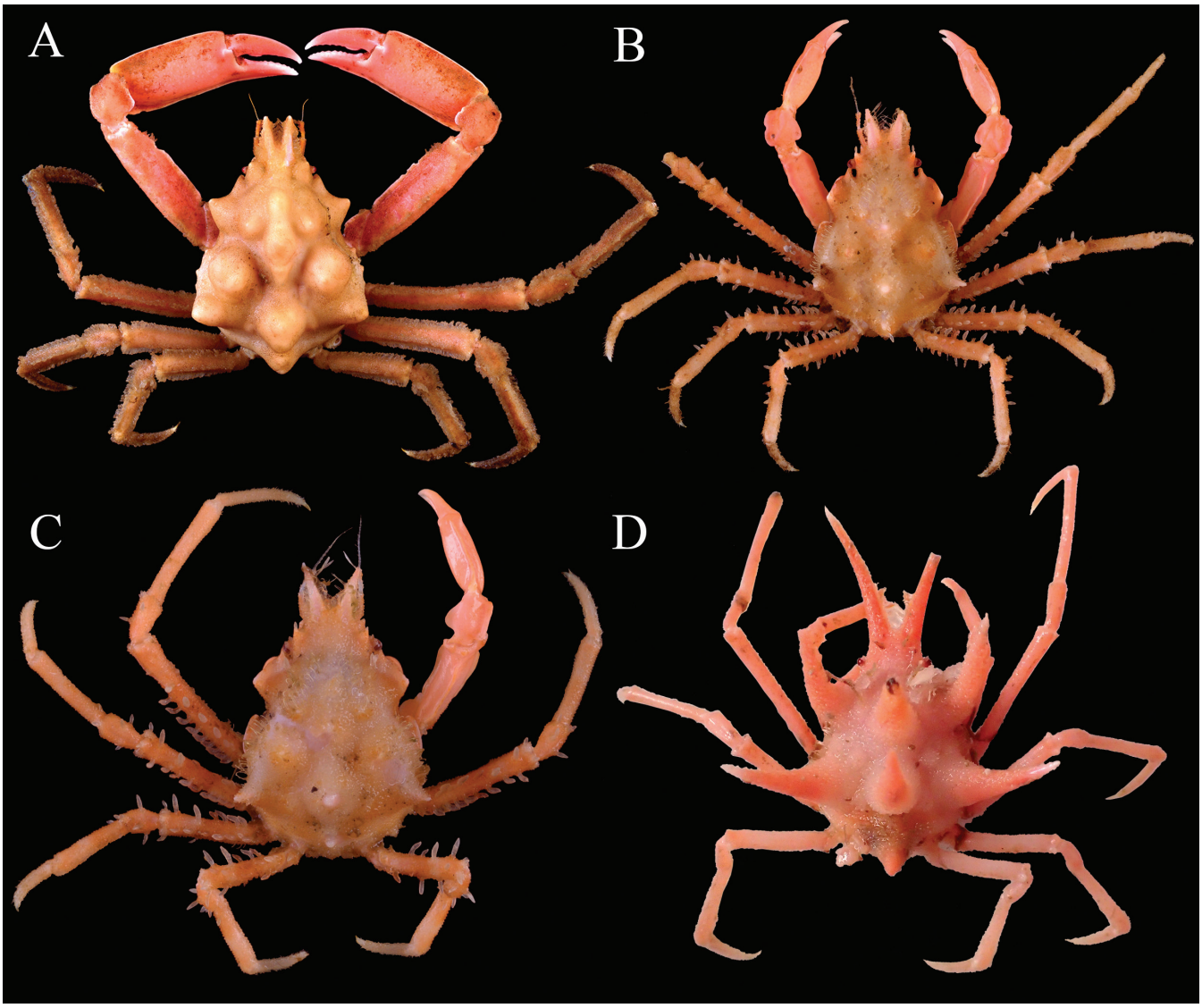

Fig. 1. Colour in life. A, *Crocydocinus brevirostris* (Doflein, 1904), male (29.6 × 22.6 mm) (ZRC 2020.0020), stn CP51; B, *Laubierinia globulifera* (Wood-Mason, in Wood-Mason & Alcock, 1891), male (12.9 × 9.1 mm) (ZRC 2020.0024), stn CP07; C, *L. globulifera* (Wood-Mason, in Wood-Mason & Alcock, 1891), male (11.5 × 7.9 mm) (ZRC 2020.0025), stn CP08; D, *Neophrys neptunus*, new species, holotype, female (17.6 × 12.5 mm) (MZB Cru 5069), stn CP47. All from southern Java.

Remarks. *Crocydocinus brevirostris* (Doflein, 1904) was first described as *Hyastenus brevirostris* Doflein, 1904, from a female specimen collected off the southern coast of Sumatra from a depth of 614 m, a site very close to the SJADES 2018 stations. The species was later referred to *Rochinia* by Griffin & Tranter (1986a: 176), and later transferred to a new genus, *Crocydocinus*, by Lee et al. (2019). A specimen questionably identified to this species by Richer de Forges & Ng (2013: 473) from Vanuatu was referred to a new species, *C. vanuatu* by Lee et al. (2019: 33). The good series of specimens obtained in this study allowed us to have a better understanding of the species and to confirm the characters of the genus. Male specimens and gonopod characters are described and figured here for the first time. The species superficially resembles *Tunepugettia corbariae* Lee, Richer de Forges & Ng, 2019; but the two species are easily separated: the gastric area is relatively less inflated in *C. brevirostris* (Figs. 1A, 2A) than in *T. corbariae* (Fig. 10F), with the dorsal carapace generally less inflated in *T. corbariae* (Fig. 10F) whereas the cardiac, branchial, and hepatic regions are more swollen in *C. brevirostris* (Figs. 1A, 2A). In addition, the ambulatory legs in *T. corbariae* are distinctly carinated (Fig. 10F) but are cylindrical in *C. brevirostris* (Figs. 1A, 2A) (see also Lee et al., 2019).

Distribution. The species was originally described from southern Sumatra by Doflein (1904). In southern Java, *C. brevirostris* seems to have a very wide depth range, from 234 to 1,259 m.

Laubierinia Richer de Forges & Ng, 2009

Laubierinia globulifera (Wood-Mason, in Wood-Mason & Alcock, 1891)

(Fig. 1B, C)

Pugettia globulifera Wood-Mason, in Wood-Mason & Alcock, 1891: 260 (type locality: between North and South Sentinel Island).

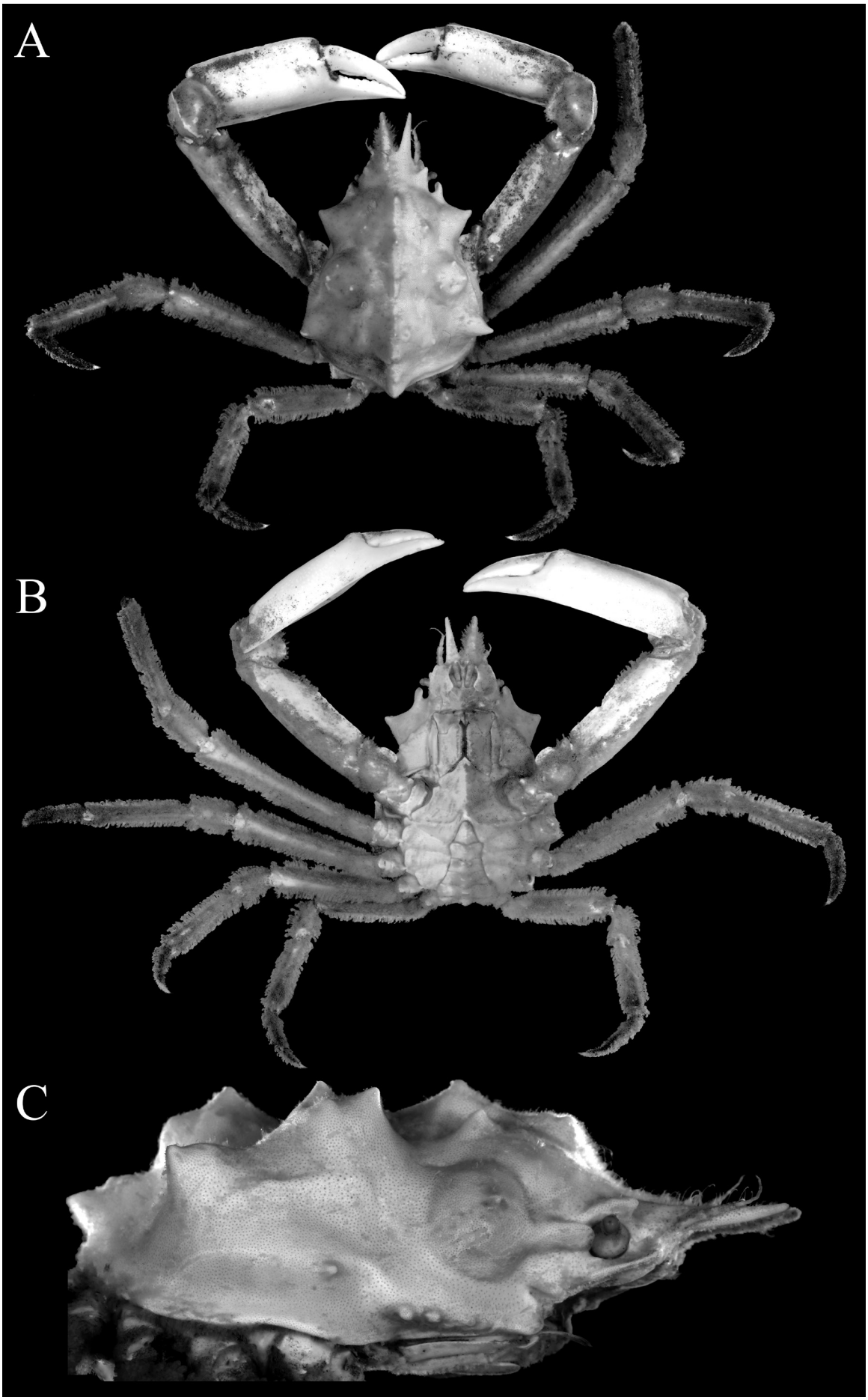

Fig. 2. *Crocydocinus brevirostris* (Doflein, 1904), male (30.3 × 21.7 mm) (ZRC 2020.0020), stn CP51, southern Java. A, overall dorsal view; B, overall ventral view; C, lateral view of carapace.

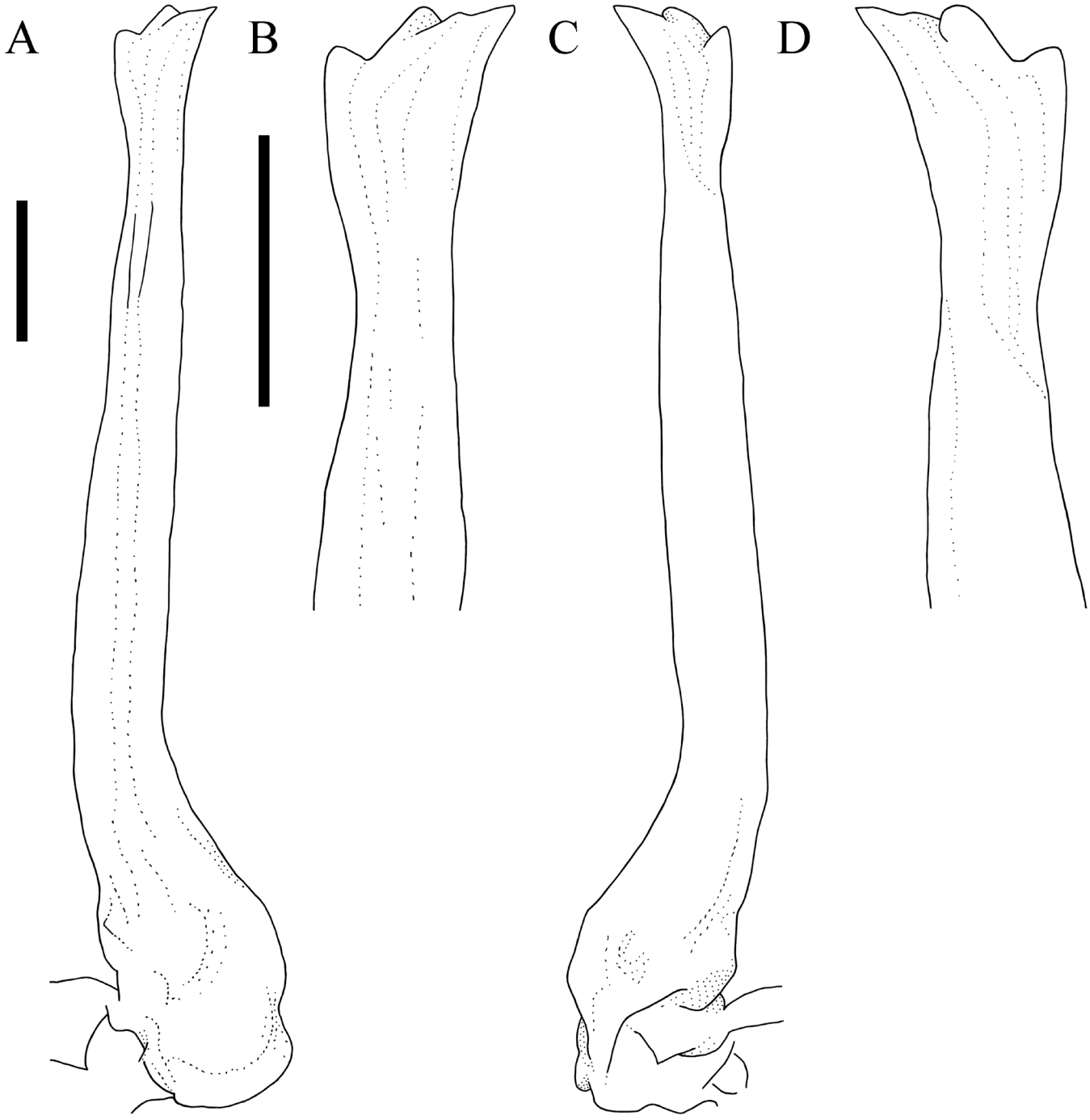

Fig. 3. *Crocydocinus brevirostris* (Doflein, 1904), male (30.3 × 21.7 mm) (ZRC 2020.0020), stn CP51, southern Java, left G1. A, ventral view; B, distal portion of ventral view; C, dorsal view; D, distal portion of dorsal view. Scale bars = 1.0 mm.

Scyramathia globulifera—Alcock, 1895: 205. – Alcock & Anderson, 1895: pl. 20 fig. 3, 3a. – Alcock, 1899: 5 (list), 54. – Doflein, 1904: 85.

Rochinia globulifera—Serène & Lohavanijaya, 1973: 56 (key). – Griffin & Tranter, 1986a: 175 (key), 179, fig. 62a, b. – Casadío et al., 2005: 159 (list). – Ng & Richer de Forges, 2007: 62 (list). – Ng et al., 2008: 105 (list). – Huys et al., 2014: 15 (table). – Tavares & Santana, 2018: 223 (list).

Laubierinia globulifera—Lee et al., 2021: 22 (list), 26, 27, 28, figs. 5A–F, 8A, B. [new combination]

Material examined. Indonesia: 5 males (13.2 × 9.2 mm, 12.9 × 9.1 mm [photographed], 12.5 × 9.1 mm, 10.8 × 7.5 mm, 10.3 × 7.1 mm), 1 female (11.5 × 7.5 mm), 1 ovigerous female (14.3 × 9.7 mm) (ZRC 2020.0024), 1 male (12.4 × 8.4 mm), 1 ovigerous female (11.8 × 8.3 mm) (MZB Cru 5068), stn CP07, between Tabuan Island and Sumatra, Sunda Strait, 5°44.678′S 104°51.151′E to 5°44.917′S 104°52.061′E, 379–409 m, coll. SJADES 2018, 25 March 2018. – 1 male (11.5 × 7.9 mm) [photographed] (ZRC 2020.0025), stn CP08, between Tabuan Island and Sumatra, Sunda Strait, 5°45.126′S 104°51.080′E to 5°45.225′S 104°51.710′E, 425–442 m, coll. SJADES 2018, 25 March 2018. – 1 male (8.9 × 5.9 mm), 1 female (with *Sacculina*; 8.6 × 6.0 mm) [photographed] (ZRC 2020.0026), stn CP20, south of Panaitan Island, Sunda Strait, 6°42.320′S 105°08.682′E to 6°42.879′S 105°09.018′E, 325–362 m, coll. SJADES 2018, 27 March 2018. For type and other material examined, see Lee et al. (2021).

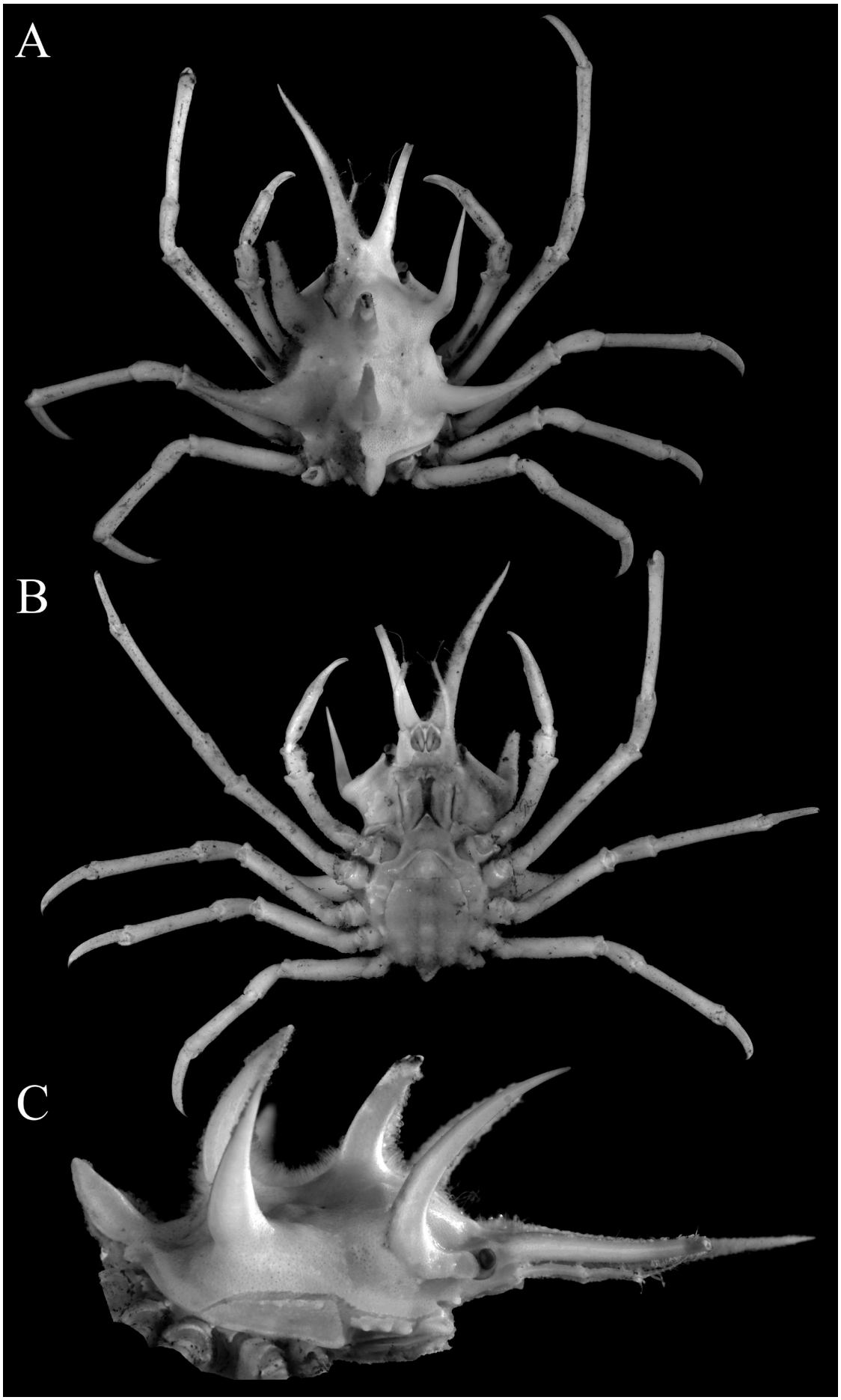

Fig. 4. *Neophrys neptunus*, new species, holotype, female (17.6 × 12.5 mm) (MZB Cru 5069), stn CP47, southern Java. A, overall dorsal view; B, overall ventral view; C, lateral view of carapace.

Diagnosis. Carapace pyriform, covered with setae, smooth when denuded. Pseudorostral spine short, slender, straight, diverging. Carapace with regions defined; hepatic lobe forms a plate, flattened laterally with sharp tip, with rounded granule ventrally; swollen gastric region with 3 swellings above; epibranchial region slightly swollen; lateral branchial spine pointing outwards; cardiac region slightly swollen; posterior region with small granule medially (Fig. 1B, C); laterally flattened branchial plate on lateral border of carapace. Basal antennal article longer than broad, distal angle sharp, straight outer margin. Pterygostomial region with single rounded plate on outer margin. Male thoracic sternum depressed anteriorly; sternites 3, 4 constricted anteriorly, widest at base; male pleon triangular, telson and somites all free. G1 straight, with slightly sharp tip, slight bifid. (After Lee et al., 2021).

Colouration. In life, the carapace, chelipeds, and ambulatory legs are pale orange to pink (Fig. 1B, C).

Remarks. The species was described from between North and South Sentinel Island in the Andaman Sea, and subsequently recorded from Bali by Griffin & Tranter (1986a) nearly a century later. Recently, Lee et al. (2021) re-examined the male type specimen deposited in the Natural History Museum in London. The species was transferred to the genus, *Laubierinia* Richer de Forges & Ng, 2009, as it has the distinctive inflated hepatic region as well as the large round lateral plate which are characteristic of the genus. Two other species are known: *L. carinata* (Griffin & Tranter, 1986) (type species) and *L. nodosa* (Rathbun, 1916) (see Richer de Forges & Ng, 2009a).

Distribution. The species is known from its type locality, between North and South Sentinel Island, Andaman Sea (Wood-Mason & Alcock, 1891), Bali (Griffin & Tranter, 1986a), and Sunda Strait off Java (this study), Indonesia.

Neophrys Lee, Richer de Forges & Ng, 2019

Neophrys neptunus, new species
(Figs. 1D, 4A–C)

Material examined. Holotype: female (17.6 × 12.5 mm) [photographed] (MZB Cru 5069), stn CP47, south of Pameungpeuk, Indian Ocean, 7°47.972′S 107°45.298′E to 7°48.257′S 107°45.706′E, 476–530 m, coll. SJADES 2018, 1 April 2018.

Description. Carapace pyriform, covered by layer of short, dense, stout setae. Pseudorostral spines long, curved outward, diverging in V, with row of long hooked setae on internal margin. Supraorbital eave fused with carapace; pre-orbital angle absent; postorbital lobe weak, fused with large hepatic spine. Carapace with 7 sharp, curved spines; 2 long hepatic spines, curved upwards, pointed forwards; 1 long gastric spine curved anteriorly; 1 cardiac spine curved anteriorly; 2 long branchial spines slightly curved anteriorly, pointed outwards; 1 short intestinal spine along posterior margin of carapace (Figs. 1D, 4A); lateral branchial margin with 4 granules in dorsal view (Fig. 4C).

Antennal flagellum shorter than pseudorostral spines. Basal antennal article longer than short, narrow, rounded distal angle, outer margin relatively straight. Buccal frame covered by third maxilliped. Pterygostomial region with 3 granules on outer margin (Fig. 4B).

Female cheliped short, slender. Ambulatory legs long, slender; dactylus slightly curved with sharp tip; P2 longest, P2 merus length 10.1 times merus width, P2 merus length 0.8 times pcl; P5 merus length 5.1 times merus width, P5 merus length 0.43 pcl (Fig. 4A).

Female thoracic sternum depressed anteriorly. Female pleon with 6 free somites and telson (Fig. 4B).

Colouration. In life, the carapace, chelipeds, and ambulatory legs are pinkish-red, the carapace spines being slightly reddish with the distal tips white (Fig. 1D).

Etymology. The name alludes to Neptune, the Roman God of the Sea whose trident bears a resemblance to the long carapace spines of the new species which are curved anteriorly. Used as a noun in apposition.

Remarks. Compared to the only other species of the genus, *N. inopinata* Lee, Richer de Forges & Ng, 2019, from Papua New Guinea, the pseudorostral spines of *N. neptunus* are relatively less divergent (Figs. 1D, 4A) (versus the more divergent pseudorostral spines in *N. inopinata*; cf. Lee et al., 2019: figs. 10D, 21A); the postorbital lobe is proportionately broader and wider (Figs. 1D, 4A) (versus the postorbital lobe is narrower and less broad in *N. inopinata*; cf. Lee et al., 2019: figs. 10D, 21A); the hepatic spine is bent medially so the structure is distinctly directed anteriorly (Figs. 1D, 4A) (versus the hepatic spine evenly tapering, almost straight and directed obliquely laterally in *N. inopinata*; cf. Lee et al., 2019: figs. 10D, 21A); the cardiac spine is more curved and pointed forward (Fig. 1D, 4A) (versus the cardiac spine is relatively straighter and pointed upwards in *N. inopinata*; cf. Lee et al., 2019: figs. 10D, 21A, C) and the intestinal spine on the posterior carapace margin is distinctly broader and dentiform (Fig. 1D, 4A) (versus narrow and spiniform intestinal spine on the posterior carapace margin in *N. inopinata*; cf. Lee et al., 2019: figs. 10D, 21A).

Distribution. This species is currently only known from its type locality, south of Pameungpeuk, Java, Indonesia.

Oxypleurodon Miers, 1885

Oxypleurodon cuneus Wood-Mason, in Wood-Mason & Alcock, 1891
(Figs. 5A–E, 6A–C, 7A–D, 8A–D, 9A–F)

Oxypleurodon cuneus Wood-Mason, in Wood-Mason & Alcock, 1891: 261 (type locality: between North and South Sentinel Island, Andaman Sea).

Sphenocarcinus cuneus—Alcock, 1895: 193. – Alcock & Anderson, 1896: pl. 21 figs. 1, 1a. – Alcock, 1899: 50. – Guinot & Richer de Forges, 1985: 51 (key), 51, figs. 1A–D, 6A, B, pl. 1 figs.

