

Carcinoplax mistio, a new species of goneplacid crab from the Indian Ocean (Decapoda: Brachyura: Goneplacoidea)

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ABSTRACT

Trawls from the Bay of Bengal obtained material of a new species of the goneplacid crab, *Carcinoplax mistio*, the sixth species of the genus known from India. The new species superficially resembles *C. purpurea* Rathbun, 1914, and *C. sinica* Chen, 1984, from the western Pacific. Records of *C. sinica* from the Persian Gulf are also here referred to the new species. *Carcinoplax mistio* n. sp. differs from its closest congeners mainly in the form of the carapace, anterolateral armature, proportions of the ambulatory legs and structure of the male pleon.

KEYWORDS

taxonomy, Goneplacidae, Indo-Pacific region, *Carcinoplax*, Bay of Bengal, India

INTRODUCTION

Eight species of *Carcinoplax* H. Milne Edwards, 1852 (family Goneplacidae), are now known from the Indian Ocean (including the Red Sea): *C. fasciata* Ng and Kumar, 2016; *C. indica* Doflein, 1904; *C. specularis* Rathbun, 1914; *C. longipes* (Wood-Mason, in Wood-Mason and Alcock, 1891); *C. ischurodous* (Stebbing, 1923); *C. longimanus* (De Haan, 1833); *C. monodi* Guinot, 1989; and *C. sinica* Chen, 1984 (*cf.* Guinot, 1989; Castro, 2007, 2012, 2013; Ng and Kumar, 2016; Naderloo, 2017). Of these, five are known from India: *C. fasciata*, *C. indica*, *C. specularis*, *C. longipes* and *C. longimanus* (see Trivedi *et al.*, 2018).

Recently, the authors examined three specimens initially identified as *C. sinica* collected by fishermen from the Bay of Bengal. This species was

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originally described from the South China Sea by Chen (1984) but has since been reported from the Philippines, Taiwan and Persian Gulf (Guinot, 1989; Hsueh and Huang, 2002; Castro, 2007; Naderloo, 2017; Ng *et al.*, 2017). Close comparisons with material of *C. sinica* s. str. from the western Pacific (including topotypic material) showed that the Indian specimens belong to a different species, here named *Carcinoplax mistio* n. sp.

MATERIAL AND METHODS

Specimens examined are deposited in the Zoological Survey of India (ZSI), Calcutta, India; and Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum, National University of Singapore. Measurements (in millimetres) of the material examined are of the maximum carapace width (including teeth) and length, respectively. Male pleonal somite 6 is measured along its widest part (on the proximal margin) and the maximum length along the median line, while the male telson is measured along its longest and widest points. The following abbreviations are used: P2–P5 = first to fourth ambulatory legs, respectively; G1 and G2 = male first and second gonopods, respectively. The terminology used follows Ng *et al.* (2008) and Davie *et al.* (2015).

SYSTEMATICS

Superfamily Goneplacoidea MacLeay, 1838

Family Goneplacidae MacLeay, 1838

Genus *Carcinoplax* H. Milne Edwards, 1852 s. str.

Carcinoplax mistio n. sp.

(Figs. 1, 2, 6A, B, 7A, G, H, 8A–G, 9A, B)

Carcinoplax (*purpurea*)? – Stephensen, 1946: 166, 208, fig. 44 (not *Carcinoplax purpurea* Rathbun, 1914).

Carcinoplax purpurea – Guinot, 1967: 276 (list); Titgen, 1982: 252 (list) (not *Carcinoplax purpurea* Rathbun, 1914).

Carcinoplax sinica – Guinot, 1989: 285, text-fig. 14A, B, pl. 5 figs. A, B, B1, C, C1, D, E, E1; Apel, 2001: 101; Naderloo and Sari, 2007: 449; Naderloo, 2017: 69, text-fig. 11.2d, e, fig. 12.1 (not *Carcinoplax sinica* Chen, 1984).

Type material. Holotype: male (29.2 x 19.0 mm) (ZSI Reg. No. C7123/2), Fresargunj Fishing Harbour, trawl by-catch, District 24 Pargana (South), West Bengal, Bay of Bengal, India, coll. local fishermen, 24 February 2017. Paratypes: 1 female (36.4 x 24.2 mm) (ZSI Reg. No. C7124/2), same data as holotype; 1 female (36.7 x 27.5 mm) (ZSI), same location as holotype, coll. local fishermen, 28 July 2018.

Comparative material. *Carcinoplax purpurea* Rathbun, 1914: 1 male (31.7 x 24.3 mm), 2 females (larger 38.8 x 29.5 mm) (ZRC 2001.0017), Tahsi, Ilan County, northeastern Taiwan, coll. K.-X. Li, 2000; 1 male (31.0 x 24.2 mm) (ZRC 1999.0773), Tashi port, Ilan County, northeastern Taiwan, coll. P.K.L. Ng and K. Lim, May 1999. — *Carcinoplax sinica* Chen, 1984: 1 male (31.7 x 20.9 mm) (ZRC 2011.0607), station 6215, sand-mud substrate, Gulf of Tonkin, South China Sea, 48 m, China-Vietnam Cooperative Expedition of Comprehensive Oceanographic Investigation on Beibu Gulf (Gulf of Tonkin) 1959–1960, trawl, coll. 18 April 1960; 1 juvenile female (30.2 x 19.3 mm) (ZRC 2011.0609), station 6234, muddy-sand substrate, Gulf of Tonkin, South China Sea, 30 m, China-Vietnam Cooperative Expedition of Comprehensive Oceanographic Investigation on Beibu Gulf (Gulf of Tonkin) 1959–1960, trawl, coll. 21 April 1960; 1 male (28.5 x 19.5 mm) (ZRC 1984.5693), near Horsburg Lighthouse, about 241.4 km off Singapore, South China Sea, coll. trawlers, H. Huat, 28 August 1983; 2 females (35.9 x 25.6 mm, 30.6 x 21.0 mm) (ZRC 1984.6312-6313), about 48.3 km from Horsburg Lighthouse, South China Sea, off Singapore, coll. trawlers, H. Huat, 10 September 1983; 1 male (35.2 x 23.4 mm), 1 female (42.8 x 29.2 mm) (ZRC 1984.7842-7843), Horsburg Lighthouse, South China Sea, near Singapore, coll. trawlers, H. Huat, 26 November 1982 and 15 December 1982; 1 male (34.6 x 25.0 mm) (ZRC 1984.6314), near Horsburg Lighthouse, about 241.4 km off Singapore, South China Sea, coll. trawlers, H. Huat, 28 August 1983; 1 female (44.0 x 29.3 mm) (ZRC 2001.0136), Tungkang, Kaohsiung County, southwestern Taiwan, coll. L.-S. Huang, 4 August 1996.

Etymology. The name is derived from the Latin “mistio” for “a mixture”; alluding to the mix of diagnostic characters in this species which are shared with *C. purpurea* and *C. sinica*. The name is used as a noun.

