

THE IDENTITY OF *SESARMA ROTUNDATA* HESS, 1865, AND DESCRIPTION
OF A NEW SPECIES OF ARBOREAL CRAB OF THE GENUS
LABUANUM SERÈNE & SOH, 1970, FROM GUAM, WESTERN PACIFIC
(CRUSTACEA: DECAPODA: BRACHYURA: SESARMIDAE)

Peter K. L. Ng

Tropical Marine Science Institute and Department of Biological Sciences, National University of Singapore
Kent Ridge, Singapore 119260, Republic of Singapore
Email: dbsngkl@nus.edu.sg

ABSTRACT. — The identity of the arboreal western Pacific sesarmid crab, *Labuanium rotundatum* (Hess, 1865) is clarified. A neotype from Tonga is selected to stabilise the taxonomy of the species, which is rediagnosed and figured. A new species from Guam, previously identified with *L. rotundatum*, is diagnosed and compared with congeners. *Labuanium navus*, new species, differs from *L. rotundatum* and allied taxa by a combination of carapace, cheliped, male abdomen and gonopod characters.

KEY WORDS. — Crustacea, Brachyura, *Labuanium*, *L. rotundatum*, taxonomy, new species, Guam

INTRODUCTION

The sesarmid crab genus *Labuanium* Serène & Soh, 1970, currently contains 12 species (Ng et al., 2008; Ng & Davie, 2011). The type species by original designation, *Sesarma rotundata* Hess, 1865, was redescribed by Ng & Liu (2003), who followed De Man (1891, 1896) and Tesch (1917) in regarding *Sesarma dentifrons* A. Milne-Edwards, 1869 (Samoa), *Sesarma oceanica* De Man, 1889 (Ponape), *Sesarma* (*Episesarma*) *rotundata papuomalesiaca* Nobili, 1899 (Nias, western Sumatra and New Guinea), *Sesarma gardineri* Borradaile, 1900 (Funafuti Island, Tuvalu and Rotuma Island, Fiji), and *Sarmatium faxoni* Rathbun, 1906 (Marshall Islands and Hawaiian Islands) as junior synonyms of the species.

Ng & Liu (2003: 613), however, observed a number of differences in specimens of *L. rotundatum* from Guam and other Pacific islands, and commented that it is “quite possible that there is more than one species belonging to what is here identified as *L. rotundatum*, and some of the synonyms may be shown to be valid in the future”. Ng & Liu’s (2003) doubts about the synonymy of *L. rotundatum* were mainly directed at specimens from American Samoa and the Cook Islands, which differed in a number of carapace and gonopod features from those from Guam but they commented that more material was needed before any firm taxonomic decisions could be taken, particularly because the type material is lost. In the intervening years, the author has examined more material, including fresh specimens as

well as many of the types of the synonyms of *L. rotundatum*. Ng & Davie (2011), upon examining some of this material from the Andamans, Christmas Island (Indian Ocean), western Sumatra, Java, Irian Jaya, Papua-New Guinea, Caroline Islands, and Solomon Islands, reinstated *Sesarma* (*Episesarma*) *rotundata papuomalesiaca* Nobili, 1899, as a valid species of *Labuanium*, and also recognised a new species, *L. vitatum* Ng & Davie, 2011, from the Indian Ocean.

The present study shows that material previously referred to as *L. rotundatum* from the western Pacific belongs to two separate species. The true *L. rotundatum* (Hess, 1865), is found in the central Pacific, east of the Caroline Islands and Solomon Islands, ranging across the islands of Pohnpei, Fiji, Samoa, Tonga, Cook Islands, Marshall Islands, and questionably the Hawaiian Islands (see also Castro, 2011). A neotype is selected to stabilise the taxonomy of this name, and *Sesarma dentifrons* A. Milne-Edwards, 1869, *Sesarma oceanica* De Man, 1889, *Sesarma gardineri* Borradaile, 1900, and *Sarmatium faxoni* Rathbun, 1906, are confirmed as subjective junior synonyms. The material from Guam is referred to a new species, here named *L. navus*, new species.

All measurements (in millimetres) are of the maximum carapace width and length, respectively. The abbreviations G1 and G2 are used for the male first and second gonopods, respectively. Material examined is deposited in the U.S. National Museum of Natural History (USNM), Smithsonian

Institution, Washington D.C.; Bernice P. Bishop Museum (BPBM), Honolulu; The Naturalis (formerly Rijksmuseum van Natuurlijke Historie, RMNH), Leiden; Cambridge University Museum of Zoology (CUMZ), London; Senckenberg Museum (SMF), Frankfurt; and the Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research, National University of Singapore. Comparative material of allied species used in this study previously listed in Ng & Liu (2003), Ng & Davie (2011), and Jeng et al. (2003) is not repeated here.

TAXONOMY

Family Sesarmidae Dana, 1851

Labuanium Serène & Soh, 1970

Type species. — *Sesarma polita* De Man, 1888, by original designation; gender neuter.

Remarks. — Twelve species are currently placed in *Labuanium*: *L. cruciatum* (Bürger, 1893), *L. demani* (Bürger, 1893), *L. finni* (Alcock, 1900), *L. gracilipes* (H. Milne Edwards, 1853) (= *Sesarma compressum* Jacquinot, 1853; *Sesarma jacquinoti* Ortmann, 1894), *L. papuomalesiacum* (Nobili, 1899), *L. politum* (De Man, 1888), *L. rotundatum* (Hess, 1865) (= *Sesarma dentifrons* A. Milne-Edwards, 1869; *Sesarma oceanica* De Man, 1889; *Sesarma gardineri* Borradaile, 1900; *Sarmatium faxoni* Rathbun, 1906), *L. scandens* Ng & Liu, 2003, *L. schuettei* (Hess, 1865), *L. sinuatifrontatum* (Roux, 1933), *L. trapezoideum* (H. Milne Edwards, 1837) (= *Sesarma trapezoideum longitarsis* De Man, 1889; *Sesarma oblonga* von Martens, 1868), and *L. vitatum* Ng & Davie, 2011 (Ng et al., 2008; Ng & Davie, 2011).

In establishing *Labuanium*, Serène & Soh (1970: 402) noted that there were two distinct groups. One group contained *L. politum*, *L. demani*, *L. cruciatum*, and *L. rotundatum*, with its members having a relatively more elongated male abdomen, a distinct G1 form and a relatively short ambulatory dactylus. The second group (*L. gracilipes*, *L. finni*, and *L. trapezoideum*) is characterised by the presence of a row of transverse tubercles on the dactylus of the male chela, a relatively more slender and elongated ambulatory dactylus and a different G1 structure. Serène & Soh (1970), however, noted that the male abdomen of *L. trapezoideum* was more elongated than those of *L. gracilipes* and *L. finni*, which are broader. For this reason, they probably decided against establishing separate genera for them. Jeng et al. (2003: 234) discussed this matter and indicated that *L. trapezoideum* was closely related to *Sesarmops weberi* (De Man, 1892) although they have differently proportioned legs and are currently in separate genera. Ng et al. (2008: 224) subsequently commented that both species should be transferred to a new genus as they shared several key cheliped, gonopod, and larval characters.

A total of four species-groups can be recognised in *Labuanium* as presently defined. The first group is defined by only the type species, *L. politum*, and is characterised by its very short ambulatory propodus and dactyli. This species lives almost exclusively among nipah palms (*Nypa fruticans*) in mangrove forests. A second group of species allied to *L. gracilipes* has relatively long ambulatory dactyli that are gently curved and lined with scattered stiff setae. A third group contains *L. rotundatum* and its allies and these have relatively shorter ambulatory dactyli that are almost straight and the margins densely lined with short setae. The second and third groups are arboreal species and live on inland trees but not far from the sea. As discussed above, the fourth group includes just *L. trapezoideum*, and this species is unusual in that it is not arboreal but lives on cliff fronts and vertical walls with fast flowing streams or rivers (e.g., near waterfalls). The genus *Labuanium* s. lato is now being revised by Tohru Naruse (Ryukyus University, Japan) and the present author, and as such, the taxonomy of these groups will not be elaborated upon here.