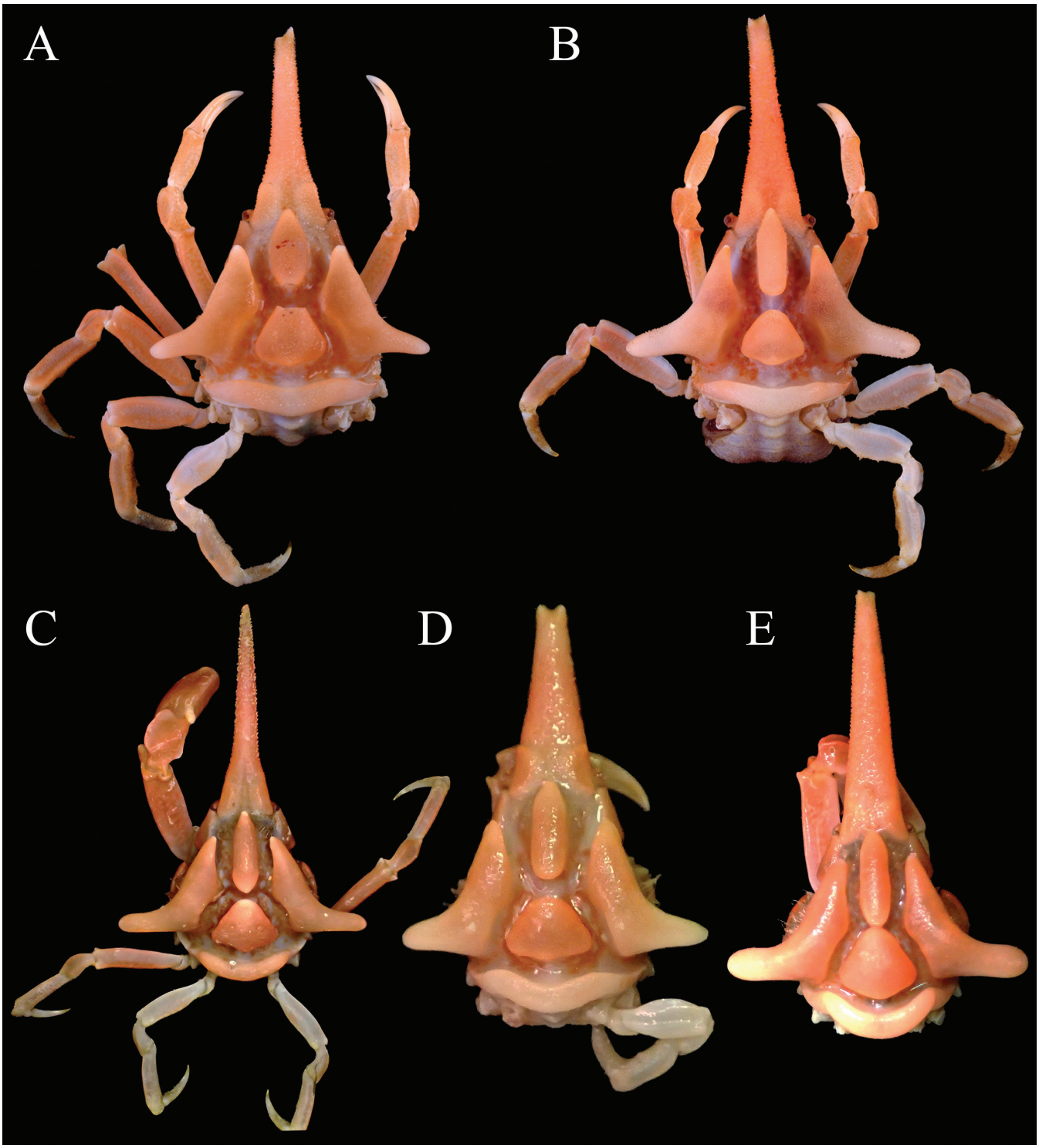

Fig. 5. *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891, colour in life. A, female (with *Sacculina*; 13.2 × 8.7 mm) (ZRC 2020.0027), stn CP03; B, ovigerous female (12.3 × 8.3 mm) (ZRC 2020.0028), stn CP07; C, male (15.6 × 10.6 mm) (ZRC 2020.0029), stn CP20; D, female (10.7 × 7.1 mm) (MZB Cru 5071), stn CP20; E, male (14.0 × 9.6 mm) (ZRC 2020.0029), stn CP20. All from southern Java.

A, B. – Guinot & Richer de Forges, 1986a: 134 (list), 135 (key). – Guinot & Richer de Forges, 1986b: 29 (list).

Nasutocarcinus cuneus—Tavares, 1991: 172. – Ng et al., 2008: 104 (list). – Richer de Forges & Ng, 2009b: 248 (list).

Oxypleurodon cuneus—Richer de Forges, 2010: 647 (list), 651 (list).

Material examined. Lectotype (here designated): male (15.0 × 11.0 mm) (ZSI 143-6/7, 3186/9), stn 56, between North and South Sentinel Island, Andaman Sea, 220–240 fathoms, coll. Investigator Marine Survey, 24–25 April 1889. **Other material: Indonesia:** 1 female (with *Sacculina*; 13.2 × 8.7 mm) [photographed] (ZRC 2020.0027), stn CP03, west of Rakata Island, Sunda Strait, 6°08.941′S 105°14.817′E to 6°08.590′S 105°15.100′E, 283–398 m, coll. SJADES 2018, 24 March 2018. – 2 males (13.9 × 9.6 mm, 13.2 × 7.4 mm damaged), 1 female (with *Sacculina*; 11.9 × 8.5 mm) (MZB Cru 5070), 1 ovigerous female (12.3 × 8.3

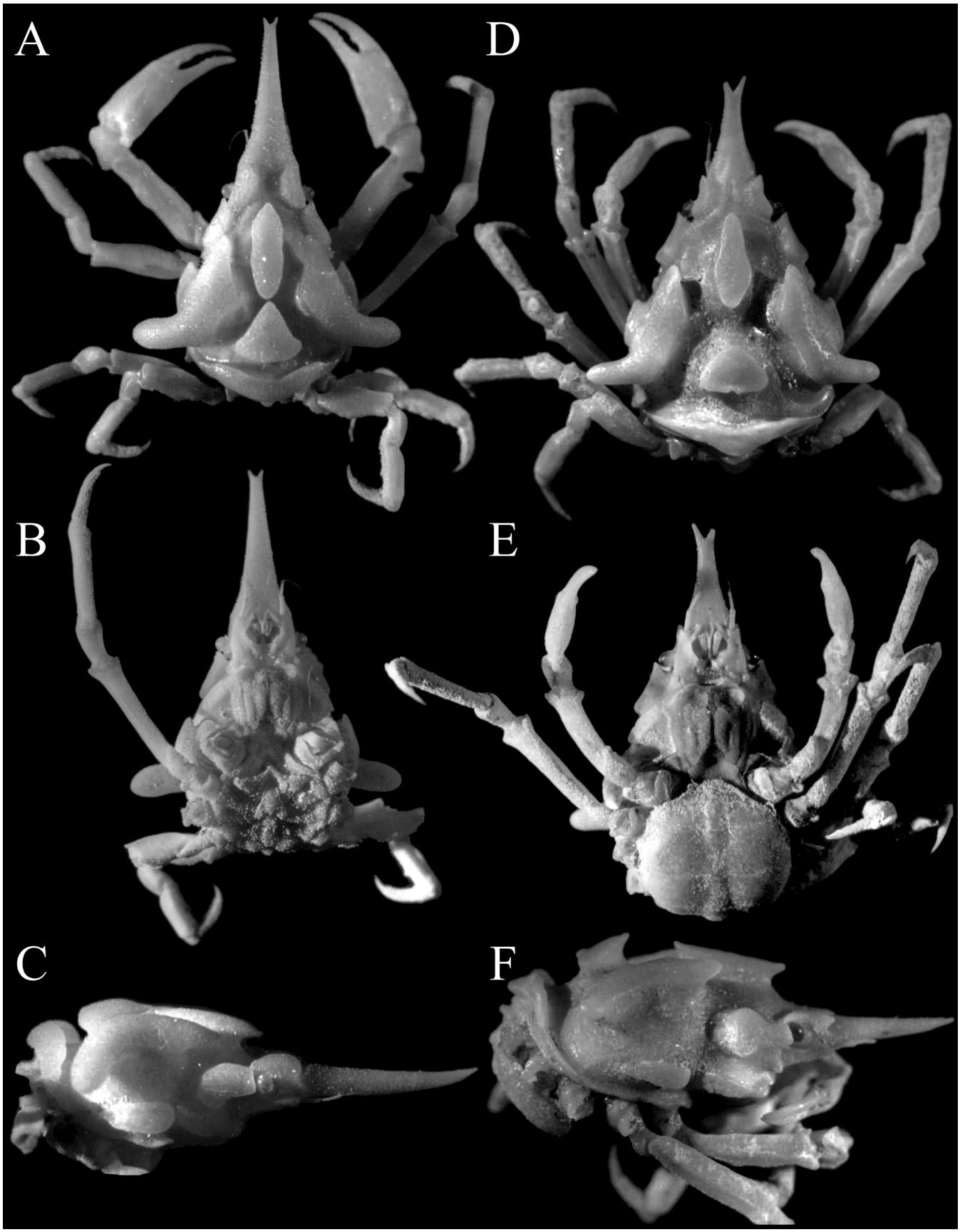

Fig. 6. A–C, *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891, lectotype, male (15.0 × 11.0 mm) (ZSI 143-6/7, 3186/9), stn 56, between North and South Sentinel Island, Andaman Sea; D–F, *O. aurorae* (Alcock, 1899), lectotype, ovigerous female (15.5 × 13.0 mm) (ZSI 2874-2900/10), stn 248, off Travancore coast. A, D, overall dorsal view; B, E, overall ventral view; C, F, lateral view of carapace.

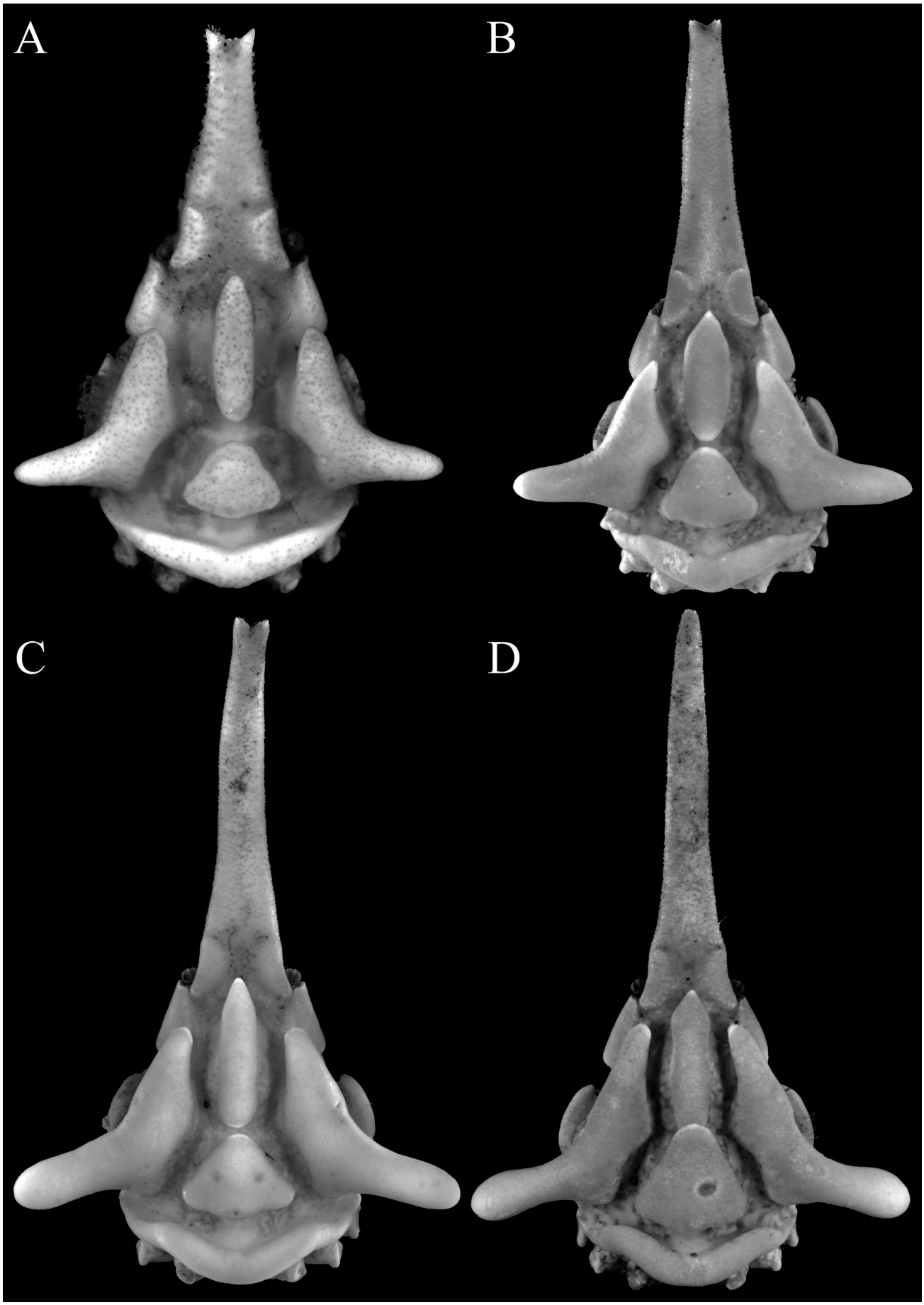

Fig. 7. *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891, carapace view. A, male (9.4 × 6.3 mm) (ZRC 2020.0030), stn CP34; B, male (14.7 × 10.0 mm) (ZRC 2020.0030), stn CP34; C, male (17.9 × 12.5 mm) (ZRC 2020.0030), stn CP34; D, male (17.6 × 12.5 mm) (ZRC 2020.0031), stn CP38. All from southern Java.

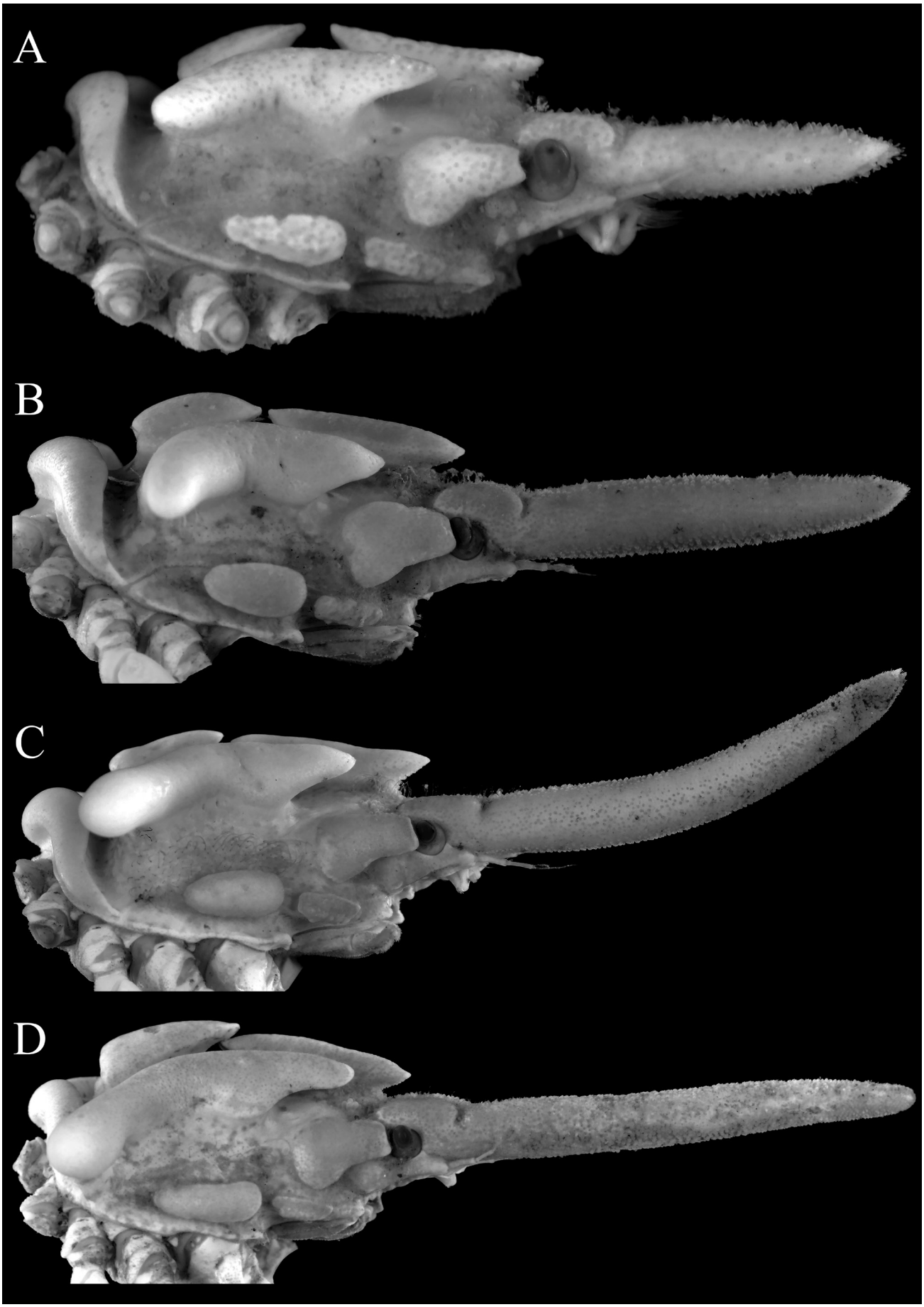

Fig. 8. *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891, lateral view of carapace. A, male (9.4 × 6.3 mm) (ZRC 2020.0030), stn CP34; B, male (14.7 × 10.0 mm) (ZRC 2020.0030), stn CP34; C, male (17.9 × 12.5 mm) (ZRC 2020.0030), stn CP34; D, male (17.6 × 12.5 mm) (ZRC 2020.0031), stn CP38. All from southern Java.

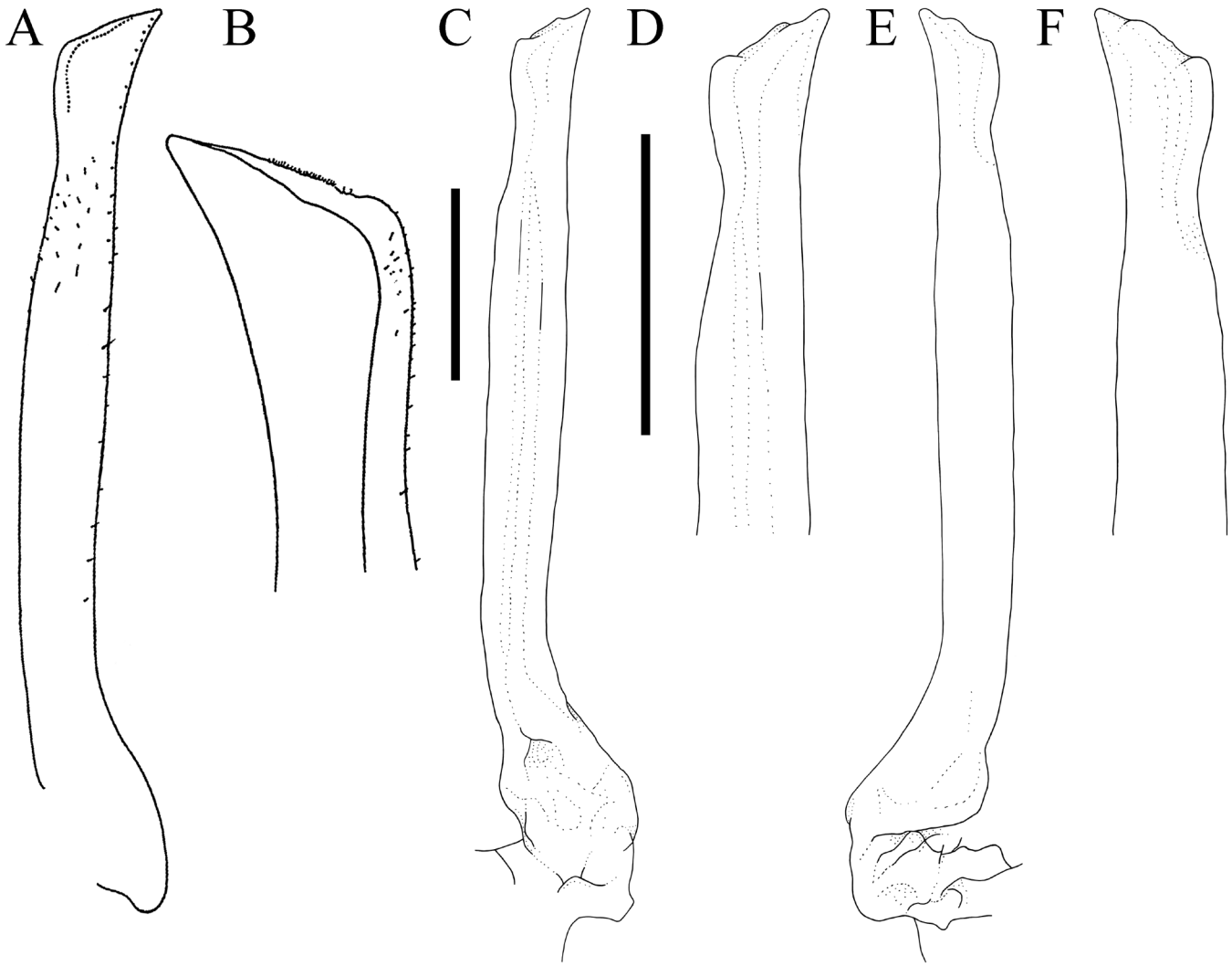

Fig. 9. *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891, left G1. A, B, lectotype, male (15.0 × 11.0 mm) (ZSI 143-6/7, 3186/9), stn 56, between North and South Sentinel Island, Andaman Sea (after Guinot & Richer de Forges, 1985: fig. 6A, B); C–F, male (17.6 × 12.5 mm) (ZRC 2020.0031), stn CP38, southern Java. A, C, ventral view; B, F, distal portion of dorsal view; D, distal portion of ventral view; E, dorsal view. Scale bars = 1.0 mm.

mm) [photographed], 1 damaged ovigerous female (ZRC 2020.0028), stn CP07, between Tabuan Island and Sumatra, Sunda Strait, 5°44.678′S 104°51.151′E to 5°44.917′S 104°52.061′E, 379–409 m, coll. SJADES 2018, 25 March 2018. – 1 male (15.6 × 10.6 mm) [photographed], 1 male (14.0 × 9.6 mm) [photographed] (ZRC 2020.0029), 3 males (13.7 × 9.0 mm, 12.5 × 8.8 mm, 10.5 × 7.1 mm), 1 female (10.7 × 7.1 m) (MZB Cru 5071), stn CP20, south of Panaitan Island, Sunda Strait, 6°42.320′S 105°08.682′E to 6°42.879′S 105°09.018′E, 325–362 m, coll. SJADES 2018, 27 March 2018. – 5 males (17.9 × 12.9 mm, 17.9 × 12.5 mm, 17.6 × 12.8 mm, 14.7 × 10.0 mm, 9.4 × 6.3 mm), 1 juvenile female (8.4 × 6.1 mm), 1 ovigerous female (13.1 × 9.3 mm) (ZRC 2020.0030), stn CP34, south of Tanjong Boyongkareuceng, Indian Ocean, 7°44.464′S 107°39.018′E to 7°44.575′S 107°39.447′E, 234–243 m, coll. SJADES 2018, 29 March 2019. – 5 males (18.1 × 12.4 mm, 17.6 × 12.5 mm [photographed], 16.2 × 10.8 mm, 13.6 × 9.3 mm, 12.2 × 8.2 mm), 1 female (14.1 × 9.3 mm), 4 ovigerous females (16.3 × 10.8 mm, 11.3 × 7.3 mm, 10.5 × 6.4 mm, 10.2 × 6.4 mm) (ZRC 2020.0031), stn CP38, south of Cilacap, Indian Ocean, 8°13.038′S 109°07.689′E to 8°13.150′S 109°08.216′E, 290–295 m, coll. SJADES 2018, 30 March 2018.

Comparative material. *Oxypleurodon aurorae* (Alcock, 1899): lectotype (here designated): ovigerous female (15.5 × 13.0 mm) (ZSI 2874-2900/10), stn 248, off Travancore coast, Laccadive Sea, 8°37′N 75°52′30″E, 224–284 fathoms, coll. Investigator Marine Survey, 17 October 1888.

Colouration. In life, the carapace and carapace plates are orange or pinkish-orange, with the chelipeds and ambulatory legs white or pinkish-orange (Fig. 5A–E).

Remarks. Wood-Mason (in Wood-Mason & Alcock, 1891) described *Oxypleurodon cuneus* from *Investigator* station 56, between North and South Sentinel Island in the Andaman Sea, at 407–444 m. It has been regarded as a rare species, with Rathbun (1911: 249) reporting one ovigerous female from Providence Island in the western Indian Ocean, and Griffin (1974: 29) recording one female from off Mombasa in East Africa. No fresh specimens had been reported until

the present study. In their study of Madagascar material, Guinot & Richer de Forges (1985) examined and figured a syntype male deposited in the Zoological Survey of India (ZSI) in Calcutta, commenting that the records of this species by Rathbun (1911) and Griffin (1974) are questionable (Guinot & Richer de Forges, 1985: 54). Considering the known distributions, it is possible that their species is the allied *O. difficilis* (Guinot & Richer de Forges, 1985) from northern Madagascar or an allied taxon.

Wood-Mason (in Wood-Mason & Alcock, 1891: 261) listed two males and one female of *O. cuneus*, and provided measurements for one specimen (18.7 × 13.7 mm; presumably inclusive of the spines), but the sex of the specimen was not stated. Guinot & Richer de Forges (1985) figured a syntype male (15.0 × 11.0 mm) (ZSI 143-6/7, 3186/9) (Fig. 6A–C). As the taxonomy of the genus is still in flux, it would be useful for the identity of the species to be fixed. As such, this ZSI specimen (ZSI 143-6/7, 3186/9) is here designated as the lectotype of *Oxypleurodon cuneus* Wood-Mason, in Wood-Mason & Alcock, 1891.

The series of specimens of *O. cuneus* on hand are important as they show substantial variation. The pseudorostral spine is very long in large males, sometimes even longer than the carapace itself (Figs. 5C, E, 6A, 7A–D), but is always shorter in females (Fig. 5A, B, D). In both sexes, the gastric plate sometime touches or even overlaps the cardiac plate (Figs. 5A–E, 6A, 7A–D). The variation in form of the gastric plate is clearly indicated by the numerous specimens collected during SJADES 2018 (see also Figs. 5A–E, 7A–D). In the largest male specimens, the gastric plate is more elongated, touching the cardiac plate or even passing under the border of the cardiac plate (Figs. 5E, 6A, 7D). However, for one of the larger female specimens (ZRC 2020.0031), the elongated gastric plate passes above the cardiac plate instead. As the plates are very swollen in *O. cuneus*, the grooves between them are deep. The specimens from station CP38, in particular, are also interesting in that some ovigerous females are much smaller than normal, being only 6.4 mm wide. In the smallest specimens, the pseudorostrum is clearly bifid distally (Figs. 5D, 7A). In the larger adult males, the chelipeds are also distinctly carinate, with an enlarged chela (Figs. 5C, 6A).