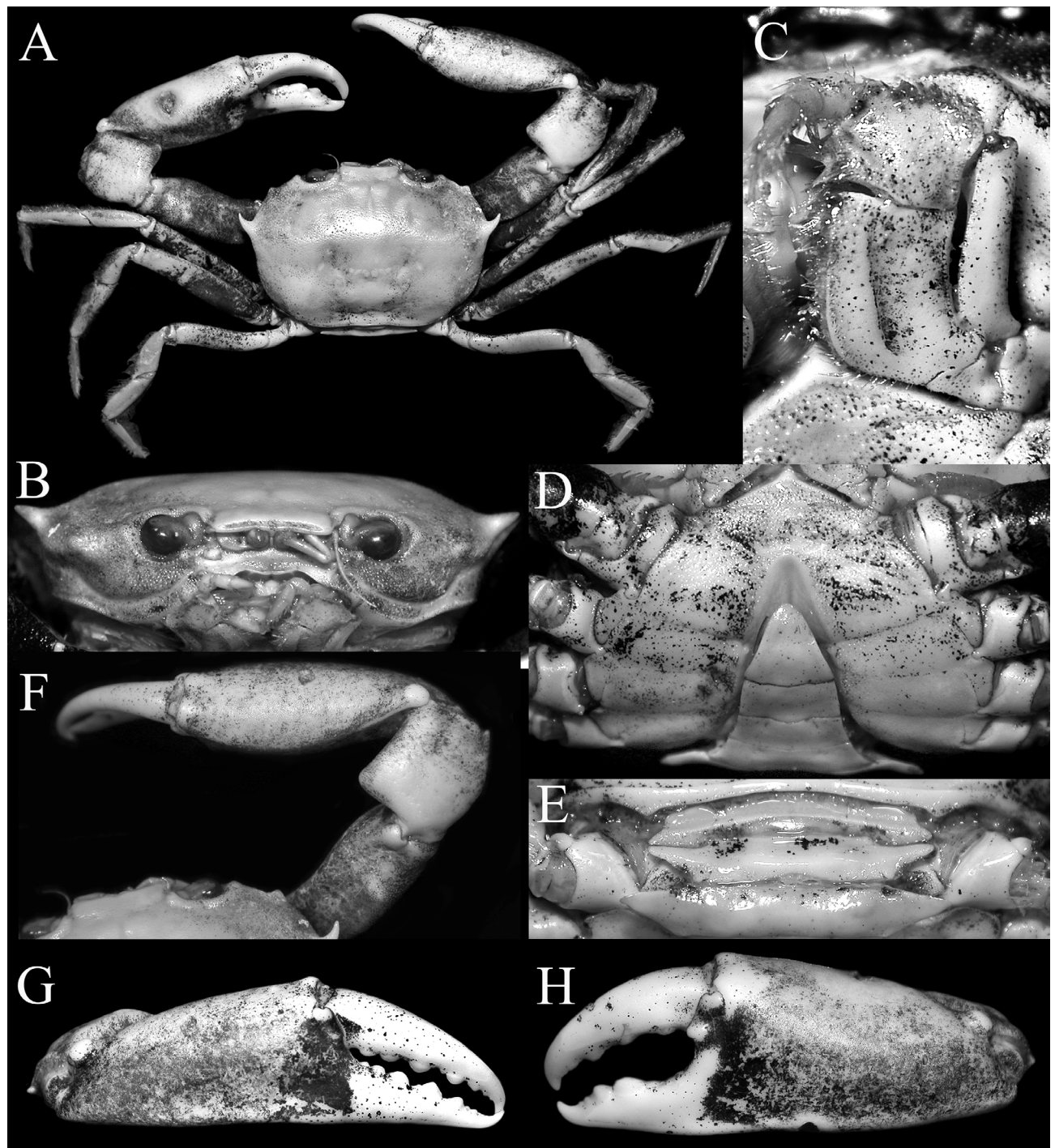


Figure 1. *Carcinoplax mistio* n. sp., holotype male (29.2 x 19.0 mm) (ZSI Reg. No. C7123/2), Bay of Bengal. A, overall habitus; B, frontal view of cephalothorax; C, left third maxilliped; D, anterior thoracic sternum, pleonal somites 4–6 and telson; E, posterior thoracic sternum and pleonal somites 1–3; F, dorsal view of right cheliped; G, outer view of right chela; H, outer view of left chela.

Diagnosis. Carapace transversely hexagonal, 1.33–1.54 times wider than long; dorsal surface gently convex, smooth, lateral surfaces with densely packed low, rounded granules; epigastric region low but visible; postorbital regions not clearly demarcated; frontal margin lamellar, truncate, bilobed with small median notch; anterolateral margin with first

tooth very low not spiniform, second tooth long, acute, sharp, curving gently obliquely anteriorly; posterolateral margin gradually converging towards gently sinuous posterior carapace margin; posterior margin of epistome with prominent but low triangular median projection; merus of third maxilliped with anteroexternal margin auriculiform; dorsal margin

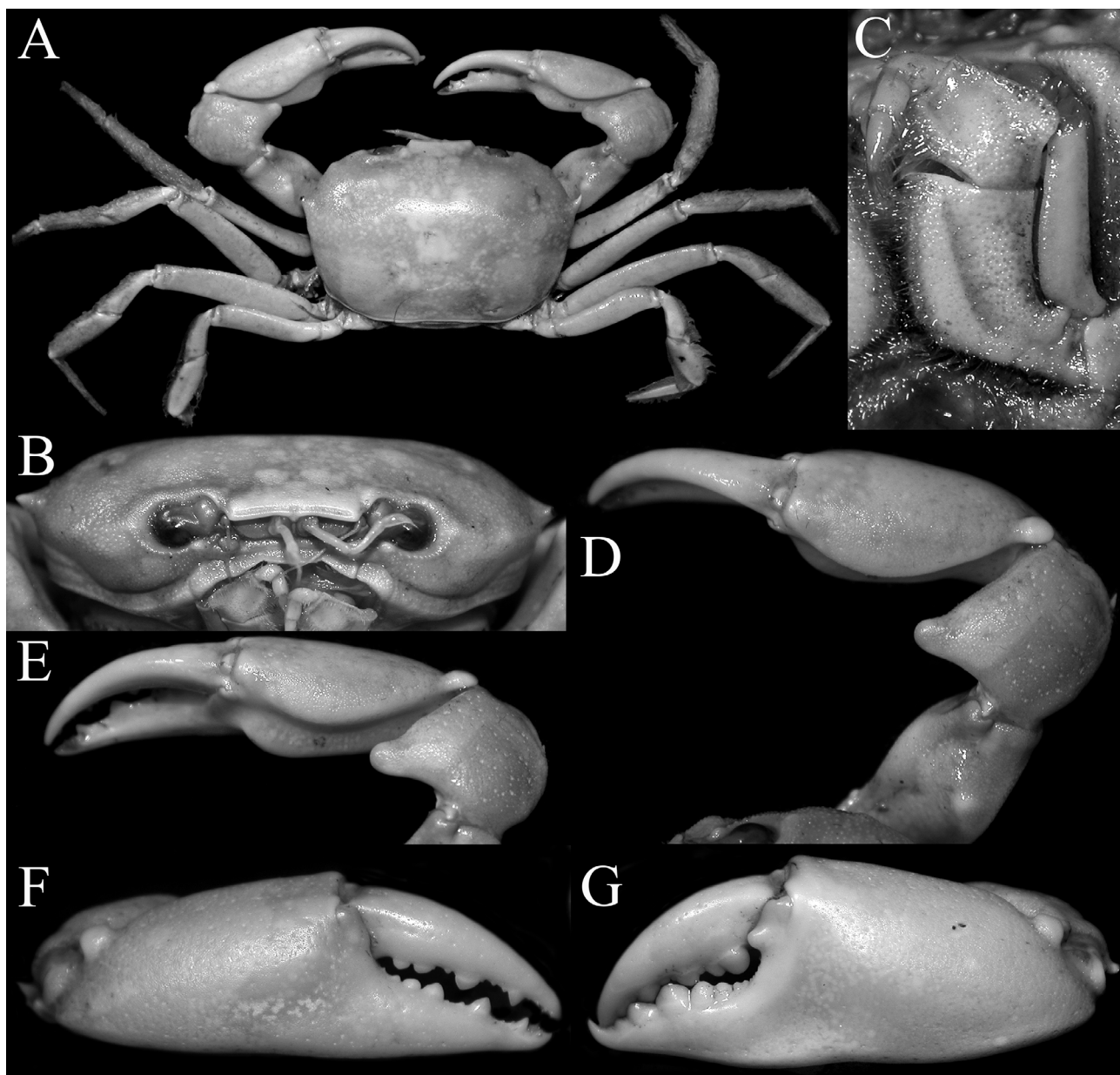


Figure 2. *Carcinoplax mistio* n. sp., paratype female (36.4 x 24.2 mm) (ZSI Reg. No. C7124/2), Bay of Bengal. A, overall habitus; B, frontal view of cephalothorax; C, left third maxilliped; D, E, dorsal view of right cheliped (viewed at slightly different angles); F, outer view of right chela; G, outer view of left chela.