Labuanium rotundatum (Hess, 1865)

(Figs. 1–7)

Sesarma rotundata Hess, 1865: 149, pl. 6 Fig. 9 (type locality ostensibly Sydney, Australia); Miers, 1877: 136 (part); De Man, 1896: 110, pl. 3 Fig. 6, 6a

Sesarma dentifrons A. Milne-Edwards, 1869: 31 (type locality Samoa); De Man, 1896: 110, pl. 3 Fig. 7, 7a,b

Sesarma oceanica De Man, 1889: 429, pl. 10 Fig. 9 (type locality Ponape Island)

Sesarma gardineri Borradaile, 1900: 593, pl. 42 Fig. 8 (type locality Funafuti and Rotuma islands)

Sarmatium faxoni Rathbun, 1906: 841, pl. 7 Fig. 1 (type locality O'ahu, Hawaiian Islands, and Marshall Islands)

Labuanium rotundatum — Serène & Soh, 1970: 401; Davie, 2002: 221; Ng & Liu, 2003: 614 (part), Fig. 8E–I; Ng et al., 2008: 221 (list); Ng & Davie, 2011: 43 (part)

Material examined. — **Tonga:** Neotype male (36.3 × 36.3 mm) (USNM 1150304), Niuafoou Island, Tonga, coll. H. C. Kellerr, Naval Eclipse Expedition, 29 Sep. 1930; 1 male (31.5 × 32.3 mm) (USNM 1150305), same data as neotype. **Pohnpei:** 1 male (15.0 × 15.1 mm) (SMF 2010a) (designated lectotype of *Sesarma oceanica* De Man, 1889), Ponape; 1 female (paralectotype of *Sesarma oceanica* De Man, 1889), same data as lectotype; 5 males (largest 31.0 × 29.0 mm, smallest 20.2 × 19.9 mm), 3 females (largest 31.7 × 30.6 mm, smallest 24.7 × 24.1 mm) (ZRC), on trees, Renipua Island, small island on the southern end of Pohnpei atoll, ca. 6°44'41.64"N, 157°57'10.97"E, coll. T. Herman via B. Lynch, caught at night using headlamps, 2 Jul. 2011. **Funafuti:** 1 male (32.2 × 33.3 mm) (CUMZ) (designated lectotype of *Sesarma gardineri* Borradaile, 1900), Funafuti; 2 males (24.0 × 24.2 mm, 26.5 × 27.5 mm), 3 females (32.7 × 32.4 mm, 24.7 × 24.7 mm, 17.9 × 17.8 mm) (paralectotypes of *Sesarma gardineri* Borradaile, 1900), same data as lectotype. **Cook Islands:** 1 male, post-moult, carapace soft, deformed (ca. 37.9 × 35.7 mm) (BPBM 4354), Puka-Puka Island, northern group of Cook Islands, coll. R. D. Frisbe, 1936. **American Samoa:** 1 male (28.0 × 29.1 mm), 1 female (35.2 × 34.5 mm) (BPBM 4191), 1 male (24.0 × 24.5 mm) (ZRC 2002.453), Swain's Island, coll. Itasca Expedition, Mar. 1936. **Marshall Islands:** 1 male (23.5 × 23.8 mm), 1 female (36.5 × 35.6 mm) (BPBM S10701),

Arno Atoll, no other data. **Hawaiian Islands:** 1 female (36.8 × 34.5 mm) (USNM 22837) (holotype of *Sarmatium faxoni* Rathbun, 1906), O'ahu, coll. H. Mann, 1864.

Diagnosis. — Carapace as wide as long; antero-dorsal surfaces distinctly granular, posterior surface rough or with striae and low rugosities (Figs. 1A,B, 2A, 3A, 4); posterolateral regions with distinct oblique striae (Figs. 3A, 4); postfrontal cristae distinct, sharp, medially separated by deep longitudinal furrow (Figs. 3A,B, 4); merus of third maxilliped in adult male longitudinally ovate, 1.8 times longer than broad (Fig. 7O); inner margin of cheliped carpus with triangular tooth, tip granular, inner margins granular to smooth in large males (Figs. 3A,C, 4A,C–E); outer surface of

chela with well-spaced rounded granules (Figs. 3C, 6); dorsal margin of male chela with non-pectinated ridge with about 25 small granules (sometimes indistinct in larger specimens), with 2 shorter, less distinct oblique granular rows posterior to it (Figs. 3C, 6A); dorsal surface of adult male cheliped dactylus with row of 10 or 11 distinct granules (Figs. 3C, 6A); outer surface of ambulatory meri weakly rugose, dorsal margin finely granular with distinct subterminal tooth (Figs. 2A, 3A); male abdominal somite 6 broader than long, distal part of lateral margins convex, proximal part gently sinuous (Fig. 5); abdominal telson subequal in length to somite 6, subtriangular in shape with rounded tip (Fig. 5); G1 relatively slender; distal part bent about 60–80° from vertical, distal chitinous part tapering, beak-like (Fig. 7A–D,F–N).

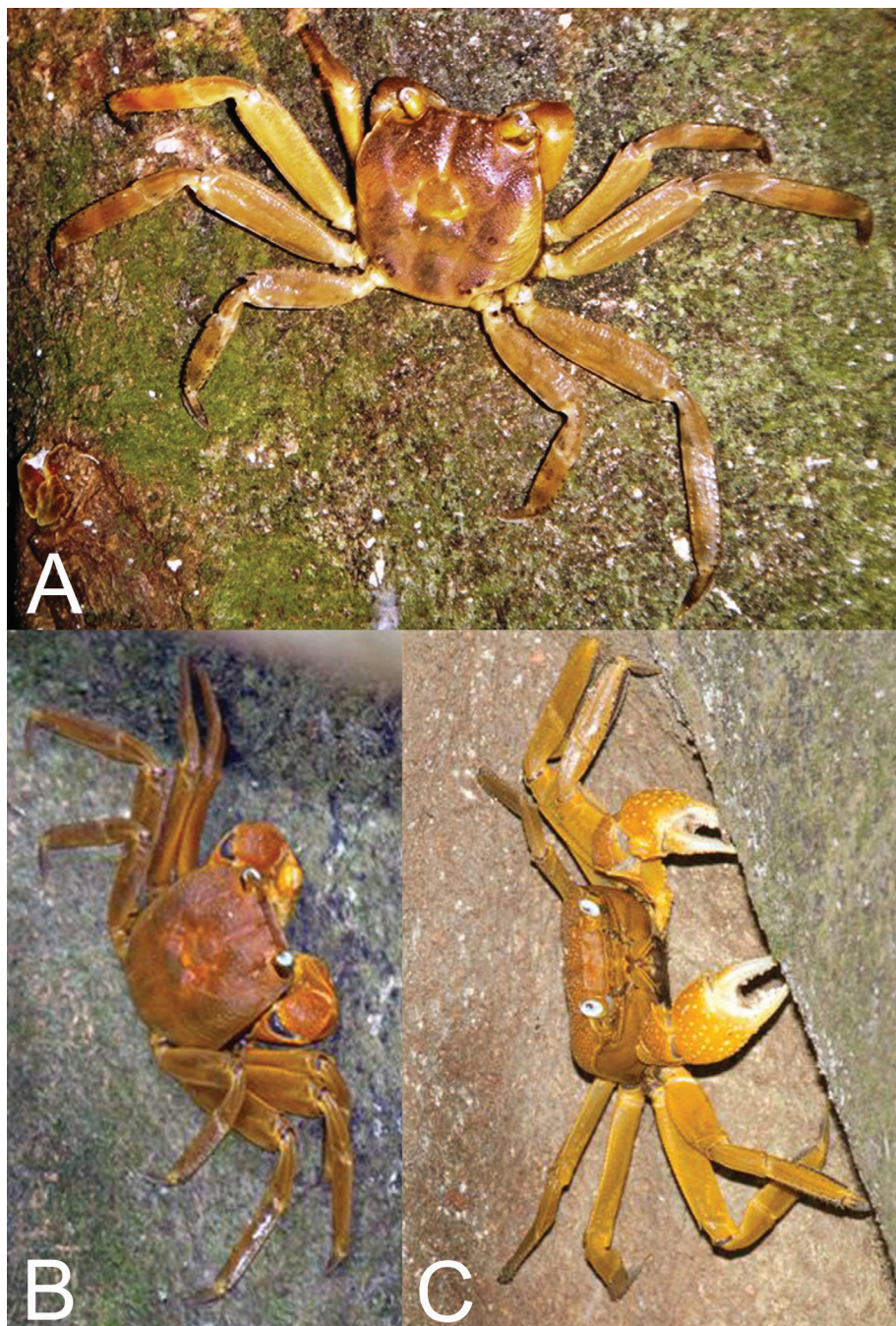


Fig. 1. *Labuanium rotundatum* (Hess, 1865). Colours in life. A, male, Pohnpei (photograph Brian Lynch); B, C, male, Fiji (Photograph by: P. A. Ryan, courtesy of Colin McLay). Specimens not collected.