The closest species to *O. cuneus* is *O. difficilis*. The main difference is the shape of the cardiac plate, being triangular in *O. cuneus* (Figs. 5A–E, 6A, 7A–D) but ovoid in *O. difficilis* (cf. Guinot & Richer de Forges, 1985: pl. 1 figs. E–H). One male from station CP34 has a long pseudorostrum which curves upwards (Fig. 8C), resembling the condition in *O. pinocchio* (Guinot & Richer de Forges, 1985) from Makassar Strait, Indonesia (cf. Guinot & Richer de Forges, 1985: pl. 2 figs. B, F). However, the pseudorostrum in this specimen of *O. cuneus* is not as slender and the cardiac plate has a different shape, being triangular in *O. cuneus* (Figs. 5A–E, 6A, 7A–D) but with two lateral extensions in *O. pinocchio* (cf. Guinot & Richer de Forges, 1985: pl. 2 figs. A, C, E). *Oxypleurodon cuneus* is also close to *O. aurorae* from the Indian Ocean. Guinot & Richer de Forges (1985: 56) separated the two species by a number of characters, notably that the pseudorostrum is more slender and longer in *O. cuneus* (Figs. 5A–E, 6A, 7A–D) (versus the pseudorostrum is stouter and shorter in *O. aurorae*; Fig. 6D); the carapace is more slender and relatively less inflated (Figs. 6C, 8A–D) (versus enlarged and inflated carapace in *O. aurorae*; Fig. 6F); relatively smaller and narrower channels between the carapace plates (Figs. 5A–E, 6A, 7A–D) (versus the relatively bigger and wider channels between the carapace plates in *O. aurorae*; Fig. 6D); the cardiac plate is triangular (Figs. 5A–E, 6A, 7A–D) (versus cordiform in *O. aurorae*; Fig. 6D); the gastric plate nearly touches the cardiac plate in large specimens (Figs. 5A–E, 6A, 7A–D) (versus the gastric and cardiac plates are well separated by a distinct channel in *O. aurorae*; Fig. 6D); the branchial plate is wider medially (Figs. 5A–E, 6A, 7A–D) (versus the branchial plate is narrower medially in *O. aurorae*; Fig. 6D); the preorbital plate is more rounded (Figs. 5A–E, 6A, 7A–D) (versus more spine-like preorbital plate in *O. aurorae*; Fig. 6D); the postorbital plate is narrower (Figs. 5A–E, 6A, C, 7A–D) (versus wider postorbital plate in *O. aurorae*; Fig. 6D, F); and the pterygostomial plate is closer to the postorbital plate (Figs. 6C, 8A–D) (versus the pterygostomial and postorbital plates are more widely separated in *O. aurorae*; Fig. 6F). The excellent series of *O. cuneus* on hand shows that some of these characters are not reliable. The carapace shape is useful as all the specimens of *O. cuneus* are slender in general form (Figs. 5A–E, 6A, 7A–D), while the carapace shape of *O. aurorae* is more inflated (Fig. 6D), regardless of size or sex. The pseudorostrum form is different, although length is not a reliable character, varying greatly in *O. cuneus*. The pseudorostrum of *O. cuneus* is always evenly tapering towards the tip (Figs. 5A–E, 6A, 7A–D) whereas in *O. aurorae*, the median part is gently constricted (Fig. 6D). The supraorbital eave and hepatic lobes are much less salient, being more rounded and lower in *O. cuneus*, with the margins almost level with the rest of the carapace margin (Figs. 5A–E, 6A, 7A–D); in *O. aurorae*, they are more expanded and pronounced, forming clear lamelliform plates (Fig. 6D). The shape of the cardiac plate is not a useful character and extent to which the gastric plate reaches the cardiac plate is also unreliable, varying substantially in *O. cuneus* (Figs. 5A–E, 6A, 7A–D). The channels between the plates in *O. cuneus*, especially that between the cardiac and intestinal plates, however, are always narrower (Figs. 5A–E, 6A, 7A–D) compared to those of *O. aurorae* (Fig. 6D).

Distribution. This is a new record for Indonesia. The species is otherwise known only from its type locality, between North and South Sentinel Island, Andaman Sea (Wood-Mason & Alcock, 1891).

Samadinia Ng & Richer de Forges, 2013

Remarks. *Samadinia* was earlier established by Ng & Richer de Forges (2013) as a monospecific genus comprising *S. longispina* Ng & Richer de Forges, 2013, from New Caledonia, but Lee et al. (2021) proposed the transfer of

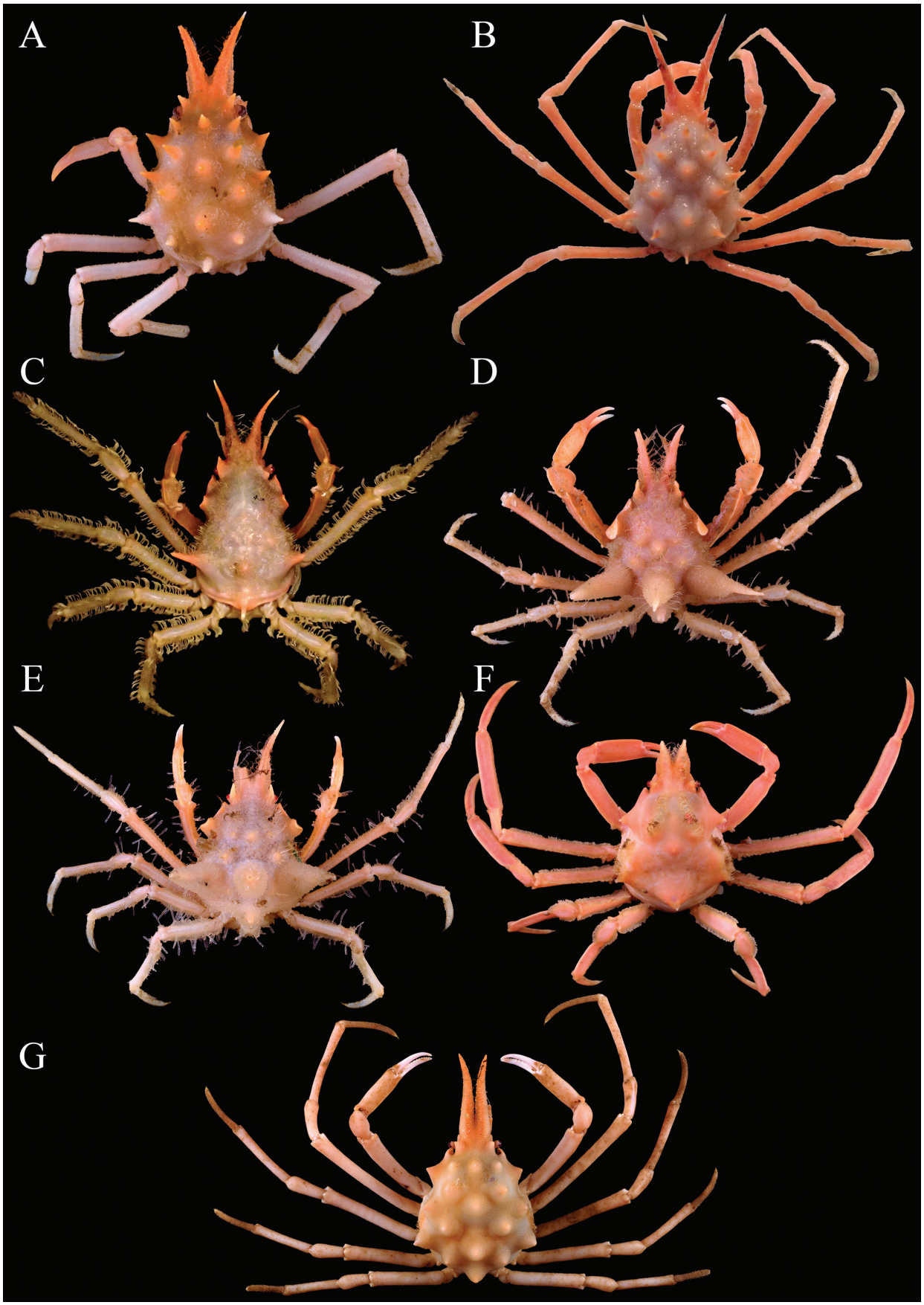

Fig. 10. Colours in life. A, *Samadinia livermorii* (Wood-Mason, in Wood-Mason & Alcock, 1891), female (12.7 × 8.6 mm) (ZRC 2020.0032), stn CP08; B, *S. livermorii* (Wood-Mason, in Wood-Mason & Alcock, 1891), male (15.8 × 10.8 mm) (ZRC 2020.0038), stn CP39; C, *S. jefrii*, new species, paratype, ovigerous female (14.4 × 9.0 mm) (ZRC 2020.0040), stn CP23; D, *S. yoyoae*, new species, holotype, male (15.6 × 10.7 mm) (MZB Cru 5076), stn CP18; E, *S. yoyoae*, new species, paratype, female (16.1 × 11.1 mm) (ZRC 2020.0041), stn CP18; F, *Tunepugettia corbariae*, male (23.5 × 16.5 mm) (ZRC 2020.0045), stn CP23; G, *Chimaerodinia musica*, new genus, new species, holotype, male (33.1× 25.2 mm) (MZB Cru 5079), stn CP51. All from southern Java.

most of the Indo-West Pacific species previously placed in "*Rochinia* A. Milne-Edwards, 1875" sensu lato into this genus, such that *Rochinia* sensu stricto is now solely represented by the western Atlantic species, *R. gracilipes* A. Milne-Edwards, 1875. Members of the allied genus, *Scyramathia* A. Milne-Edwards, 1880, are entirely Atlantic in distribution comprising four species (see Tavares & Santana, 2018; Lee et al., 2020, 2021). With the reinstatement of one previously synonymised species and the description of three new species, there are now 30 taxa in *Samadinia*.

Samadinia livermorii (Wood-Mason, in Wood-Mason & Alcock, 1891), new combination

(Fig. 10A, B)

Anamathia Livermorii Wood-Mason, in Wood-Mason & Alcock, 1891: 260 (type locality: between North and South Sentinel Islands).

Anamathia Livermorii—Alcock, 1894: 401.

Anamathia livermorei [sic]—Anonymous, 1891: 56. – Huys et al., 2014: 26.

Scyramathia pulchra—Alcock, 1895: 202. [not *Amathia* (*Amathia*) *pulchra* Miers, 1885]

Scyramathia livermorii—Alcock & Anderson, 1895: pl. 14 fig. 3.

Material examined. Indonesia: 2 females (12.7 × 8.6 mm, 12.5 × 8.5 mm) [photographed] (ZRC 2020.0032), stn CP08, between Tabuan Island and Sumatra, Sunda Strait, 5°45.126′S 104°51.080′E to 5°45.225′S 104°51.710′E, 425–442 m, coll. SJADES 2018, 25 March 2018. – 1 female (13.6 × 9.2 mm), 1 ovigerous female (14.4 × 10.2 mm) [photographed] (ZRC 2020.0033), stn CP23, south of Panaitan Island, Sunda Strait, 6°46.739′S 105°09.239′E to 6°45.924′S 105°08.360′E, 559–571 m, coll. SJADES 2018, 27 March 2018. – 1 male (11.5 × 7.4 mm) (ZRC 2020.0034), stn CP25, south of Panaitan Island, Sunda Strait, 6°50.185′S 105°10.353′E to 6°50.923′S 105°10.776′E, 876–937 m, coll. SJADES 2018, 27 March 2018. – 2 males (14.1 × 10.1 mm, 14.0 × 9.7 mm), 1 juvenile female (6.9 × 4.5 mm) (MZB Cru 5072), stn CP47, south of Pameungpeuk, Indian Ocean, 7°47.972′S 107°45.298′E to 7°48.257′S 107°45.706′E, 476–530 m, coll. SJADES 2018, 1 April 2018. – 1 male (with bopyrid; 16.4 × 12.2 mm) [photographed] (ZRC 2020.0035), 1 male (15.7 × 11.0 mm) (MZB Cru 5073), stn CP51, Pelabuhanratu Bay, Indian Ocean, 7°04.874′S 106°25.396′E to 7°05.348′S 106°25.044′E, 569–657 m, coll. SJADES 2018, 2 April 2018. – 2 males (15.1 × 10.5 mm, 13.2 × 8.5 mm), 1 ovigerous female (13.3 × 9.3 mm) (MZB Cru 5074), stn CP33, south of Tanjong Boyongkareuceng, Indian Ocean, 7°42.912′S 107°36.559′E to 7°43.255′S 107°37.234′E, 312–525 m, coll. SJADES 2018, 29 March 2018. – 1 female (with *Sacculina*; 14.7 × 10.3 mm) [photographed] (ZRC 2020.0036), stn CP26, east of Tinjil Island, Indian Ocean, 6°57.221′S 105°54.754′E to 6°56.664′S 105°55.315′E, 517–727 m, coll. SJADES 2018, 28 March 2018. – 1 male (with bopyrid; 12.0 × 10.4 mm), 1 female (11.2 × 7.2 mm) (ZRC 2020.0037), stn CP48, south of Tanjong Gedeh, Java, Indian Ocean, 7°51.120′S 107°46.245′E to 7°51.718′S 107°46.375′E, 637–689 m, coll. SJADES 2018, 1 April 2018. – 5 males (19.1 × 14.0 mm, 17.0 × 11.6 mm, 15.8 × 10.8 mm [photographed], 14.0 × 10.0 mm, 13.1 × 9.9 mm), 1 damaged male, 9 females (17.4 × 12.2 mm, 16.0 × 11.5 mm, 14.4 × 10.3 mm, 9.0 × 6.5 mm, 8.9 × 5.4 mm), 3 females (with bopyrid; 15.0 × 13.3 mm, 14.1 × 12.4 mm, 11.4 × 9.7 mm), 2 ovigerous females (15.5 × 11.1 mm, 13.5 × 9.8 mm) (ZRC 2020.0038), stn CP39, south of Cilacap, Indian Ocean, 8°15.885′S 109°10.163′E to 8°16.060′S 109°10.944′E, 528–637 m, coll. SJADES 2018, 30 March 2018.

Colouration. Carapace spines orange to pink, chelipeds and ambulatory legs orange to pale pink (Fig. 10A, B).

Remarks. Compared to the type and a large series of specimens of *Samadinia pulchra* (Miers, 1885) that we have examined from and near the type locality in the Philippines (see also Richer de Forges & Ng, 2013), the specimens attributed to *S. livermorii* from the southern coast of Java differ in having the hepatic spine rounded in cross-section (Fig. 10A, B) (versus the laterally flattened hepatic spine in *S. pulchra*; cf. Sakai, 1938: text-fig. 35; Takeda, 1975: fig. 4a). The Javanese specimens agree with the description and figures of *Anamathia livermorii* Wood-Mason, in Wood-Mason & Alcock, 1891 (see also Alcock & Anderson, 1895: pl. 14 fig. 3). *Anamathia livermorii* was synonymised under *Amathia pulchra* Miers, 1885, by Alcock (1895: 202) without comment and this synonymy has been accepted ever since. The taxonomy of *A. livermorii* will be treated elsewhere in a revision of the *S. pulchra* group of species by Lee BY & Ahyong ST (in prep.) and as such, its taxonomy will not be elaborated on here.

Distribution. This is a new record for Indonesia. The species is otherwise known only from the type locality, between North and South Sentinel Islands, Andaman Sea (Wood-Mason & Alcock, 1891).

Samadinia jefrii, new species

(Figs. 10C, 11B, 12A–C, 14A–C, 15A–D)

Material examined. Holotype: male (18.4 × 11.6 mm) [photographed] (MZB Cru 5075), stn CP48, south of Tanjong Gedeh, Java, Indian Ocean, 7°51.120′S 107°46.245′E to 7°51.718′S 107°46.375′E, 637–689 m, coll. SJADES 2018, 1 April 2018. Paratypes: 2 males (15.5 × 9.9 mm, 14.5 × 9.3 mm), 2 females (14.6 × 8.9 mm, 13.3 × 8.2 mm), 1 ovigerous female (17.1 × 10.7 mm) (ZRC 2020.0039), same data as holotype. – 1 ovigerous female (14.4 × 9.0 mm) [photographed] (ZRC 2020.0040), stn CP23, south of Panaitan Island, Sunda Strait, 6°46.739′S 105°09.239′E to 6°45.924′S 105°08.360′E, 559–571 m, coll. SJADES 2018, 27 March 2018.

Diagnosis. Carapace pyriform, covered with long and short setae, regions well defined. Pseudorostral spines short, diverging in V-shape, curved outwards. Supraorbital eave enlarged, curved upward, flattened laterally; postorbital lobe cup-like, flattened laterally, fused with hepatic spine (Figs. 10C, 12A, C). Carapace with short spines: 2 hepatic spines flattened laterally, directed upwards, sharp tip small metagastric granule; 2 protogastric granules along base of swollen gastric region; 1 short cardiac spine; 1 epibranchial

Fig. 11. Colours in life. A, *Neophrys neptunus*, new species, holotype, female (17.6 × 12.5 mm) (MZB Cru 5069), stn CP47; B, *Samadinia jefrii*, new species, paratype, male (14.5 × 9.3 mm) (ZRC 2020.0039), stn CP48; C, *S. yoyoae*, new species, holotype, male (15.6 × 10.7 mm) (MZB Cru 5076), stn CP18; D, *Tunepugettia corbariae* Lee, Richer de Forges & Ng, 2019, male (37.3 × 26.1 mm) (ZRC 2020.0047), stn CP35. All from southern Java.

swelling; 2 branchial spines pointing outwards and slightly upwards; 1 sharp intestinal spine medially on posterior region of carapace (Figs. 10C, 12A). Basal antennal article short, with blunt and rounded distal external angle; distal internal angle indented, with antero-external crested rim of antennal fossa; outer margin straight. Pterygostomial region with plate-like granule on outer margin (Figs. 12B, 14B). Cheliped carinate; merus short, carinate, triangular in cross-section, with sharp spine on distal tip near carpus; carpus with 2 strong carinate; propodus enlarged, flattened with lamellated carina; fingers short curved with serrulated border. Ambulatory legs long, slender, bordered by row of thick curved setae; dactylus sharp, curved, with 2–3 weak granules on ventral margin on P4–P5 dactylus, smooth ventral margin on P2–P3 dactylus; P2 longest, P2 merus length 8.3–11.6 times merus width, male P2 merus length 0.73–0.84 times pcl, female P2 merus length 0.6–0.67 times pcl; P5 merus length 4.2–6.2 times merus width, male P5 merus length 0.38–0.44 times pcl, female P5 merus length 0.32–0.36 times pcl (Figs. 10C, 11B, 12A, 14C). Male thoracic sternum

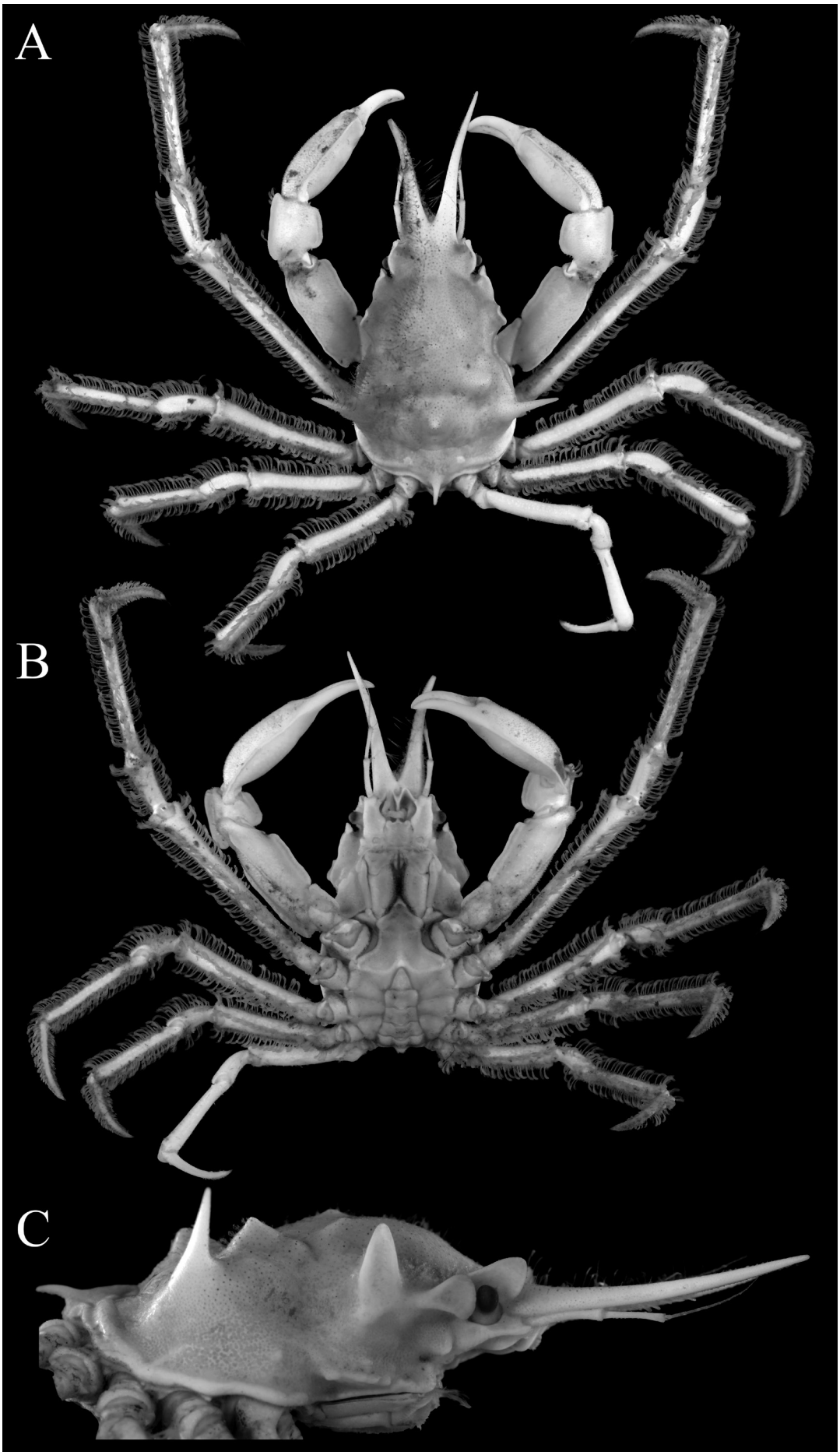

Fig. 12. *Samadinia jefrii*, new species, holotype, male (18.4 × 11.6 mm) (MZB Cru 5075), stn CP48, southern Java. A, overall dorsal view; B, overall ventral view; C, lateral view of carapace.

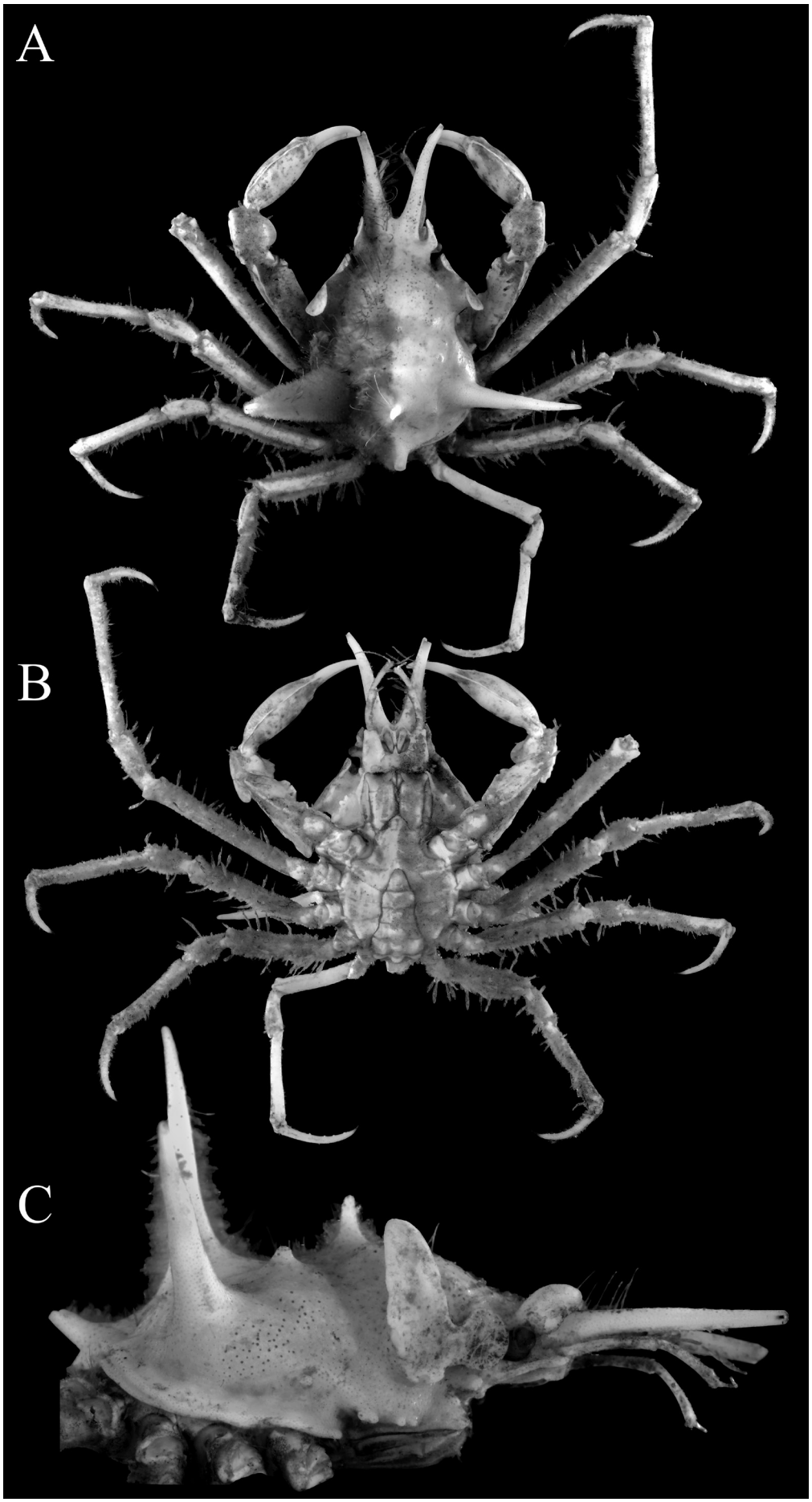

Fig. 13. *Samadinia yoyoae*, new species, holotype, male (15.6 × 10.7 mm) (MZB Cru 5076), stn CP18, southern Java. A, overall dorsal view; B, overall ventral view; C, lateral view of carapace.

