

Gordonopsis robusta, a new species of deep-sea porter crab (Crustacea: Brachyura: Homolidae) from the Andaman Sea, India

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Abstract. A new species of the deep-sea porter crab genus, *Gordonopsis* Guinot & Richer de Forges, 1995 (Homolidae), is described from the Andaman Sea in the eastern Indian Ocean. *Gordonopsis* has previously been represented by *G. profundorum* (Alcock & Anderson, 1899) from the western Indian Ocean and *G. pacifica* Takeda & Suyama, 2019 from Japan. *Gordonopsis robusta*, new species, differs markedly from *G. profundorum* and *G. pacifica* in its more globose carapace, more tomentose body, and proportionately shorter ambulatory meri, notably that of the last pair of legs which just reach the gastric groove on the carapace.

Key words. Homoloidea, taxonomy, new species, eastern Indian Ocean, deep-water, *Gordonopsis*

INTRODUCTION

The homolid genus *Gordonopsis* Guinot & Richer de Forges, 1995, has traditionally contained only one rare species, *G. profundorum* (Alcock & Anderson, 1899), described from three small female specimens off the Travancore coast in India, and has been reported from the Maldives, Seychelles, and East Africa (Alcock & Anderson, 1899; Alcock, 1901; Doflein, 1904; Gordon, 1950; Guinot & Richer de Forges, 1981, 1995). Recently, Takeda & Suyama (2019) described *Gordonopsis pacifica* Takeda & Suyama, 2019, on the basis of a male specimen collected from off the island of Okino-Torishima in southern Japan, the first record of the genus from the Pacific. The first author, with Bertrand Richer de Forges, has been involved in a revision of this genus for several years, and has examined material from various parts of the Indian Ocean as well as western Pacific, and *Gordonopsis* clearly contains more than two species.

Recently, the second and third authors obtained two specimens of an unusual *Gordonopsis* species collected from the Andamans. Examination of the material confirmed it is distinct from *G. profundorum* s. str., differing markedly in its proportionately wider and more swollen carapace as well as distinctively shorter ambulatory legs. It is here described

as a new species, *G. robusta*. As the name is needed for other Indian studies now being undertaken, it was decided that it is best that this species be described separately from the larger work concerning the revision of the genus, which is still in the process of being completed.

MATERIAL AND METHODS

The terminology used follow Guinot & Richer de Forges (1995) and Davie et al. (2015). The measurements included (in millimetres) are for the maximum carapace length and width (including spines), respectively. The following abbreviations are used: CL = carapace length; CW = carapace width; FORVSS = Fisheries Oceanographic Research Vessel Sagar Sampada; G1 = male first gonopod; G2 = male second gonopod; HSDT (CV) = High Speed Demersal Trawl net (crustacean version); IO/SS/BRC/ = Indian Ocean/SAGAR SAMPADA/Brachyura; P2–P5 = pereopods 2–5 (first to fourth ambulatory legs), respectively; RL = rostral length. The material examined is deposited in the Referral Centre collection of the Centre for Marine Living Resources and Ecology (CMLRE), Kochi, Kerala, India. The type specimens are preserved in 70% ethanol.

TAXONOMY

Family Homolidae De Haan, 1839

Genus *Gordonopsis* Guinot & Richer de Forges, 1995

Gordonopsis robusta, new species (Figs. 1–4)

Material examined. Holotype: male (44.9 x 33.5 mm) (CMLRE IO/SS/BRC/00082), Andaman Sea, FORVSS