Colour. — Adults are a uniform yellow to orange in life, with white eyes; the chelae are orange to yellow, with the fingers white (Fig. 1).

Remarks. — Part of the problem with the taxonomy of *Sesarma rotundata* has been because the type is believed to be lost and its type locality is clearly incorrect. Hess (1865: 149) described the species on the basis of one male specimen measuring 45 × 45 mm supposedly from “Sydney”. Davie (2002: 221) commented that the provenance “is certainly erroneous; extensive field collecting across northern Australia

has so far failed to rediscover the existence of *L. rotundatum*; it is most likely that it was collected from the islands of the south-west Pacific and sent to Hess via Sydney”. The depository for Hess’s material was the Zoological Museum of Göttingen, Germany, but the collections there were transferred to SMF many years ago. The last person to have examined the specimen when it was still in Göttingen was apparently De Man (1896), who figured the carapace, front and male abdomen, and compared it with *S. dentifrons*. Peter Davie (Queensland Museum), as well as Michael Türkay and Andreas Allspach (SMF), searched for this specimen in the

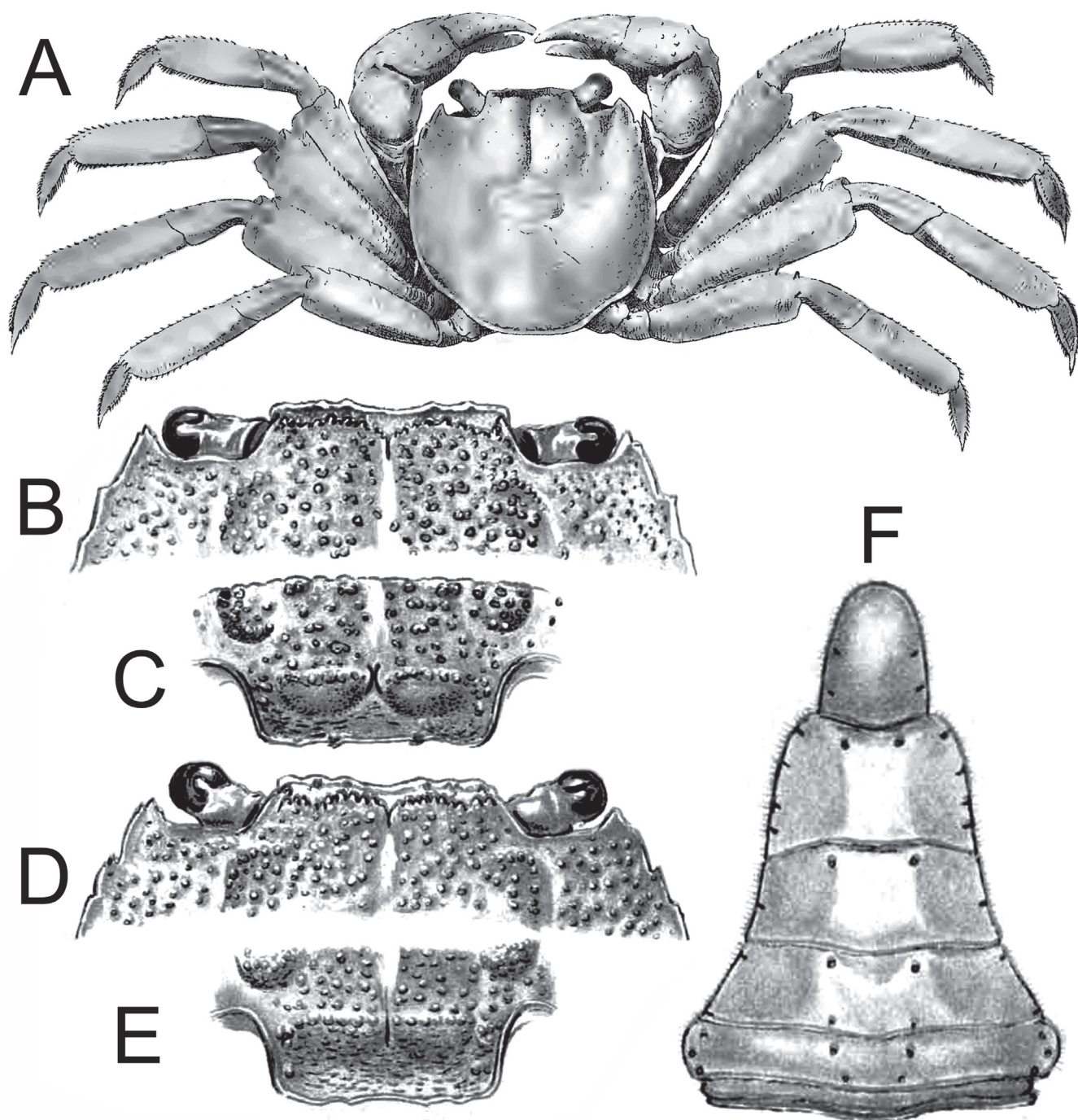


Fig. 2. *Labuanium rotundatum* (Hess, 1865). A, holotype male of *Sesarma rotundatum* Hess, 1865 (after Hess, 1865: pl. 6 Fig. 9); B, C, type of *Sesarma dentifrons* A. Milne-Edwards, 1869 (after De Man, 1896: 110, pl. 3 Fig. 6, 6a); D–F, holotype male of *Sesarma rotundatum* Hess, 1865 (after De Man, 1896: pl. 3 Fig. 7, 7a,b). A, overall view; B, D, anterior view of carapace; C, E, frontal view of frontal margin; F, male abdomen.

1990s but could not locate it (pers. comm.). During a recent visit in late 2010, the author with Michael Türkay again unsuccessfully searched the SMF for this specimen and also checked the archives to see where else the specimen may be. We are now sure the specimen is lost. Michael Türkay also commented that Sydney was the port of call for many ship captains who serviced the European territories in the southwest Pacific during that time, and it was likely Hess's specimen came from one of the islands there.

De Man (1896) was able to examine the type of *Sesarma rotundata* Hess, 1865, when he compared it with the type of *Sesarma dentifrons* A. Milne-Edwards, 1869, and he regarded the two as different primarily by the form of the postfrontal cristae, being sharper and more prominent in the latter species (compare Fig. 2B,C versus Fig. 2D,E). De Man (1896: 114) had observed that there may be more variation in these two species, as well as *Sesarma oceanica* De Man, 1889, and a larger series of specimens will be needed to ascertain if all three are conspecific. The good series of specimens from Pohnpei (ZRC) includes different sized specimens of both sexes and shows that the postfrontal cristae varies too much to be used as a species character.

The form of the carapace of *L. rotundatum* is also variable to some degree. The carapace shape varies from almost quadrate to slightly longer than broad, with the lateral margins almost

straight or slightly convex, and the anterolateral dentition may be distinct or low (Figs. 2A,B,D, 3A, 4). Significantly, even in large specimens like the original type male and the neotype male from Tonga (see below), the lateral carapace margin is almost straight or only gently convex (Figs. 2A, 3A). This is in contrast to the allied *L. papuomalesiacum* from New Guinea and Caroline Islands that has distinctly arcuate lateral carapace margins (cf. Ng & Davie, 2011: Figs. 2B, 9B).

