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Research article

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Actaea grimaldii, a new species of reef crab from Papua New Guinea (Crustacea, Brachyura, Xanthidae)

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Abstract. A new species of xanthid crab, *Actaea grimaldii*, is described from the coral reefs of Papua New Guinea. This species has a distinctive red and white coloration and is closest to *Actaea spinosissima* Borradaile, 1902, from the Indian Ocean. However, the new species can be distinguished by the arrangement of spines on the carapace, chelipeds and ambulatory legs, and the structure of the male gonopods. *Actaea grimaldii* sp. nov. has also been confused with *A. polyacantha* (Heller, 1861), but differs markedly in the carapace armature.

Keywords. Crustacea, Xanthidae, Papua New Guinea, *Actaea*, new species.

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Introduction

In the 1970–1990s, extensive marine biology field work was carried out on the north coast of Papua New Guinea: at Laing Island, in Hansa Bay, at King Leopold III Biological Station, and in the Madang Lagoon, at a facility run by the Christensen Foundation. Several authors (e.g., Gosliner 1992; Thomas 1996) highlighted the exceptionally high species richness of Madang Lagoon, which became a famous place in marine biodiversity lore. Both King Leopold III Biological Station and the Christensen Foundation facility ceased operations in the mid-1990s, and, as a result, marine biologists essentially stopped research activities on the north coast of Papua New Guinea. However, in 2012 a large expedition, under the “Our Planet Reviewed” programme, was hosted on the campus of the Divine Word University in Madang. A new wave of novel marine species descriptions (e.g., Fricke 2014; Rubio & Rolán 2014; Summers *et al.* 2014; Ng & Anker 2014; Meyer-Wachsmuth *et al.* 2014; Macpherson & Robainas-Barcia 2015) was generated by this multinational expedition which lasted two months and involved 110 participants. Many more reports await publication. Between November 30 and December 2, 2012, the expedition was

visited by Prince Albert II of Monaco, whose Foundation had made the expedition possible. During his visit, the Prince was presented with a species of xanthid crab that, pending confirmation then, appeared new to science. Its colour pattern was similar to the colours of the armorial of the Grimaldi family and, with the Prince's approval, we offered to name the species after his family if it was confirmed to be new. The purpose of the present paper is to describe this new species of *Actaea* De Haan, 1833.

Actaea (type species *Cancer granulatus* Audouin, 1826; see Guinot & Cleva 2009) is a xanthid genus typically associated with tropical coral reefs and currently containing 31 species (updated from Ng *et al.* 2008). The genus has been studied by Odhner (1925), Guinot (1968, 1969, 1976) and Serène (1984) (see also Guinot & Low 2010). However, many *Actaea* species are not well known, and a revision of *Actaea s. str.* is needed. One poorly known species is *Actaea spinosissima* Borradaile, 1902, originally described from the Indian Ocean. This species has also been reported from Australia and the Moluccas in eastern Indonesia by Odhner (1925) and Serène (1984), respectively. Examination of the type of *A. spinosissima* shows that a series of specimens from Papua New Guinea, as well as Serène's (1984) specimen, should be referred to a new species, here named *A. grimaldii*.

Material and methods

Material examined is deposited in:

- Muséum national d'Histoire naturelle, Paris, France (MNHN);
- Zoology Museum of Cambridge University, United Kingdom (CUMZ);
- Zoological Reference Collection of the Lee Kong Chian Natural History Museum (ex Raffles Museum of Biodiversity Research), National University of Singapore (ZRC).

The abbreviations G1 and G2 refer to the male first and second gonopods, respectively. Measurements provided (in millimetres) are of the maximum carapace width and length, respectively. The terminology for the carapace regions follows that proposed by Dana (1852) (see also Serène 1984: fig. C).

Results

Infraorder Brachyura Latreille, 1802
Superfamily Xanthoidea MacLeay, 1838
Family Xanthidae MacLeay, 1838
Subfamily Actaeinae Alcock, 1898

Genus *Actaea* De Haan, 1833

Remarks

Although the subfamily Actaeinae has been well studied by many authors, one name that was missed by most revisors is *Actaeodius* Klunzinger, 1913. For instance, the name is not listed in the revisionary studies and compilations by Serène (1984) and Ng *et al.* (2008). Klunzinger (1913: 231) established *Actaeodius* (as “*Actäodius*”) when discussing the taxonomy of *Actaea fragifera* (White, 1848) and *A. polyacantha* (Heller, 1861). He decided that these names were synonyms and described and illustrated the species as “*Actäodius fragifer*”. Guinot (1976: 236–237) followed and treated Klunzinger's “*Actäodius fragifer*” as a synonym of *Actaea polyacantha*. The status of the genus, however, has not been discussed. Although Klunzinger (1913) did not specifically state which was the type species of *Actaeodius*, his synonymy of the two treated species means that *Chlorodius fragifer* White, 1848 is the type species of the genus by monotypy. Currently, the two species are regarded as distinct species of *Actaea s. str.* (see Odhner 1925; Guinot 1976; Ng *et al.* 2008).

Actaea grimaldii sp. nov.

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Figs 1–5

Actaea peronii var. *squamosa* – Calman 1900: 10 (not *Actaea squamosa* Henderson, 1893).

Actaea spinosissima – Odhner 1925: 59 (part). — Serène 1984: 115, pl. 14F. — Davie 2002: 511 (not *Actaea spinosissima* Borradaile, 1902).

Diagnosis

Anterior surfaces of carapace regions (1M, 2M, 3M, 2L, 5L) covered with numerous short sharp spines and sharp tubercles of varying sizes, 2M and 2L surface gently convex, not distinctly inflated in frontal view, 2M separated by median longitudinal groove anteriorly, 4M lunate, with sharp granules; 1P flattened, divided into many smaller regions by shallow grooves, with distinct transverse groove on anterior third, confluent with series of flattened granules on 3R, 2R and 1R (Figs 1, 2A, 3A, 4A); frontal margins lined by sharp granules, 1F and 2F with many sharp spines which project anteriorly, hiding frontal margin from dorsal view (Figs 1, 2A–B, 3A–B, 4A); anterolateral margin with 4 spines (excluding external orbital spine), each with smaller spine or spines basal to it on sub-branchial surface (Figs 1, 2A, 3A, 4A); suborbital and subhepatic regions covered with numerous small, sharp granules (Figs 2B, 3B); third maxilliped with outer surfaces pitted (Fig. 5A); outer surfaces of chelipeds with numerous sharp spines and sharp tubercles, with small, sharp granules interspersed, carpus ovate, inner angle with several short, slightly curved spines, outer surface of chela with strong spines, inner surface of chela with median spine and several smaller sharp tubercles and granules (Figs 1, 2A, C–D, 3A, C–D); ambulatory legs short, outer surfaces of merus, carpus and propodus covered with sharp tubercles or granules, dorsal margins of merus, carpus and dactylus with numerous sharp spines, ventral margin of dactylus with subterminal tubercle, with scattered long, simple setae, some of which extend beyond tip of dactylus (Figs 1, 2A, 3A, 4C); thoracic sternum with surface distinctly pitted (Figs 1B, 5B); male abdomen longitudinally narrow, surfaces of sternites 1–3 pitted (Fig. 5C); G1 elongate, gently sinuous, distal part curves upwards (Fig. 5D–F).

Etymology

The species name is in honour of His Serene Highness Albert II, Prince of Monaco, patron of the PAPUA NIUGINI Expedition and several other biodiversity expeditions of the “Our Planet Reviewed” programme conducted by MNHN and Pro-Natura International. The red and white colour pattern of the new species also alludes to the colours associated with the House of Grimaldi.

Type material

Holotype

PAPUA NEW GUINEA: Madang District, Expedition PAPUA NIUGINI, stn PB35, outer slope, south of Sek Is., 05°07.0'S 145°49.4'E, 12 m, 4 Dec. 2012, 1 ♂, 6.2 × 4.4 mm (MNHN IU 2013-921).