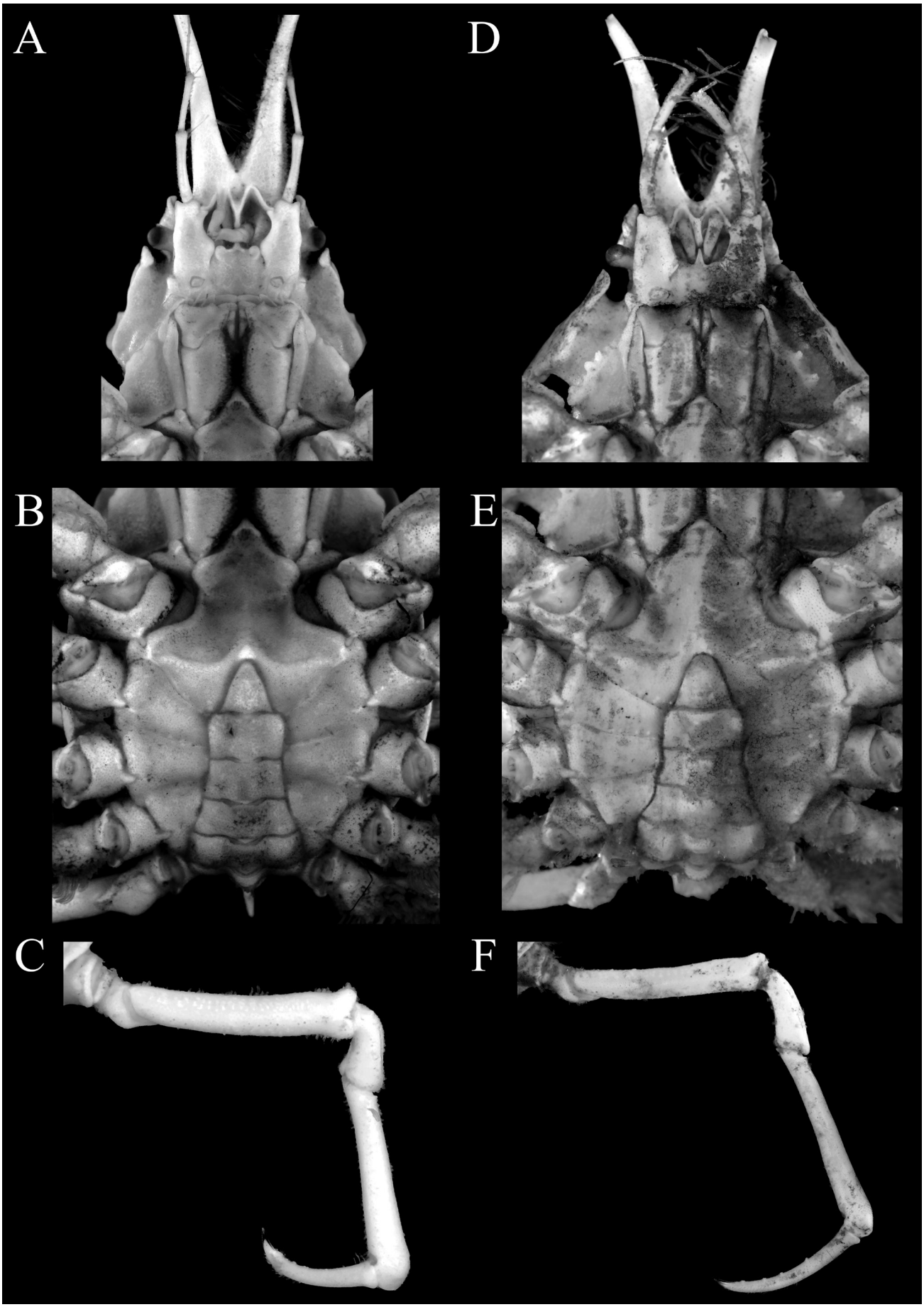

Fig. 14. A–C. *Samadinia jefrii*, new species, holotype, male (18.4 × 11.6 mm) (MZB Cru 5075), stn CP48; D–F, *S. yoyoae*, new species, holotype, male (15.6 × 10.7 mm) (MZB Cru 5076), stn CP18. All from southern Java. A, D, ventral frontal view; B, E, male thoracic sternum view; C, F, dorsal view of P5.

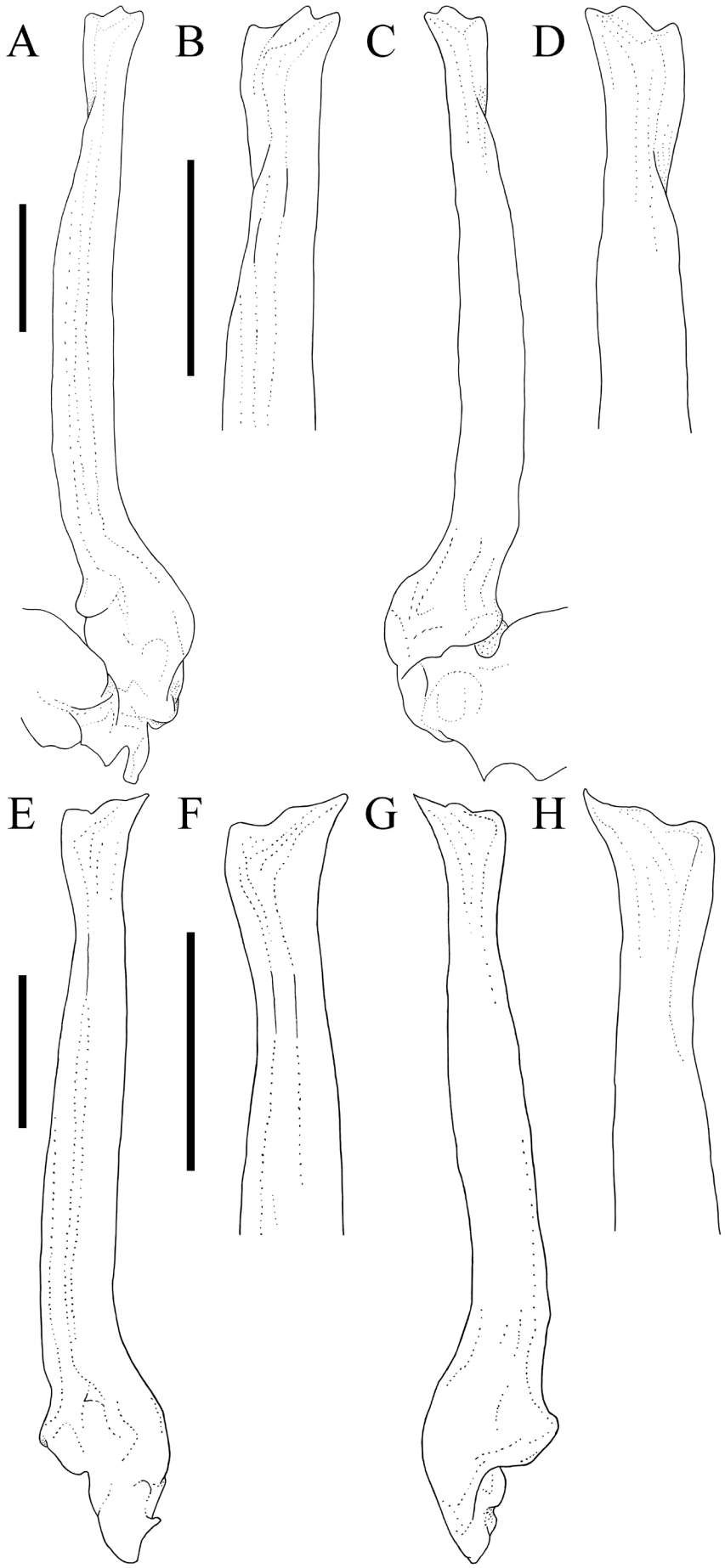

Fig. 15. Left G1. A–D, *Samadinia jefrii*, new species, holotype, male (18.4 × 11.6 mm) (MZB Cru 5075), stn CP48; E–H, *S. yoyoae*, new species, holotype, male (15.6 × 10.7 mm) (MZB Cru 5076), stn CP18. All from southern Java. A, E, ventral view; B, F, distal portion of ventral view; C, G, dorsal view; D, H, distal portion of dorsal view. Scale bars = 1.0 mm.

deeply depressed anteriorly. Male pleon with 6 free somites and telson, short median tooth on articles 2–4 (Figs. 12B, 14B). G1 relatively straight, slightly constricted near distal third, distally with slightly rounded angle medially on upper edge near blunt tip (Fig. 15A–D).

Colouration. In life, the carapace is medially whitish-yellow; pseudorostrum, carapace spines and chelipeds are orange to almost pink with the ambulatory legs dirty white (Figs. 10C, 11B).

Etymology. Dedicated to Captain Jefri Juliansyah, captain of the Indonesian research vessel *Baruna Jaya VIII*.

Remarks. The general shape of the carapace of *Samadinia jefrii*, new species, superficially resembles that of *Oxypleurodon fultoni* (Grant, 1905) (see Richer de Forges & Ng, 2013; Lee et al., 2021). The latter species has long been assigned to *Rochinia* but Lee et al. (2021) argued that while this species does not have the characteristic carapace plates, it does have a relatively narrow male thoracic sternum and the posterior part of its carapace is swollen and raised, like most species of *Oxypleurodon*. Ng & Richer de Forges (2013) noted that "*R. fultoni*" belonged to its own group. Despite their general appearance (mainly in the slender and elongate carapace), the hepatic region of *S. jefrii* has a prominent flattened plate that is fused with the postorbital plate and directed upwards (Fig. 12C) (versus with an outwardly directed small sharp spine in *O. fultoni*; cf. Lee et al., 2021: fig. 6A); the branchial spines are directed upwards (Figs. 10C, 11B, 12A) (versus directed outwards in *O. fultoni*; cf. Lee et al., 2021: fig. 6A); the ambulatory legs are distinctly setose (Figs. 10C, 11B, 12A) (versus glabrous and smooth in *O. fultoni*; cf. Lee et al., 2021: fig. 6A); the male thoracic sternum is wider with the median part of sternite 4 not strongly depressed (Figs. 12B, 14B) (versus narrower in *O. fultoni*; see Ng & Richer de Forges, 2013: fig. 5F; Lee et al., 2021: fig. 6B); and the posterior margin of the carapace is not swollen (Figs. 10C, 12A) (versus prominently swollen and raised in *O. fultoni*; Lee et al., 2021: fig. 6A). For these reasons, the present new species is best placed in *Samadinia* rather than *Oxypleurodon*.

One of the living specimens of *S. jefrii* collected from station CP48 was found clinging onto a crinoid (Fig. 11B) in the trawl sample. We are not sure if this association with the crinoid is natural or merely an artefact of the collection process.

Distribution. The species is known so far only from its type locality, in southern Java, Indonesia.

Samadinia yoyoae, new species
(Figs. 10D, E, 11C, 13A–C, 14D–F, 15E–H)

Material examined. Holotype: male (15.6 × 10.7 mm) [photographed] (MZB Cru 5076), stn CP18, between Sumatra & Java, Sunda Strait, Indonesia, 6°10.758′S 105°05.589′E to 6°11.587′S 105°05.735′E, 1060–1073 m, coll. SJADES 2018, 26 March 2018. Paratypes: 3 males (16.3 × 10.9 mm, 14.7 × 9.5 mm, 11.6 × 8.0 mm), 1 female (16.1 × 11.1 mm) (ZRC 2020.0041), same data as holotype. – 1 damaged ovigerous female (ZRC 2020.0042), stn CP20, south of Panaitan Island, Sunda Strait, Indonesia, 6°42.320′S 105°08.682′E to 6°42.879′S 105°09.018′E, 325–362 m, coll. SJADES 2018, 27 March 2018. – 4 males (13.0 × 8.9 mm, 13.0 × 8.3 mm, 12.2 × 8.2 mm, 10.4 × 6.7 mm), 2 ovigerous female (13.5 × 9.3 mm, 12.4 × 8.5 mm) (ZRC 2020.0043), stn CP48, south of Tanjong Gedeh, Java, Indian Ocean, Indonesia, 7°51.120′S 107°46.245′E to 7°51.718′S 107°46.375′E, 637–689 m, coll. SJADES 2018, 1 April 2018.

Diagnosis. Carapace pyriform, covered with a layer of short and long hooked setae. Pseudorostral spines relatively short, sharp, curved outward. Supraorbital spines flattened, directed upwards; postorbital spine fused with long hepatic spine forming L-shape lobe, flattened laterally; hepatic spine pointing upward with rounded tip (Figs. 10D, E, 11C, 13A, C). Carapace with 5 large spines medially: 1 mesogastric spine; 1 cardiac spine; 2 long branchial spines, pointed outwards; 1 intestinal spine medially on posterior region of carapace (Figs. 10D, E, 13A). Antennal flagellum nearly as long as pseudorostral spines. Basal antennal article longer than short, fused with carapace, blunt distal external angle; outer margin relatively straight. Pterygostomial region with 2–4 granules (Figs. 13B, 14E). Male cheliped short; merus short, slightly curved, triangular in cross-section, sharp spine on upper distal border near carpus; carpus short with strong carinate; propodus inflated, carinate on both borders forming flattened expansion. Ambulatory legs long, slender, with thick setae on border; dactylus long, sharp, curved, with 4–8 granules on ventral margin on P3–P5, smooth ventral margin on P2; P2 longest, P2 merus length 10.0–15.9 times width, male P2 merus length 0.81–0.95 times pcl, female P2 merus length 0.73–0.75 times pcl; P5 merus length 5.4–8.6 times width, male P5 merus length 0.39–0.5 times pcl, female P5 merus length 0.39–0.43 times pcl (Figs. 10D, E, 13A, 14F). Male thoracic sternum depressed anteriorly. Male pleon with 6 free somites and telson (Figs. 13B, 14E). G1 straight, slightly constricted near distal third, distal tip with slight angle medially on upper edge near sharp tip (Fig. 15E–H).

Colouration. In life, the carapace is pale pink, with the chelipeds and ambulatory legs pale pink to white (Figs. 10D, E, 11C).

Etymology. To honour our colleague and friend, Professor Dwi Listyo Rahayu, better known to her close associates as "Yoyo", who was the Indonesian chief scientist on the SJADES 2018 cruise.

Remarks. The most obvious features of *S. yoyoae*, new species, are the presence of three long and large spines on the carapace and the long, laterally flattened, L-shaped postorbital-hepatic spine. The carapace spines appear wide because they are covered by a thick tomentum of globose setae. The distinctively structured laterally flattened and curved hepatic plate is a character shared by *S. sibogae* Griffin & Tranter, 1986, and *S. galathea* Griffin & Tranter, 1986. None of these species, however, have the strong carapace spines present in *S. yoyoae*.

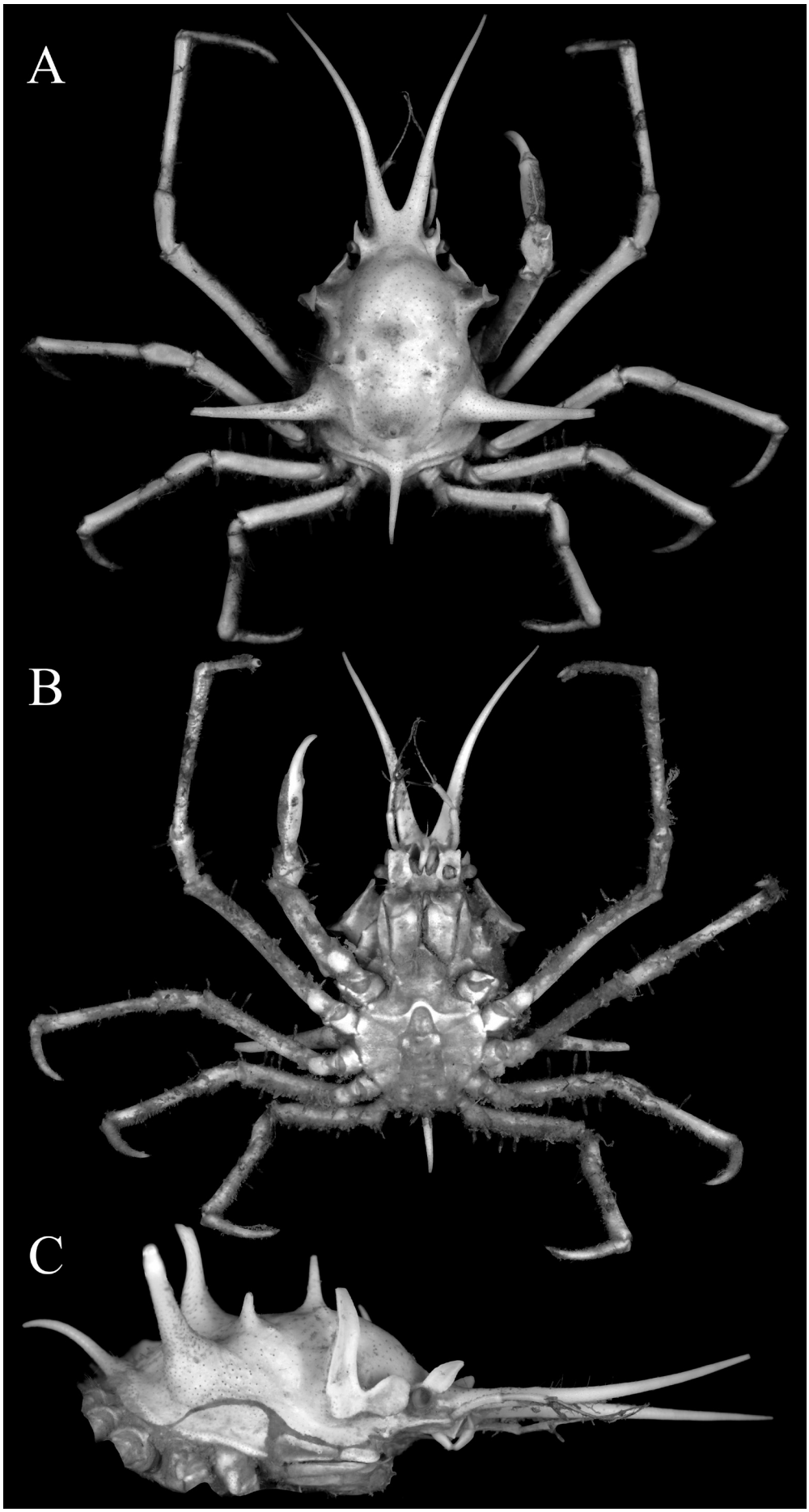

Fig. 16. *Samadinia taylorae*, new species, holotype, male (17.0 × 10.5 mm) (MV J58142), Western Australia. A, overall dorsal view; B, overall ventral view; C, lateral view of carapace.

Samadinia galathea from the Natal coast in South Africa only has a small cardiac spine and its carapace has a distinct appearance with its laterally flattened hepatic spine curved (cf. Griffin & Tranter, 1986b: fig. 11b, h). *Samadinia sibogae* from the Ceram Sea, Indonesia, is probably the species closest to *S. yoyoae*, but their carapace spines differ. In *S. yoyoae*, the branchial spines are distinctly shorter (Figs. 10D, E, 11C, 13A) (versus branchial spines longer in *S. sibogae*; cf. Griffin & Tranter, 1986b: fig. 12f); the cardiac spine is much longer with a sharp tip (Figs. 10D, E, 13A) (versus the shorter cardiac spine with blunt tip in *S. sibogae*; cf. Griffin & Tranter, 1986b: fig. 12f); and the intestinal spine is short (Fig. 13A) (versus very long and sharp in *S. sibogae*; cf. Griffin & Tranter, 1986b: fig. 12f). In the description of *S. sibogae*, Griffin & Tranter (1986b) did not mention any tomentum or setae on the dorsal surface of the carapace and spines of *S. galathea* or *S. sibogae*; these features are very distinctive characteristics of *S. yoyoae* (Figs. 10D, E, 11C, 13A). Whether these characters were merely omitted as the specimens were already denuded by the time of the study, or these species are actually less setose is not known. A species that has the same kind of spines and is also covered with dense tomentum over the entire carapace is *S. debilis* (Rathbun, 1932), from Japan. *Samadinia debilis*, however, is a larger species than *S. yoyoae* (28.9 mm carapace length versus 16.3 mm carapace length), the branchial spines are less divergent, and the hepatic spine is small and sharp, and not flattened laterally (cf. Lee et al., 2021). For differences with *Samadinia taylorae*, new species, see remarks below.

Distribution. This species is known thus far only from its type locality, southern Java, Indonesia.

Samadinia taylorae, new species
(Figs. 16A–C, 17A–D)

Rochinia sibogae—Richer de Forges & Poore, 2008: 69, fig. 2c [not *Rochinia sibogae* Griffin & Tranter, 1986].

Rochinia strangeri—Richer de Forges & Poore, 2008: 69, fig. 2d. – Poore et al., 2008: 56 [not *Rochinia strangeri* Serène & Lohavanijaya, 1973].

Material examined. Holotype: male (17.0 × 10.5 mm) (MV J58142), Barrow L1 transect, northwestern Australia, Western Australia, Australia, 20°59′09″S 114°00′47″E to 20°57′34″S 114°00′26″E, 1000 m, coll. MF Gomon, 9 June 2007. Paratypes: 1 ovigerous female (16.3 × 10.3 mm) (MV J58024), Mermaid L24 transect, northwestern Australia, Western Australia, Australia, 16°38′04″S 119°09′13″E to 16°38′46″S 119°08′02″E, 990–987 m, coll. MF Gomon, 17 June 2007. – 1 female (10.2 × 6.6 mm) (MV J55427), Abrolhos Island, Western Australia, Australia, 29°03′39″S 113°38′10″E to 29°04′41″S 113°37′48″E, 1000–1037 m, coll. G. C. Poore, 2 December 2005.

Diagnosis. Carapace with long setae along margin of carapace. Pseudorostral spines long, curved outwards, diverging. Supraorbital eave fused with carapace, preorbital spine curved upwards, sharp at tip; postorbital lobe fused with hepatic spine forming L-shape lobe, hepatic spine curved upwards (Fig. 16A, C). Carapace with 7 spines: 1 mesogastric spine; 2 epibranchial spines; 2 long lateral branchial spines; 1 cardiac spine; 1 long posterior curved spine medially (Fig. 16A, C). Antennal flagellum shorter than pseudorostral spines. Basal antennal article longer than broad, wide, distal angle of article rounded, outer margin straight. Pterygostomial region with 2–4 distinct granules on outer margin (Fig. 16B). Chelipeds slender, propodus slightly inflated, carinate on margin; carpus with carinate margin on outer surface; merus triangular in cross-section, carinate on outer margin. Ambulatory legs slender, covered with short setae and long setae on margins; merus with blunt distal tip; dactylus curved with 4–6 weak or no granules on ventral margins, smooth internal margin on P2 dactylus; P2 longest, P2 merus length 12.3–13.4 times width, male P2 merus length 0.79 times pcl, female P2 merus length 0.68–0.77 times pcl; P5 merus length 5.7–7.4 times width, male P5 merus length 0.38 times pcl, female P5 merus length 0.35–0.36 times pcl (Fig. 16A). Male thoracic sternum slightly depressed anteriorly; sternites 3, 4 with lateral margins constricted anteriorly, posterior wide. Male pleon triangular, telson triangular (Fig. 16B). G1 straight, slight constriction near distal third, dorsal edge with slight rounded swellings medially, sharp distal tip (Fig. 17A–D).

Colouration. Not known.

Etymology. This species is named after Joanne Taylor, manager of the Natural Sciences Collections, Museum Victoria, Melbourne, Australia, for her kind help with the specimen loan.

Type locality. Off Northwest Cape, Western Australia, Australia, 20°59′09″S 114°00′47″E to 20°57′34″S 114°00′26″E, 1000 m.

Remarks. Specimens of *Samadinia taylorae*, new species, from the southwestern coast of Australia were originally identified by Richer de Forges & Poore (2008: 69, fig. 2c, d) as two different species, *S. strangeri* (Serène & Lohavanijaya, 1973), and *S. sibogae* (Griffin & Tranter, 1986) (both as *Rochinia* A. Milne-Edwards, 1875). Lee et al. (2017: 18) commented that the "*Rochinia strangeri*" as identified by Richer de Forges & Poore (2008) was actually closer to *S. soela* (as a *Rochinia*) but was not that species. Similarly, what they identified as "*Rochinia sibogae*" are also *Samadinia taylorae*.

Samadinia taylorae resembles *S. sibogae*, *S. soela*, and *S. despereaux* Lee, Richer de Forges & Ng, 2017, in having the postorbital lobe and hepatic spine fused to form an L-shape lobe (Fig. 16C), and the long lateral branchial spines being longer than or equal to the carapace width (Fig. 16A). *Samadinia taylorae* differs, however, in having the preorbital spine distinctly curving upwards (Fig. 16A, C) (versus with short preorbital spine or preorbital spine pointing upwards in the other species), the fused postorbital-hepatic lobe is curved upwards (Fig. 16C) (versus pointing outwards in other species), and possession of a very long posterior spine

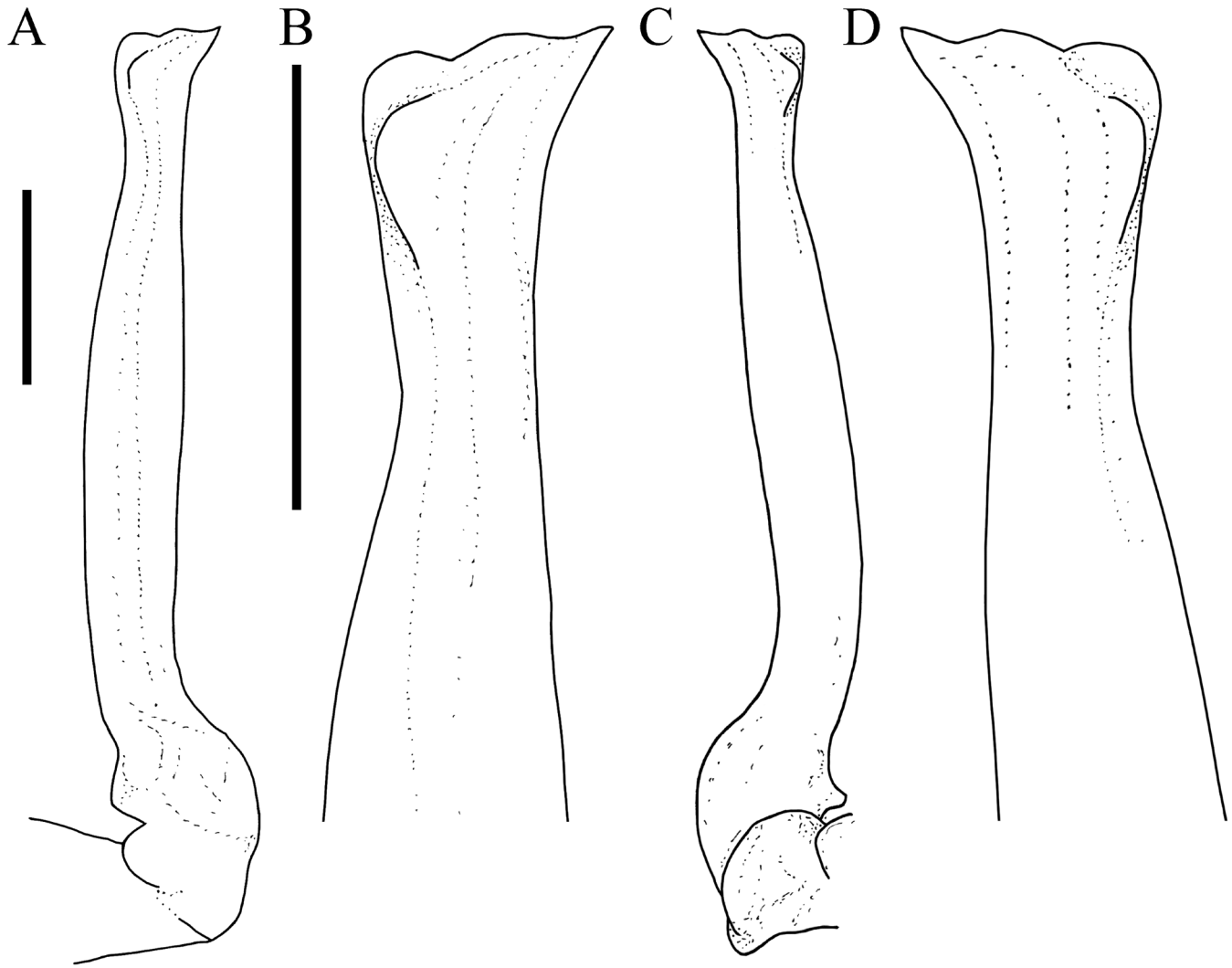

Fig. 17. *Samadinia taylorae*, new species, holotype, male (17.0 × 10.5 mm) (MV J58142), Western Australia, left G1. A, ventral view; B, distal portion of ventral view; C, dorsal view; D, distal portion of dorsal view. Scale bars = 1.0 mm.