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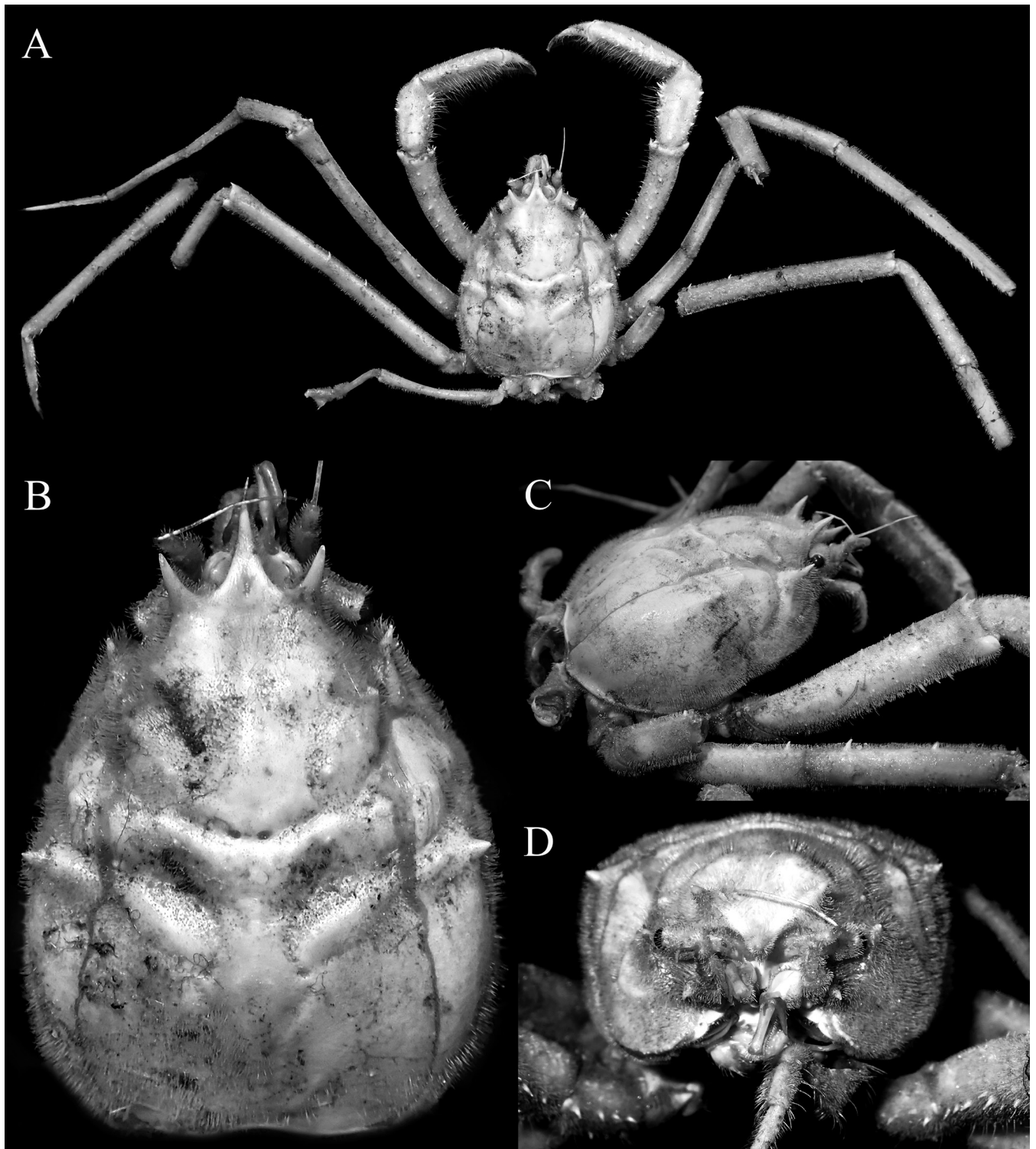


Fig. 1. *Gordonopsis robusta*, new species, holotype male (44.9 x 33.5 mm) (CMLRE IO/SS/BRC/00082), Andaman Sea. A, dorsal overall view; B, dorsal view of carapace; C, sublateral view of cephalothorax; D, frontal view of cephalothorax. Dorsal surfaces brushed, right lateral surfaces of cephalothorax partially denuded.

station 36708, 13.27°N, 93.26°E, 635 m, HSDT (CV), coll. S. S. Cubelio, 26 November 2017. Paratype: young female (20.8 x 15.6 mm) (CMLRE IO/SS/BRC/00083), same data as holotype.