Paratypes

PAPUA NEW GUINEA: same data as holotype, 1 ♂, 5.1 × 3.8 mm (ZRC, ex MNHN IU 2013-920); Madang District, Expedition PAPUA NIUGINI, stn PR17, west of Kranket Is., 05°11.8'S 145°48.8'E, 15 m, 11 Nov. 2012, 1 ♀, 10.2 × 7.8 mm (ZRC, ex MNHN IU 2013-1245); Expedition PAPUA NIUGINI, stn PR05, Kranket Is., 05°11.3'S 145°49.6'E, 7 Nov. 2012, 1 ♀, 8.5 × 6.2 mm (MNHN IU 2013-222); Expedition PAPUA NIUGINI, stn PB28, east of Kranket Is., 05°11.9'S 145°49.6'E, 10 m, 24 Nov. 2012, 1 young ♀, 6.7 × 4.9 mm (MNHN IU 2013-759).

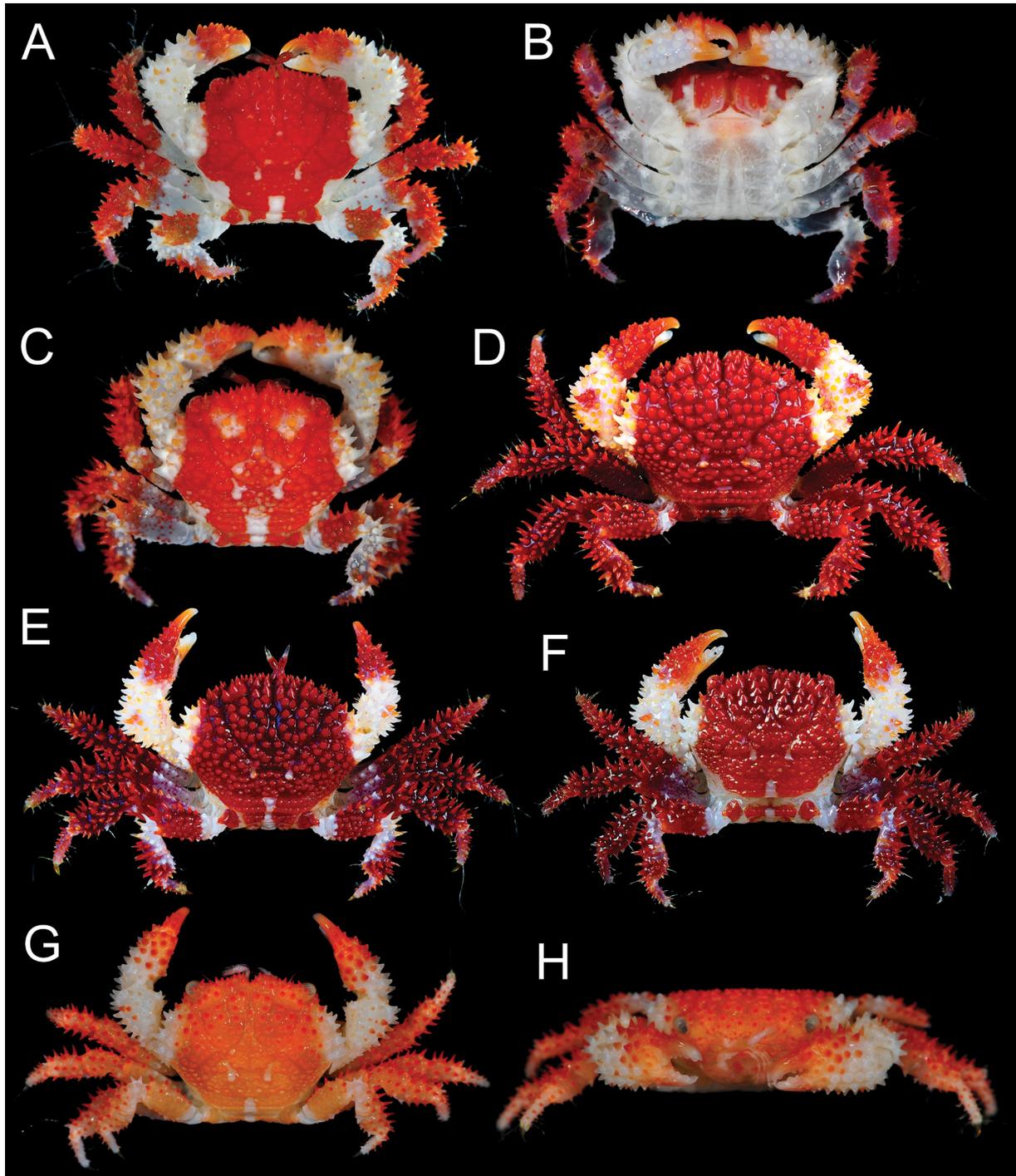


Fig. 1. *Actaea grimaldii* sp. nov., Papua New Guinea, colours in life. **A–B.** Paratype, ♂, 5.1 × 3.8 mm (ZRC, ex MNHN IU 2013-920). **C.** Holotype, ♂, 6.2 × 4.4 mm (MNHN IU 2013-921). **D.** Paratype, ♀, 10.2 × 7.8 mm (ZRC, ex MNHN IU 2013-1245). **E.** Paratype, ♀, 8.5 × 6.2 mm (MNHN IU 2013-222). **F.** Paratype, ♀, 6.7 × 4.9 mm (MNHN IU 2013-759). **G–H.** Paratype, ♀, 6.4 × 4.9 mm (ZRC, ex MNHN IU 2013-1255). **A–G,** dorsal views of habitus; **B,** ventral view of habitus; **H,** frontal view of habitus.

Comparative material

Actaea spinosissima Borradaile, 1902

MALDIVES: Mahlos Atoll, 23 fathoms, J.S. Gardiner coll., holotype, ♂, 5.1 × 3.4 mm (juvenile, no gonopods) (CUMZ I.63106).

BRITISH INDIAN OCEAN TERRITORY: Great Chagos Bank, stn CH0666, outer reef, among dead branching coral heads, 10 m, Brothers Island, C. Head & H. Koldewey coll., 28 Feb. 2013, 1 ♂, 8.9 × 6.6 mm (ZRC).

Actaea polyacantha (Heller, 1861)

GUAM: southwest of Orote Peninsula, G. Paulay coll., 15–18 Apr. 2000, 1 ♀ (ZRC 2000.731).

PAPUA NEW GUINEA: Expedition PAPUA NIUGINI, stn PB17, outer slope, Sek Is., 05°04.9'S 145°49.3'E, 26 m, 14 Nov. 2012, 1 ♀, 6.4 × 4.9 mm (ZRC, ex MNHN IU 2013-1255).

Actaea peronii (H. Milne Edwards, 1834)

AUSTRALIA: New South Wales, M. Ward coll., 2 ♀♀ (ZRC 1969.12.27.3–4).

Description

Regions well demarcated, separated by distinct grooves, anterior surfaces (notably 1M, 2M, 3M, 2L, 5L) covered with numerous spines and sharp tubercles of varying sizes; 2M and 2L surface gently convex, does not appear inflated in frontal view; 2M separated by median longitudinal groove anteriorly; 3M subtriangular, with sharp spines; 4M lunate, with sharp granules; 1P flattened, divided into many smaller regions by shallow grooves, with distinct transverse groove on anterior third, confluent with series of flattened granules on 3R, 2R and 1R; 2O transversely narrow, low; 2P raised, surface rounded (Figs 1, 2A, 3A, 4A). Frontal margin bilobate, lobes separated by broad, U-shaped cleft; margins lined by sharp granules; 1F and 2F with many sharp spines which project anteriorly, hiding frontal margin from dorsal view (Figs 1, 2A–B, 3A–B, 4A). Supraorbital margin with 3 distinct spines; orbit short, ovate; eye completely filling orbit; peduncle short, stout, with several dorsal granules; cornea large, with granule basally (Figs 2A–B, 3A–B, 4A–B). Anterolateral margin arcuate, with 4 spines (excluding external orbital spine), each with smaller basal spine or spines on sub-branchial surface; posterolateral margin gently concave, surfaces covered with small, flattened granules; posterior carapace gently sinuous, lined with small, flattened granules (Figs 1, 2A, 3A, 4A).