The form of the male abdomen of *L. rotundatum* is slightly variable. In most specimens (carapace width ca. 20 mm), the male abdomen is relatively more slender, with somite 6 somewhat trapezoidal in shape (Figs. 2F, 5C,D,F). In some (including the neotype and male from Tonga), the abdomen appears slightly broader, with somite 6 slightly more rectangular in shape (Fig. 5A,B). In one specimen, a small male (the type of *Sesarma oceanica*), the male abdomen and somite 6 are relatively broader (Fig. 5E). In general, however, the male abdomen of *L. rotundatum* (Fig. 5) is proportionately more slender than in *L. papuomalesiacum* (cf. Ng & Davie, 2011: Fig. 6B).

The size and arrangement of the granules on the outer surface of the chela separates two clusters of species of *Labuanium* in the *L. rotundatum* species-group. One cluster includes *L. rotundatum* s. str. and *L. navus*, and the outer surface of the chela is covered with relatively large, rounded and well-spaced granules (Figs. 6, 11). In the second cluster, which includes *L. papuomalesiacum*, *L. scandens*, and *L. vitatum*, the outer surface of the chela is covered with numerous small granules that are arranged closer to each other (see Ng & Liu, 2003: Fig. 3; Ng & Davie, 2011: Figs. 5, 7A, B, 9C, D). This diagnostic character is consistent and even applies to female and juvenile specimens (Fig. 6).

The structure of the G1 is very reliable as a species character. Ng & Liu (2003: 613) had commented that the carapaces of the specimens from Cook Islands and American Samoa (Fig. 4D,E) appeared to be proportionately longer and the dorsal surface slightly more granular, with the G1 relatively more slender and the pectinated distal part more elongated than those from Guam. However, they preferred not to separate the two populations as distinct taxa as they did not have much material from the Pacific. With the large series of specimens the author has since studied from the western Pacific, it is clear that the taxonomy of "*L. rotundatum*" is not that simple. The differences observed by Ng & Liu (2003) are in fact constant, and the central-western Pacific has three species. One species occurs in Irian Jaya and Papua-New Guinea as well as the nearby islands (i.e., Caroline and Solomon islands), for which the name *L. papuomalesiacum* (Nobili, 1899) is available (see Ng & Davie, 2011). This species has a distinctly convex lateral carapace margin and the outer surface of the chela has numerous small granules that are positioned closely to each other. Another species, *L. rotundatum* s. str., which occurs from the Marshall Islands, American Samoa, Fiji, Cook Islands, and eastwards to the Hawaiian Islands (although this record needs to be reconfirmed, see Castro, 2011; Ng & Davie, 2011), has an almost straight or only

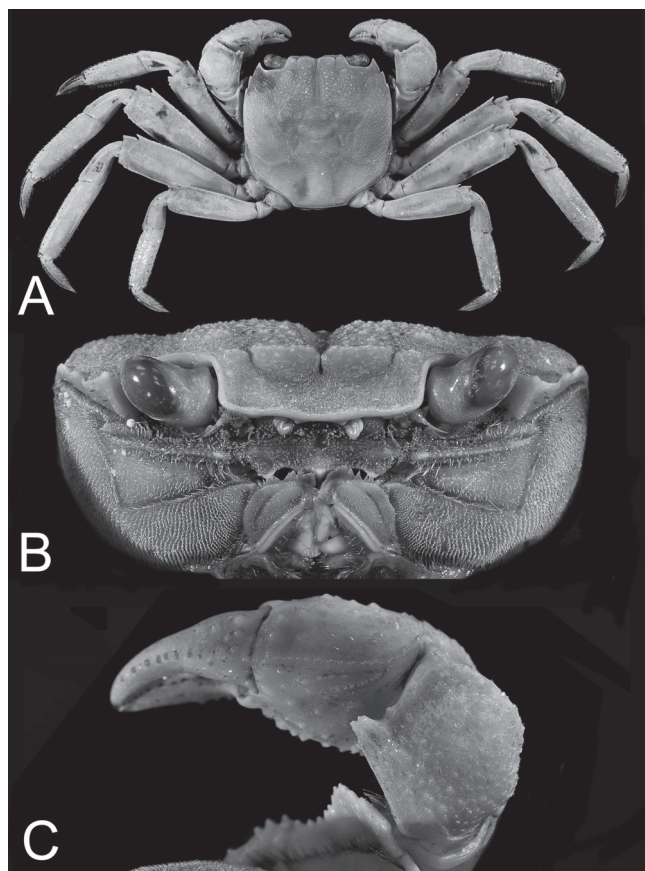


Fig. 3. *Labuanium rotundatum* (Hess, 1865). Neotype male (36.3 × 36.3 mm) (USNM 1150304), Tonga. A, overall view; B, frontal view of carapace; C, dorsal marginal view of right cheliped showing ridges on chela.