Diagnosis (based on holotype male). Carapace longitudinally ovate ($CW/CL = 0.75$), distinctly (1.75 times) wider posteriorly than anteriorly, with distinct lateral linea homolica (sensu Guinot & Richer de Forges, 1995); carapace high,

box-like in frontal view; dorsal carapace surface with well-defined regions, separated by broad, deep grooves; dorsal parts with numerous scattered setae that do not obscure surface; lateral parts with denser setae that partially obscures surface, especially dense on hepatic, pterygostomial and suborbital regions (Figs. 1A, B). Rostrum relatively long ($RL/postrostral\ CL = 0.15$), sharp, two obliquely directed pseudorostral spines shorter than rostrum (0.87 times RL), sharp (Fig. 1B). Eyes with short ocular peduncle, cornea

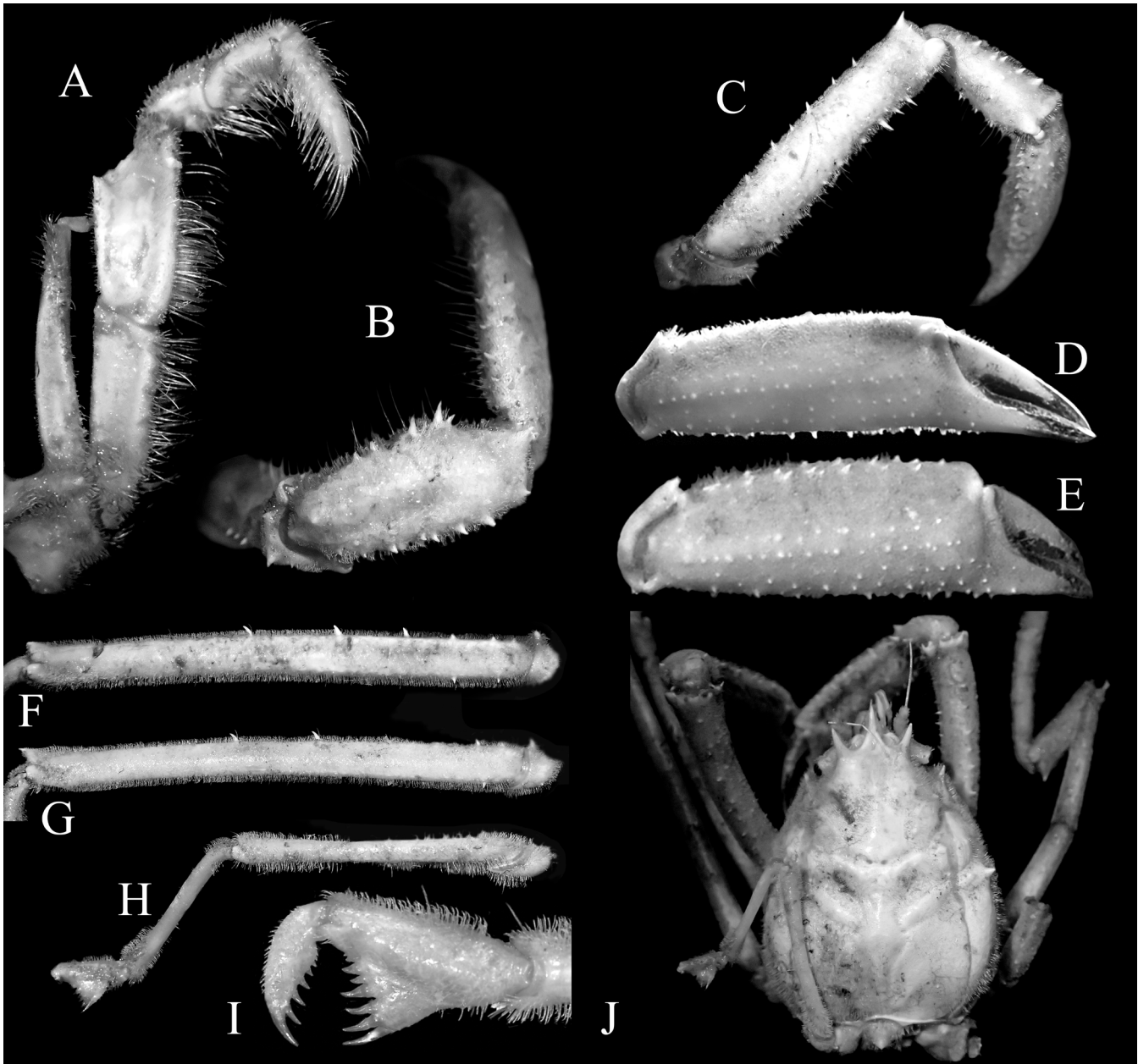


Fig. 2. *Gordonopsis robusta*, new species, holotype male (44.9 x 33.5 mm) (CMLRE IO/SS/BRC/00082), Andaman Sea. A, right third maxilliped, partially denuded; B, dorsal view of carpus of right cheliped; C, subventral view of merus and carpus of right cheliped; D, E, outer view of right chela; E, outer view of right chela (tilted laterally to highlight granules); F, left P2 merus; G, left P3 merus; H, left P5; I, pseudochela of left P5; J, dorsal view of carapace and P5 position. Surfaces brushed.

prominent; no discernible orbit (Fig. 1B–D). Hepatic area not inflated, with short obliquely directed spine (Fig. 1B, C). Gastric area without spines (Figs. 1B, 4B). Gastric groove well marked, with distinct ovate gastric fossae anterior to