Suborbital margin with 5 or 6 small spines; suborbital and subhepatic regions covered with numerous small, sharp granules; pterygostomial region almost smooth (Figs 1H, 2B, 3B). Antennules folding laterally (Figs 2B, 3B). Antenna with basal article quadrate, with 1 large and 1 small, sharp granule, mobile; flagellum short, at base of orbital hiatus (Figs 2B, 3B). Epistome transversely rectangular; anterior margin granulated; posterior margin with prominent median triangle, lateral margins sinuous (Figs 2B, 3B).

Third maxilliped relatively short; outer surfaces pitted; ischium subrectangular, with shallow but distinct submedian sulcus, inner margin dentate; merus quadrate, distolateral angle not distinctly auricular; exopod stout, distal end reaching to distolateral edge of merus, flagellum elongate, as wide as merus (Fig. 5A).

Chelipeds slightly asymmetrical; outer surfaces with numerous sharp spines and sharp tubercles, with small, sharp granules interspersed; inner and outer surfaces with scattered short, simple setae (Figs 1, 2A, C–D, 3A, C–D). Basis-ischium lined with small granules. Merus short, rounded; dorso-distal spine largest. Carpus ovate, inner angle with several short, curved spines (Figs 1, 2A, 3A). Chelae short, stout, palm longer than fingers, not pigmented black or dark brown; inner surface with median spine and several smaller sharp tubercles and granules (Figs 2C–D, 3C–D). Pollex with 2 low, longitudinal ridges, 1 submedian groove; cutting edge with 3 or 4 large, blade-like teeth; tip subspatuliform (Figs 2C–D,

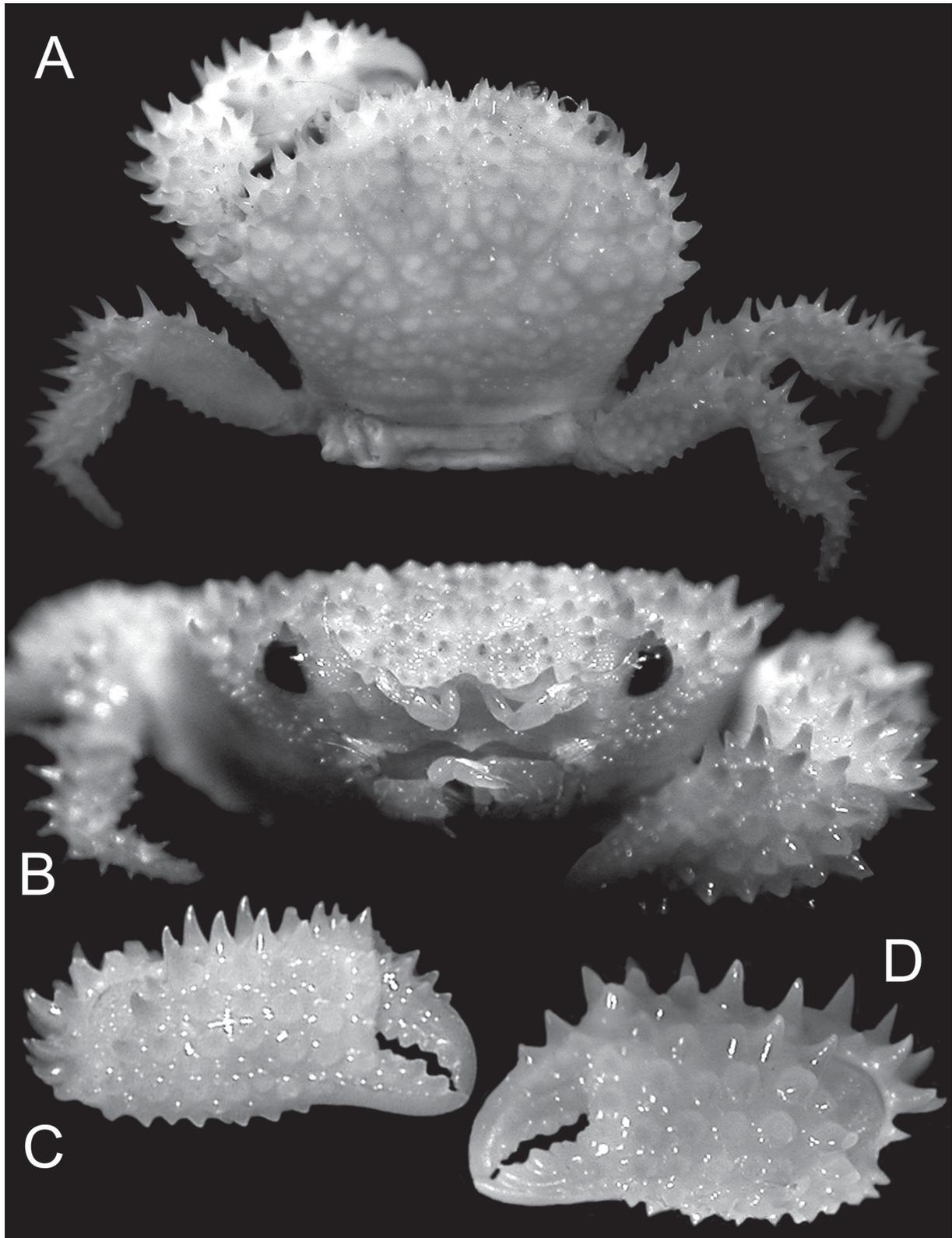


Fig. 2. *Actaea grimaldii* sp. nov., holotype, ♂, 6.2 × 4.4 mm (MNHN IU 2013-921), Papua New Guinea. **A.** Dorsal view of habitus. **B.** Frontal view of carapace. **C.** Outer view of right chela. **D.** Outer view of left chela.