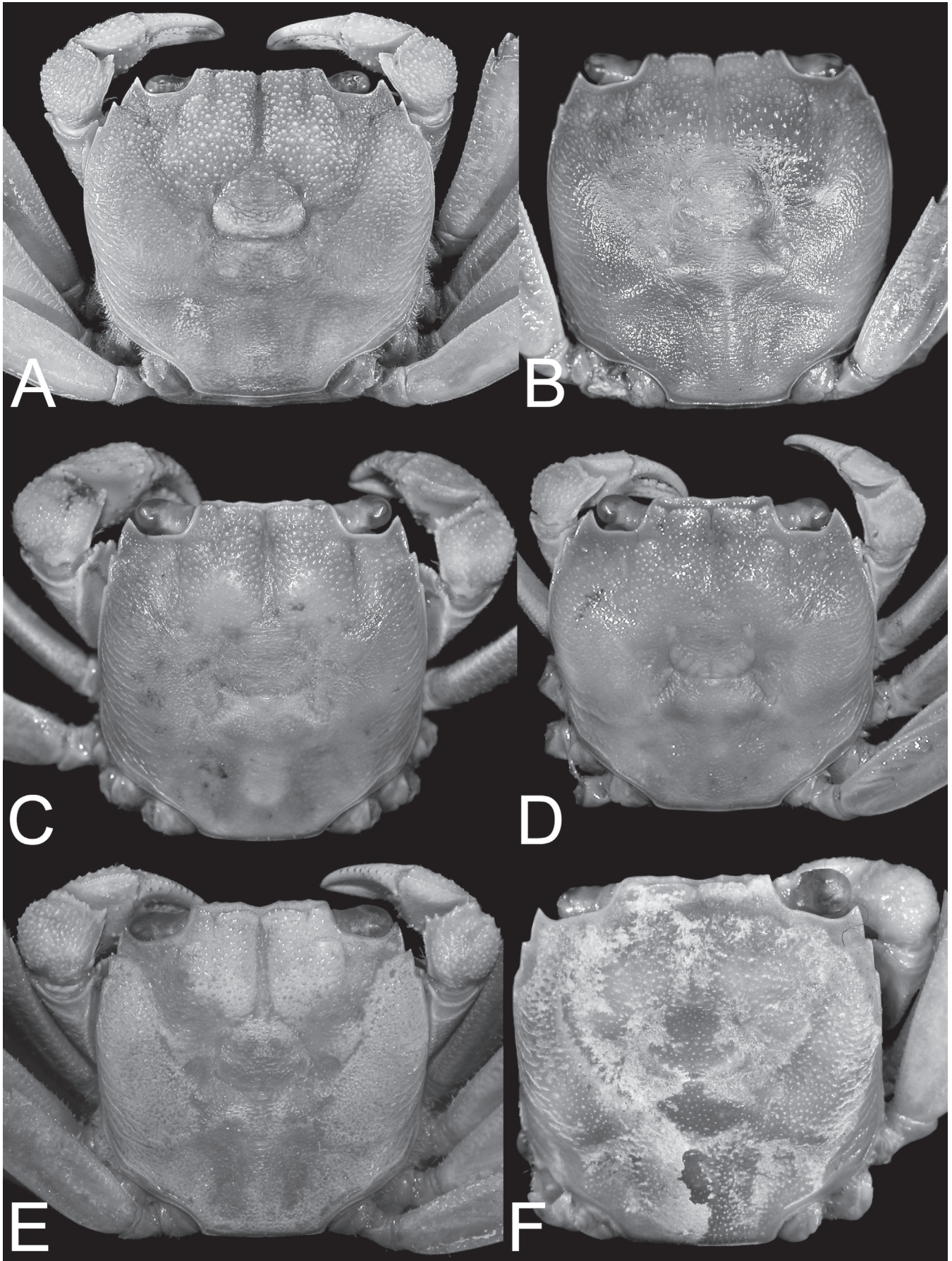


Fig. 4. *Labuanium rotundatum* (Hess, 1865). Dorsal views of carapaces. A, female (36.8 × 34.5 mm) (USNM 22837) (holotype of *Sarmatium faxoni* Rathbun, 1906); B, male (32.2 × 33.3 mm) (CUMZ) (lectotype of *Sesarma gardineri* Borradaile, 1900), Funafuti; C, male (28.0 × 29.1 mm) (BPBM 4191), American Samoa; D, female (35.2 × 34.5 mm) (BPBM 4191), American Samoa; E, male (23.5 × 23.8 mm) (BPBM S10701), Marshall Islands; F, male (15.0 × 15.1 mm) (SMF 2010a) (lectotype of *Sesarma oceanica* De Man, 1889), Pohnpei.

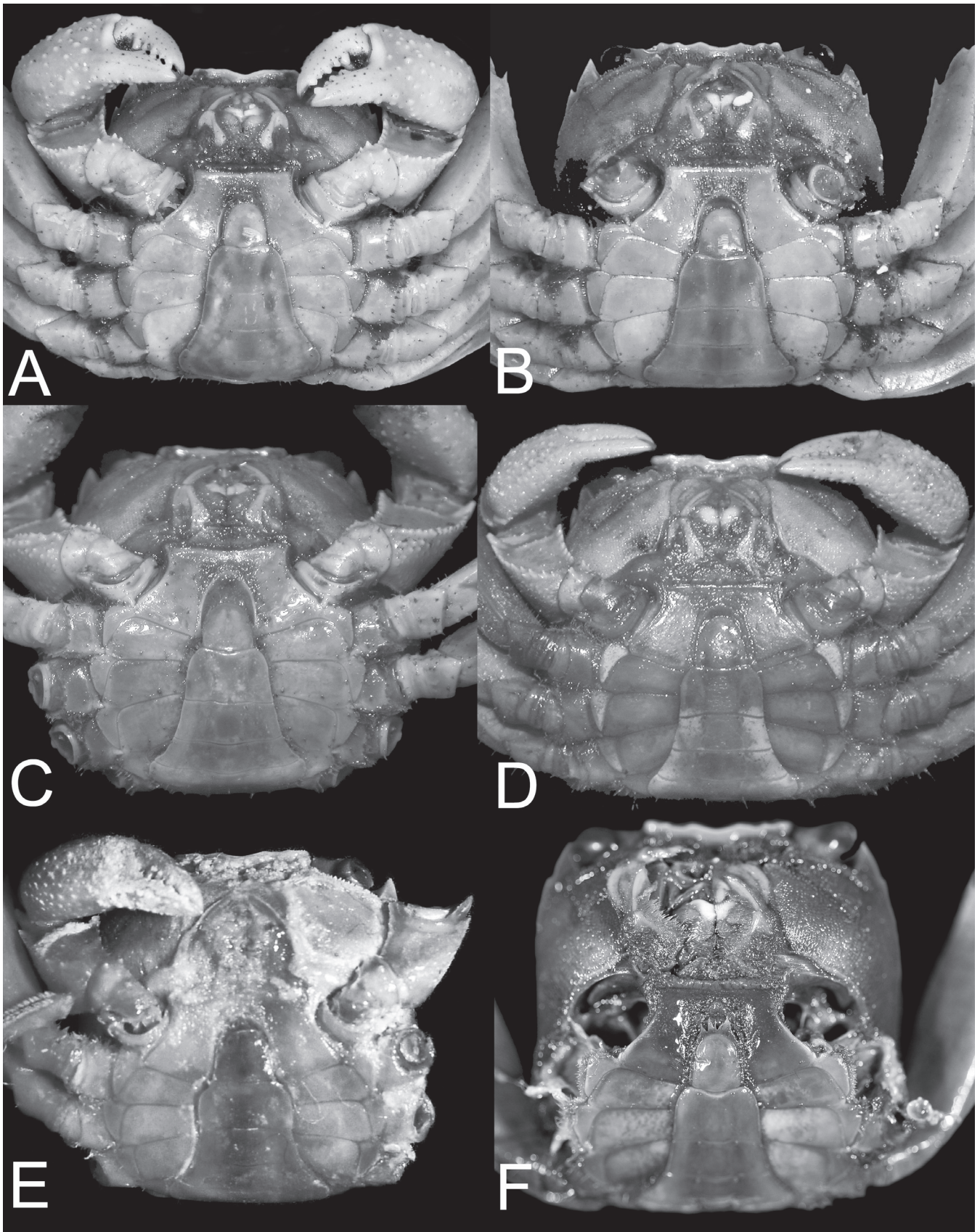


Fig. 5. *Labuanium rotundatum* (Hess, 1865). Ventral views of carapaces showing anterior part of thoracic sternums and abdomens. A, neotype male (36.3 × 36.3 mm) (USNM 1150304), Tonga; B, male (31.5 × 32.3 mm) (USNM 1150305), Tonga; C, male (28.0 × 29.1 mm) (BPBM 4191), American Samoa; D, male (23.5 × 23.8 mm) (BPBM S10701), Marshall Islands; E, male (15.0 × 15.1 mm) (SMF 2010a) (designated lectotype of *Sesarma oceanica* De Man, 1889), Pohnpei; F, male (32.2 × 33.3 mm) (CUMZ) (lectotype of *Sesarma gardineri* Borradaile, 1900), Funafuti.

gently convex lateral carapace margin and the outer surface of the chela is covered with relatively larger, rounded and well-spaced granules. It is noteworthy that the structure of the G1 of *L. rotundatum* s. str., is also consistently different from that of the Guam material described by Ng & Liu (2003), as are their carapaces. The present study also shows that they have very different colours in life. As such, the Guam material should now be recognised as a new species (see **Remarks** for *L. navus*).

Since the type for *Sesarma rotundata* Hess, 1865, is clearly no longer extant, and in view of the recognition of three separate taxa in what had been traditionally called “*Labuanium rotundatum*”, a neotype must be selected to stabilise the taxonomy of the species. A large specimen collected from Niuaufou Island in Tonga measuring 36.3×36.3 mm (USNM 1150304) (Figs. 3, 5A) is here designated as the neotype of *Sesarma rotundata* Hess, 1865. This action is preferable

to selecting any of the extant type specimens of the junior synonyms as a neotype, all of which are in poor condition, represented by juveniles or of doubtful provenance.

Borradaile (1900) described *Sesarma gardineri* from three males and three females from Funafuti Island, Tuvalu and three males and a female from Rotuma Island, Fiji and briefly commented that it differs from *S. oceanica* in possessing dorsal ridges on the chela and having relatively more setose ambulatory dactyli. These differences are associated with size as the type male specimen of *S. oceanica* is small and subadult.