(Fig. 16A, C) (versus with only a short sharp tubercle in the other species) (cf. Griffin & Tranter, 1986b; Lee et al., 2017, 2021).

Samadinia taylorae is also close to *S. yoyoae*, and collection sites of both species are in the eastern Indian Ocean. In *S. taylorae*, however, the intestinal spine is longer and thinner than in *S. yoyoae*, which is only a sharp granule. The carapace and spines of *S. taylorae* do not possess the dense tomentum present in S. *yoyoae* (Figs. 10D, E, 11C, 13A), the long branchial spines are more divergent outwards (Fig. 16A) (versus the long branchial spines more directed upwards; Fig. 13A), the pseudorostral spines are proportionately longer (Fig. 16A) (versus the pseudorostral spines proportionately shorter in *S. yoyoae*; Figs. 10D, E, 13A), and the sharp and slender hepatic plate is directed upwards (Fig. 16C) (versus the rounded and broad hepatic plate directed upwards in *S. yoyoae*; Figs. 11C, 13B).

Distribution. This species is currently only known from its type locality, off northwestern Australia.

Tunepugettia Ng, Komai & Sato, 2017

Tunepugettia corbariae Lee, Richer de Forges & Ng, 2019

(Figs. 10F, 11D)

Tunpugettia corbariae Lee, Richer de Forges & Ng, 2019: 21–23, figs. 10A, 11D–F, 12A–D (type locality: Ainto Bay, south-east New Britain, Solomon Sea, Papua New Guinea).

Material examined. Indonesia: 1 female (20.0 × 13.0 mm) [photographed] (ZRC 2020.0044), stn CP12, southeast of Tabuan Island, Sunda Strait, 5°52.252′S 104°66.786′E to 5°52.728′S 104°56.422′E, 615–698 m, coll. SJADES 2018, 25 March 2018. – 3 males (23.5 × 16.5 mm, 19.9 × 13.8 mm, 16.2 × 10.6 mm), 1 female (14.0 × 9.2 mm) [photographed] (ZRC 2020.0045), stn CP23, south of Panaitan Island, Sunda Strait, 6°46.739′S 105°09.239′E to 6°45.924′S 105°08.360′E, 559–571 m, coll. SJADES 2018, 27 March 2018. – 1 male (14.0 × 8.9 mm), 1 female (12.8 × 8.5 mm) (MZB Cru 5077), stn CP24, south of Panaitan Island, Sunda Strait, 6°47.344′S 105°06.039′E to 6°47.914′S 105°06.485′E, 1044–1068 m, coll. SJADES 2018, 27 March 2018. – 5 males (19.9 × 12.9 mm, 18.2 × 12.4 mm, 17.7 × 11.5 mm, 13.1 × 8.5

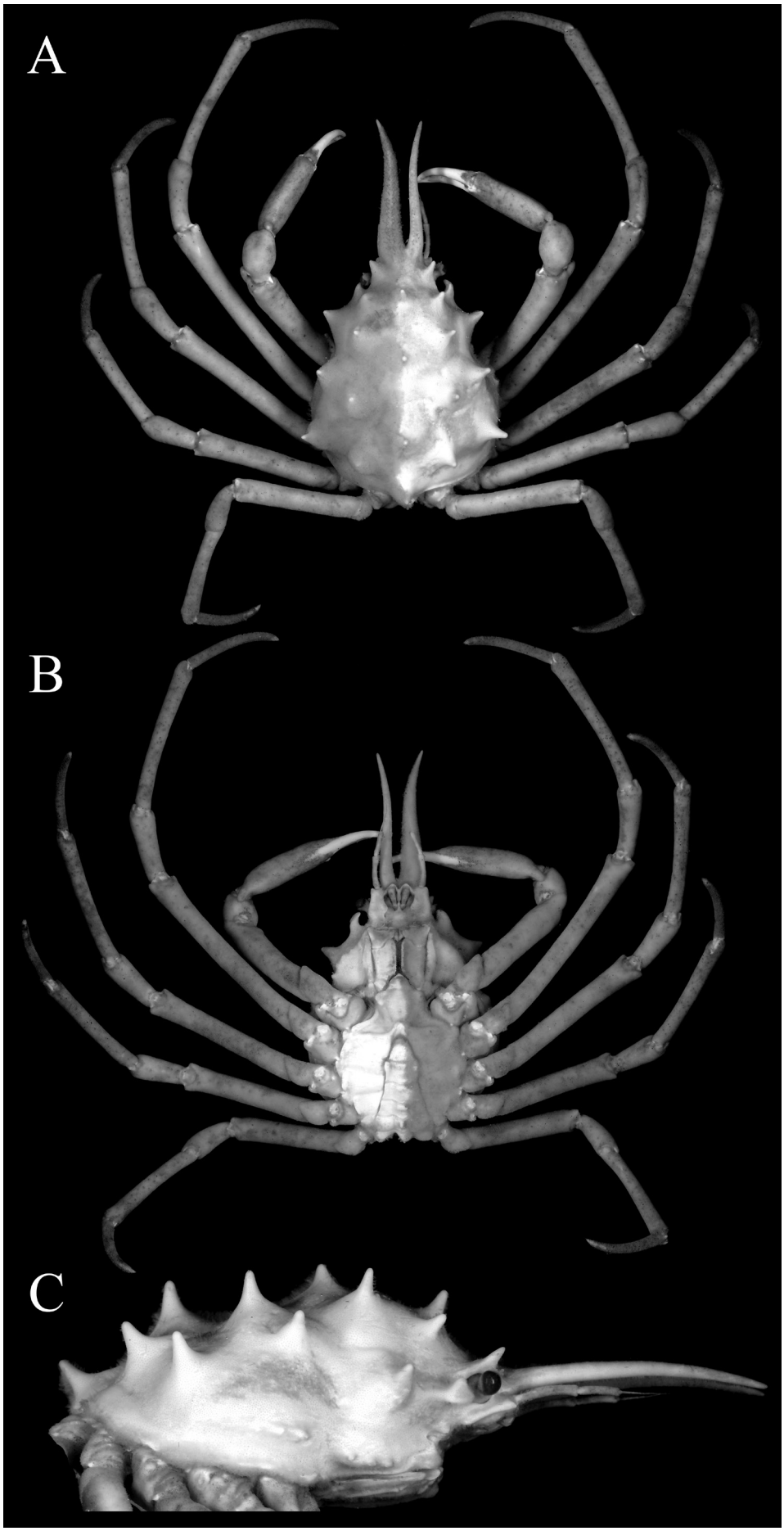

Fig. 18. *Chimaerodinia musica*, new genus, new species, holotype, male (33.1 × 25.2 mm) (MZB Cru 5079), stn CP51, southern Java. A, overall dorsal view; B, overall ventral view; C, lateral view of carapace.

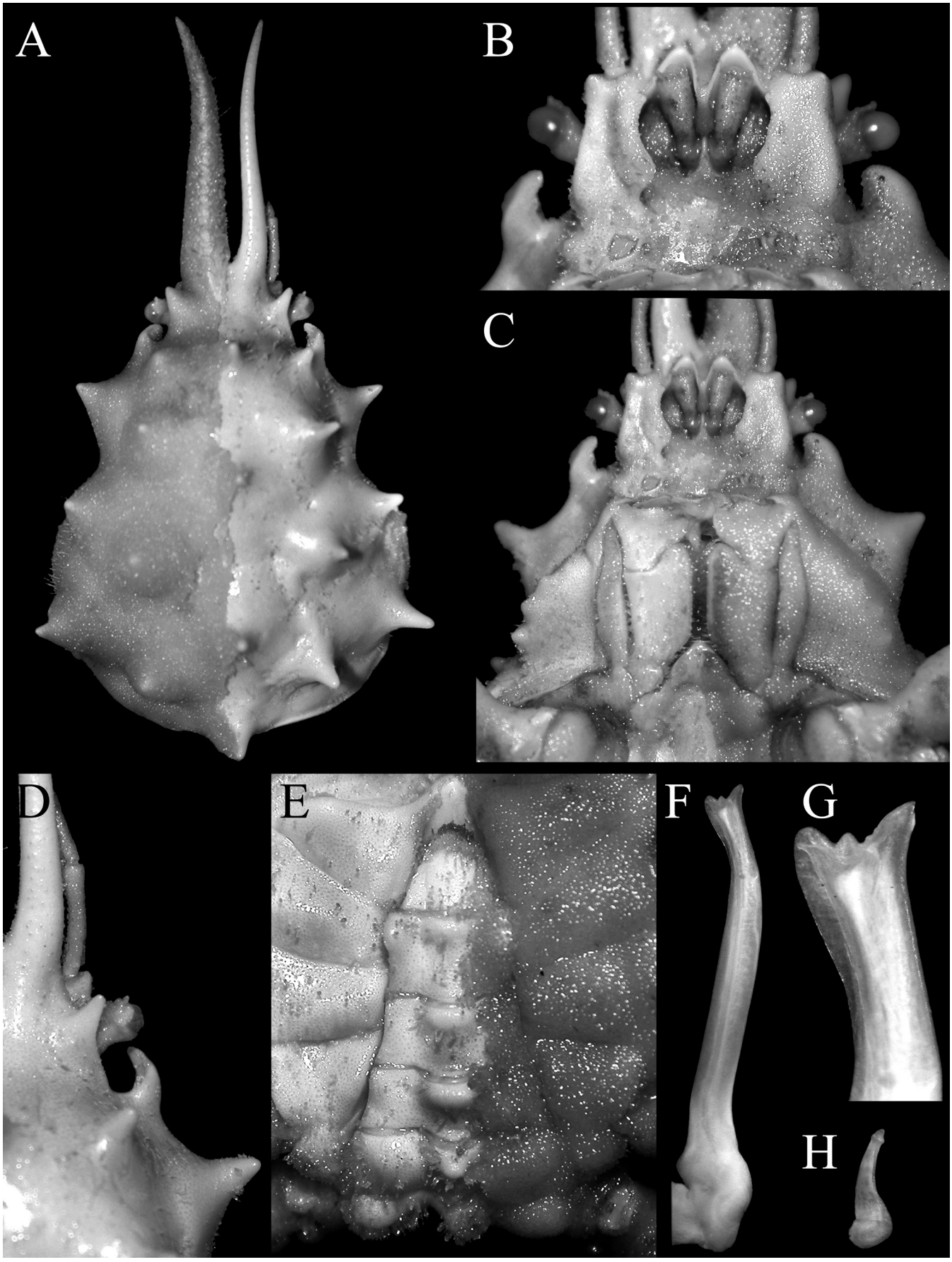

Fig. 19. *Chimaerodinia musica*, new genus, new species, holotype, male (33.1 × 25.2 mm) (MZB Cru 5079), stn CP51, southern Java. A, carapace view; B, basal antennal article view; C, ventral frontal view; D, right orbital view; E, male thoracic sternum view; F, left G1 ventral view; G, left G1 ventral view of distal portion; H, left G2.

mm, 12.6 × 7.7 mm), 2 females (29.0 × 20.2 mm, 17.3 × 11.1 mm) (ZRC 2020.0046), stn CP33, south of Tanjong Boyongkareuceng, Indian Ocean, 7°42.912′S 107°36.559′E to 7°43.255′S 107°37.234′E, 312–525 m, coll. SJADES 2018, 29 March 2018. – 1 male (37.3 × 26.1 mm) (ZRC 2020.0047), stn CP35, south of Tanjong Boyongkareuceng, Indian Ocean, 7°47.677′S 107°41.904′E to 7°47.681′S 107°42.477′E, 603–686 m, coll. SJADES 2018, 29 March 2018. – 1 female (15.4 × 10.4 mm) (MZB Cru 5078), stn CP50, Pelabuhanratu Bay, Indian Ocean, 7°03.322′S 106°26.673′E to 7°03.762′S 106°26.334′E, 383–435 m, coll. SJADES 2018, 2 April 2018. – 1 male (24.0 × 16.9 mm) (ZRC 2020.0048), stn CP51, Pelabuhanratu Bay, Indian Ocean, 7°04.874′S 106°25.396′E to 7°05.348′S 106°25.044′E, 569–657 m, coll. SJADES 2018, 2 April 2018.

Colouration. In life, the carapace, chelipeds, and ambulatory legs are all uniformly pale pink (Figs. 10F, 11D).

Remarks. The uniform pale pink colouration of the SJADES 2018 *Tunepugettia corbariae* specimens differs slightly from those collected from Papua New Guinea, where the carapace and chelipeds are orange to pale pink, while the ambulatory legs are white (cf. Lee et al., 2019: fig. 10A). Morphologically, however, there are no significant differences.

Distribution. This is a new record for *Tunepugettia corbariae* from Indonesia, which was first described from the northern coast of Papua New Guinea. Its known range is now extended substantially westwards to Indonesia along the southern shores of Java, at depth ranges of 559 m to 1,044 m.

Chimaerodinia, new genus

Diagnosis. Pseudorostral spines lyre-shaped; long, approximately ⅔ carapace length; covered by a thick tomentum of globose setae (Figs. 10G, 18A, 19A, C). Postorbital spine directed anteriorly to protect eye. Carapace pyriform, covered with thick tomentum of short setae. Carapace with 22 short subequal spines, with 4 spines in medial row (Figs. 10G, 18A, 19A). Basal antennal article short, broad (Figs. 18B, 19B). Pterygostomial region with 3 swollen teeth out outer margin (Figs. 18B, 19C). Male thoracic sternum constricted, depressed anteriorly; sternite 8 exposed. Pleon with 6 somites and triangular telson, with medial swelling on each somite except telson (Figs. 18B, 19E). G1 long, sigmoid, flattened on terminal part, showing 3 short projections (Fig. 19F, G).

Etymology. The genus name is derived from the Latin word, "*chimaera*", in arbitrary combination with *Samadinia.* It alludes to a fabulous mythical organism with its body composed by pieces of several other species. The gender is feminine.

Remarks. *Chimaerodinia*, new genus, superficially resembles *Naxioides* A. Milne-Edwards, 1865, especially in the general shape of the carapace and the long, lyriform pseudorostral spines. One obvious difference is that unlike in all *Naxioides* species, the pseudorostral spine of *Chimaerodinia* is entire and has no subdistal accessory spine (see Griffin & Tranter, 1986b; Poupin, 1995; Suvarna Devi et al., 2019). In addition, the G1 structure of *Chimaerodinia* is completely different from those of *Naxioides* species which are long, slender, gently curved with a tapering tip (e.g., Griffin & Tranter, 1986b: fig. 37e–h). The scyriform G1 of *Chimaerodinia* resembles that of most *Samadinia* species, with the distal part distinctly dilated to form a beak-like structure except that the distal quarter is distinctly bent to one side (Fig. 19F, G) (always straight or gently curved in *Samadinia* species; Figs. 15A–H, 17A–D) and the distal margin has an additional median projection (Fig. 19F, G). A three-pronged G1 tip is, however, a diagnostic feature of *Pugettia* Dana, 1851 (see Garth, 1958: pl. L figs. 1–7; Lee et al., 2021: fig. 9E, F). In general carapace morphology and position of the spines (excluding the pseudorostral spines), *Chimaerodinia* resembles *Samadinia pulchra* and *S. boucheti*, with the dorsal regions distinct and covered with small spines (see Richer de Forges & Ng, 2013). The unusual combination of characters requires the establishment of a new genus for the following new species.

Chimaerodinia musica, new species
(Figs. 10G, 18A–C, 19A–H)

Material examined. Holotype: male (33.1 × 25.2 mm) [photographed] (MZB Cru 5079), stn CP51, Pelabuhanratu Bay, Indonesia, Indian Ocean, 7°04.874′S 106°25.396′E to 7°05.348′S 106°25.044′E, 569–657 m, coll. SJADES 2018, 2 April 2018.

Diagnosis. As for genus.

Description. Carapace pyriform, covered with layer of setae; with numerous spines when denuded. Pseudorostral spines long, lyre shaped. Supraorbital eave fused with carapace; preorbital tooth with slightly sharp distal angle, pointing outwards; postorbital tooth curved, laterally flattened (Figs. 10G, 18A, 19A, C). Carapace with total of 22 subequal spines, with 4 spines in medial row; 2 supraorbital, 2 curved postorbital, 2 hepatic spines; 2 mesogastric spines, 4 protogastric spines; 1 cardiac spine medially; 2 epibranchial spines, 2 mesobranchial spines, 2 metabranchial spines, 2 lateral branchial spines; 1 intestinal spine medially on posterior region of carapace (Figs. 10G, 18A, 19A). Lateral border of carapace with row of granules forming ridge (Fig. 18C).

Antennal flagellum shorter than pseudorostral spines. Basal antennal article fused to carapace, with curved internal border, distal angle rounded, relatively straight outer margin (Fig. 19B). Buccal frame covered by third maxillipeds. Pterygostomial region with 3 big granules on outer margin (Figs. 18B, 19C).

Cheliped short, covered with layer of setae except fingers; articles cylindrical; dactylus long, serrulated. Ambulatory legs long with cylindrical articles, covered with layer of setae; dactylus slightly curved with smooth ventral margin on all legs; P2 longest, longer than cheliped, P2 merus

length 7.7 times width, P2 merus length 0.63 times pcl; P5 merus length 6.8 times width, P5 merus length 0.55 times pcl (Figs. 10G, 18A).

Male thoracic sternum depressed anteriorly. Male pleon with 6 free somites and triangular telson; large swelling medially on each somite segment except telson (Figs. 18B, 19E); round male pleon lock present on sternite 5, on sternopleonal cavity edge. G1 distal part with 3 projections (Fig. 19F, G).

Colouration. In life, the carapace and ambulatory legs are a pale orangish-pink, with the chelipeds pale pink and the fingers white (Fig. 10G).

Etymology. The species name alludes to the lyre-like shape of the pseudorostral spines.

Remarks. *Chimaerodinia musica*, new species, exhibits an unusual combination of characters as discussed in the remarks for genus above.

Distribution. This species is known only from its type locality, southern Java, Indonesia.

Family Inachidae MacLeay, 1838

Subfamily Inachinae MacLeay, 1838

Cyrtomaia Miers, 1885

Cyrtomaia suhmi Miers, 1885
(Figs. 20A–C, 21A–F)

Cyrtomaia suhmi Miers, 1885: 589 (type locality: between Meangis and Tulur Islands [= Talaud Islands]).
Cyrtomaia suhmii Miers, 1886: 16, pl. 3 fig. 2, 2a–c.
Cyrtomaia Suhmi typica Doflein, 1904: 54, 55, pl. 19 figs. 1, 2 (type locality: Sumatra, Nias, Nicobar, Sombrero-Kanal).
Cyrtomaia Suhmi var. *curviceros* Bouvier, 1915: 9, pl. 1.
(For remaining synonymy, see Guinot & Richer de Forges, 1986a: 116; Promdam, 2011: 7, 8).

Material examined. Indonesia: 1 male (12.9 × 12.9 mm) [photographed], 1 juvenile (8.1 × 7.2 mm) (ZRC 2020.0049), stn CP22, south of Panaitan Island, Sunda Strait, 6°46.458′S 105°07.068′E to 6°47.450′S 105°07.613′E, 864–870 m, coll. SJADES 2018, 27 March 2018. – 2 males (20.0 × 20.6 mm [photographed], 14.8 × 12.8 mm) (ZRC 2020.0050), stn CP23, south of Panaitan Island, Sunda Strait, 6°46.739′S 105°09.239′E to 6°45.924′S 105°08.360′E, 559–571 m, coll. SJADES 2018, 27 March 2018. – 1 damaged ovigerous female (ZRC 2020.0051), stn CP27, east of Tinjil Island, Indian Ocean, 6°58.624′S 105°53.745′E to 6°58.937′S 105°53.363′E, 481–557 m, coll. SJADES 2018, 28 March 2018. – 1 ovigerous female (67.6 × 76.4 mm) [photographed], 1 female (13.0 × 13.9 mm) [photographed] (ZRC 2020.0052), stn CP33, south of Tanjong Boyongkareuceng, Indian Ocean, 7°42.912′S 107°36.559′E to 7°43.255′S 107°37.234′E, 312–525 m, coll. SJADES 2018, 29 March 2018. – 1 damaged juvenile (MZB Cru 5080), stn CP28, east of Tinjil Island, Indian Ocean, 7°00.194′S 105°54.624′E to 6°59.778′S 105°55.224′E, 957–1022 m, coll. SJADES 2018, 28 March 2018. – 1 juvenile (7.1 × 7.1 mm), 1 damaged specimen (11.4 × 12.8 mm) (ZRC 2020.0053), stn CP35, south of Tanjong Boyongkareuceng, Indian Ocean, 7°47.677′S 107°41.904′E to 7°47.681′S 107°42.477′E, 603–686 m, coll. SJADES 2018, 29 March 2018. – 1 female (15.0 × 15.9 mm), 1 juvenile (7.4 × 6.8) (ZRC 2020.0054), stn CP39, south of Cilacap, Indian Ocean, 8°15.885′S 109°10.163′E to 8°16.060′S 109°10.944′E, 528–637 m, coll. SJADES 2018, 30 March 2018. – 1 juvenile (8.3 × 7.5 mm) (MZB Cru 5081), stn CP47, south of Pameungpeuk, Indian Ocean, 7°47.972′S 107°45.298′E to 7°48.257′S 107°45.706′E, 476–530 m, coll. SJADES 2018, 1 April 2018. – 1 male (13.9 × 13.6 mm), 3 juveniles (9.2 × 8.5 mm, 7.8 × 7.0 mm) (ZRC 2020.0055), stn CP48, south of Tanjong Gedeh, Java, Indian Ocean, 7°51.120′S 107°46.245′E to 7°51.718′S 107°46.375′E, 637–689 m, coll. SJADES 2018, 1 April 2018. – 2 ovigerous females (68.6 × 76.6 mm, 68.2 × 75.7 mm) (MZB Cru 5082), stn CP50, Pelabuhanratu Bay, Indian Ocean, 7°03.322′S 106°26.673′E to 7°03.762′S 106°26.334′E, 383–435 m, coll. SJADES 2018, 2 April 2018. – 1 juvenile (7.8 × 7.4 mm) (ZRC 2020.0056), stn CP51, Pelabuhanratu Bay, Indian Ocean, 7°04.874′S 106°25.396′E to 7°05.348′S 106°25.044′E, 569–657 m, coll. SJADES 2018, 2 April 2018.

Colouration. In life, the carapace, chelipeds, and ambulatory legs are reddish-orange or orange (Fig. 20A–C).

Remarks. The taxonomy of *Cyrtomaia suhmi*, which was named after Rudolf von Willemoes-Suhm, a scientist on board the Challenger who died during the cruise near Hawaii, has been somewhat confused until about a decade ago. It was described from Talaud Islands from the Moluccas in Indonesia from a crushed specimen, and later reported from various sites in the Indian and Western Pacific Oceans. *Cyrtomaia Suhmi* var. *curviceros* was described by Bouvier (1915) from a large male specimen (98 mm carapace width) from Japan. Guinot & Richer de Forges (1982a; 1986a) discussed the taxonomy of these two species but did not conclusively resolve whether the two were synonymous as has long been suspected (see Griffin & Tranter, 1986a: 30), preferring to provisionally regard them as separate taxa as the available material was relatively scarce. Ng et al. (2008: 111) treated the two names as synonymous but without any elaboration (see also Richer de Forges & Ng, 2008: 19). Promdam (2011) obtained a good series of specimens, including juveniles, and showed that *C. suhmi* and *C. curviceros* are indeed synonyms. We have on hand also a good series of specimens of various sizes and they confirm the degree of variation observed.

The year of publication of *Cyrtomaia suhmi* is often cited as "Miers, 1886" but the name was actually validated one year earlier, "Miers, 1885" (see Froglia & Clark, 2011). The spelling of the name requires clarification. In his narrative of the Challenger expedition, when the species name was first used, Miers (1885) spelled it as "*Cyrtomaia suhmi*". When he described the species at length in his main report, Miers (1886) used two different spellings. In his introduction to

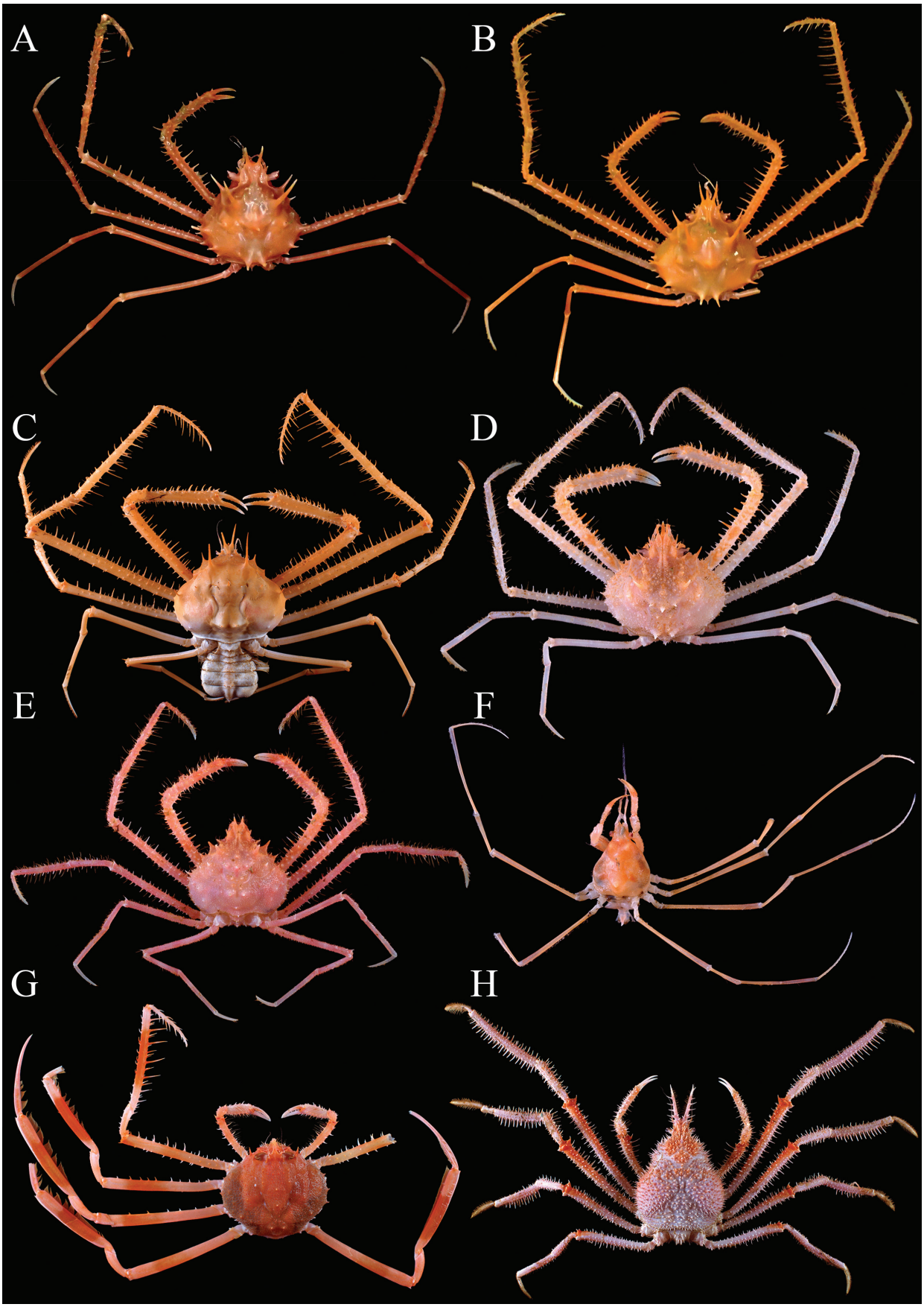

Fig. 20. Colour in life. A, *Cyrtomaia suhmi* Miers, 1885, male (12.9 × 12.9 mm) (ZRC 2020.0049), stn CP22; B, *C. suhmi* Miers, 1885, male (20.0 × 20.6 mm) (ZRC 2020.0050), stn CP23; C, *C. suhmi* Miers, 1885, female (13.0 × 13.9 mm) (ZRC 2020.0052), stn CP33; D, *C. pilosa* Ihle & Ihle-Landenberg, 1931, male (18.9 × 21.7 mm) (ZRC 2020.0057), stn CP08; E, *C. pilosa* Ihle & Ihle-Landenberg, 1931, male (18.3 × 19.5 mm) (ZRC 2020.0057), stn CP08; F, *Physachaeus tonsor* Alcock, 1895, male (8.4 × 7.4 mm) (ZRC 2020.0058), stn CP03; G, *Platymaia alcocki* Rathbun, 1916, male (35.2 × 38.1 mm) (ZRC 2020.0061), stn CP37; H, *Pleistacantha pungens* (Wood-Mason, in Wood-Mason & Alcock, 1891), 1 female (72.7 × 59.8 mm) (ZRC 2019.1120), stn CP02. All from southern Java.

the Brachyura, Miers twice spelled it as "*Cyrtomaia suhmi*" (Miers, 1886: xxix, xl); however in his list of species studied, he used "*Cyrtomaia suhmii*" (Miers, 1886: xliii). In his description of the species and in his plates, he also used "*Cyrtomaia suhmii*" (Miers, 1886: 16, pl. 3 fig. 2). As the valid name dates from the earlier paper, we follow Miers (1885) in using *Cyrtomaia suhmi*.