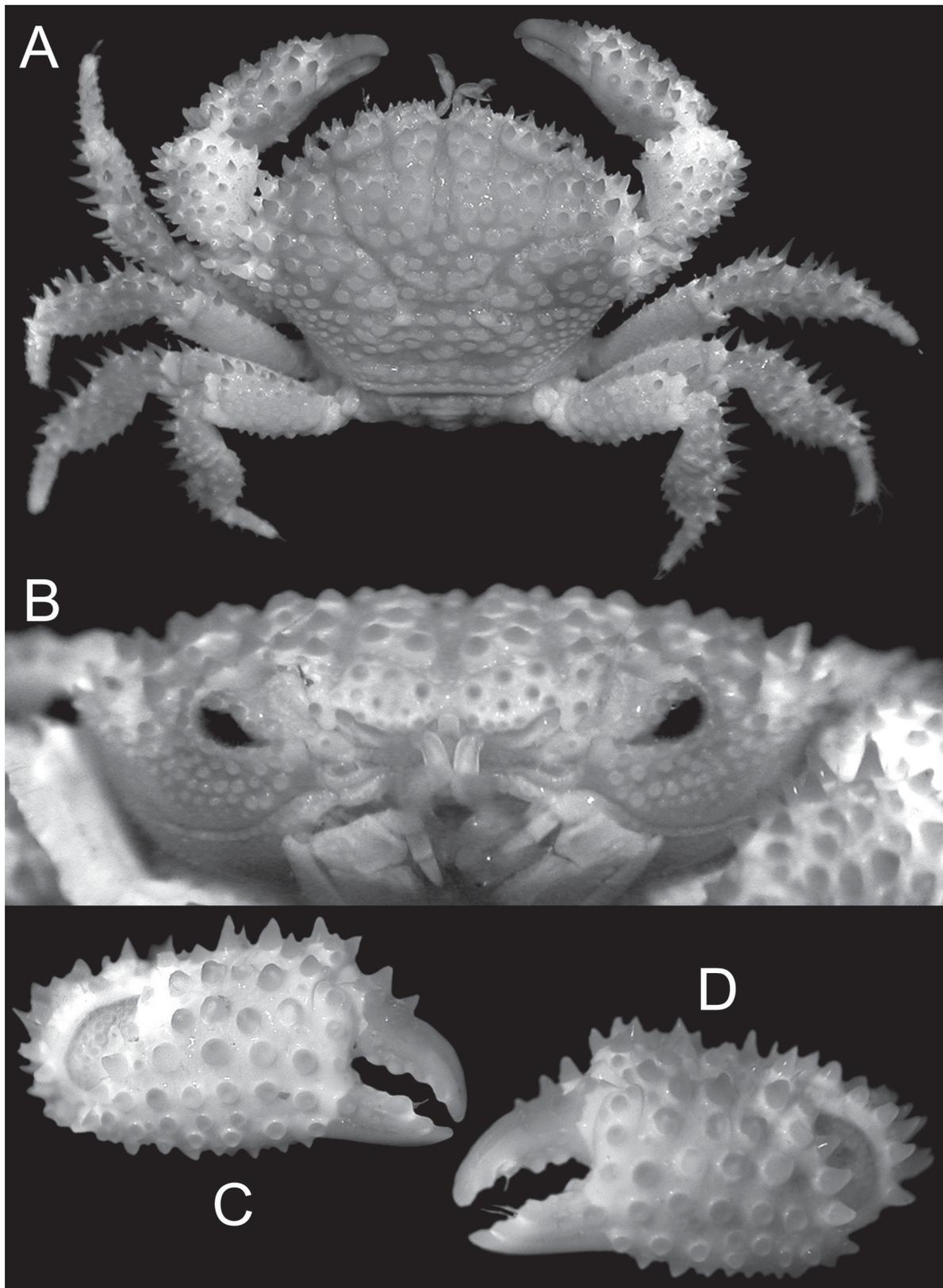


Fig. 3. *Actaea grimaldii* sp. nov., paratype, ♀, 10.2 × 7.8 mm (ZRC, ex MNHN IU 2013-1245), Papua New Guinea. **A.** Dorsal view of habitus. **B.** Frontal view of carapace. **C.** Outer view of right chela. **D.** Outer view of left chela.

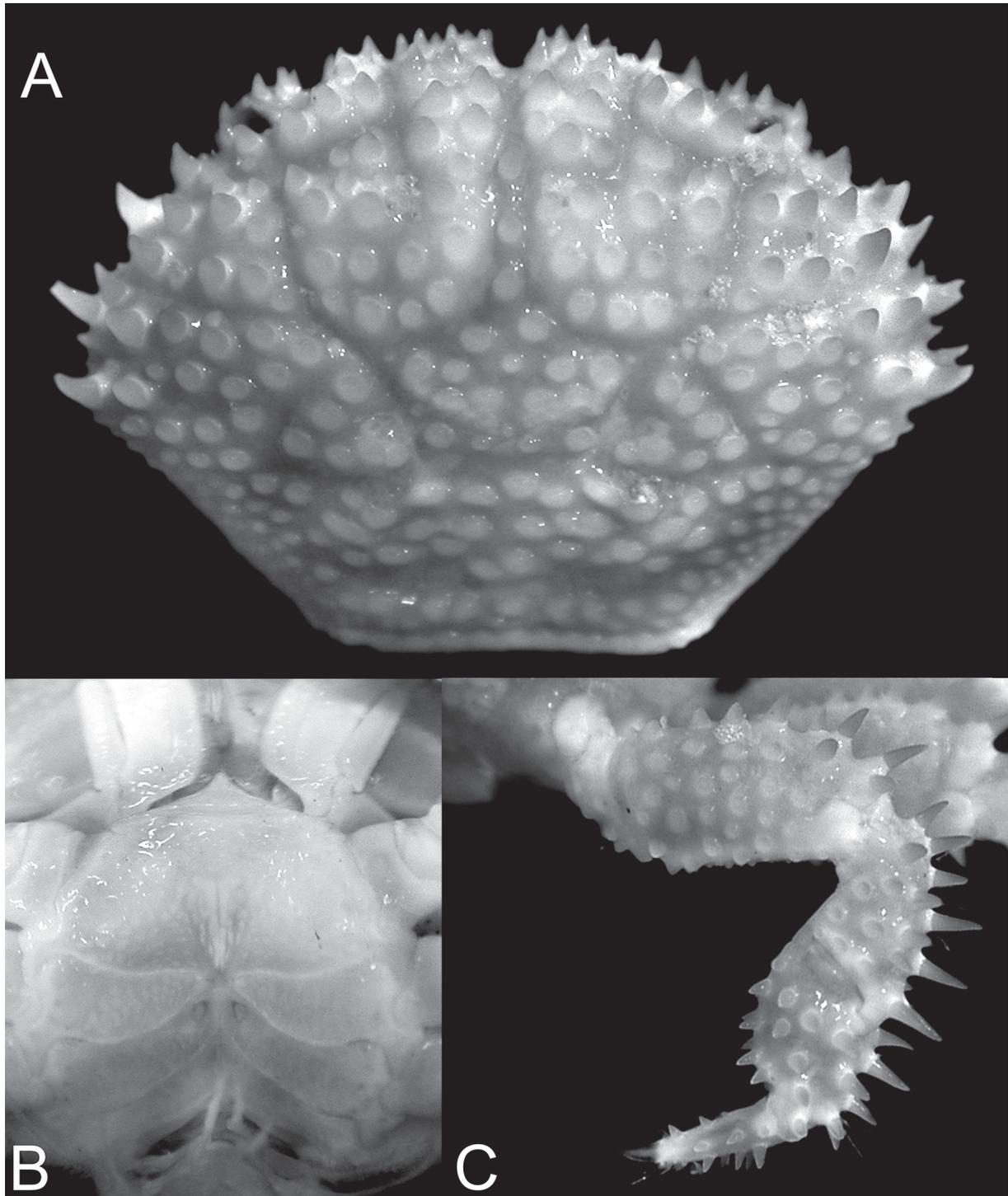


Fig. 4. *Actaea grimaldii* sp. nov., paratype, ♀, 10.2 × 7.8 mm (ZRC, ex MNHN IU 2013-1245), Papua New Guinea. **A.** Dorsal view of carapace. **B.** Thoracic sternum showing vulvae. **C.** Right fourth ambulatory leg.