of cheliped palm rounded, smooth; carpus of male cheliped with low rounded tooth on distal inner angle; merus elongate with low rounded tooth on distal third of dorsal margin; ambulatory legs (P2–P5) slender, long; thoracic sternum surface covered with numerous small, rounded, densely packed granules; sternopleonal cavity extending to about two-thirds of sternite 4, reaching imaginary line connecting proximal part of coxae of chelipeds; male pleon triangular, transversely broad, telson broadly triangular, somite 6 transversely rectangular, much wider than long; G1 relatively slender, distal two-thirds almost straight; distal part

slightly flared, laterally flattened, subtruncate; G2 much longer than G1, distal segment flagelliform, about three-quarters length of basal segment; vulvae ovate, large, level with surface of sternum.

Description of male holotype. Carapace (Figs. 1A, 6A) transversely hexagonal, 1.54 times wider than long; dorsal surface gently convex, smooth, without setae, lateral surfaces with densely packed low, rounded granules; regions poorly defined; epigastric region low but visible, separated by shallow Y-shaped groove; postorbital regions not clearly demarcated; gastro-

cardiac shallow but visible; external orbital angle low, broadly triangular, surface granular, not extending to frontal margin. Frontal margin (Figs. 1A, 6A) lamellar, truncate, straight, slightly deflexed downwards, with deep transverse submarginal groove; bilobed with shallow but distinct median notch; front separated from supraorbital margin by small but distinct notch. Anterolateral margin (Figs. 1A, 6A) convex, first tooth very low not spiniform; second tooth long, acute, sharp, curving gently obliquely anteriorly; anterolateral margin separated from posterolateral margin by shallow concavity, junction with posterolateral margin gently convex; posterolateral margin gradually converging towards gently sinuous posterior carapace margin. Orbit short, ovate, much shorter than front margin (Figs. 1B, 6A); ocular peduncle stout, very short; cornea large, round. Supraorbital margin (Figs. 1A, 6A) gently concave, lined with very low, small rounded granules, with shallow median groove mostly obscured by granules, lateral end of margin confluent with external orbital tooth. Suborbital margin (Fig. 1B) gently concave, entire, distinctly granulated, with low, rounded inner tooth near base of eye. Suborbital, subhepatic, anterior half of pterygostomial regions (Fig. 1B) covered with small, low rounded densely packed granules. Basal antennular article (Fig. 1B) subrectangular; article 3 rectangular, distal margin touching frontal margin; article 4 shorter than article 3; flagellum long, folding transversely. Basal antennular article (Fig. 1B) subrectangular; article 3 rectangular, distal margin touching frontal margin; article 4 just shorter than article 3; flagellum long, folding transversely. Epistome (Fig. 1B) longitudinally narrow; posterior margin of epistome with prominent but low triangular median projection, with distinct median fissure, separated from gently concave lateral margin by fissure. Endostomial ridge sharp, distinct on anterior part, posterior part low. Third maxillipeds (Fig. 1C) almost completely closing buccal cavern when closed; merus quadrate, anteroexternal margin auriculiform, median part gently depressed; ischium rectangular, with deep submedian oblique sulcus, inner (mesial) margin lined with dense stiff setae; exopod relatively stout with prominent subdistal triangular tooth on inner (mesial) margin, with long flagellum.

Chelipeds (Fig. 1A, F–H) unequal, left chela larger; fingers relatively slender, distinctly shorter than palm; surfaces covered with low, rounded granules, appears rugose in parts; inner surface smooth, with slightly

swollen longitudinal median part; pollex of major chela smooth on outer surface, cutting edge with low, rounded teeth; dactylus smooth on outer surface, cutting edge with low, rounded teeth; fingers of minor chela similar to those on major chela except teeth more distinct; carpus subtriangular with low rounded tooth on distal inner angle, outer (lateral) angle with sharp tubercle; merus elongate, trigonal in cross-section, surface with small, rounded granules, dorsal margin with low rounded tooth on distal third.

Ambulatory legs (P2–P5) (Figs. 1A, 7G, H) slender, long; P3 longest; P2–P5 merus subcylindrical, laterally flattened, outer surface almost smooth or with very low flattened granules, generally glabrous or with scattered setae, ventral margin smooth, dorsal margin with low granules but not serrate; P2–P5 carpus elongate, outer surface and dorsal margin with low granules and setae; P2–P4 propodus long, distinctly laterally flattened, with longitudinal median sulcus (very shallow on P5), lateral margins of distal third with relatively dense setae which partially obscure margin; P2–P4 dactylus elongate, falciform, entire surface except for sharp tip covered with pubescence; P5 shortest, when folded reaching second anterolateral tooth, merus gently curved dorsal margin with very low granules, appearing almost smooth, propodus longitudinally ovate with shallow median sulcus, lateral margins with numerous long setae, dactylus shorter than those on P2–P4, with setae relatively longer; dactylo-propodal lock not developed.

Thoracic sternum (Fig. 1D) relatively wide, surface covered with numerous small, rounded, densely packed granules; sternites 1, 2 completely fused, triangular, lateral margins gently convex, separated from sternite 3 by shallow, gently convex suture, partially obscured by low granules; sternites 3, 4 fused with only lateral part of suture clearly visible, median parts indicated by shallow depressions, partially obscured by low granules; sutures 4/5, 5/6, 7/8 medially interrupted, suture 6/7 complete; distinct median longitudinal groove extending across most of sternites 7, 8. Posterior edge of episternite 7 partially overlapping small anterior part of P5 coxa. Sternopleonal cavity (Fig. 1D) deep, extending to about two-thirds of sternite 4, reaching imaginary line connecting median part of coxae of chelipeds; with longitudinal groove on sternite 4; part of sternite 8 (Fig. 1E) exposed between somites 2 and 4 when completely closed. Press-button male pleonal locking mechanism present as short peg-like tubercle on anterior margin of sternite 5, just adjacent

to sternite 4. Opening for penis coxal, at anterior edge of condyle of P5 coxa; penis short, tubular with distal half wider than proximal part.

Pleon (Figs. 1D, E, 7A) triangular, transversely broad, all somites, telson free; telson broadly triangular, lateral margins almost straight to gently sinuous; somite 6 transversely rectangular, much wider than long, lateral margins gently convex, gently converging towards telson; somites 3–5 wide, trapezoidal, somite 3 widest, lateral parts tapering, edges overlapping part of P5 coxae; somites 1, 2 longitudinally narrow, reaching to P5 coxae.

G1 (Fig. 8A–C) relatively slender, distal two-thirds with mesial margin gently concave; tip slightly flared, laterally flattened, subtruncate; distal surfaces with numerous short spines. G2 (Fig. 8D) slender, much longer than G1, distal segment long, flagelliform, about three-quarters length of basal segment, tip weakly bifurcated.