Doflein (1904: 54, 55) recognised two forms of *C. suhmi*. For one form, he used the name "*Cyrtomaia Suhmi typica* Miers" (p. 54), and a second form, which he named "*Cyrtomaia Suhmi platyceros* nov. sbsp." (p. 55). While he was clearly treating the "typical" form as the nominate subspecies of Miers, the name "*Cyrtomaia Suhmi typica*" is nevertheless an available name under the current zoological Code (ICZN, 1999) (see Castro et al., 2004: 39, 40). In describing *C. gaillardi* Guinot & Richer de Forges, 1982, from Madagascar, Guinot & Richer de Forges (1982a: 1097) listed *Cyrtomaia Suhmi typica* Doflein, 1904, in the synonymy of their new species, but with doubt. They commented that Doflein's material from Nias and the Nicobar Islands could be their new species. If indeed so, then Doflein's name must replace *C. gaillardi* as it has priority. Doflein (1904: 5) listed specimens of *Cyrtomaia suhmi typica* from Nias, Nicobars and Sombrero Channel (next to Nicobar Islands), and also included the type of *C. suhmi* from the Talaud Islands. All these specimens must therefore be treated as syntypes of *Cyrtomaia suhmi typica* Doflein, 1904. The known material of *C. suhmi* from the eastern Indian Ocean all match *C. suhmi* s. str. as defined here (see Promdam, 2011), and they appear distinct from *C. gaillardi*; and as such, the synonymy suspected by Guinot & Richer de Forges (1982b) is probably unwarranted. Nevertheless, to ensure there is no ambiguity in the use of Doflein's name, we here select the holotype of *Cyrtomaia suhmi* Miers, 1885, that is in the Natural History Museum in London (see Guinot & Richer de Forges, 1986a), as the lectotype of *Cyrtomaia suhmi typica* Doflein, 1904. This makes both names objective synonyms. *Cyrtomaia suhmi platyceros* is currently regarded as a distinct species (see Ng et al., 2008).

Distribution. *Cyrtomaia suhmi* has previously been recorded from its type locality, between Meangis and Tulur Islands (= Talaud Islands) (Miers, 1885) in Indonesia, and from between Philippines and the sea of Moluccas (Ihle & Ihle-Landenberg, 1931). The present record from Java, Indonesia, extends the range approximately 2,000 km westwards. In Indonesia, we collected *C. suhmi* from between 500 and 900 m depth, and this is the known depth range (see Guinot & Richer de Forges, 1982a, b, 1986a).

Cyrtomaia pilosa Ihle & Ihle-Landenberg, 1931
(Figs. 20D, E, 22A–E, 23F–J, 24A–B, 25A–F)

Cyrtomaia horrida susp. *pilosa* Ihle & Ihle-Landenberg, 1931: 154 (type locality: Kei Island [= Kai Island]).
Cyrtomaia horrida var. *pilosa*—Bennett, 1964: 30 (list).
?*Cyrtomaia pilosa*—Guinot & Richer de Forges, 1982b: 45, figs. 24A–C, 25A, B.

Material examined. **Indonesia.** 3 males (19.8 × 20.8 mm, 18.9 × 21.7 mm [photographed], 18.3 × 19.5 mm [photographed]), 3 females (19.9 × 21.3 mm, 17.8 × 19.1 mm, 11.4 × 12.3 mm) (ZRC 2020.0057), stn CP08, between Tabuan Island and Sumatra, Sunda Strait, 5°45.126′S 104°51.080′E to 5°45.225′S 104°51.710′E, 425–442 m, coll. SJADES 2018, 25 March 2018.

Comparative material. *Cyrtomaia horrida* Rathbun, 1916: Philippines: 1 male (48.5 × 54.9 mm), 1 female (42.5 × 46.2 mm) (ZRC 2007.0031), Balicasag Island, collected with tangle nets by fishermen, 200–500 m, coll. P.K.L. Ng, July 2003. – 1 ovigerous female (44.1 × 49.5 mm), 1 female (19.9 × 22.0 mm), 4 juveniles (14.1 × 14.5 mm, 15.7 × 16.6 mm, 14.5 × 14.5 mm, 14.1 × 15.8 mm) (ZRC 2007.0040), stn CP2405, Bohol and Sulu Seas, 9°37.9′N 123°44.9′E, 453–470 m, coll. PANGLAO 2005 Expedition, 1 June 2005. – 1 male (20.9 × 24.0 mm), 1 juvenile male (ZRC 2007.0035), stn CP2359, Bohol and Sulu Seas, 8°52.3′N 123°34.7′E, 513–476 m, coll. PANGLAO 2005 Expedition, 26 May 2005.

Diagnosis. Carapace rounded granulous-spinulous, covered by setae of different sizes; short setae covering P4, P5. Pseudorostral spines shorter than rostrum (Figs. 20D, 22B, 23F). Postocular spine long, strong, sharp, directed anteriorly and outwards. Eyes with 3 terminal tubercles. Hepatic area with 1 long spine, several spinules. One long, sharp orbital intercalary spine directed outwards; protogastric spines short, divergent outwards and anteriorly; 1 small mesiogastric spine with 2 lateral spinules; branchial area swollen with short spines; 1 small intestinal spine; cardiac area swollen with 2 short spines (Figs. 20D, E, 22A, 23F). Lateral border of carapace, between hepatic and branchial areas with anteriorly curved tooth (Fig. 22B). Basal antennal article with 3 long, sharp spines; buccal frame square, internal border of third maxilliped ischium serrulated; epistome wider than long; pterygostomial region with denticulated border (Figs. 22C, D, 23G, 25B). Chelipeds slender, long, covered on each article by spines; fingers serrulated (Fig. 23I). Ambulatory legs long, slender: P2 spiny on merus, carpus, propodus, dactylus very long; P3 spiny on merus, small spinules on carpus, propodus smooth; P4 and P5 have only distal merus spine, inferior border of P4 and P5 meri with small, curved spines smaller than setae (Figs. 20D, E, 22A, 23J). Male pleon narrow with 6 somites and telson, median spines on each article except telson (Fig. 22E). G1 slightly curved with blunt distal tip (Fig. 25C–F).

Colouration. Carapace and chelipeds orange or pink, ambulatory legs pale orange or pink (Fig. 20D, E).

Remarks. *Cyrtomaia horrida* subsp. *pilosa* was described by Ihle & Ihle-Landenberg (1931) from a young female specimen from the Kei Islands (Indonesia). Guinot & Richer de Forges (1982b) examined the type and with doubt, treated it as a valid species, *Cyrtomaia pilosa*. Richer de Forges & Ng (2007: 57–59) examined a large number of specimens of *C. horrida* Rathbun, 1916 s. str., from the Philippines, including many small specimens, and noted that small specimens, notably females, were more pilose than adults,

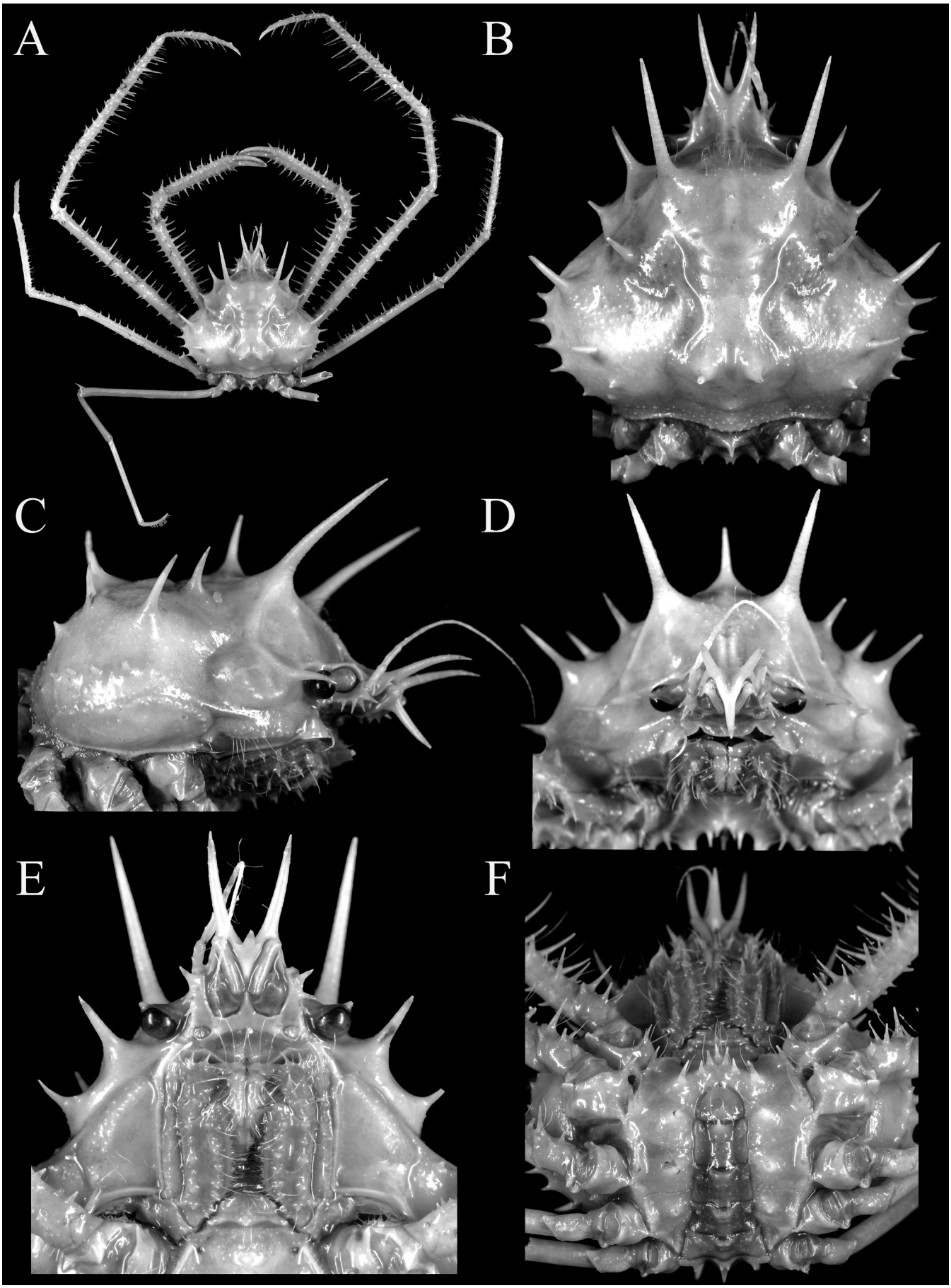

Fig. 21. *Cyrtomaia suhmi* Miers, 1885, male (20.0 × 20.6 mm) (ZRC 2020.0050), stn CP23, southern Java. A, overall dorsal view; B, carapace view; C, lateral view of carapace; D, top view of carapace; E, ventral frontal view; F, male thoracic sternum view.

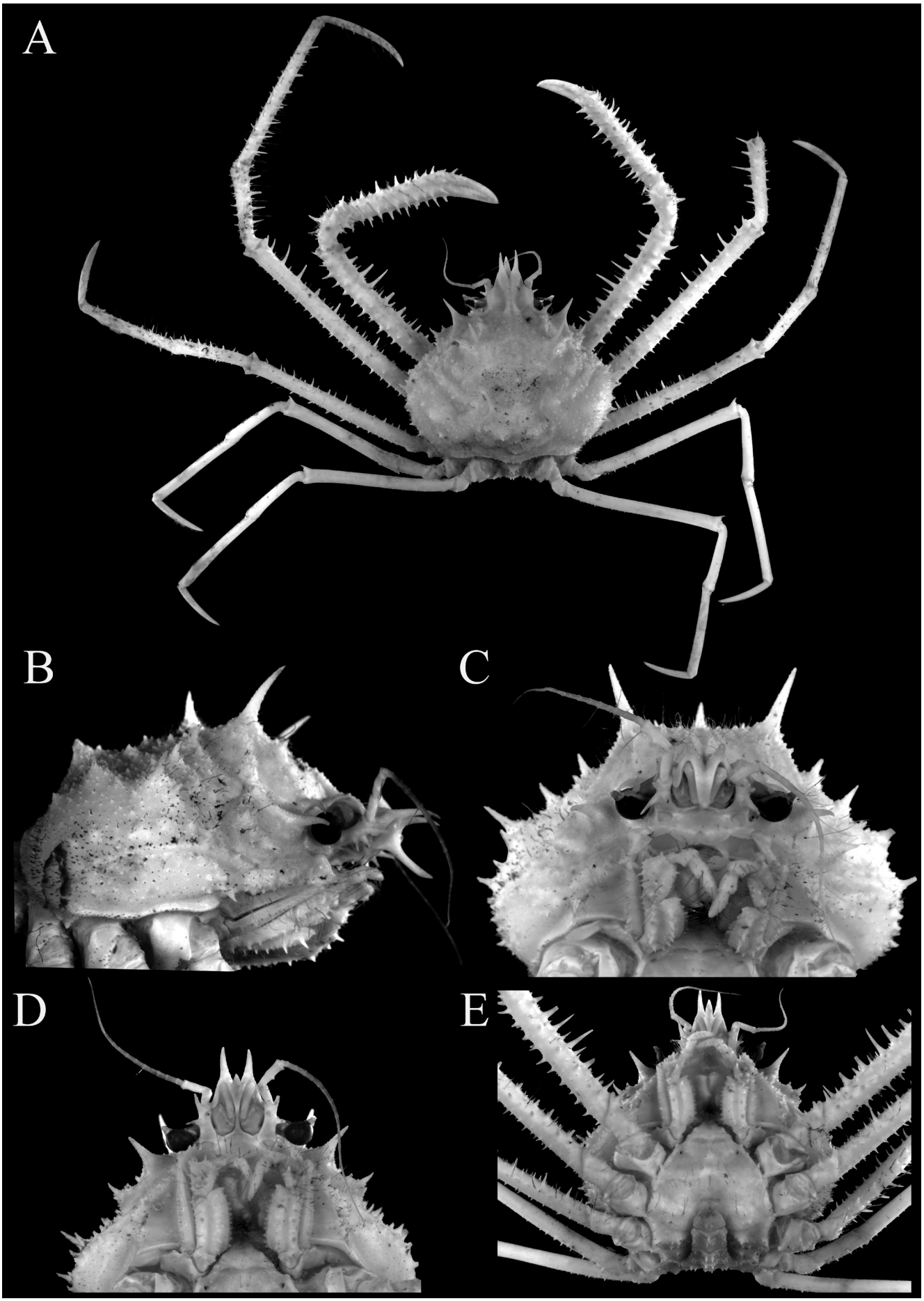

Fig. 22. *Cyrtomaia pilosa* Ihle & Ihle-Landenberg, 1931, male (18.9 × 21.7 mm) (ZRC 2020.0057), stn CP08, southern Java. A, overall dorsal view; B, lateral view of carapace; C, top view of carapace; D, ventral frontal view; E, male thoracic sternum view.

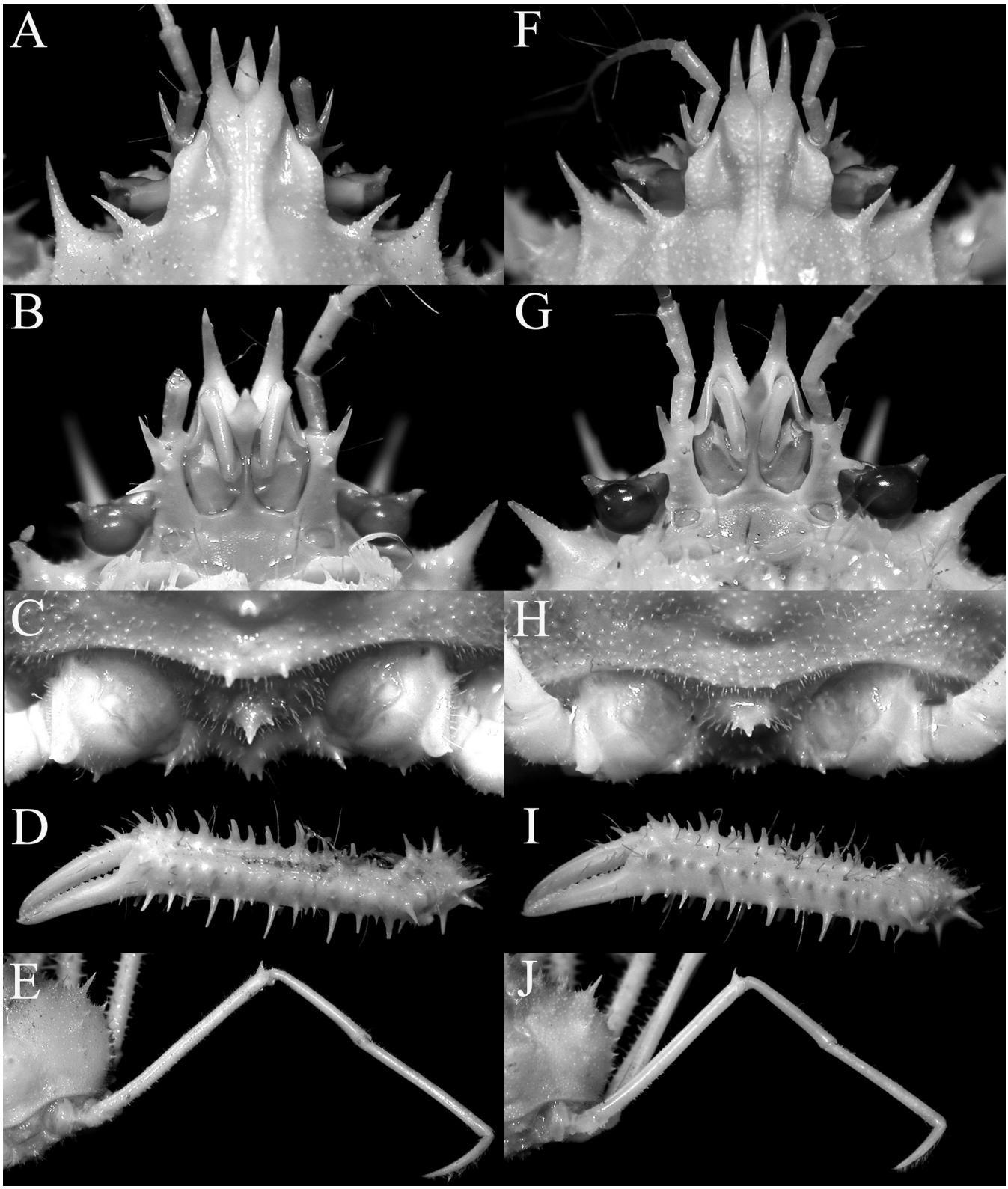

Fig. 23. A–E, *Cyrtomaia horrida*, male (20.9 × 24.0 mm) (ZRC 2007.0035), Philippines; F–J, *C. pilosa* Ihle & Ihle-Landenberg, 1931, male (18.9 × 21.7 mm) (ZRC 2020.0057), stn CP08, southern Java. A, F, frontal regions of carapace showing pseudorostrum and orbit; B, G, ventral frontal view; C, H, posterior margin of carapace; D, I, dorsal view of right cheliped; E, J, dorsal view of P5.

and synonymised both taxa, as was suggested by Griffin (1976: 188).

The SJADES expedition obtained six relatively small specimens of *C. pilosa*, but all three males already have fully developed gonopods. These specimens superficially resemble small *C. horrida* but when compared directly with similar sized small specimens from the Philippines, a number of key differences was observed. In the Javanese specimens, *C. pilosa*, the pseudorostral spines are proportionally shorter (Figs. 20D, E, 22A, 23F, 24, 25A) (versus proportionately longer in *C. horrida*; Fig. 23A); the interorbital spine is

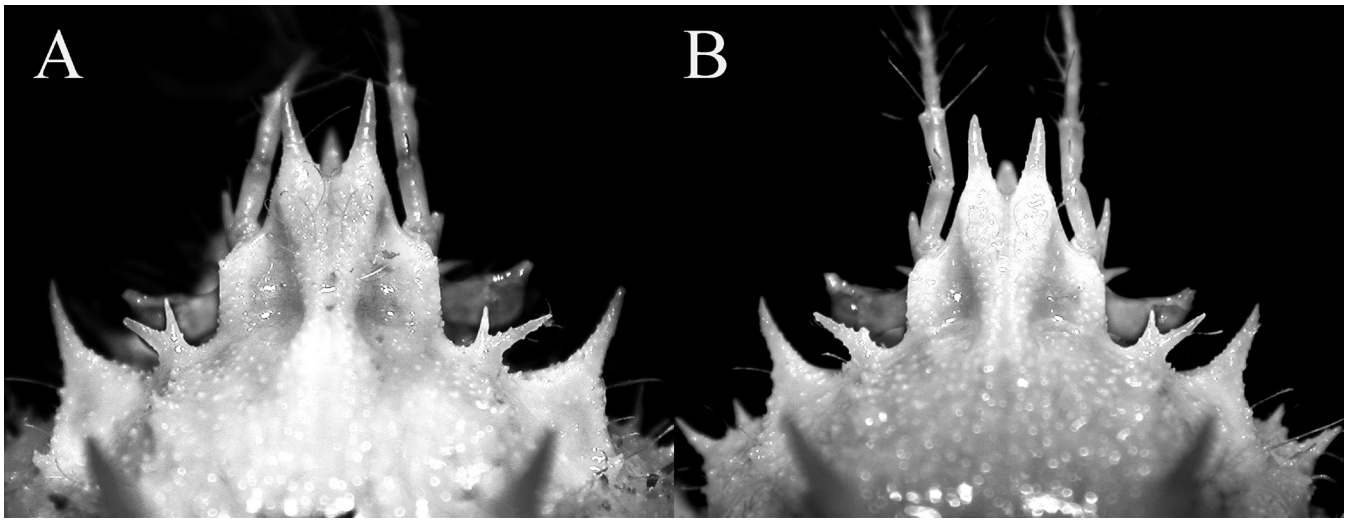

Fig. 24. *Cyrtomaia pilosa* Ihle & Ihle-Landenberg, 1931, frontal regions of carapace showing pseudorostrum and bifid interorbital spine. A, female (19.0 × 21.3 mm) (ZRC 2020.0057), stn CP08; B, female (17.8 × 19.1 mm) (ZRC 2020.0057), stn CP08. All from southern Java.

straight, sharp and relatively more slender (Fig. 23F) (versus thicker and gently curved in *C. horrida*; Fig. 23A); the second antennal article and flagellum is relatively shorter (Fig. 23F, G) (versus distinctly longer in *C. horrida*; Fig. 23A, B); the ambulatory meri are distinctly shorter (Fig. 23J) (versus much longer and more slender in *C. horrida*; Fig. 23E); and on the median part of male pleonal somite 1, there are usually three short and subequal spines (more distinct in males) (Fig. 23H) (versus with only one long median spine with the lateral ones much smaller in *C. horrida*; Fig. 23C); and when similarly-sized specimens are compared, the G1 is less curved when observed in dorsal or ventral view with the distal one-fifth relatively less elongate (Fig. 25C–J). These differences indicate the presence of two different species.

The characters of the Javanese specimens are the same as those present on the female type specimen of *C. pilosa* from the Kei Islands (cf. Guinot & Richer de Forges, 1982b: figs. 24, 25). As such, we are confident that the two specimens on hand from southern Java belong to *C. pilosa* and it is in fact a distinct species. The recognition of *C. pilosa*, and its distribution in the Moluccas and now Java in the eastern Indian Ocean is biogeographically interesting. There are no records of *C. horrida* s. str. from the Indian Ocean, the closest so far being the record from Kei Islands when *C. pilosa* was regarded as a junior synonym. This distribution pattern, with one species in the Indian Ocean and a sister taxon in the West Pacific, has precedence in several other deep water majoids and homoloids; cf. *Gordonopsis*, *Lamoha*, *Pleistacantha* (e.g., Ng et al., 2017b; Richer de Forges & Ng, 2020; see also Ng, 2019).

Two of the female specimens collected are unusual in that the interorbital spines are distinctly bifurcated (Fig. 24). This is clearly morphological variation as the interorbital spines in all the other specimens are simple (Fig. 23A). The largest female specimen (19.9 × 21.3 mm) is still immature with the pleon subrectangular and the pleopods not setose, and the species probably grows to at least twice this size.

Distribution. *Cyrtomaia pilosa* was previously known only from the Kei Islands in the Moluccas. The present record from Java, extends the range approximately 2,000 km westwards.

Physacheus Alcock, 1895

Physachaeus tonsor Alcock, 1895
(Figs. 20F, 26A–D, 27A–I, 28A–L)

Physachaeus tonsor Alcock, 1895: 176, pl. 3 fig. 3 (type locality: Andaman Sea).
Physachaeus tonsor—Alcock & Anderson, 1896: pl. 18 fig. 2, 2a. – Griffin & Tranter, 1986a: 42 (list). – Ng et al., 2008: 112 (list).
Physacheus [sic] *tonsor*—Dev Roy, 2015: 83 (list).