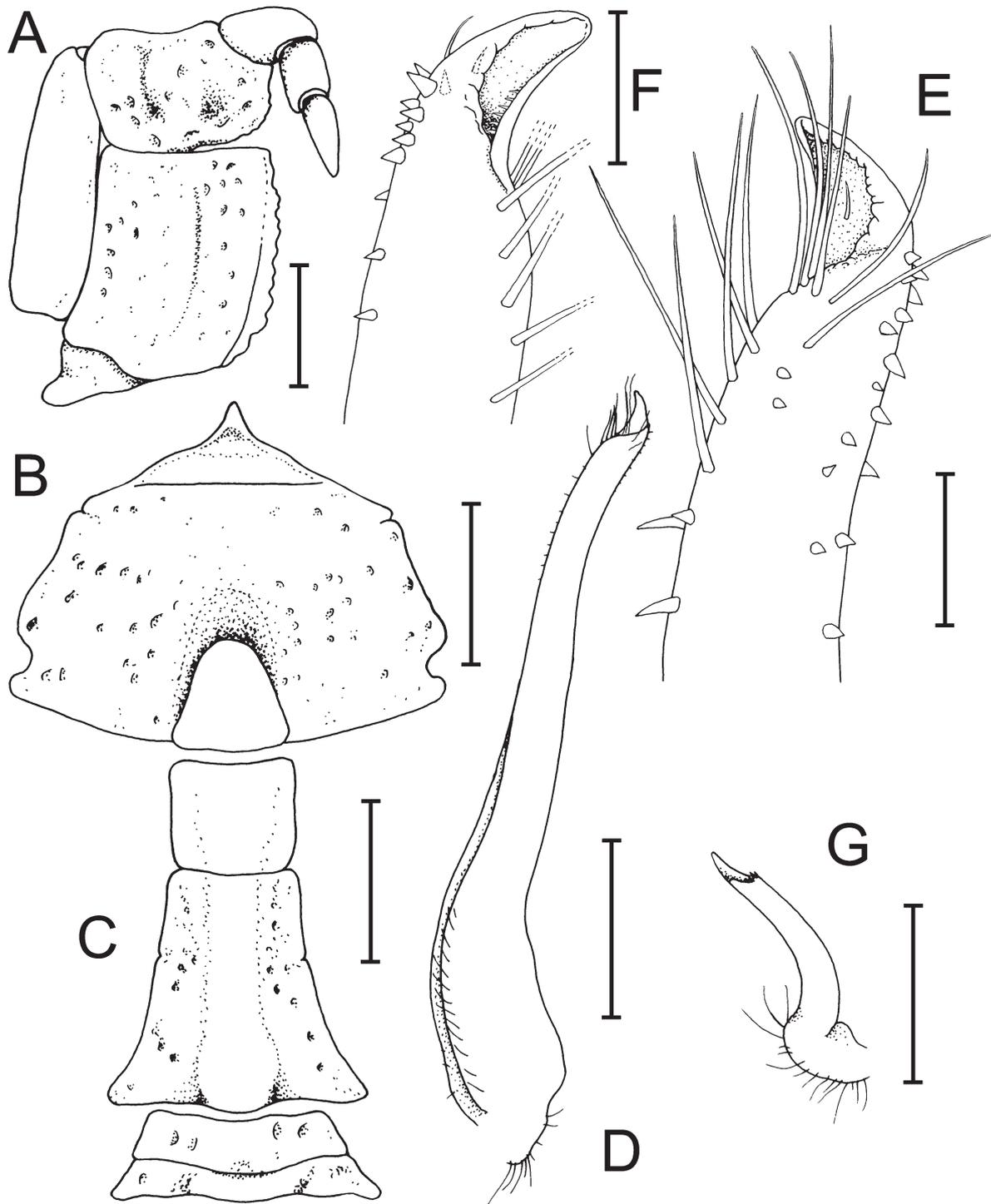


Fig. 5. *Actaea grimaldii* sp. nov., holotype, ♂, 6.2 × 4.4 mm (MNHN IU 2013-921), Papua New Guinea. **A.** Right third maxilliped (setae not drawn). **B.** Anterior thoracic sternum (sternites 1–4) and telson. **C.** Abdominal somites 1–6. **D.** Ventral view of left G1. **E.** Ventral view of distal part of left G1. **F.** Dorsal view of distal part of left G1. **G.** Left G2. Scale bars: A, D, G = 0.5 mm; B–C = 1.0 mm; E–F = 0.1 mm.

3C–D). Dactylus with 1 distinct low, longitudinal ridge, 1 submedian groove; upper margin with 2–4 spines on proximal half, cutting edge with 2 larger teeth on proximal half, distal half with 2 or 3 low teeth; tip subspatuliform (Figs 2C–D, 3C–D).

Ambulatory legs short, stout; second pair longest; fourth pair shortest (Figs 1, 3A). Basis-ischium lined with small granules. Outer surfaces of merus, carpus and propodus covered with sharp tubercles or granules (Figs 1, 2A, 3A, 4C). Merus with dorsal margin armed with numerous sharp spines which gradually become smaller proximally, distal one largest; ventral margin lined with small, sharp granules (Figs 1, 2A, 3A, 4C). Dorsal margins of carpus and propodus with several sharp spines; ventral margin of carpus with sharp granules; ventral margin of propodus with sharp spines (Figs 1, 2A, 3A, 4C). Dactylus gently curved, surface covered with small, sharp granules; ventral margin with relatively larger subterminal tubercle; tip corneous; surfaces with scattered long, simple setae, those on second to third legs may be very long, extending well beyond tip of dactylus (Figs 1, 2A, 3A, 4C). Dactylo-propodal lock well developed; distal margin of propodus with rounded median projection that overlaps ball-like swelling on proximal margin of dactylus (Fig. 4C).

Thoracic sternum with surface distinctly pitted (Figs 1B, 5B). Thoracic sternites 1 and 2 completely fused; sternites 2 and 3 separated by distinct transverse suture; sternites 3 and 4 completely fused except for lateral cleft (Figs 1B, 5B). Sternoabdominal cavity deep, reaching to median part of sternite 4 (Figs 1B, 5C). Male abdominal locking mechanism a knob-like process, on anterior third of sternite 5.

Male abdomen longitudinally narrow; surfaces of sternites 1–5 pitted (Fig. 5C). Somites 1 and 2 trapezoidal, completely covering surfaces of thoracic sternum between coxae of last pair of ambulatory legs, sternite 8 completely covered; somites 3–5 completely fused, median sutures not discernible; lateral margins concave; somite 6 rectangular, lateral margins gently sinuous, slightly longer than telson; telson triangular, lateral margins gently sinuous, tip rounded (Fig. 5C).

G1 elongate, gently sinuous, distal part curves upwards, subdistal surfaces with numerous long setae and spinules (Fig. 5D–F). G2 short, c. quarter of length of G1; proximal part sinuous, distal part spatuliform (Fig. 5G).

Females and variation

The females agree with the males in almost all non-sexual characters. A female measuring 6.7×4.9 mm (MNHN IU 2013-759) is still immature, with the abdomen triangular in shape. An adult female, 10.2×7.8 mm (pleopods fully setose, ZRC, ex MNHN IU 2013-1245), has an ovate abdomen that covers about half the surface of the thoracic sternum. The vulvae are small, positioned on the anterior half of sternite 6 submedially and each has a distinct opercular cover in the form of a narrow plate (Fig. 4B). There is hardly any variation in the diagnostic characters, although some of the specimens (e.g., ZRC, ex MNHN IU 2013-1245) are twice the size of the smaller crabs (e.g., ZRC, ex MNHN IU 2013-920).

The long, simple setae on the ambulatory legs are easily broken, and while obvious in fresh specimens (Fig. 1), they are often lost in preserved material. The holotype male has a developed G1 (Fig. 5D–F) but does not appear to be fully mature. While the setae on the subdistal part of the G1 are long (Fig. 5E–F), they are simple and not plumose as is typical for actaeine gonopods (cf. Guinot 1976).

Colour

In life (Fig. 1), the colour is a striking bright orange to red across the median part of the carapace, with the lateral regions white. There may be patches of white on the gastric and adjacent regions in smaller specimens. The legs are banded red and white, and the chelipeds are red and white, with parts yellowish-white in colour. The fingers of the chela are reddish-orange basally and white at the tips. The ventral surfaces are white, but abdominal somites 1 and 2 may have large patches of red.

Distribution

This species is known for certain from the Moluccas and Papua New Guinea, and is probably also present in Australia.

Discussion

There are a group of *Actaea* species which have numerous small and large spines on their dorsal carapace surface, chelipeds and/or legs: *A. calculosa* (H. Milne Edwards, 1834) (= *Euxanthus tuberculatus* Miers, 1884), *A. catalai* Guinot, 1976, *A. flosculata* Alcock, 1898, *A. fragifera* (White, 1848), *A. glandifera* Rathbun, 1914, *A. hystrix* Miers, 1886, *A. occidentalis* Odhner, 1925, *A. peronii* (H. Milne Edwards, 1834), *A. perspinosa* Borradaile, 1902, *A. petalifera* Odhner, 1925, *A. polyacantha* (Heller, 1861) (= *Xantho spinosus* Hess, 1865), *A. spinosissima* Borradaile, 1902, and *A. squamulosa* Odhner, 1925 (see Guinot 1976: pls 12–14; Serène 1984: pl. 14D–F).