it (Fig. 1B). Cardiac region swollen; branchial region inflated, with distinct branchio-cardiac grooves (Fig. 1B). Lateroposterior tubercle on carapace distinct, sharp (Fig. 1B). Base of antenna with stout, slightly curved spine (Fig. 1D). Antennal flagellum short; second and third articles thick, setose. Epistome short (Fig. 1D). Third maxilliped pediform, merus with sharp, dentiform external angle (Fig. 2A). Chelipeds ca. 1.50 times as long as CL, reaching only to P2 propodus when out-stretched; fingers long; palm long, slender, gently compressed laterally, dorsal margin with three rows of spinules, outer surface with five indistinct rows of

well-spaced granules, internal surface with two rows of spinules, dorsal row shorter, ventral row extending to base of pollex; carpus longitudinally ovate, outer margin with eight to ten short spines, inner margin with five or six prominent spines, that on subdistal angle largest; merus triangular in cross-section, relatively long, curved, with eight spines on upper border, seven to nine spines on lower border, those on distal part longer, sharper, those on proximal part low (Fig. 1A, 2B–E). Ambulatory legs relatively long, with distal edge of P5 merus just reaching beyond lateroposterior tubercle when folded anteriorly; basis-ischium with small granules, without distinct spines; P2 merus with five spines on upper border, one distal spine, ventral margin with three or four spines and one proximal tubercle; P3 merus with five spines on upper border, one distal spine, ventral margin with one