De Man (1889) described *Sesarma oceanica* from two specimens (a male and a female) from Ponape [= Pohnpei]. The larger female specimen is in very poor condition, while the male is small and partially damaged. The male specimen measuring 15.0×15.1 mm in the SMF is here designated as

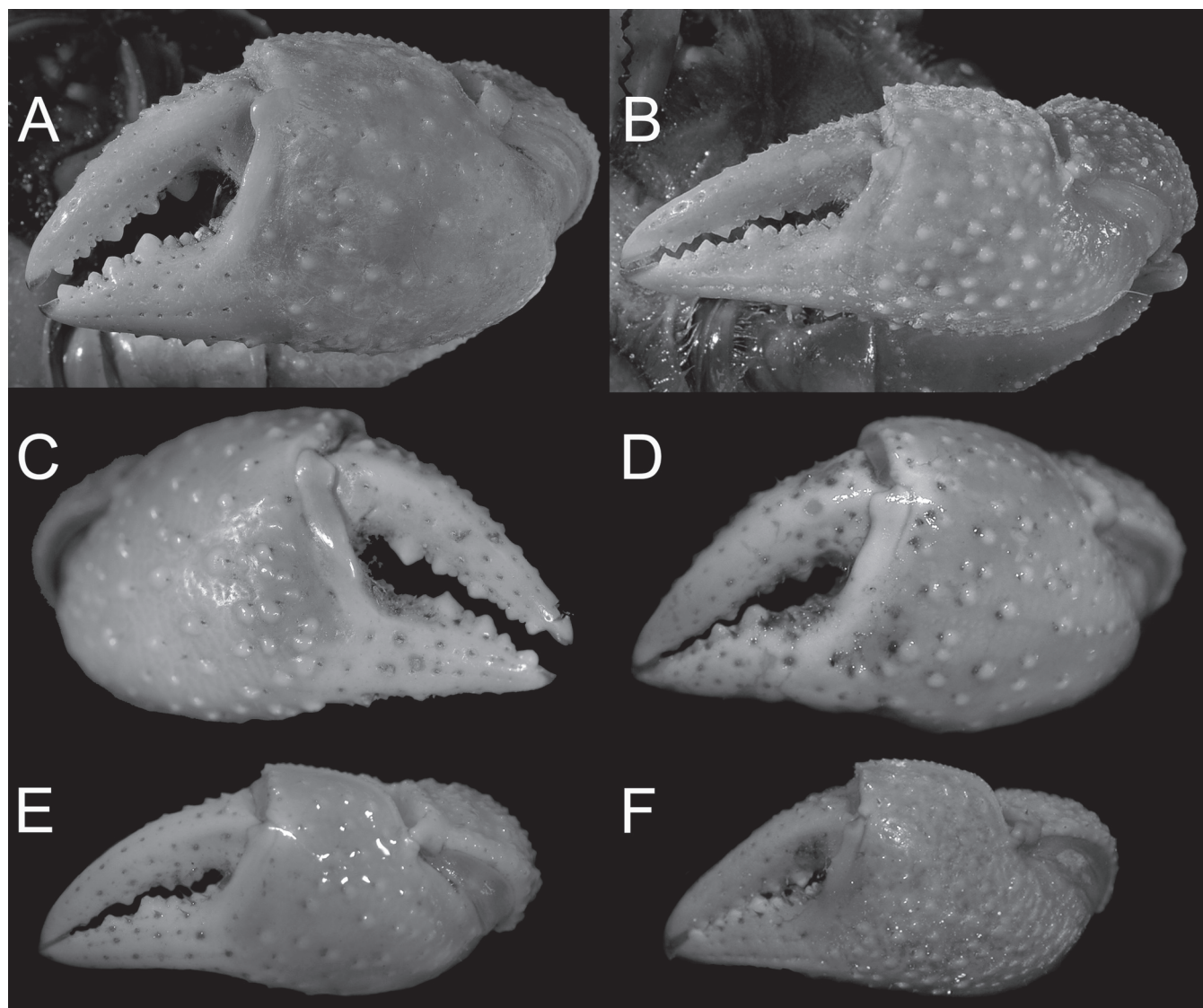


Fig. 6. *Labuanium rotundatum* (Hess, 1865). Outer views of chelae. A, neotype male (36.3×36.3 mm) (USNM 1150304), Tonga; B, female (36.8×34.5 mm) (USNM 22837) (holotype of *Sarmatium faxoni* Rathbun, 1906); C, male (32.2×33.3 mm) (CUMZ) (lectotype of *Sesarma gardineri* Borradaile, 1900), Funafuti; D, male (28.0×29.1 mm) (BPBM 4191), American Samoa; E, female (35.2×34.5 mm) (BPBM 4191), American Samoa; F, male (23.5×23.8 mm) (BPBM S10701), Marshall Islands.

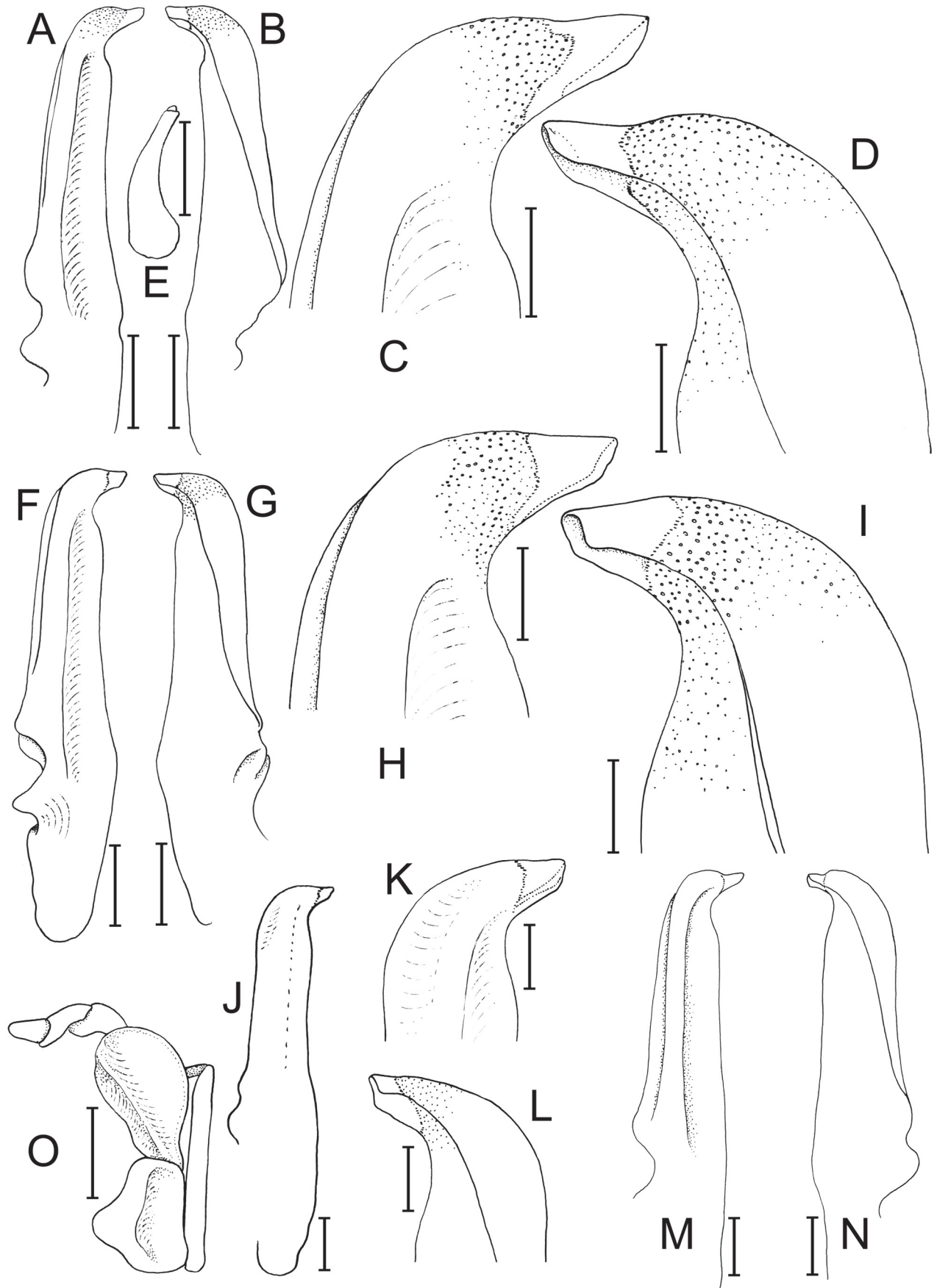


Fig. 7. *Labuanium rotundatum* (Hess, 1865). A–D, F–N, left G1s (denuded); E, left G2 (denuded); O, left third maxilliped (denuded). A–E, O, neotype male (36.3 × 36.3 mm) (USNM 1150304), Tonga; F–I, male (31.5 × 32.3 mm) (USNM 1150305), Tonga; J–L, male (23.5 × 23.8 mm) (BPBM S10701), Marshall Islands; M, N, male (28.0 × 29.1 mm) (BPBM 4191), American Samoa. A, C, F, H, J, K, M, ventral views; B, D, G, I, L, N, dorsal views; C, D, H, I, K, L, distal part of G1s. Scales: A, B, E–G = 2.0 mm; C, D, H, I, K, L = 0.5 mm; J, M, N = 1.0 mm; O = 4.0 mm.