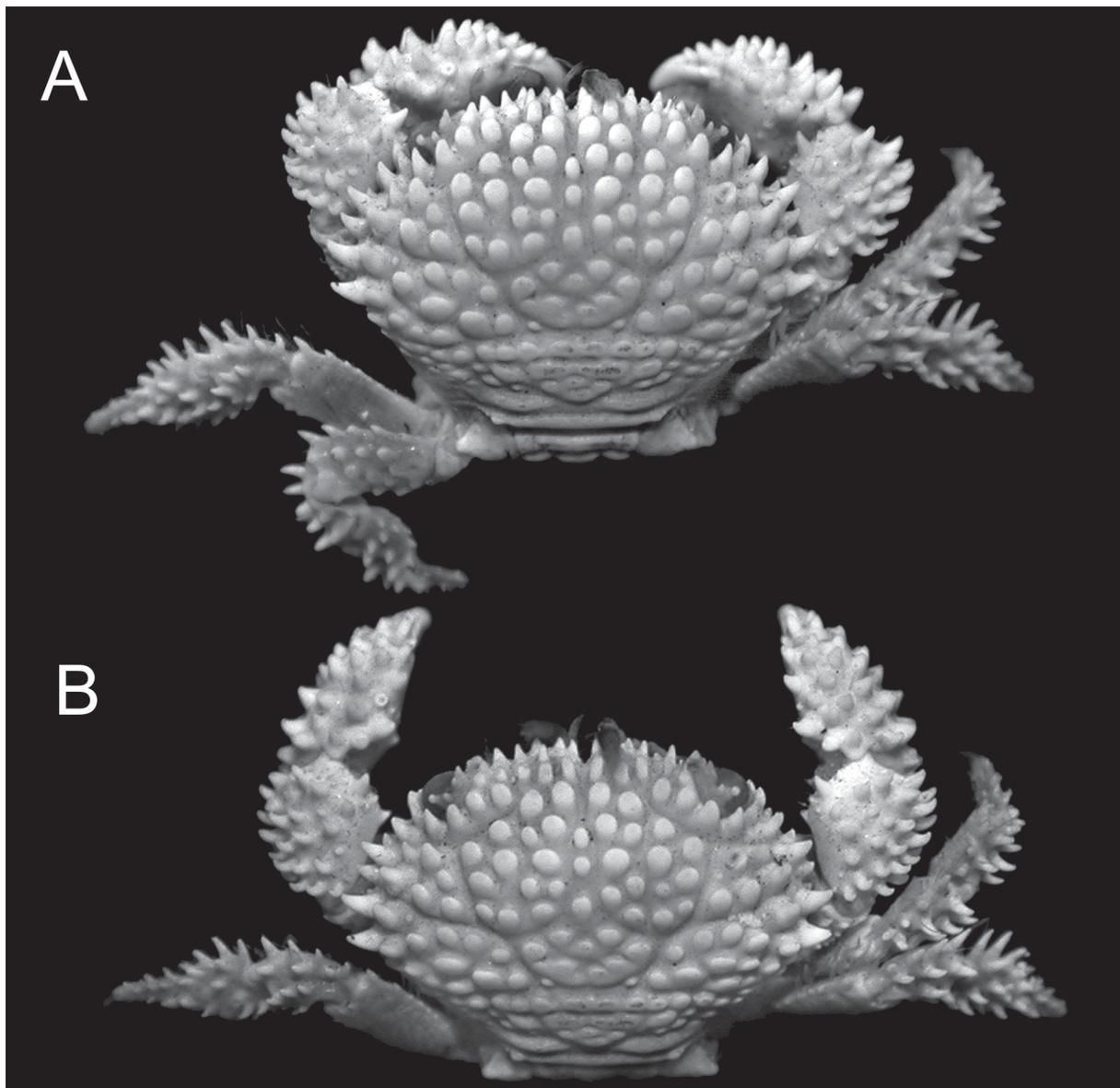


Fig. 6. *Actaea spinosissima* Borradaile, 1902, holotype, ♂, 5.1 × 3.4 mm (CUMZ I.63106). Dorsal view of habitus, photographed from slightly different angles.

The present new species, however, has distinct anterolateral spines (not granulated or spiniform lobes), a character shared only with *A. flosculata*, *A. fragifera*, *A. glandifera*, *A. perspinosa*, *A. polyacantha*, *A. spinosissima* and *A. squamulosa* (cf. Guinot 1976: pl. 13, figs 2, 4–7, pl. 14, fig. 3). *Actaea squamulosa* is distinctive in that it has short anterolateral spines and only low granules and rugosities on the dorsal carapace surface, and has very stout cheliped fingers (Guinot 1976: pl. 13, figs 7–8). As to the 1L, 3L and 4L of the carapace possessing sharp spines, the new species shares this character with *A. glandifera*, *A. perspinosa*, *A. polyacantha* and *A. spinosissima*.

With regard to the general carapace facies and armature, *A. grimaldii* sp. nov. is most similar to *A. polyacantha* (cf. Guinot 1976: pl. 13, fig. 6) and *A. spinosissima* (cf. Borradaile 1902: fig. 55; Odhner 1925: pl. 4, fig. 4; present Figs 5–6). *Actaea polyacantha*, however, has the granules on 1M, 2M and 3M flattened, low and rounded (cf. Guinot 1976: pl. 13 fig. 6); these areas have spiniform granules and spines in *A. grimaldii* sp. nov. In addition, their G1 structures are quite different. The distal part of the G1 in *A. polyacantha* is formed into a pronounced lobe (Guinot 1976: fig. 40B, b) but in *A. grimaldii* sp. nov., the distal part of the G1 is turned upwards and tapers gradually to a sharp tip (Fig. 5E–F).

The identity of *A. spinosissima* Borradaile, 1902 is more problematic and its G1 structure has not been figured before. *Actaea spinosissima* s. str. is now known for certain only from the western Indian

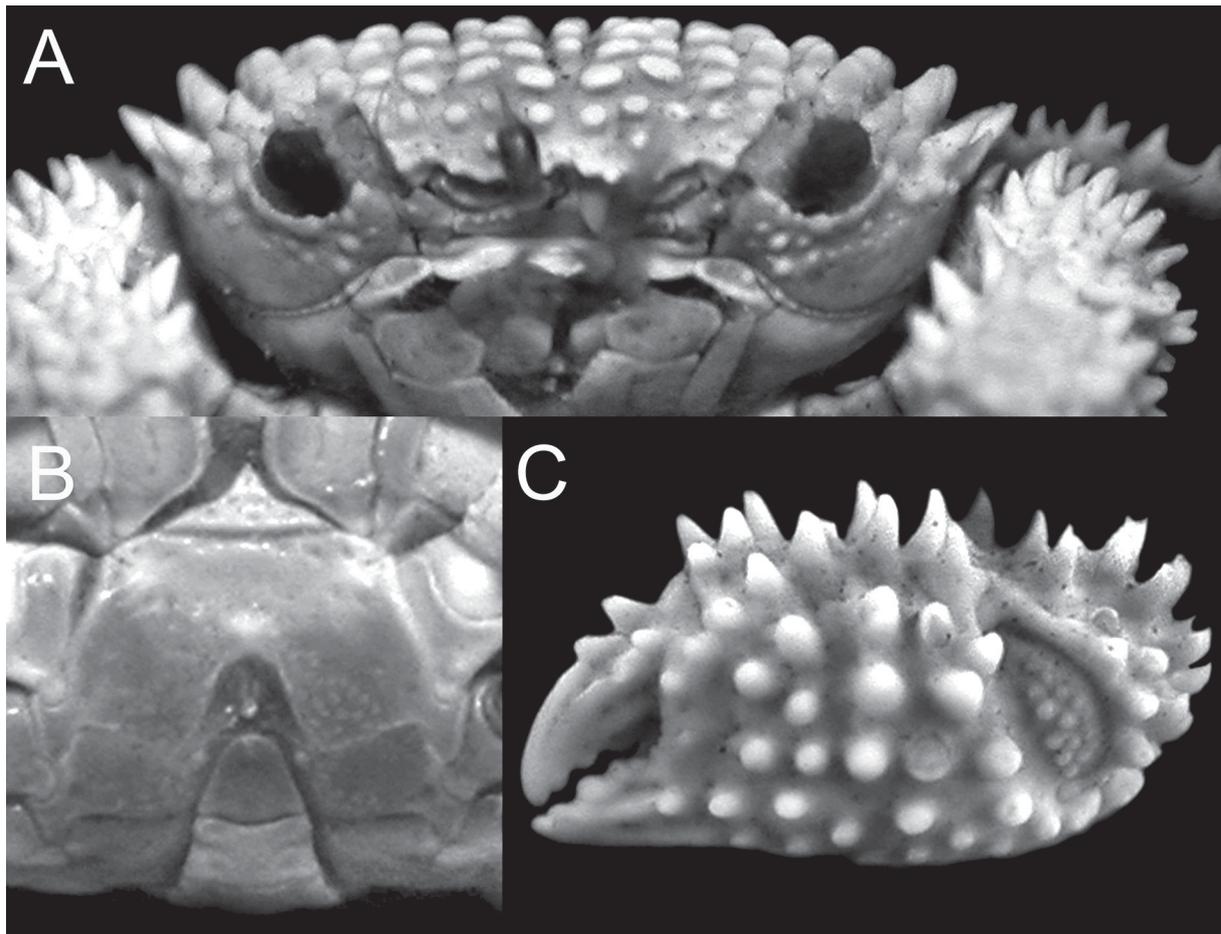


Fig. 7. *Actaea spinosissima* Borradaile, 1902, holotype, ♂, 5.1 × 3.4 mm (CUMZ I.63106), Maldives. **A.** Frontal view of carapace. **B.** Anterior thoracic sternum (sternites 1–4), telson and abdominal somite 6. **C.** Outer view of left chela.