Material examined. Indonesia: 1 male (8.4 × 7.4 mm) [photographed] (ZRC 2020.0058), stn CP03, west of Rakata Island, Sunda Strait, 6°08.941′S 105°14.817′E to 6°08.590′S 105°15.100′E, 283–398 m, coll. SJADES 2018, 24 March 2018. – 1 male (8.0 × 6.7 mm), 1 ovigerous female (10.6 × 9.2 mm) (MZB Cru 5083), stn CP07, between Tabuan Island and Sumatra, Sunda Strait, 5°44.678′S 104°51.151′E to 5°44.917′S 104°52.061′E, 379–409 m, coll. SJADES 2018, 25 March 2018. – 1 male (7.9 × 7.2 mm) (MZB Cru 5084), stn CP08, between Tabuan Island and Sumatra, Sunda Strait, 5°45.126′S 104°51.080′E to 5°45.225′S 104°51.710′E, 425–442 m, coll. SJADES 2018, 25 March 2018. – 2 males (8.5 × 7.5 mm [photographed], 7.8 × 6.3 mm), 1 female (9.8 × 8.5 mm), 1 ovigerous female (9.2 × 8.1 mm [photographed]) (ZRC 2020.0059), stn CP20, south of Panaitan Island, Sunda Strait, 6°42.320′S 105°08.682′E to 6°42.879′S 105°09.018′E, 325–362 m, coll. SJADES 2018, 27 March 2018. – 1 ovigerous female (6.2 × 5.3 mm) (ZRC 2020.0060), stn CP34, south of Tanjong Boyongkareuceng, Indian Ocean, 7°44.464′S 107°39.018′E to 7°44.575′S 107°39.447′E, 234–243 m, coll. SJADES 2018, 29 March 2019.

Description of male. Carapace pyriform, almost as wide as long; dorsal surface with regions demarcated by swollen regions, smooth, mostly glabrous; protogastric region distinct

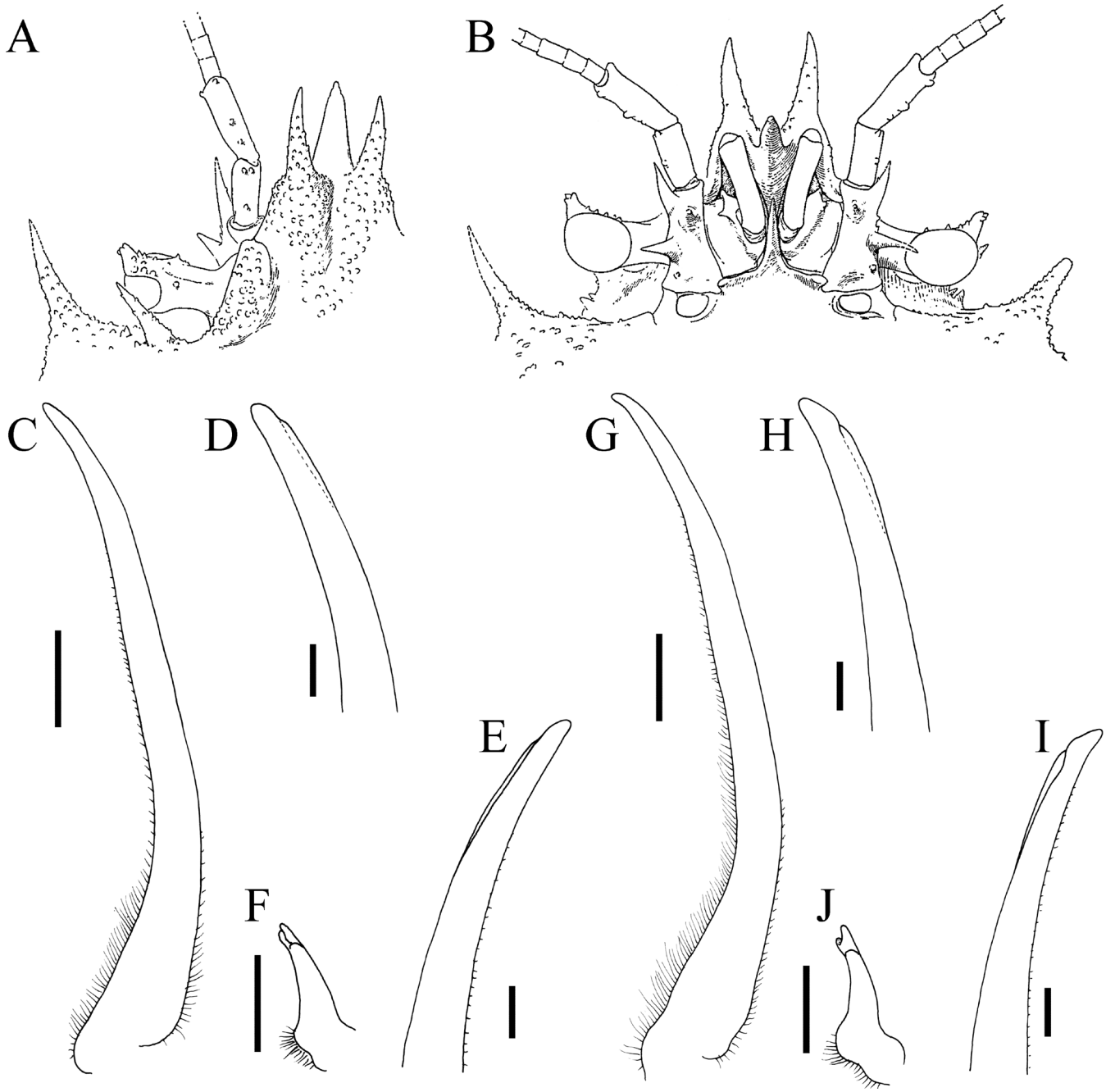

Fig. 25. A, B, *Cyrtomaia pilosa* Ihle & Ihle-Landenberg, 1931, female (21 × 23 mm) (Zoological Museum of the University of Amsterdam, now in Naturalis Biodiversity Centre, Leiden), Kei Islands (after Guinot & Richer de Forges, 1982b: fig. 25A, B); C–F, *C. pilosa* Ihle & Ihle-Landenberg, 1931, male (18.9 × 21.7 mm) (ZRC 2020.0057), stn CP08, southern Java, left G1 and G2; G–J, *C. horrida* Rathbun, 1916, male (20.9 × 24.0 mm) (ZRC 2007.0035), Philippines, left G1 and G2. A, dorsal left orbital view; B, ventral frontal view of antennae, antennules, and orbit; C, G, left G1 dorsal view; D, H, left G1 dorsal view of distal portion; E, I, left G1 ventral view of distal portion; F, J, left G2. Scale bars: C, F, G, J = 1.0 mm; D, E, H, I = 0.5 mm.

with strong rounded swelling, mesogastric region gently swollen, cardiac region with large raised tubercle with tip especially narrow, gently curved posteriorly, with long scattered setae over tubercle surface; branchial regions gently swollen with median parts higher but with no visible tubercle (Figs. 26A, C, 27E). Pseudorostrum short, bilobed, each lobe triangular with slightly bifurcated tip, separated by V-shaped cleft (Fig. 26A, C). Supraorbital eave low wide, margin concave, preorbital angle low, postorbital tooth small (Fig. 26A, C). Eye short, stout, tightly fitting into base of orbit but otherwise exposed, mobile; ocular peduncle subcylindrical; cornea distinct (Fig. 26A, C). Postorbital region between supraorbital eave and hepatic region short, gently divergent, not constricted (Fig. 26A, C). Hepatic region slightly inflated, not armed; separated from branchial region by broad, shallow groove (Figs. 26A, C, 27A). Pterygostomial region rounded, nor armed (Fig. 27B). Posterolateral margin lined with small spinules. Pleurites 6–8 visible as narrow rectangular plate above coxae of P3–P5, respectively. Posterior carapace margin gently sinuous (Fig. 26C).

Antennular fossae large, longitudinally ovate (Fig. 27B). Antennae long; basal article unarmed, very long, positioned obliquely in lateral view, distal half protruding obliquely

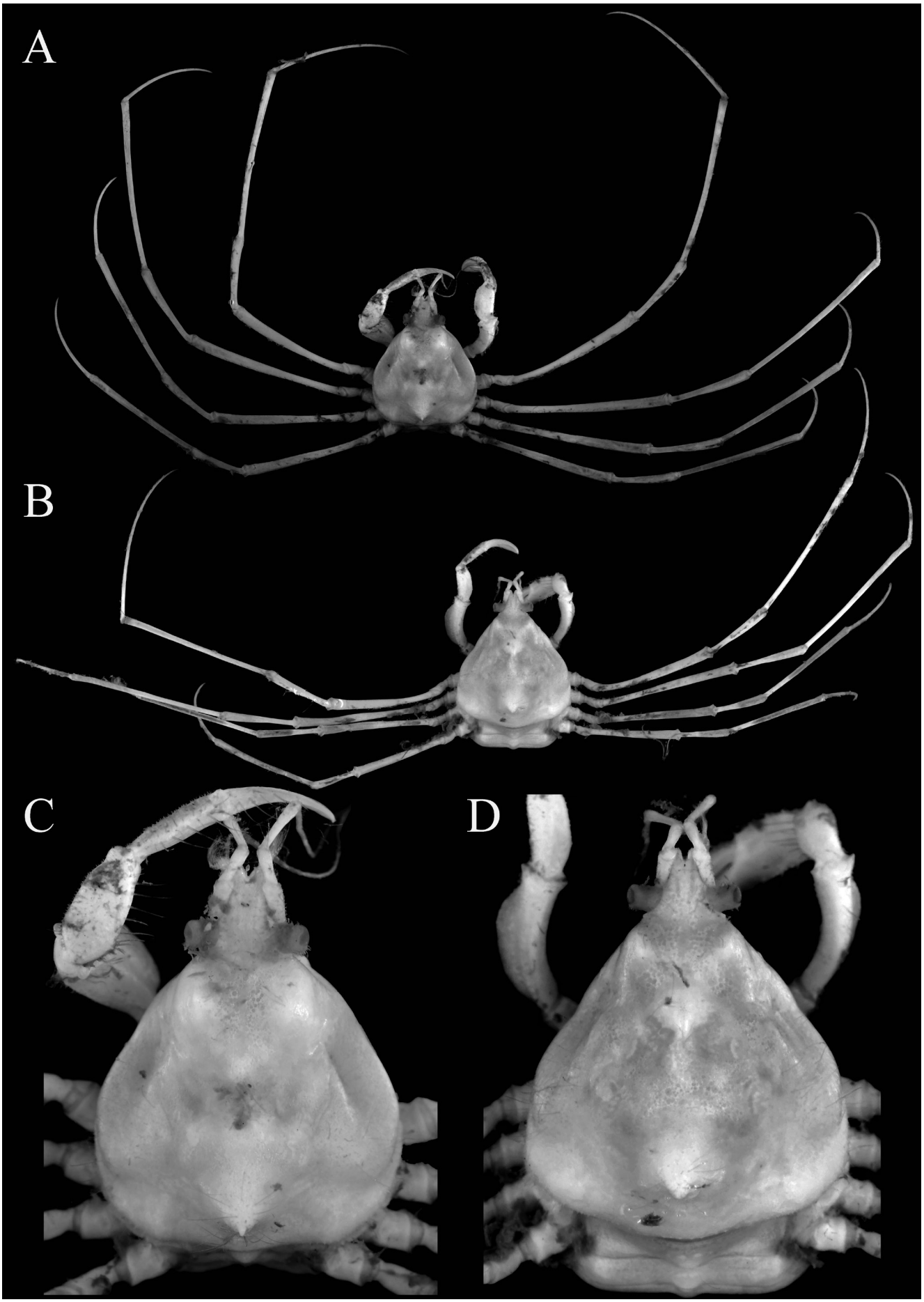

Fig. 26. *Physachaeus tonsor* Alcock, 1895. A, C, male (8.5 × 7.5 mm) (ZRC 2020.0059), stn CP20; B, D, female (9.2 × 8.1 mm) (ZRC 2020.0059), stn CP20. All from southern Java. A, B, overall dorsal view; C, D, carapace view.

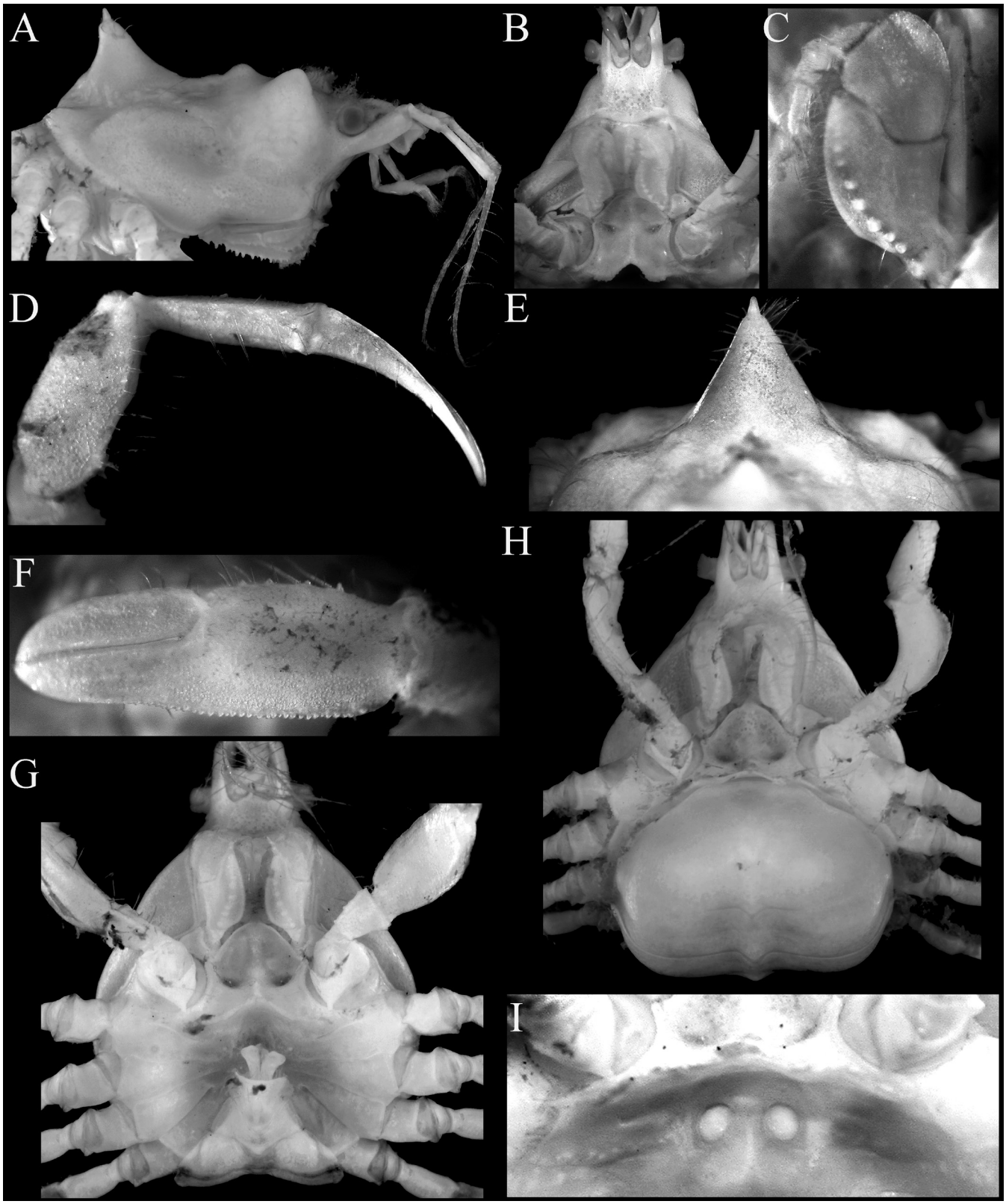

Fig. 27. *Physachaeus tonsor* Alcock, 1895. A–G, male (8.5 × 7.5 mm) (ZRC 2020.0059), stn CP20; H, I, female (9.2 × 8.1 mm) (ZRC 2020.0059), stn CP20. All from southern Java. A, lateral view of carapace; B, ventral frontal view; C, third maxilliped; D, top view of cheliped; E, side view of cardiac spine; F, dorsal view of cheliped; G, H, thoracic sternum view; I, female gonopore.

upwards to margin of pseudorostrum, completely fused with epistome and pseudorostrum; second and third articles elongate, mobile (Fig. 27B). Interantennular septum (proepistome) triangular, compressed, projecting downwards, not visible in dorsal view (Fig. 27B). Epistome longer than wide; posterior margin with median part triangular, bilobed, separated by deep fissure and cleft, tip rounded, lateral margin with low convex lobe (Fig. 27B). Buccal cavity wide, with anterolateral edge rounded, almost completely covered by closed third maxillipeds except for distal part (Fig. 27B,

C). Third maxilliped relatively short; ischium longitudinally subovate, submedian sulcus distinct, with oblique row of sharp granules, inner distal angle sharp, mesial margin uneven; merus subquadrate, mostly smooth, anteroexternal angle rounded, not auriculiform; carpus, propodus, and dactylus short; exopod long, slender, smooth, reaching to distal edge of merus, with long flagellum (Fig. 27B, C).

Chelipeds slender, relatively long (Figs. 20F, 26A, 27D, 28A). Basis-ischium subtrigonal, inner margin with sharp granules; merus trigonal in cross-section, prominently curved, margins smooth, ventral margin distinctly convex, prominently carinate (Figs. 20F, 26A, 27D, 28A). Carpus elongate, smooth (Figs. 20F, 26A, 27D, 28A). Chela slender, laterally flattened; palm longer than wide; dorsal margin with several small spines; ventral margin lined with small, relatively sharp granules to base of pollex; outer surface smooth; fingers almost as long as palm, relatively high; pollex and dactylus gently curved inwards, laterally flattened; cutting margins with smooth, blade-like (Figs. 20F, 26A, 27D, 28A).

Ambulatory legs very long, slender; surface covered with long and short scattered setae; P2 longest, almost 5 times carapace width, remaining legs decreasing regularly in length, fourth shortest (Figs. 20F, 26A, 28A); margins of merus, carpus, propodus, and dactylus smooth, unarmed; P2 dactylus long, almost straight except for curved distal part, unarmed (Figs. 20F, 26A, 28A); dactylus elongate, very slender, gently curved, P2 dactylus longest (Figs. 20F, 26A, 28A).

Thoracic sternum with surfaces smooth; sternites 1 and 2 completely fused into one plate, lateral margin convex; sternites 3 and 4 fused but lateral fissures visible with deep submedian transverse depression, medially interrupted; sternite 4 with median longitudinal rounded ridge, lateral surfaces depressed, medially slightly constricted; margin of sternites 4 and 5 marked by prominent, raised sharp transverse serrulate ridge with V-shaped median cleft, marks end of sternopleonal cavity; sternopleonal cavity relatively shallow; male pleonal locking mechanism as small round granule on anterior half of sternite 5 (Fig. 27G). Penis opening through condyle of P5 coxa.

Pleon triangular wide; somite 1 free, trapezoidal; somites 2–4 functionally fused although sutures still distinct; somite 5 slightly articulating with fused somites 2–4; somite 6 fused with telson but demarcation visible as a lateral notch, structure slightly articulating with somite 5; telson subtruncate; median surface of somites 2–5 each with low rounded tubercle; somite 6 with long, strong, anteriorly directed sharp tooth that reaches just beyond tip of telson (Figs. 27G, 28D–F). G1 relatively short, stout, C-shaped, curving outwards, subdistal part with twisted fold, tip subspatuliform (Fig. 28J, K); G2 short with slightly twisted subspatuliform tip, about quarter length of G1 (Fig. 28L).

Description of female. Transverse raised ridge separating somites 4 and 5 very wide, reaching to below coxae of chelipeds, bordering entire distal margin of telson when closed (Fig. 27H). Pleon large, domed, completely covering thoracic sternum; somites 1 and 2 free, all other somites and somites functionally fused although sutures visible, that between somite 6 and telson very shallow; somite 1 longitudinally narrow; somite 2 broad, rectangular; somites 3–6 with strongly convex surfaces, separated by distinct sutures; telson semicircular, separated from somite 6 by shallow suture; median part of somites 3–6 and telson with rounded median tubercle (Fig. 27H). Vulva large, slightly raised, opening round, on submedian part of sternite 6; directed obliquely anteriorly (Fig. 27I).

Colouration. In life, the carapace, chelipeds, and ambulatory legs are orange (Fig. 20F).

Remarks. There are only two species, both described by Alcock (1895), from this genus: *Physachaeus ctenurus* and *P. tonsor*, both from the Andaman Sea. Alcock (1895: 176–177) commented that *P. tonsor* differed from *P. ctenurus* in that its gastric region has three low rounded tubercles and no spines, the cardiac spine is stouter and curved posteriorly (versus anteriorly in *P. ctenurus*); the postocular area is less constricted, and there is a tubercle on the female somite 6 (versus more rounded in *P. ctenurus*); the posterior margin of the telson is smooth (versus with four spinules in *P. ctenurus*); the eye stalks are larger and more compressed (versus smaller and more cylindrical in *P. ctenurus*); the chelipeds are relatively stouter, the merus is distinctly compressed and the ventral margin is strongly and distinctly carinated, the chelae are much thinner and more compressed with the ventral margin sharply cristate (versus chelipeds more slender, merus less compressed with margin less obviously carinate, and the chelae more cylindrical with the margin smooth in *P. ctenurus*); and the P3 merus is long and subequal to that of P2 merus (versus P3 merus distinctly longer than P2 merus in *P. ctenurus*). Records of specimens identified as *P. ctenurus* from the Philippines and Japan by Griffin & Tranter (1986b) are very questionable. The carapace of these specimens was described and figured as granulous (see Griffin & Tranter, 1986a: 42, figs. 8a–e, 15f, g) although that on Alcock's (1895) material appears to be much smoother (cf. Alcock, 1895: pl. 3 fig. 2, 2a, b). The same is true of specimens from Western Australia figured by Poore et al. (2008: 59, unnumbered figure). Griffin & Tranter's (1986a) material will need to be re-examined to determine if they are all one species.

As for *P. tonsor*, the species was described from only two ovigerous female specimens from 271 fathoms deep in the Andaman Sea. Measurements for one female (11.0 × 9.5 mm) were provided. Males are not known, and the species has never been reported again since. The present series of specimens, which includes males, agrees very well with Alcock's original description and figures and we have no doubt they are conspecific. The species is here redescribed and figured.

The differences listed by Alcock (1895) to separate *P. tonsor* from *P. ctenurus* s. lato are valid. We can add more differences here now that we have males for *P. tonsor*. The

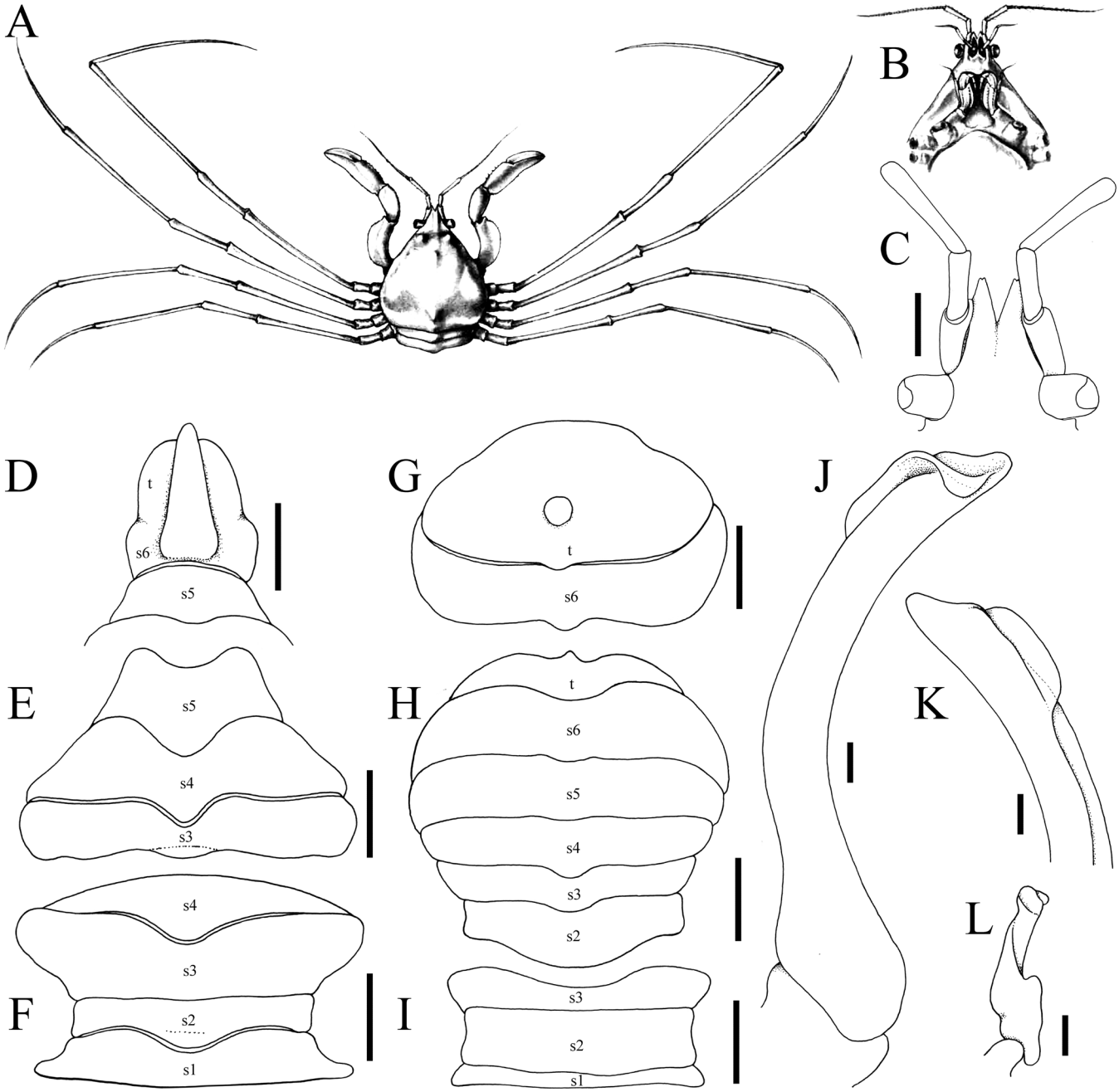

Fig. 28. *Physachaeus tonsor* Alcock, 1895. A, B, ovigerous female (11 × 9.5 mm), after Alcock & Anderson, 1896: pl. 18 fig. 2, 2a; C–F, J–L, male (8.5 × 7.5 mm) (ZRC 2020.0059), stn CP20; G–I, female (9.2 × 8.1 mm) (ZRC 2020.0059), stn CP20. All from southern Java. Abbreviations: s1–s6 = pleonal somites 1–6, respectively; t = telson. Scale bars: C–F = 1.0 mm; G–I = 2.0 mm; J–L = 0.5 mm.

outer surface of the third maxilliped of *P. tonsor* only has one strong row of sharp spines on the ischium (Fig. 27C) (versus with more rows of spines as well as on merus in *P. ctenurus*; cf. Griffin & Tranter, 1986a: fig. 8b); the basal antennal article protrudes much further anteriorly (Fig. 27B) (versus less so in *P. ctenurus*; cf. Griffin & Tranter, 1986a: fig. 8c); the cutting edges of the fingers of the chelae are blade-like (Fig. 27F) (versus serrulate in *P. ctenurus*; cf. Griffin & Tranter, 1986a: fig. 8e), the spine on male pleonal somite 6 is very long, extending to the beyond the edge of the telson (Fig. 28D) (versus short in *P. ctenurus*; cf. Griffin & Tranter, 1986a: fig. 8a); and the subdistal fold on the G1 is more pronounced and twisted (Fig. 28J, K) (versus with only a simple fold in *P. ctenurus*; cf. Griffin & Tranter, 1986a: fig. 15f, g).