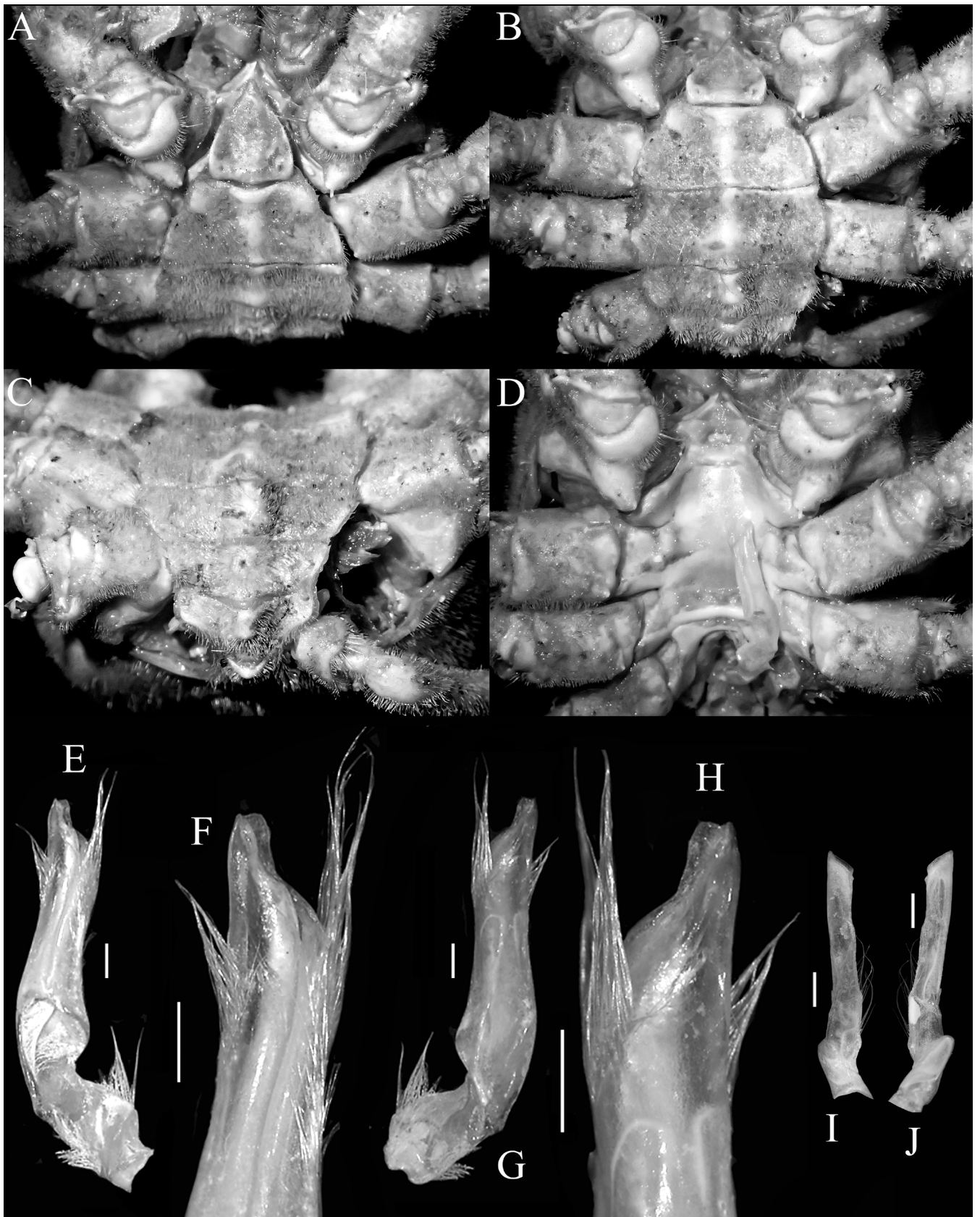


Fig. 3. *Gordonopsis robusta*, new species, holotype male (44.9 x 33.5 mm) (CMLRE IO/SS/BRC/00082), Andaman Sea. A, male pleonal somites 4–6 and telson; B, male pleonal somites 3–6 and telson; C, male pleonal somites 1–4; D, sternopleonal cavity showing intact left G1; E, ventral view of right G1; F, ventral view of distal part of right G1; G, dorsal view of right G1; H, dorsal view of distal part of right G1; I, J, right G2. Ventral surfaces brushed. Scale bars for gonopods = 1.0 mm.