Female. The carapace of the female paratypes are generally smoother on all their surfaces, with the second anterolateral tooth relatively shorter (Figs. 2A, 6B). The carapaces are also relatively higher with the dorsal surface relatively but distinctly more inflated (Fig. 2B). The inner carpal tooth on the chelipeds are also proportionately longer and the inner surface of the chela more inflated (Fig. 2A, D, E) compared to the male. The chelae of the females are similar in form to the holotype male except that the fingers and palm are relatively shorter (Fig. 2F, G). The pleons are ovate with all the somites and telson free (Fig. 9A). The vulvae are ovate, large, level with the surface of the sternite, covered with stiff membrane, without opercular cover, and positioned on the anterior two-thirds of somite 6 but not reaching the suture with sternite 5 (Fig. 9B).

Colour in life. Carapace whitish; chelipeds and ambulatory legs with the upper parts pale red; ventral surfaces white.

Remarks. The specimens from the Persian Gulf reported as *C. sinica* by Guinot (1989) and Naderloo (2017) are here also identified with the new species from the Bay of Bengal in India. They agree very well in the diagnostic features of the carapace and ambulatory legs with *C. mistio* n. sp.

Carcinoplax mistio n. sp. is superficially most similar to *C. sinica*, in the transversely hexagonal carapace

and prominent second anterolateral tooth, which is spiniform and gently curved. It can, however, be reliably distinguished by the structure of the G1. In *C. mistio* n. sp., the mesial margin of the distal two-thirds is gently concave and the tip is elongate (Fig. 8E, F) (versus distal two-thirds of the G1 is straight and the tip is rounded and short in *C. sinica*; Fig. 8L, N). When specimens of similar sizes are compared, the male pleon of *C. mistio* n. sp. (holotype (29.2 x 19.0 mm, ZSI Reg. No. C7123/2) is proportionately broader (somite 6 and telson 1.93 and 1.11 times wider than long, respectively) (Fig. 7A) (versus pleon of male 28.5 x 19.5 mm (ZRC 1984.5693), relatively narrower in *C. sinica*, with the width to length ratio for somite 6 and telson 1.85 and 0.91 times, respectively; Fig. 7D). Larger specimens of *C. sinica*, however, have relatively wider male pleons, although in these specimens, the lateral margins of somite 6 are convex and those of the telson distinctly concave (Fig. 7E, F) (versus lateral margins of somite 6 almost straight and those of the telson slightly concave in *C. mistio* n. sp.; Fig. 7A). The rounded tooth on the inner angle of the male carpus of the male cheliped is also proportionately shorter in *C. mistio* n. sp. (Fig. 1F) compared to that of *C. sinica*, which is distinctly longer (Fig. 4E).

The specimens from the Persian Gulf referred to *C. sinica* by Guinot (1989: 285), Castro (2007: 640) and Naderloo (2017: 69) should be referred to *C. mistio* n. sp. as well. Male specimens from the Persian Gulf have a relatively short rounded tooth on the distal inner angle of the carpus of cheliped (*cf.* Guinot, 1989: pl. 5 figs. A) as in the type of *C. mistio* n. sp. (Fig. 1A, F), and their G1 structures are similar in form (Fig. 8A–C, E, F).

It is unfortunate that the distal parts of both G1s of the holotype male of *C. mistio* n. sp. are damaged. In the more intact left G1, only the tip is broken off (Fig. 8B, C), but it is clear from the base that the intact structure would be more elongate and tapering, like that figured for the male from Iran (*cf.* Fig. 8E, F) rather than the more rounded tip observed for *C. sinica* (Fig. 8L, N).

Carcinoplax sinica was described from a large series of specimens from the Gulf of Tonkin (= Beibu Wan) in the South China Sea, and the authors have examined two of the non-type specimens (ZRC 2011.0607 and ZRC 2011.609), which had been listed by Chen (1984: 190). It has since been reliably reported from Taiwan, mainland China, Philippines and Vietnam (Serène and Lohavanijaya, 1973; Serène and Vadon, 1981;

Dai *et al.*, 1986; Guinot, 1989; Dai and Yang, 1991; Hsueh and Huang, 2002; Castro, 2007; Ng *et al.*, 2017) (sometimes incorrectly as *C. purpurea*).

Although their carapaces are quite different, *C. mistio* n. sp. shares similarly structured male pleons and G1s with *C. purpurea*. Compared to *C. purpurea*, however, *C. mistio* n. sp. has the carapace more transversely hexagonal, with the second anterolateral tooth elongate, gently curved anteriorly and sharp (Fig. 6A, B) (versus

carapace more quadrate with the posterolateral margins convex and subparallel, the second anterolateral tooth is low and rounded, and if spine present, it is short, straight and directed anteriorly in *C. purpurea*; Fig. 6C, D); the dorsal surface of the male carapace is relatively low (Figs. 1A, B, 6A) (versus carapace appears inflated with the dorsal carapace surface prominently convex in *C. purpurea*; Figs. 3C, 6C, D); and the P2–P4 merus is proportionately more elongate