The fusion of male pleonite 6 with the telson is prominent and even the sutures are no longer visible in members of this genus. In *P. tonsor*, we have also observed the presence of exposed pleurites 6–8 above P3–P5, a character present in a number of majoids, but the systematic significance of this is hard to gauge as this character is rarely discussed in systematic papers (see review by Guinot & Van Bakel, 2020).

Distribution. This is a new record for Indonesia. The species was previously only known from its type locality, Andaman Sea (Alcock, 1895).

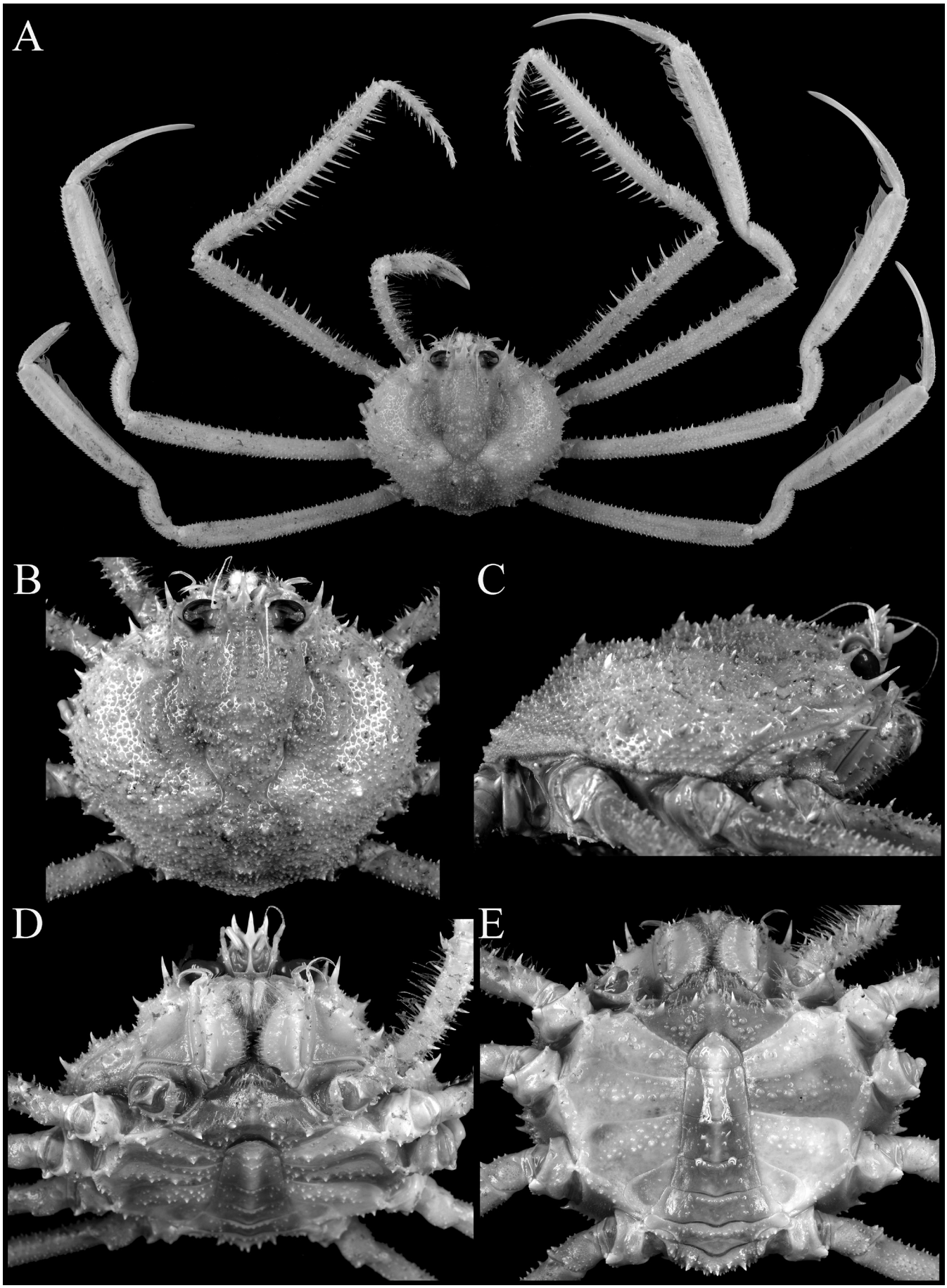

Fig. 29. *Platymaia alcocki* Rathbun, 1916, male (35.8 × 38.6 mm) (ZRC 2020.0063), stn CP38, southern Java. A, overall dorsal view; B, carapace view; C, lateral view of carapace; D, ventral frontal view; E, male thoracic sternum view.

Platymaia Miers, 1885

Platymaia alcocki Rathbun, 1916
(Figs. 20G, 29A–E, 30A–D, 31A–C)

Platymaia alcocki Rathbun, 1916: 527 (list), 530 (under remarks of *P. bartschi* Rathbun, 1916) (type locality: between North and South Sentinel Islands). – Rathbun, 1918: 8 (under remarks of *P. wyvillethomsoni* Miers, 1886).

Platymaia Wyville-Thomsoni—Wood-Mason & Alcock, 1891: 258. [not *Platymaia Wyville-Thomsoni* Miers, 1886].

Platymaia alcocki—Promdam, 2011: 10, figs. 3, 4. – Padate et al., 2020: 9, fig. 8A–I.

(For remaining synonymy list, see Guinot & Richer de Forges, 1986a: 94).

Material examined. Indonesia: 1 male (35.2 × 38.1 mm) [photographed] (ZRC 2020.0061), stn CP37, south of Cilacap, Indian Ocean, 8°07.462′S 109°05.639′E to 8°07.864′S 109°06.470′E, 163–166 m, coll. SJADES 2018, 30 March 2018. – 1 female (18.3 × 19.3 mm) (MZB Cru 5085), stn CP02, southwest of Rakata Island, Sunda Strait, 6°16.066′S 105°15.053′E to 6°14.668′S 105°15.256′E, 257–281 m, coll. SJADES 2018, 24 March 2018. – 17 males (49.7 × 55.3 mm, 38.9 × 42.5 mm, 25.6 × 27.0 mm, 25.3 × 27.1 mm), 40 females (43.8 × 46.1 mm, 34.2 ×37.3 mm, 23.6 × 25.6 mm, 23.8 × 26.0 mm, 16.6 × 17.6 mm) (ZRC 2020.0062), 2 males (38.5 × 42.0 mm, 33.5 × 36.1 mm), 2 females (35.6 × 38.0 mm, 25.2 × 27.4 mm) (MZB Cru 5086), 2 males (35.8 × 38.6 mm [photographed], 23.8 × 25.4 mm), 1 female (32.8 × 36.1 mm) (ZRC 2020.0063), stn CP38, south of Cilacap, Indian Ocean, 8°13.038′S 109°07.689′E to 8°13.150′S 109°08.216′E, 290–295 m, coll. SJADES 2018, 30 March 2018. – 1 male (37.1 × 39.8 mm) (ZRC 2020.0064), stn CP39, south of Cilacap, Indian Ocean, 8°15.885′S 109°10.163′E to 8°16.060′S 109°10.944′E, 528–637 m, coll. SJADES 2018, 30 March 2018.

Comparative material. *Platymaia remifera* Rathbun, 1916: 1 male (19.1 × 20.5 mm), 2 females (34.9 × 37.5 mm, 15.1 × 16.7 mm), 2 juveniles (7.5 × 8.0 mm, 10.5 × 11.0 mm) (ZRC 2016.0095), stn CP2332, Bohol Sea, Maribojoc bay, Philippines, 396–418 m, coll. PANGLAO 2005, 22 May 2005. – 1 male (21.2 × 24.0 mm) (ZRC 2016.0094), Balicasag Island, Panglao Island, Visayas, Philippines, 200–300 m, coll. local fishermen, June 2002. – 1 male (66.3 × 67.9 mm) (ZRC 2020.0069), stn CP2357, Bohol Sea, Philippines, 9°28.4′N, 123°54.5′E, 1760–1762 m, coll. PANGLAO 2005, 24 May 2005. – 2 males (48.4 × 50.5 mm, 45.6 × 49.2 mm), 4 ovigerous females (66.4 × 68.1 mm, 37.4 × 40.7 mm, 36.7 × 39.8 mm, 34.8 × 39.0 mm) (ZRC 2020.0070), stn CP2393, off Balicasag Island, 9°30.1′N, 123°41.6′E, 356–396 m, coll. PANGLAO 2005, 30 May 2005. – 1 male (25.5 × 27.7 mm) (ZRC 1998.454), Tashi, Taiwan, coll. PKL Ng et al., 15 May 1998. – 1 male (42.5 × 46.2 mm) (ZRC1998.458), Tashi, Taiwan, coll P.K.L. Ng, 25 May 1998.

Diagnosis. Carapace round, depressed, very granulous. Rostrum short, 2 pseudorostral spines short, directed upwards. Longest postorbital spines pointing anteriorly, and hepatic spines directed laterally. Eyes large, ovoid with distal knob with 2 small tubercles; 1 small intraocular spine (Figs. 29B, 30A). Hepatic area prominent with 4 spines, anterior longest; gastric area delimited by groove, demarcated by border marked by row of small spines; cardiac area small with 2 short spines; branchial area very large, granular surface with some short spines (Figs. 20G, 29A, B). Lateral border of carapace with 5 or 6 longer sharp spines curved forward (Fig. 30C). Basal antennal article with 2 long spines. Upper part of the epistome forming 2 strong spines overlapping base of basal antennal article. Third maxilliped with row of spines on carpus and propodus (Fig. 29D). Cheliped short, propodus slightly inflated in male. Ambulatory legs very long, flattened with long fine setae on propodus border; P2 spinulous all along, two rows of very long spines on internal border of P2; propodus of P3–5 enlarged, flattened; dactylus long curved (Figs. 20G, 29A). Pleon with 6 somites; first abdominal somite bearing row of 4 or 5 spinules (Fig. 29A, E). G1 long, thin, curved outwards along terminal third (Fig. 31A–C).

Colouration. In life, the carapace is orange, with the ambulatory legs orange with white patches (Fig. 20G).

Remarks. In *Platymaia*, three species are morphologically close: the rare *P. wyvillethompsoni* Miers, 1885, from the north of Papua New Guinea, *P. remifera* Rathbun, 1916, from the western Pacific (very abundant in the type locality Philippines), and *P. alcocki* Rathbun, 1918, from Madagascar to the coast of Nicobar Islands in the Indian Ocean.

The taxonomy of these three species has not always been clear. Specimens identified as "*P. wyvillethomsoni*" by Wood-Mason & Alcock (1891: 258) from the Andaman Sea were referred to a new species, *P. alcocki*, by Rathbun (1918). Guinot & Richer de Forges (1986a) revised the genus *Platymaia* and redescribed the holotype of *P. wyvillethompsoni* (see Guinot & Richer de Forges, 1986a: 90, fig. 2A–C, pl. 1A, B). They showed that it was unique among the species in possessing a strong intraocular spine which almost spans the width of the orbit. *Platymaia alcocki* has only a short intraocular spinule while *P. remifera* has no trace of such a spinule. Separating *P. remifera* and *P. alcocki* has been somewhat more difficult. In recent years, there have been records of *P. alcocki* from the Andaman Sea (e.g., see Promdam, 2011; Padate et al., 2020) and the SJADES cruise obtained a good series of this species as well. With the additional material and reports, we can now directly compare the two species.

The large series of specimens of *P. remifera* from the Philippines is important as we can establish how large they grow to as well as determine the range of variation of various characters. The largest male of *P. remifera* that we have on hand is 48.4 × 50.5 mm, and the largest female of *P. remifera*, 66.4 × 68.1 mm (from station CP2393). Adult males all had chelae with an inflated palm; the carapace is granulated with the dorsal spines all small: two mesogastric, two cardiac, one postorbital, one subhepatic, and five small spinules along the lateral border. On the very large ovigerous

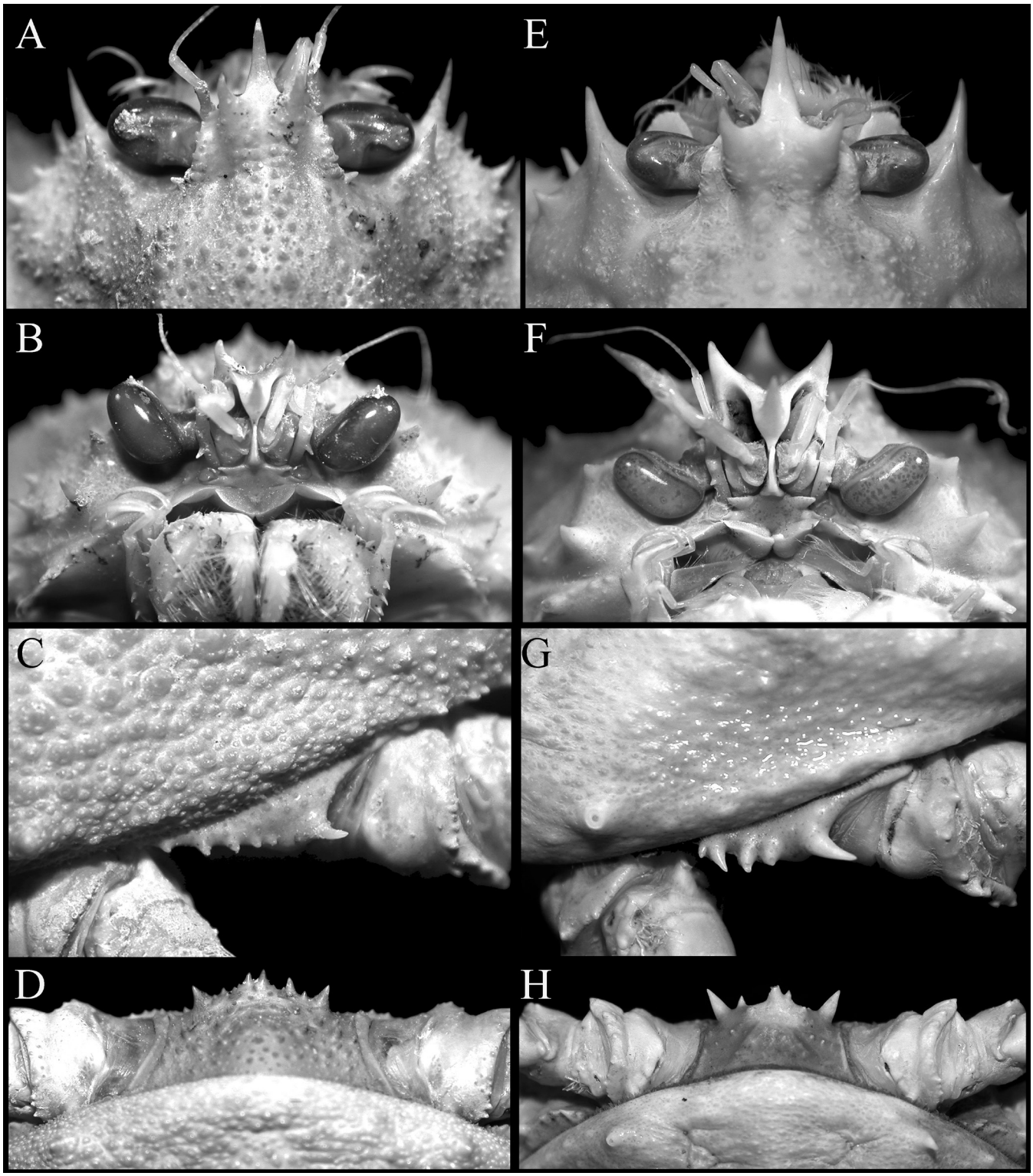

Fig. 30. A–D, *Platymaia alcocki* Rathbun, 1916, male (35.8 × 38.6 mm) (ZRC 2020.0063), stn CP38, southern Java; E–H, *P. remifera* Rathbun, 1916, male (42.5 × 46.2 mm) (ZRC 1998.458), Taiwan. A, E, frontal regions of carapace showing pseudorostrum and orbit; B, F, top view of carapace; C, G, right lateral view of carapace showing spinulate pleurite; D, H, posterior margin of carapace.

female specimen (66.4 × 68.1 mm), the two pseudorostral spines and rostrum are relatively broad and blunt. The following differences are quite apparent between the two species: there are no intraocular spines at all in *P. remifera* (Fig. 30E) (versus usually with a small spinule, sometimes reduced to a granule, in *P. alcocki*; Fig. 30A); the trident formed by the rostrum and the two pseudorostral spines is proportionately larger and stronger in *P. remifera* (Fig. 30E) (versus less prominent in *P. alcocki*; Fig. 30A); adult males of *P. remifera* (carapace width 50.5 mm) have short chelipeds with a very inflated palm (Guinot & Richer de Forges, 1986a: pl. 2 fig. A, C) (versus at the same sizes, male *P. alcocki* still have more slender chelipeds in *P. alcocki*; Figs. 20G, 29A); the two spines on the basal antennal article are relatively shorter (Fig. 30F) (versus longer in *P. alcocki*; Fig. 30F); the lateral teeth on the anterior part of the

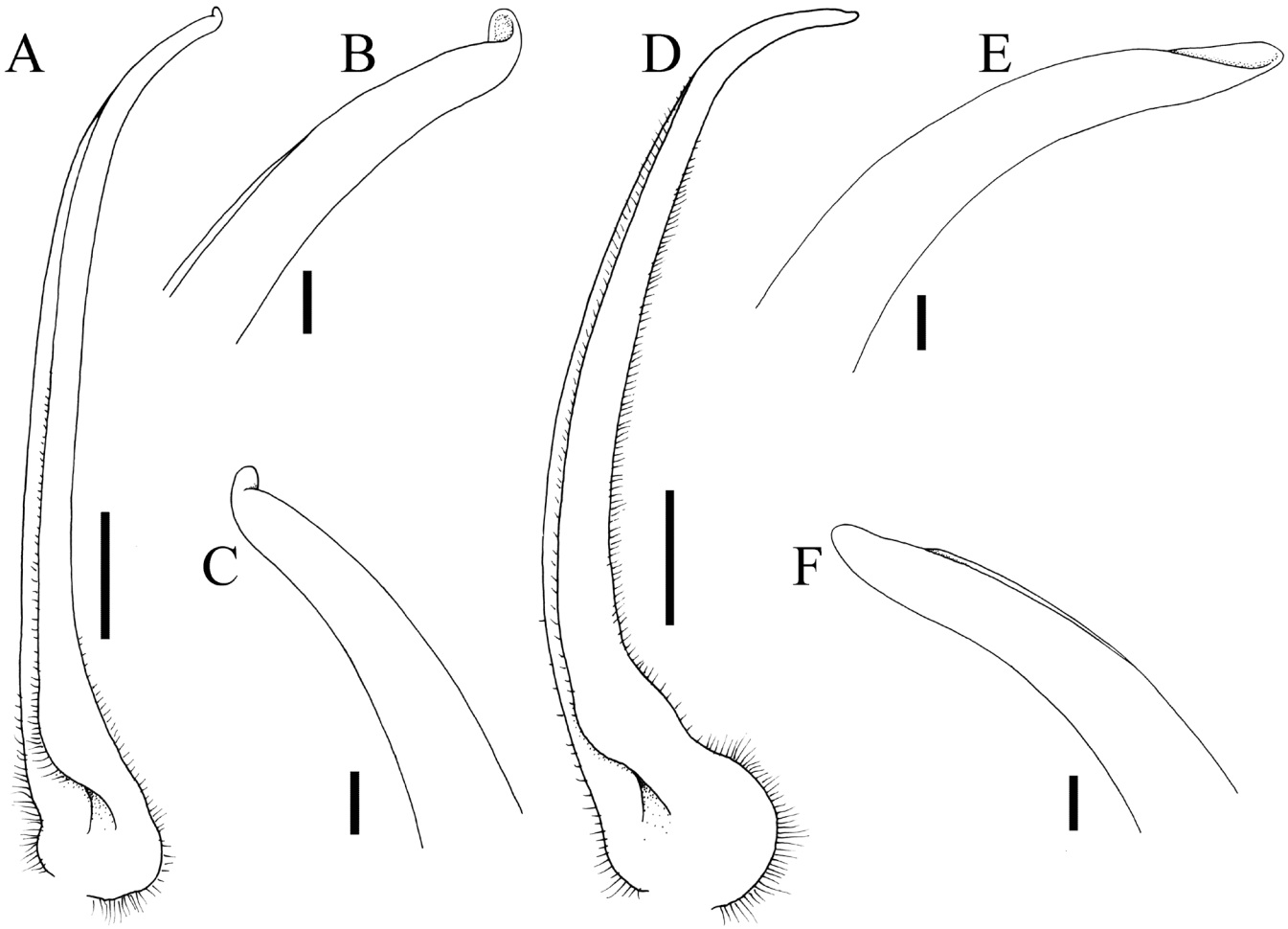

Fig. 31. A–C, *Platymaia alcocki* Rathbun, 1916, male (35.8 × 38.6 mm) (ZRC 2020.0063), stn CP38, southern Java, left G1. D–F, *P. remifera* Rathbun, 1916, male (42.5 × 46.2 mm) (ZRC 1998.458), Taiwan, left G1. A, D, ventral view; B, E, ventral view of distal portion; C, F, dorsal view of distal portion. Scale bars: A, D = 2.0 mm; B, C, E, F = 0.5 mm.

epistome are rounded (Fig. 30F) (versus with sharp strong spines overlapping the base of the basal antennal article in *P. alcocki*; Fig. 30B); there are strong curved spines on pleurites 6 and 7 (Fig. 30G) (versus only short spinules in *P. alcocki*; Fig. 30C); on male pleonal somite 1, there is a row of three spines in *P. remifera* (Fig. 30H) (versus with a row of 6 or 7 shorter spines and spinules in *P. alcocki*; Fig. 30D); and the G1 is more strongly curved with the tip almost straight (Fig. 31D–F) (versus G1 less C-shaped with tip gently upcurved in *P. alcocki*; Fig. 31A–C).

Species of *Platymaia* live mainly on flat muddy bottoms and are relatively easy to catch by trawls. Guinot & Richer de Forges (1986a) hypothesised that these crabs are able to swim, and live specimens of *Platymaia* have been observed to swim well above the substrate (Wicksten & Bingo, 2021; S.T. Ahyong, personal observation). In the aquarium, when they are placed in large tanks, their legs do perform a shuffling movement that resembles a swimming motion which seems to reduce their rate of descent while having some control over their direction of movement. When they reach the bottom, they maintain the shuffling motion with their legs and partially disappear under the sediment until most of their legs are covered but with most of the carapace still exposed (P.K.L. Ng, personal observation). When they are disturbed, they sometimes jump out of the sand and "swim" away but usually not far. The two rows of very long spines on the P2 propodus and dactylus interlock when they are flexed and are probably used to catch polychaete worms living in the soft sand. It is possible that when feeding, the legs are extended so that the long spines act as rakes to sift through the sediment, and when a prey is found, the dactylus and propodus can quickly come together to catch it.

Distribution. The species has been reported from various parts of the Indian Ocean (see Guinot & Richer de Forges, 1986a; Promdam, 2011; Padate et al., 2020). The record from southern Java is new for Indonesia.

Family Oregoniidae Garth, 1958

Subfamily Pleistacanthinae Števčić, 2005

Pleistacantha Miers, 1879

Pleistacantha pungens (Wood-Mason, in Wood-Mason & Alcock, 1891)

(Fig. 20H)

Echinoplax pungens Wood-Mason, in Wood-Mason & Alcock, 1891: 259 (type locality: between North and South Sentinel Island).

Echinoplax pungens—Anonymous, 1891: 56 (list). – Alcock, 1894: 400. – Alcock, 1895: 179. – Alcock & Anderson, 1896: pl. 17 fig. 1. – Alcock, 1899: pl. 39.

Pleistacantha moseleyi—Doflein, 1904: 76–78 (in part).

Pleistacantha pungens—Ahyong & Lee, 2006: 2, 8. – Ahyong & Ng, 2007: 68, fig. 6. – Ng et al., 2008: 112. – Huys et al., 2014: 29. – Ng et al., 2017b: 129, figs. 3B, C, 4B, 5B, 6C, D, 7D–F, 8C, D, 9C, D, 10E–H.

? *Pleistacantha pungens*—Guinot & Richer de Forges, 1982a: 1088 (list), 1110–1112, pl. 3 fig. 1 (in part).

Material examined. 1 male (21.2 × 16.5 mm) (ZRC 2019.1121), stn CP08, between Tabuan Island and Sumatra, Sunda Strait, Indonesia, 5°45.126′S 104°51.080′E to 5°45.225′S 104°51.710′E, 425–442 m, coll. SJADES 2018, 25 March 2018. – 1 female (with *Sacculina*; 72.7 × 59.8 mm) [photographed] (ZRC 2019.1120), stn CP02, southwest of Rakata Island, Sunda Strait, 6°16.066′S 105°15.053′E to 6°14.668′S 105°15.256′E, 257–281 m, coll. SJADES 2018, 24 March 2018.

Colouration. In life, the carapace is pink with orange patches, with the merus of the ambulatory legs orange and rest of the structure pinkish (Fig. 20H).

Remarks. Doflein (1904), in examining material from western Sumatra, synonymised *P. pungens* Wood-Mason, in Wood-Mason & Alcock, 1891, with *P. moseleyi* (Miers, 1885). However, Guinot & Richer de Forges (1982a: 1110, figs. 6A, B, 8A, A1, A2, pl. 3 fig. 2, 2a), in examining specimens from Madagascar, expressed doubts with this synonymy and accepted *P. pungens* as a distinct species, although with reservation. Guinot & Richer de Forges (1986a: 131) later suggested *P. moseleyi* may be the juvenile of *P. pungens*. Ahyong & Lee (2006: 8) later argued *P. pungens* is a good species but did not elaborate. Ahyong & Ng (2007) subsequently showed that the Madagascar material of Guinot & Richer de Forges (1982a) belonged to a new species, *P. ori*. Ng et al. (2017b), while describing a new species from India, compared *P. pungens* and *P. moseleyi* at length, showing that the two species differed in numerous characters.

Distribution. The species has been reported from several sites in the eastern Indian Ocean (see Ahyong & Ng, 2007; Ng et al., 2017b). The new record of this species from southern Java is therefore not surprising.

ACKNOWLEDGEMENTS

The SJADES cruise (chief scientists: Dwi Listyo Rahayu and Peter K.L. Ng) was a joint Indonesian–Singapore expedition to southern Java funded by the National University of Singapore and the Research Center for Oceanography, Indonesian Institute of Sciences (LIPI) in commemoration of 50 years of bilateral cooperation (RISING50) between the two countries. We also thank Chan Tin-Yam and his team for their invaluable help in the trawling work and other support, and to Yang Chien-Hui for tirelessly repairing the damaged nets during the cruise. We are also very grateful to the Indonesian crew of *Baruna Jaya VIII* and especially Captain Jefri Juliansyah, for their hard work and fortitude—they were asked to trawl in choppy seas, uncharted areas, and rough terrain. We are most grateful to geologist Praditya Avianto (LIPI) for his invaluable help with assessing the geography of the seabed. We would also like to thank Danièle Guinot for sending us the photographs of the lectotype of *Oxypleurodon cuneus* and *O. aurorae* that are preserved in the Zoological Survey of India. Specimens were collected under the research permit RISTEKDIKTI 80/SIP/FRP/E5/Dit.KI/III/2018.

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