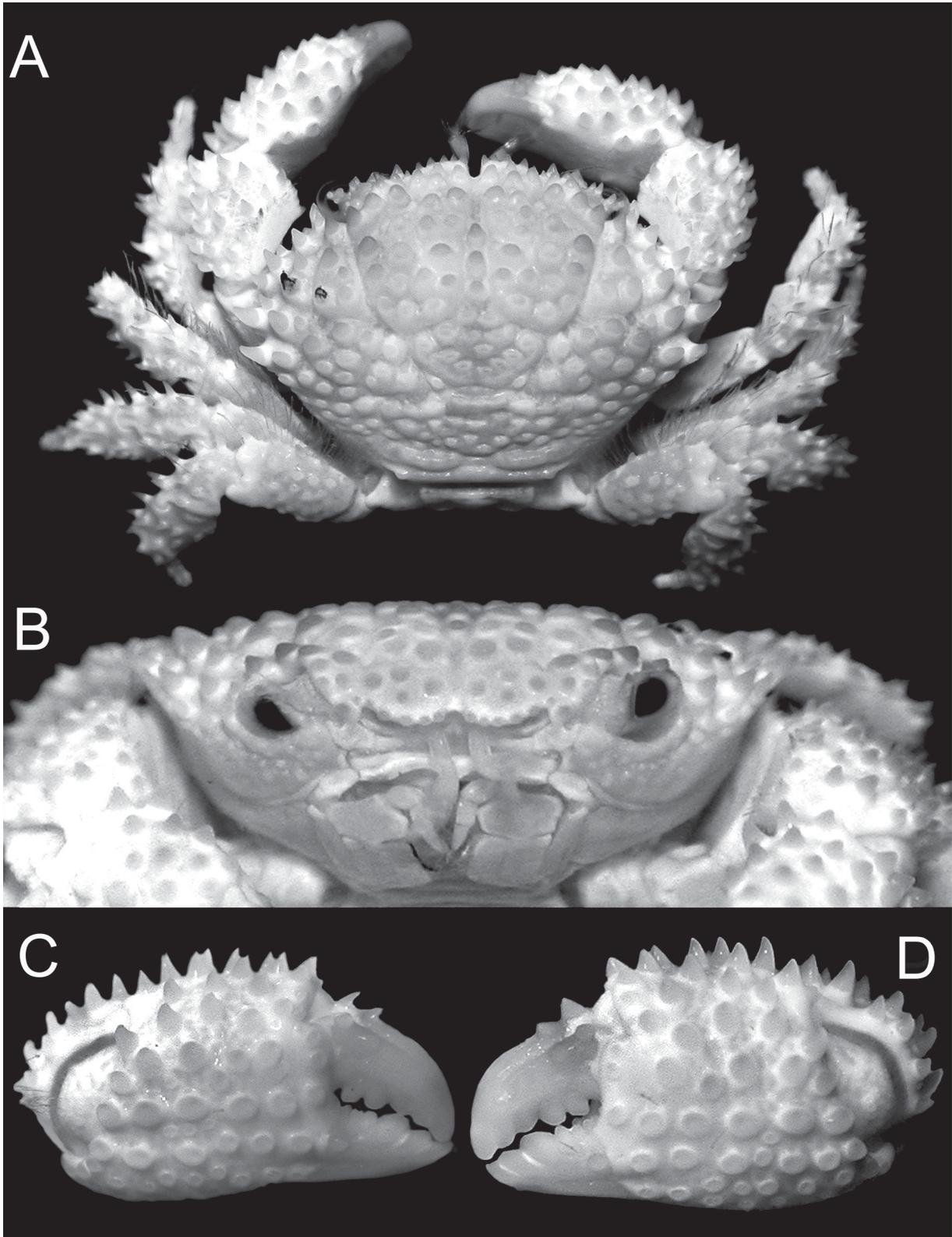


Fig. 8. *Actaea spinosissima* Borradaile, 1902, ♂, 8.9 × 6.6 mm (ZRC), Chagos Islands **A.** Dorsal view of habitus. **B.** Frontal view of carapace. **C.** Outer view of right chela. **D.** Outer view of left chela.

Ocean. Described from the Maldives by Borradaile (1902: 256, fig. 55), it was recorded again shortly after that by Rathbun (1902: 128) who also found two juveniles from these islands. Rathbun (1911) subsequently recorded another juvenile female from Cargados Carajos islands in Mauritius in the western Indian Ocean, but provided no figures. Serène (1984: 114) noted that the record of a male specimen of “*A. spinosissima*” from St. Brandon in Mauritius by Ward (1942: 87) is *A. polyacantha* instead. Whether this also includes Rathbun’s (1911) specimens cannot be ascertained. The other records of

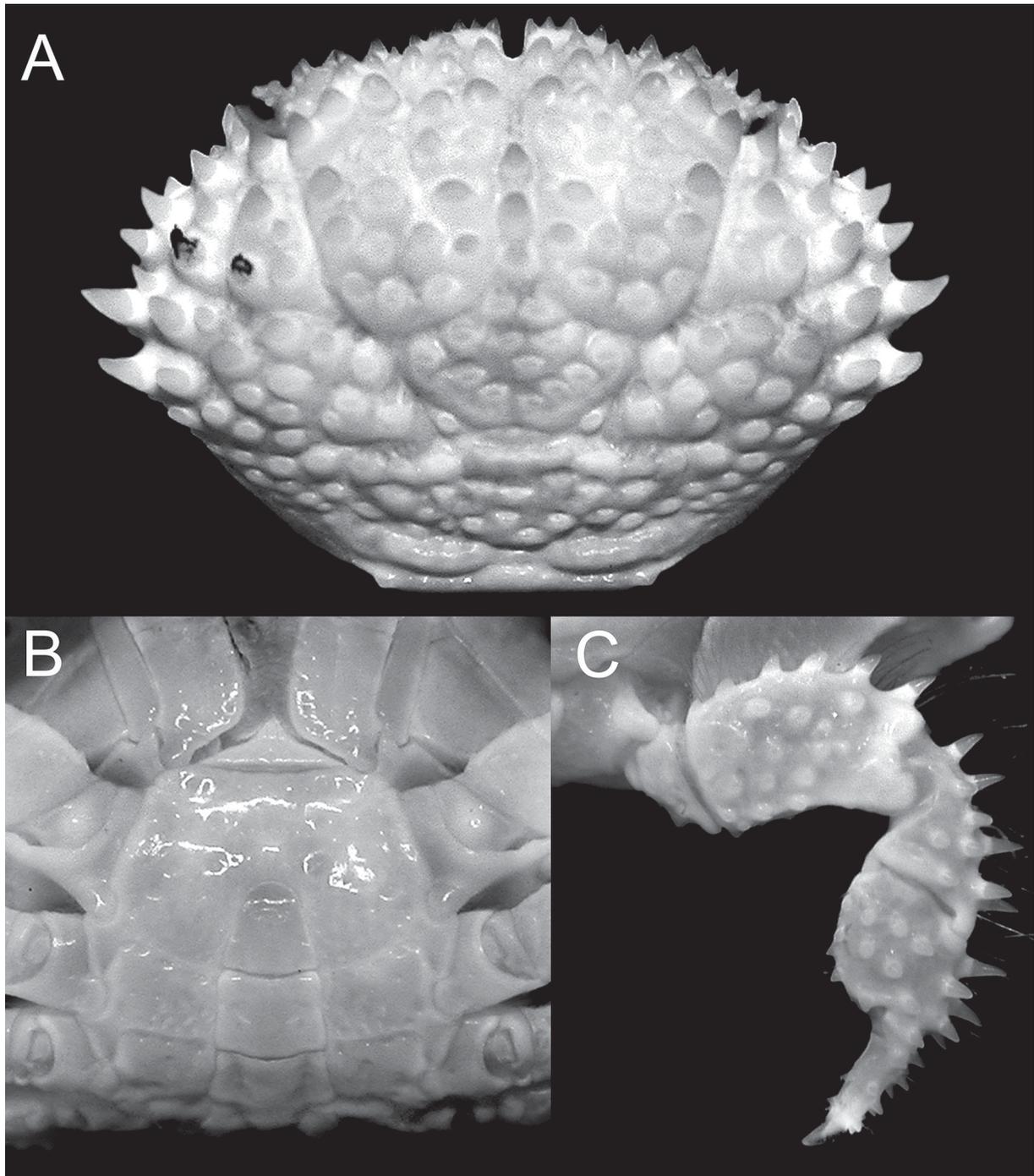


Fig. 9. *Actaea spinosissima* Borradaile, 1902, ♂, 8.9 × 6.6 mm (ZRC), Chagos Islands **A.** Dorsal view of carapace. **B.** Thoracic sternum showing vulvae. **C.** Right fourth ambulatory leg.