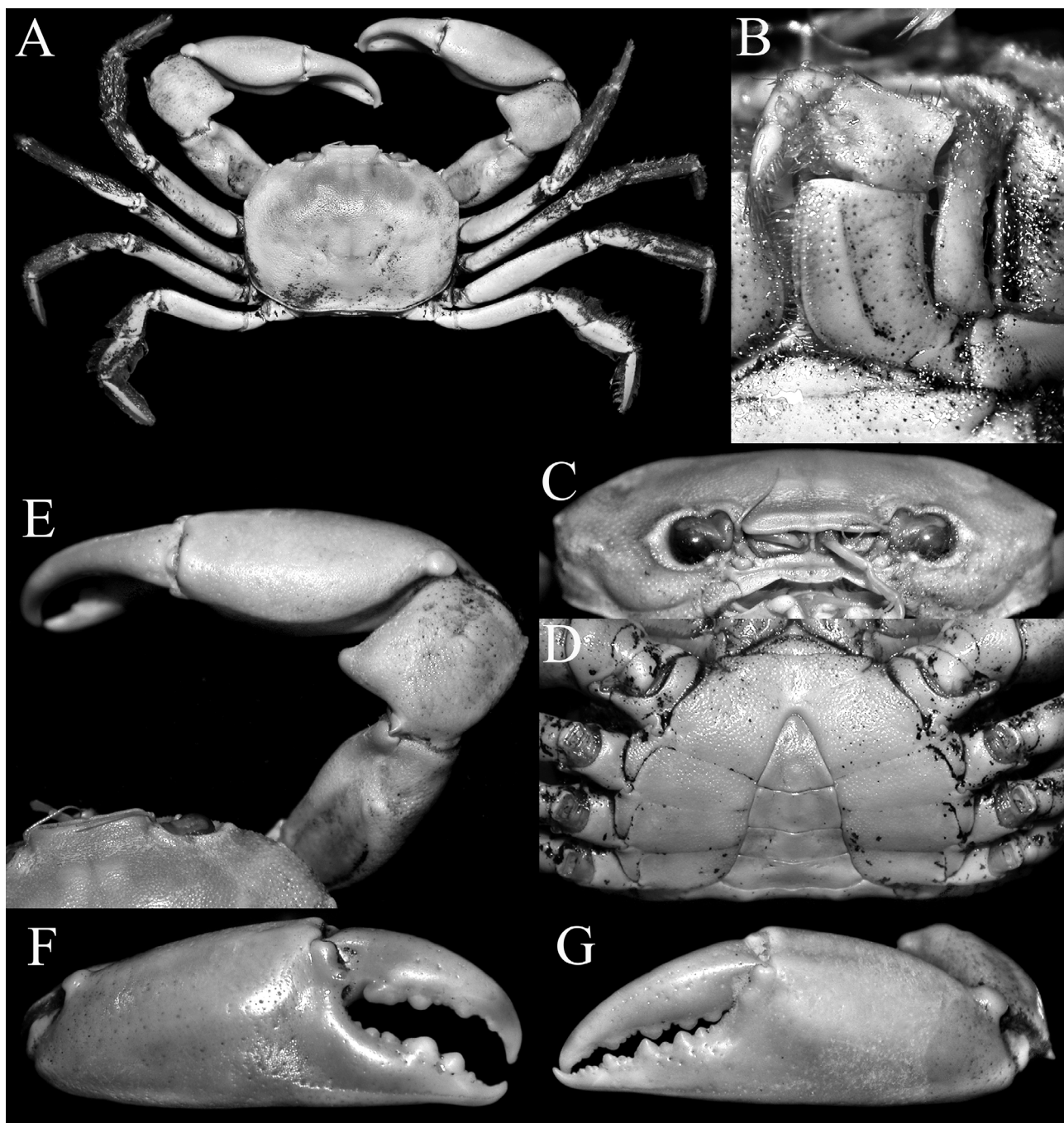


Figure 3. *Carcinoplax purpurea* Rathbun, 1914, male (31.0 x 24.2 mm) (ZRC 1999.0773), Taiwan. A, overall habitus; B, left third maxilliped; C, frontal view of cephalothorax; D, anterior thoracic sternum, pleonal somites 4–6 and telson; E, dorsal view of right cheliped; F, outer view of right chela; G, outer view of left chela.

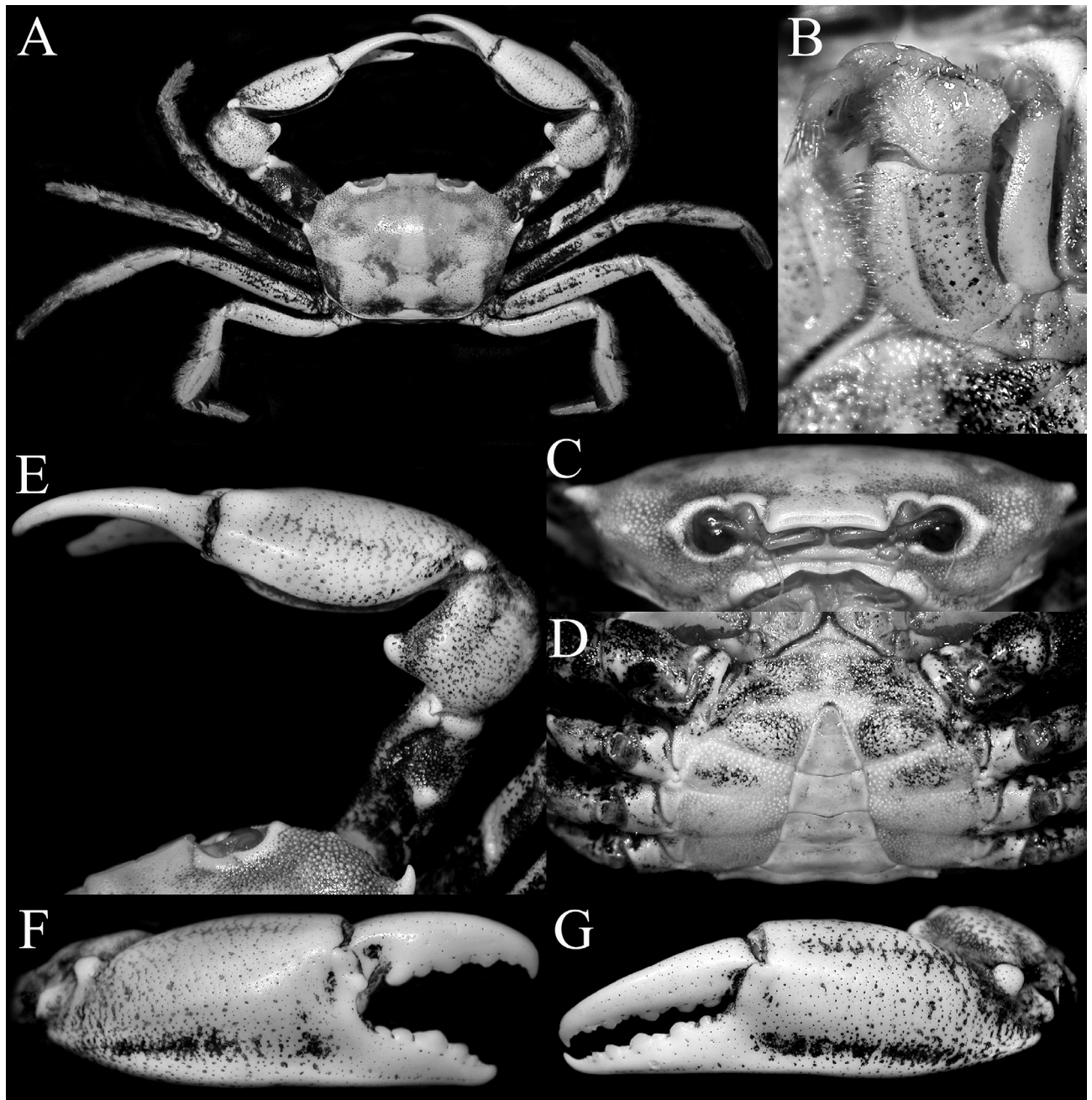


Figure 4. *Carcinoplax sinica* Chen, 1984, male (28.5 x 19.5 mm) (ZRC 1984.5693), South China Sea. A, overall habitus; B, left third maxilliped; C, frontal view of cephalothorax; D, anterior thoracic sternum, pleonal somites 4–6 and telson; E, dorsal view of right cheliped; F, outer view of right chela; G, outer view of left chela.

and slender (Fig. 7G) (versus the P2–P4 merus shorter and stouter in *C. purpurea*; Fig. 7I). *Carcinoplax purpurea* is known for certain only from the west Pacific, with records from Japan, Taiwan, mainland China, Philippines and South China Sea (Rathbun, 1914; Sakai, 1976; Dai *et al.*, 1986; Guinot, 1989; Dai and Yang, 1991; Hsueh and Huang, 2002; Castro, 2007; Ng *et al.*, 2017).

The series of specimens of *C. purpurea* and *C. sinica* indicate that the carpal spine of adult female specimens is more elongate (Fig. 9C, E) compared to comparably sized males (Figs. 3A, E, 4A, E, 5); and the inner surface of the chela is also relatively more inflated. The same pattern is observed for *C. mistio* n. sp. (Figs. 1A, F, 2A, D, E).