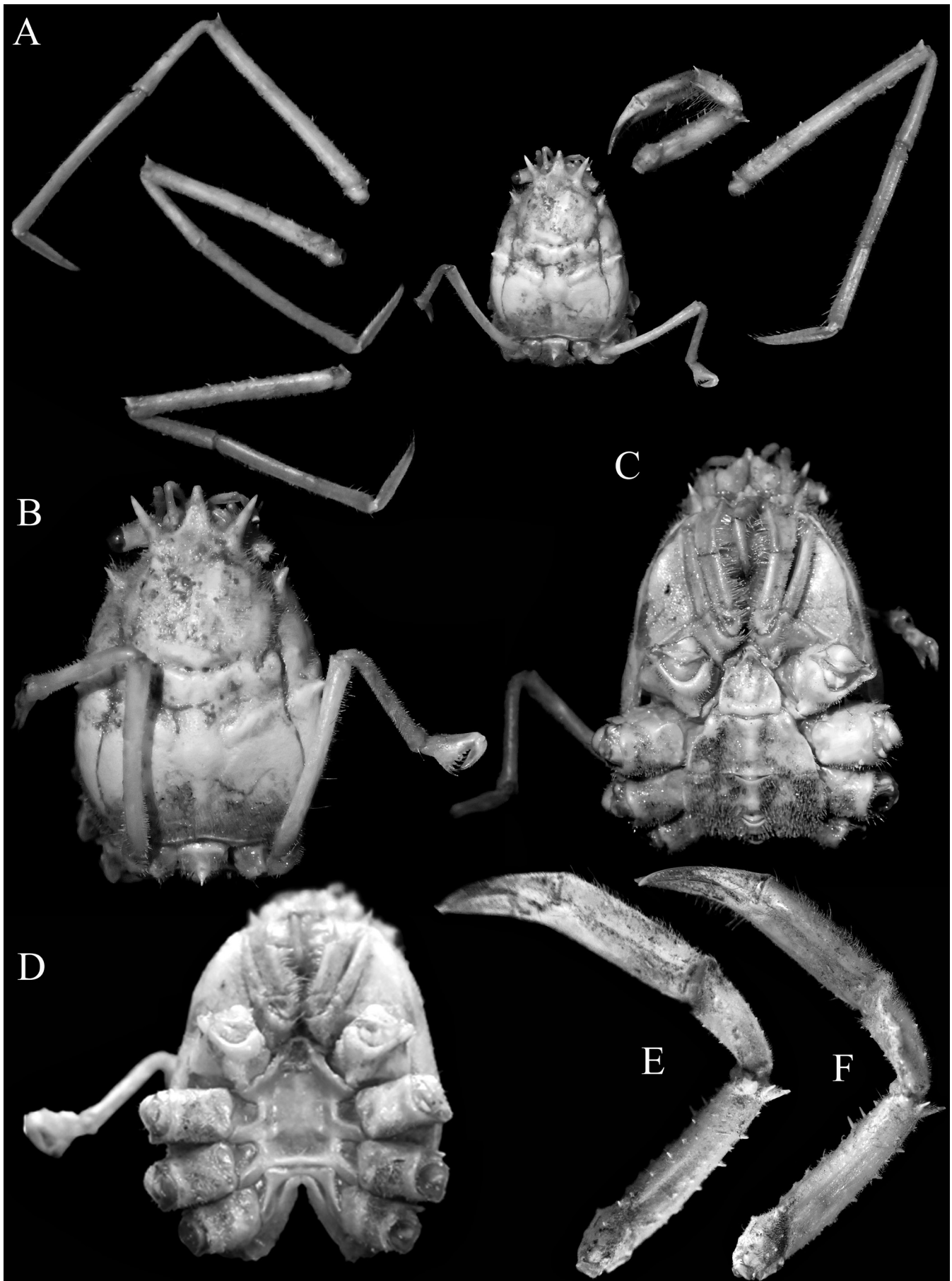


Fig. 4. *Gordonopsis robusta*, new species, paratype female (20.8 x 15.6 mm) (CMLRE IO/SS/BRC/00083), Andaman Sea. A, dorsal overall view; B, dorsal view of carapace and P5 position; C, ventral view of cephalothorax; D, sternopleonal cavity; E, F, inner subdorsal views of right cheliped. Surfaces brushed.

or two tubercles; P4 missing (Figs. 1A, 2F, G). P5 short, oriented dorsally, merus without spines on both margins, just reaching gastric groove when folded anteriorly; carpus long, propodus short, enlarged, forming prominent pseudochela with dactylus curved; distal border of propodus with row of large spine-like setae opposed to similar row on side of dactylus (Fig. 2H–J). Pleon longitudinally ovate, with six free somites and telson, telson triangular with convex lateral margins and sharp tip (Fig. 3A–C). G1 short, stout, distal part prominently narrowed with subtruncate tip (Fig. 3E–H). G2 stout, tubular, length subequal to G1, basal portion slightly dilated, covered with long setae, distal portion cup-shaped (Fig. 3I, J).