this species by Odhner (1925: 59, pl. 4, fig. 4), Serène (1961: 206, 1968: 79), Guinot (1967: 559, 1969: 238, 1971: 1071, 1976: 233, pl. 13, fig. 3) and Ng *et al.* (2008: 195) merely list or discuss the species and do not record fresh material. Fortunately, among recent material examined from the Chagos Islands in the western Indian Ocean is an adult male (Figs 8–9) that agrees well with the holotype male of *A. spinosissima*; its G1 is figured here (Fig. 10). Although the specimen is slightly faded, the remaining colour and pattern suggest they are similar to those of *A. grimaldii* sp. nov.

The specimen figured as “*A. spinosissima*” by Serène (1984: 115, pl. 14F) (a male 6.0 × 4.6 mm from Moluccas) agrees well, even in the colour and pattern (cf. Fig. 1), with what is described as *A. grimaldii* sp. nov. and they appear to be conspecific. Calman (1900: 10) recorded a male specimen measuring 14.0 by 10.0 mm that he provisionally attributed to “*Actaea peronii* var. *squamosa*” and noted as differing from *A. peronii* by its sharp and spiniform anterolateral teeth. Odhner (1925: 59) and Serène (1984: 114) suggested that his record was probably *A. spinosissima*, but could not be sure as he did not have the specimen and Calman did not figure the species. Davie (2002: 511) accepted Serène’s identification and listed this species from Australia. On the basis of geography, it seems Calman’s specimen is more likely to belong to *A. grimaldii* sp. nov. than to *A. spinosissima* s. str.

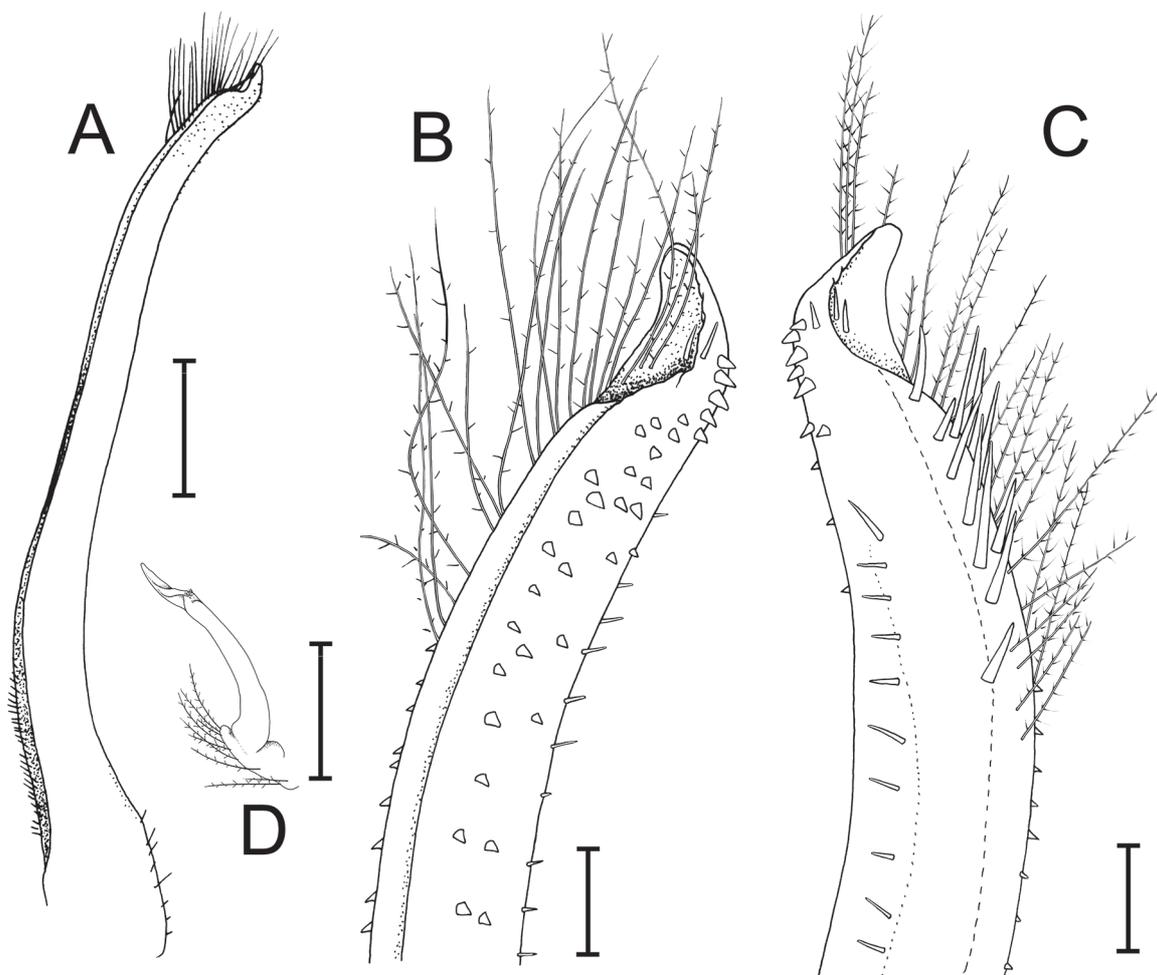


Fig. 10. *Actaea spinosissima* Borradaile, 1902, ♂, 8.9 × 6.6 mm (ZRC), Chagos Islands **A.** Ventral view of left G1. **B.** Ventral view of distal part of left G1. **C.** Dorsal view of distal part of left G1. **D.** Left G2. Scale bars: A, D = 0.5 mm; B–C = 0.1 mm.

Actaea grimaldii sp. nov. differs from the type of *A. spinosissima* s. str. in several key characters: the granules on 1M, 2M, 3M, 2L and 5L are conical and sharp (Figs 1, 2A, 3A, 4A) (vs granules raised but tips broad and rounded in *A. spinosissima*, Fig. 6); the 1P and transverse granules adjacent to it are raised and rounded (Figs 1, 2A, 3A, 4A) (vs area and granules distinctly flattened in *A. spinosissima*, Fig. 6); 2P is raised and rounded (Figs 1, 2A, 3A, 4A) (vs area flattened in *A. spinosissima*, Fig. 6); the surfaces of 2M and 2L are gently convex (Figs 2B, 3B) (vs areas distinctly more inflated in *A. spinosissima*, Fig. 7A); the subhepatic and suborbital regions are covered with numerous granules (Figs 2B, 3B) (vs these regions are covered with relatively fewer and lower granules in *A. spinosissima*, Figs 7A, 8B), the spines on the anterolateral margin and carpus of cheliped acute and straight or gently curved (Figs 1, 2A, 3A) (vs spines relatively stouter and more distinctly curved anteriorly in *A. spinosissima*, Fig. 6); the spines on the chela are relatively slender (Figs 2C, D, 3C, D) (vs stouter in *A. spinosissima*, Fig. 7C); the ambulatory merus is proportionately longer (Figs 2A, 3B, 4C) (vs distinctly shorter in *A. spinosissima*, Figs 6, 8A, 9C); and the G1 is proportionately stouter (Fig. 5D) (vs more slender in *A. spinosissima*, Fig. 10A).

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