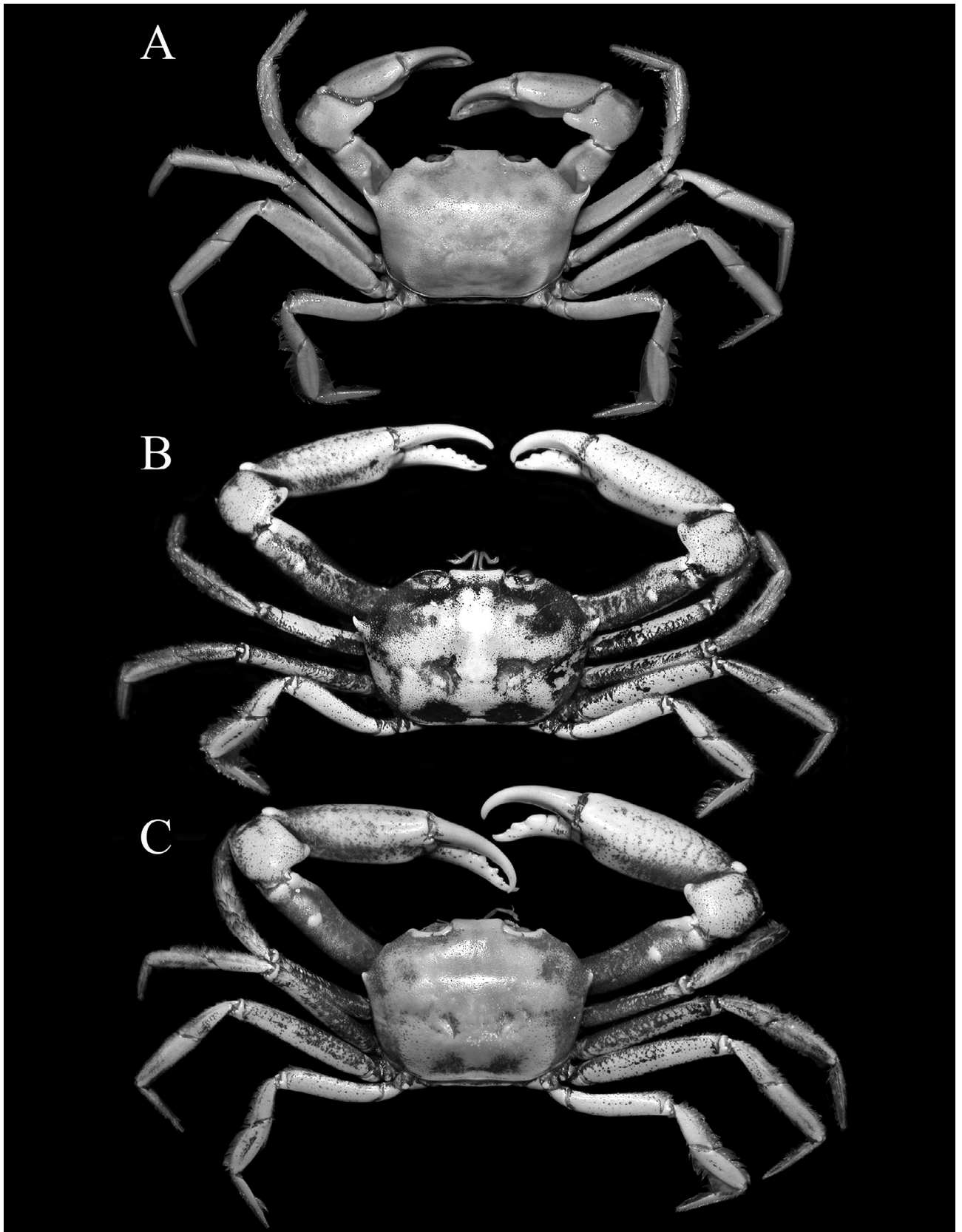


Figure 5. *Carcinoplax sinica* Chen, 1984, overall habitus. A, male (31.7 x 20.9 mm) (ZRC 2011.0607), Gulf of Tonkin; B, male (35.2 x 23.4 mm) (ZRC 1984.7842), South China Sea; C, male (34.6 x 25.0 mm) (ZRC 1984.6314), South China Sea.

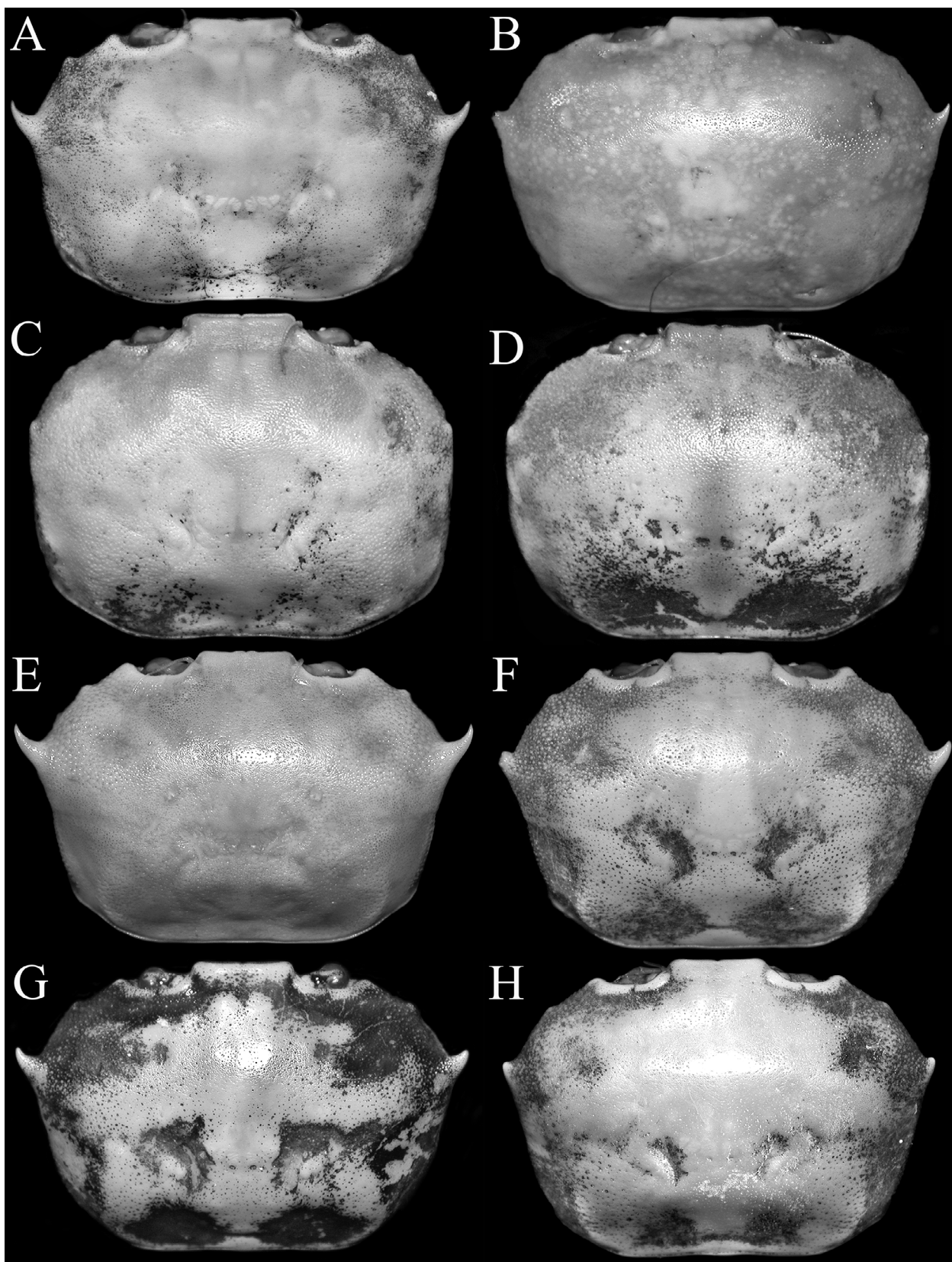


Figure 6. Dorsal view of male carapace. A, *Carcinoplax mistio* n. sp., holotype male (29.2 x 19.0 mm) (ZSI Reg. No. C7123/2), Bay of Bengal; B, *C. mistio* n. sp., paratype female (36.4 x 24.2 mm) (ZSI Reg. No. C7124/2), Bay of Bengal; C, *C. purpurea* Rathbun, 1914 (31.0 x 24.2 mm) (ZRC 1999.0773), Taiwan; D, *C. purpurea* (31.7 x 24.3 mm) (ZRC 2001.0017), Taiwan; E, *C. sinica* Chen, 1984 (31.7 x 20.9 mm) (ZRC 2011.0607), Gulf of Tonkin; F, *C. sinica* (28.5 x 19.5 mm) (ZRC 1984.5693), South China Sea; G, *C. sinica* (35.2 x 23.4 mm) (ZRC 1984.7842), South China Sea; H, *C. sinica* (34.6 x 25.0 mm) (ZRC 1984.6314), South China Sea.