Variation. The paratype female is not adult, with the pleon not fully enlarged, not dome-shaped and the pleopods not strongly setose (Fig. 4C). Its rostrum is also proportionately shorter than that of the holotype male (Fig. 4B), being only subequal in length to the lateral pseudorostral spines. The armature on the ambulatory legs of the paratype female are as follow: P2 merus with five spines on upper border, one distal spine, ventral margin with one tubercle; P3 merus with five spines on upper border, one distal spine, ventral margin with one tubercle; and P4 with three spines on upper border, one distal spine, ventral margin unarmed (Fig. 4A). The differences with the holotype male are mainly for the ventral margin, with less spines in the paratype female and this is probably due to its juvenile condition. The chelipeds and P5 of the paratype female (Fig. 4A, B, E, F) agree with the holotype male in most aspects, with small differences in number of spines probably due to its small size. The carpus of the female cheliped has eight short spines on the outer margin with the distalmost one longest while the inner margin has five spines; and the merus has six spines on the outer margin, six short spines on the inner margin and two strong spines on the upper distal margin (Fig. 4A, E, F). The spines in the female are all proportionately shorter and weaker than those of the male.

Etymology. The species name alludes to the overall stouter appearance of the new species, with its wider carapace and proportionately shorter ambulatory legs.

Remarks. *Gordonopsis robusta*, new species, differs from *G. profundorum* s. str. and *G. pacifica* most obviously in possessing a distinctly stouter and proportionately broader carapace with the posterior part clearly wider (Figs. 1B, 4B); in *G. profundorum* and *G. pacifica*, the carapace is more slender and less inflated with the anterior and posterior parts subequal in width (cf. Alcock, 1901: pl. 5, fig. 22; Doflein, 1904: pl. 7, figs. 1, 2; Guinot & Richer de Forges, 1995: figs. 63d–f, 64A; Takeda & Suyama, 2019: fig. 2). The carapace differences cannot be accounted for by size because the paratype female of *G. robusta* is of a similar size to the material reported by Doflein (1904) and Guinot & Richer de Forges (1995), as is the holotype male of *G. robusta*. Another clear difference is the proportionately shorter ambulatory legs (P2–P5) of *G. robusta* (Figs. 1A, 2F–H, J), with the meri in particular stouter and shorter in form with the P5 merus

reaching the gastric groove when folded anteriorly (Figs. 2J, 4B). In *G. profundorum* and *G. pacifica*, the ambulatory legs are prominently longer and when the P5 is folded anteriorly, the merus clearly overreaches the gastric groove, reaching the median gastric regions (cf. Alcock, 1901: pl. 5, fig. 22; Doflein, 1904: pl. 7, figs. 1, 2; Guinot & Richer de Forges, 1995: fig. 63e; Takeda & Suyama, 2019: fig. 2). There are also differences in the degree of setation on the carapace, chelipeds and ambulatory legs as well as armature on the ambulatory meri. The tomentum on the two type specimens of *G. robusta* is dense and partially obscures the surface and margins (Figs. 1, 2) (versus distinctly more glabrous in *G. profundorum*). The degree of tomentum in *G. pacifica* is similar to that of *G. robusta* (cf. Takeda & Suyama, 2019: fig. 3A–D). The dorsal meral armature of the P2–P4 in *G. robusta* is as follows: there are five spines on P2 (Fig. 2F) (versus four in *G. profundorum*; three in *G. pacifica*); five spines on P3 (Fig. 2G) (versus three in *G. profundorum* and *G. pacifica*); and three spines on P4 (Fig. 4A) (versus two or three in *G. profundorum* and *G. pacifica*) (cf. Alcock, 1901: pl. 5, fig. 22; Doflein, 1904: pl. 7, figs. 1, 2; Takeda & Suyama, 2019: 48; P. K. L. Ng & B. Richer de Forges, unpublished data).

Guinot & Richer de Forges (1995) commented that their material from the Maldives, Seychelles, and Madagascar differed from the descriptions and figures of *G. profundorum* s. str. (sensu Alcock & Anderson, 1899; Alcock, 1901; Doflein, 1904) in having a short lateroposterior carapace spine, a less pyriform carapace and relatively longer and more slender ambulatory legs. As such, they preferred to identify their material as “*Gordonopsis* aff. *profundorum*”. Their material (as well as that of Doflein, 1904) is now reappraised as part of the revision of the genus but this does not affect the discussion of the new species.

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