the lectotype of *Sesarma oceanica* De Man, 1889 (Figs. 4F, 5E). Borradaile (1900) did not select a holotype for *Sesarma gardineri*, and as such, all his material from Funafuti and Rotuma are syntypes. In CUMZ are three male and three female specimens from Funafuti. The largest male measuring 32.2×33.3 mm is here selected as the lectotype of *Sesarma gardineri* Borradaile, 1900 (Figs. 4B, 5F). Rathbun (1906) described *Sarmatium faxoni* from material she had from O'ahu (Hawaiian Islands) and the Marshall Islands, and briefly compared it only with *Sarmatium crassum* Dana, 1851, which she thought was related to it although she probably did not realise it was actually closer to *Sesarma rotundatum*. She selected one female specimen (USNM 22837) she had on hand as the "type" of the species, and consequently, this should be regarded as the holotype (Fig. 4A). The remaining material should be treated as paratypes. Rathbun's holotype, as well as the specimens available here from the Marshall Islands, leaves no doubt that *Sarmatium faxoni* Rathbun, 1906, is a junior synonym of *S. rotundata* Hess, 1865.

Miers (1877) recorded *Sesarma rotundata* from Duke of York Island (in East New Britain, New Guinea) and Fiji. His

record from Fiji is clearly *L. rotundatum* s. str., the colour photograph of a specimen from there (Fig. 1B,C) agreeing well with what is here defined as that species. On the basis of the distribution, Miers's (1877) record from Duke of York Island probably represents *L. papuomalesiacum* (see Ng & Davie, 2011).

***Labuanium navus*, new species**
(Figs. 8–11)

Labuanium rotundatum – Ng & Liu, 2003: 614 (part), Fig. 8A–D; Paulay et al., 2003: 508 (not *Sesarma rotundata* Hess, 1865)

Material examined. — Holotype male (42.9×39.7 mm) (ZRC 2002.454a), on trees, in forest, Faifai Beach, near Gun Beach, Tumon Bay, Guam, coll. H.-C. Liu & P. K. L. Ng, between 28 Jul. –1 Aug. 2001. Paratypes: 6 males (16.4×15.9 mm, 31.6×30.8 mm, 34.4×32.1 mm, 36.8×35.6 mm, 39.3×39.2 mm, 43.7×41.2 mm), 3 females (15.1×14.8 mm, 28.1×27.3 mm, 42.5×39.7 mm) (ZRC 2002.454), same data as holotype; 2 males (22.2×21.1 mm, 22.5×21.2 mm) (ZRC 2002.457), Ritidian Point, northern Guam, coll. H.-C. Liu & P. K. L. Ng, 31 Aug. 2001; 2 males (27.9×17.0 mm, 19.1×18.6 mm), 1 female (11.9×11.6 mm) (ZRC 2002.456),

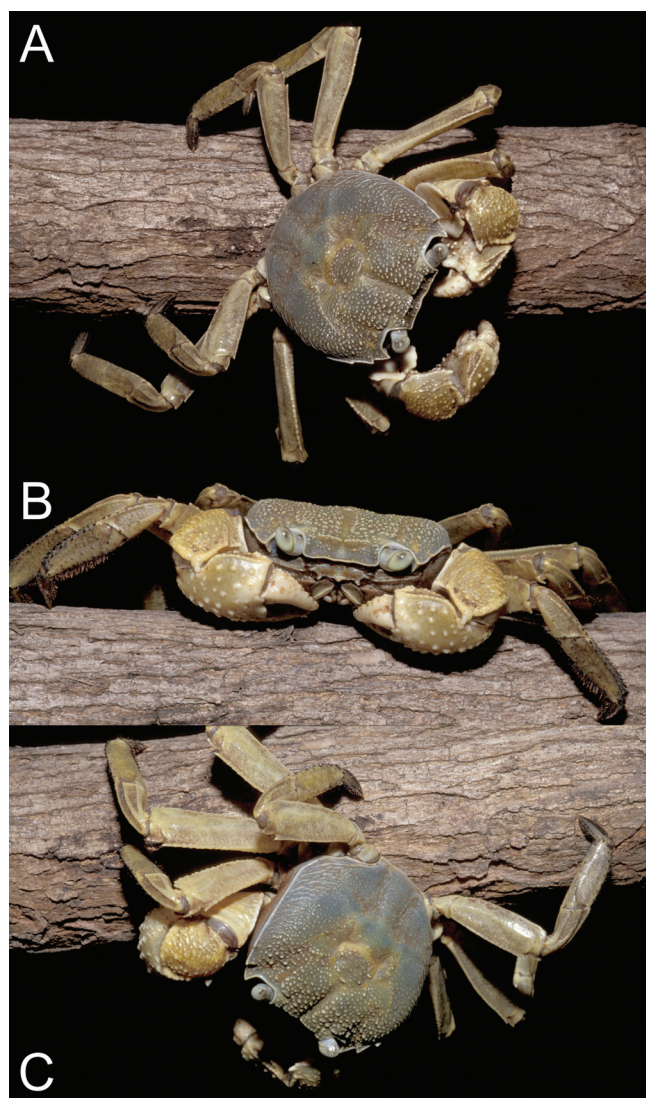


Fig. 8. *Labuanium navus*, new species. Colour in life. Specimen not preserved. (Photographs by: H.-C. Liu).

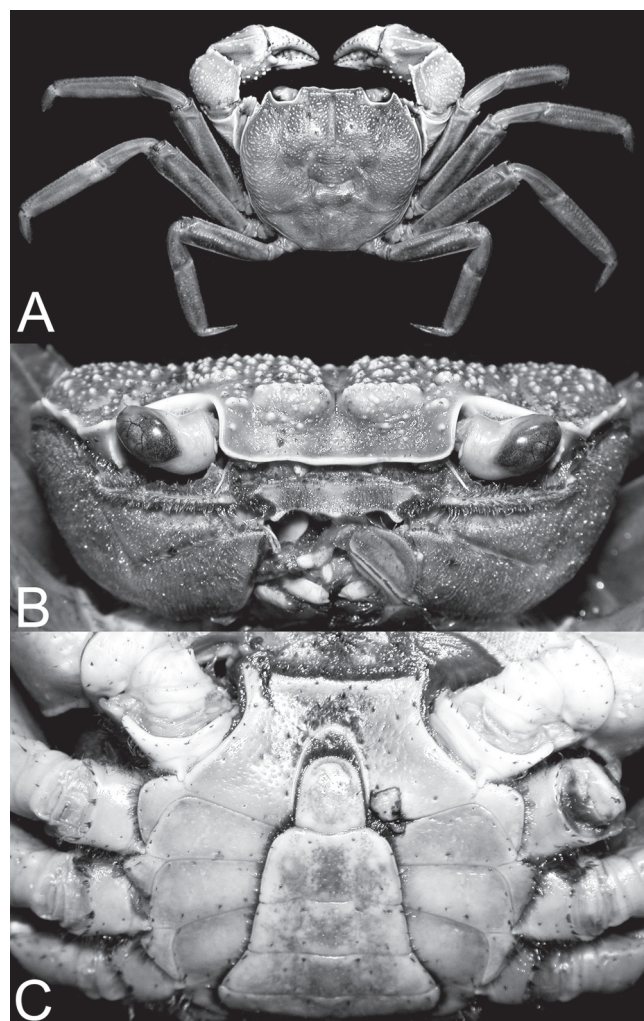


Fig. 9. *Labuanium navus*, new species. Holotype male (42.9×39.7 mm) (ZRC 2002.454a), Guam. A, overall view; B, frontal view of carapace; C, ventral view of carapace showing anterior part of thoracic sternum and abdomen.