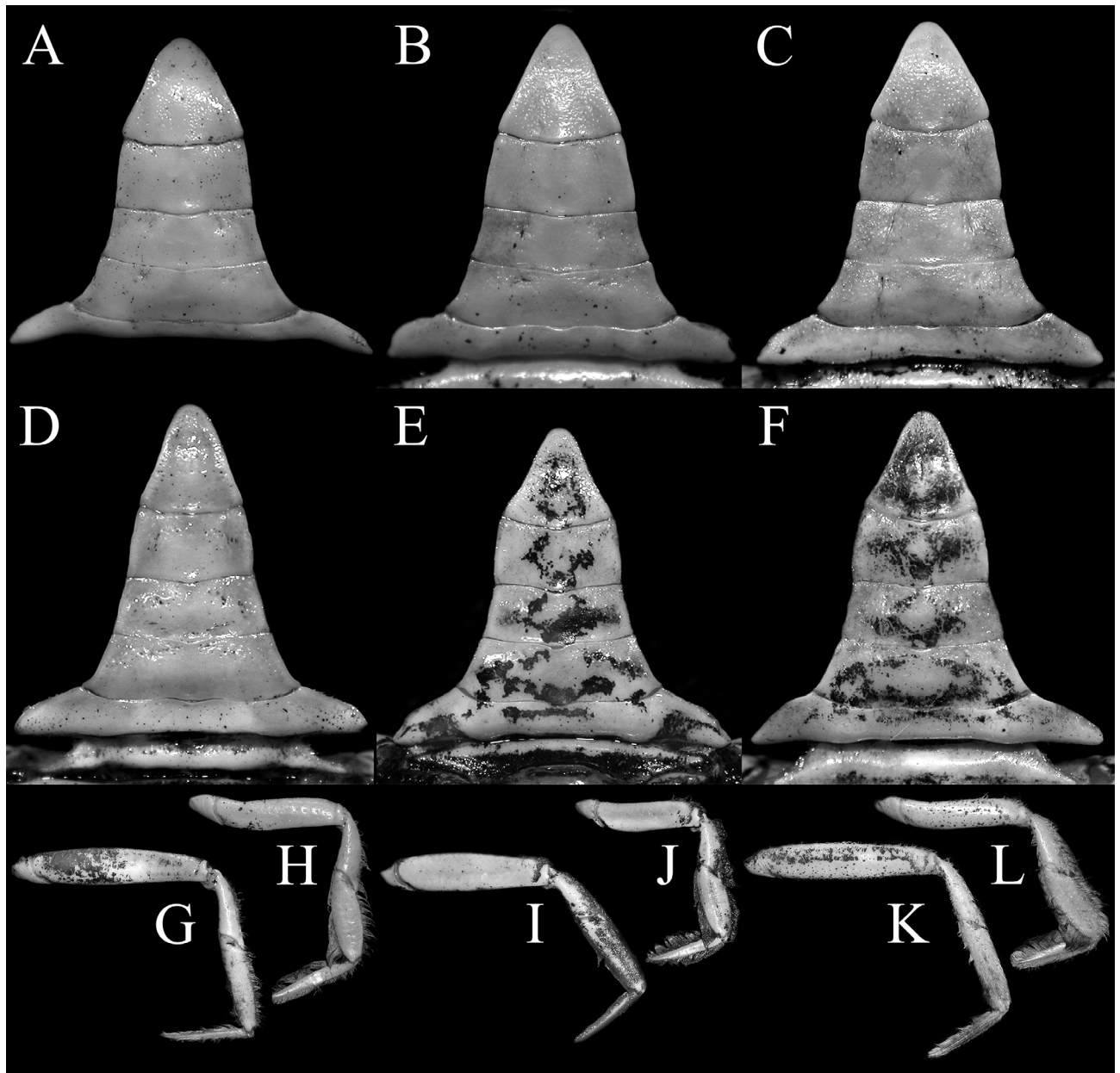


Figure 7. Male pleon and ambulatory legs. A, G, H, *Carcinoplax mistio* n. sp., holotype male (29.2 x 19.0 mm) (ZSI Reg. No. C7123/2), Bay of Bengal; B, I, J, *C. purpurea* Rathbun, 1914, male (31.0 x 24.2 mm) (ZRC 1999.0773), Taiwan; C, *C. purpurea* Rathbun, 1914, male (31.7 x 24.3 mm) (ZRC 2001.0017), Taiwan; D, K, L, *C. sinica* (28.5 x 19.5 mm) (ZRC 1984.5693), South China Sea; E, *C. sinica* (35.2 x 23.4 mm) (ZRC 1984.7842), South China Sea; F, *C. sinica* (34.6 x 25.0 mm) (ZRC 1984.6314), South China Sea. A–F, male pleonal somites 3–6 and telson; G, I, K, right P4; H, J, L, right P5.

The discovery of the present new *Carcinoplax* species is not surprising; the first goneplacid being *C. fasciata*, which had been confused with *C. specularis* (see Ng and Kumar, 2016). Recent studies have shown that an increasing number of brachyuran species which have previously been believed to occur in both Indian and west Pacific waters are actually separate taxa, even if

they are relatively shallow water taxa (e.g., see Castro and Ng, 2010; Ng and Castro, 2013, 2016; Ng and Kumar, 2016; Ng and Richer de Forges, 2015; Ng *et al.*, 2018). As reviewed in Trivedi *et al.* (2018), many Indian taxa will need to be compared with their Pacific and/or Southeast Asian counterparts, ostensibly the same species, to ascertain their actual identities.

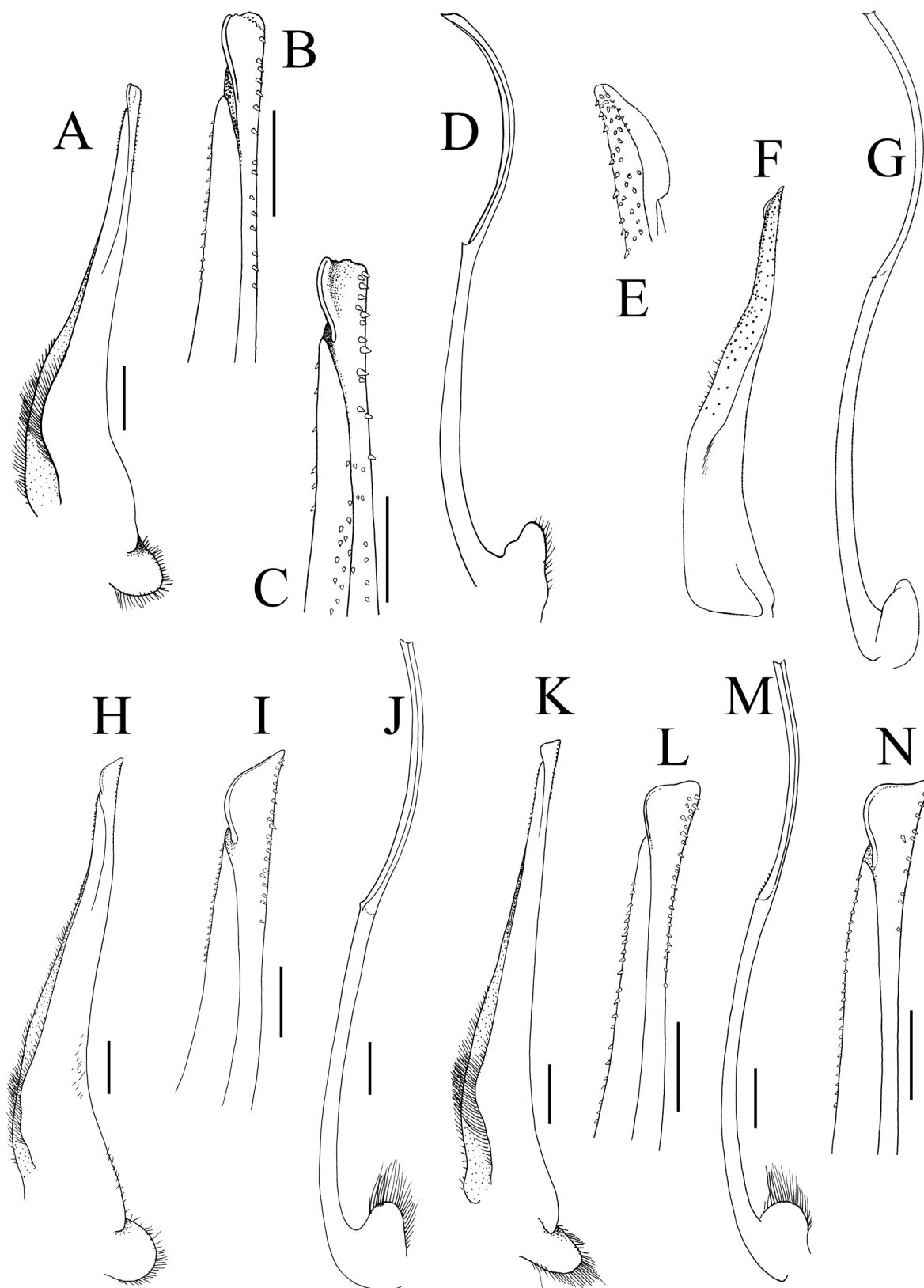


Figure 8. Gonopods. A–D, *Carcinoplax mistio* n. sp., holotype male (29.2 x 19.0 mm) (ZSI Reg. No. C7123/2), Bay of Bengal; E–J, *C. mistio* n. sp., K–M, male (45.0 x 29.0 mm) (Copenhagen Museum), Persian Gulf; H–J, *C. purpurea* Rathbun, 1914, male (31.0 x 24.2 mm) (ZRC 1999.0773), Taiwan; K–M, *C. sinica* Chen, 1984, male (31.7 x 20.9 mm) (ZRC 2011.0607), Gulf of Tonkin; N, *C. sinica* Chen, 1984, male (34.6 x 25.0 mm) (ZRC 1984.6314), South China Sea. A, H, K, left G1 (ventral view); B, C, I, L, N, distal part of left G (ventral view); D, right G2 (transposed for comparative purposes); E, distal part of G1; F, G1; G, G2; J, M, left G2. (E, after Stephensen, 1946: fig. 44A, B; F, G, after Guinot, 1989: fig. 14). Scales: A, D, H, J, K, M = 1.0 mm; B, C, I, L, N = 0.5 mm.

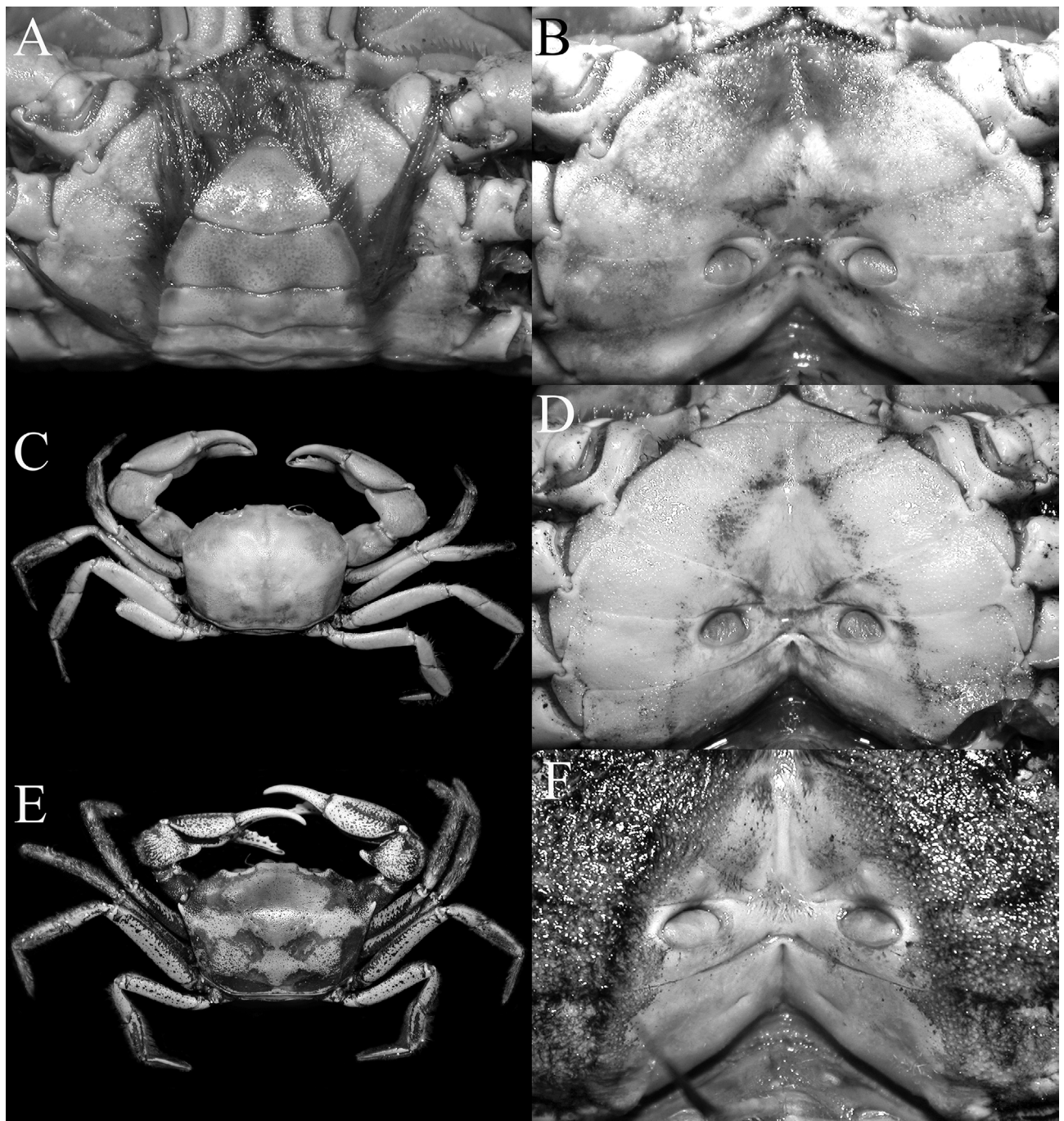


Figure 9. A, B, *Carcinoplax mistio* n. sp., paratype female (36.4 x 24.2 mm) (ZSI Reg. No. C7124/2), Bay of Bengal; C, D, *Carcinoplax purpurea* Rathbun, 1914, female (38.8 x 29.5 mm) (ZRC 2001.0017), Taiwan; E, F, *C. sinica* Chen, 1984, female (35.9 x 25.6 mm) (ZRC 1984.6313) South China Sea. A, anterior thoracic sternum and pleon; C, E, overall habitus; B, D, F, sternopleonal cavity showing vulvae.

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