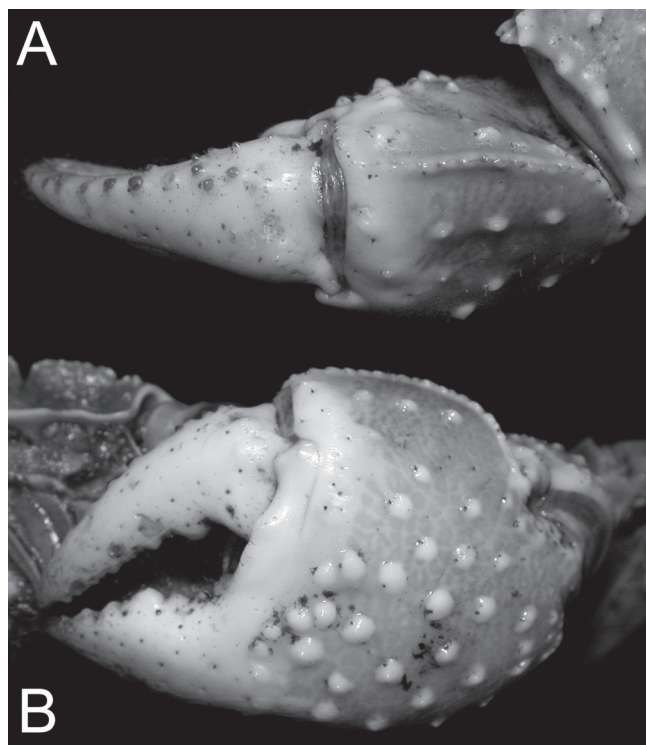


Fig. 10. *Labuanium navus*, new species. Holotype male (42.9×39.7 mm) (ZRC 2002.454a), Guam. A, dorsal marginal view of left cheliped showing ridges on chela; B, outer view of left chela.

Haputo Beach forest, Guam, coll. P. K. L. Ng, 3 Aug. 2001; 1 post ovigerous female (31.6×30.4 mm) (ZRC 2002.455), Haputo Beach forest, Guam, coll. P. K. L. Ng, 3 Aug. 2001 (first zoeae hatched 4 Aug. 2001).

Diagnosis. — Carapace distinctly wider than long; antero-dorsal surfaces distinctly granular, posterior surface rough or with striae and low rugosities (Figs. 8, 9A); posterolateral regions with distinct oblique striae (Figs. 8, 9A); postfrontal cristae distinct, sharp, medially separated by deep longitudinal furrow (Fig. 9A,B); third maxilliped merus in adult male longitudinally ovate, 1.6 times longer than broad; inner margin of cheliped carpus with triangular tooth, inner margins spiniform, granular or entire in large males (Fig. 9A); outer surface of chela with large, well-spaced rounded granules (Fig. 10); dorsal margin of male chela with non-pectinated ridge with about 25 small granules (relatively weaker in some specimens), usually with 1 or 2 shorter, indistinct oblique granular ridges posterior to it (Figs. 9A, 10); dorsal surface of adult male cheliped dactylus with row of about 12 granules (Figs. 9A, 10); outer surface of ambulatory meri weakly rugose, dorsal margin finely granular with distinct subterminal tooth (Fig. 9A); male abdominal somite 6 distinctly broader than long, distal part of lateral margins convex, proximal part gently convex (Fig. 9C); abdominal telson subequal in length to somite 6; subtriangular, with rounded tip (Fig. 9C); G1 relatively stout; distal part bent about 80° from vertical, distal chitinous part short, subtruncate (Fig. 11).

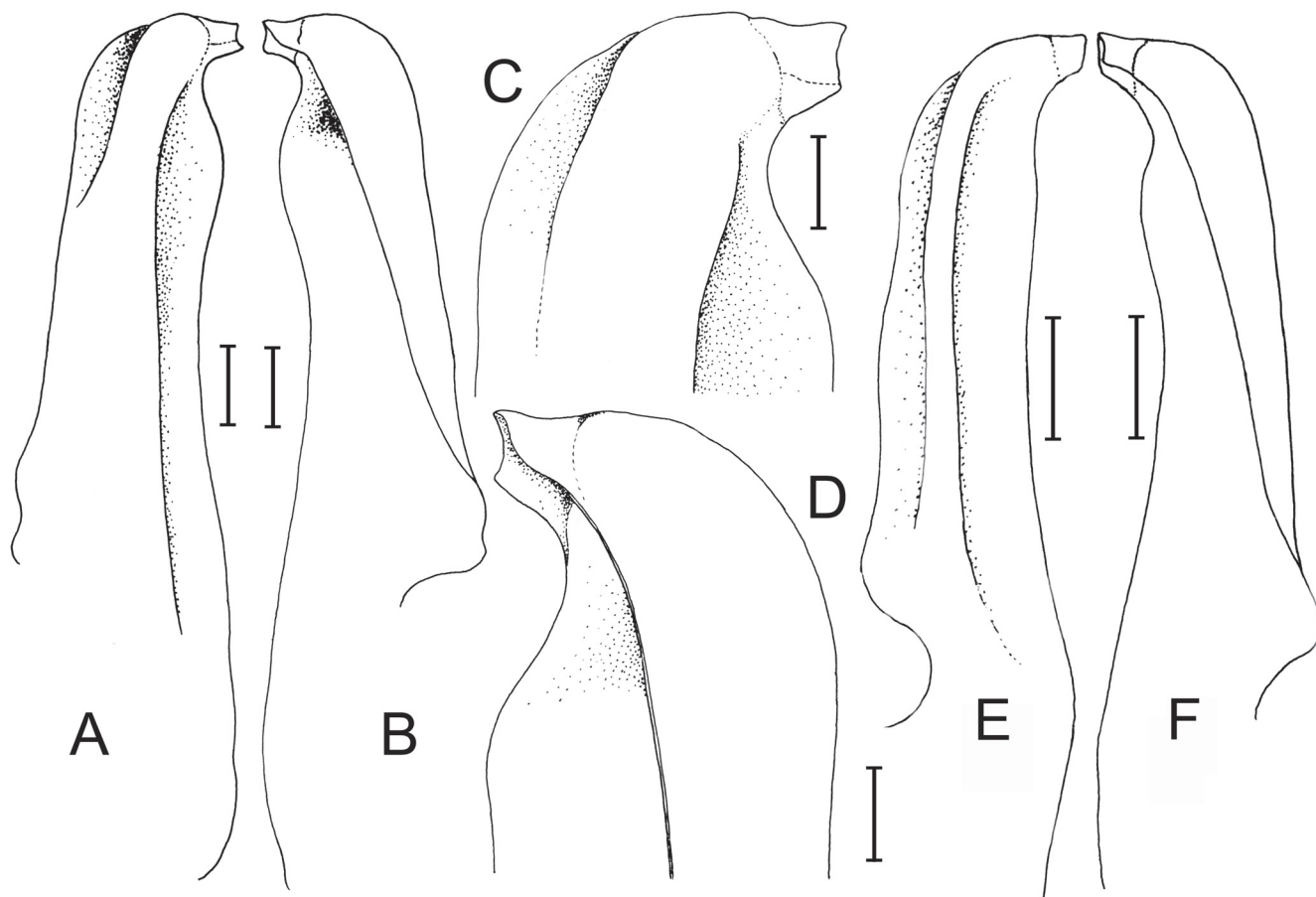


Fig. 11. *Labuanium navus*, new species. Left G1s (denuded). A–D, holotype male (42.9×39.7 mm) (ZRC 2002.454a), Guam; E, F, male (27.9×17.0 mm) (ZRC 2002.456), Haputo Beach, Guam. A, C, E, ventral views; B, D, F, dorsal views; C, D, distal part of G1. Scales: A, B, E, F = 1.0 mm; C, D = 0.5 mm.

Colour. — The carapace is greyish-white to grey in life, sometimes with patches of pale yellow; the eyes are greyish; the chelae are a uniform white to greyish-white (Fig. 9).

Etymology. — The species is named after the Latin word for active and diligent. It is used as a noun in apposition. It also honours Navjot Sodhi, a dear friend and esteemed colleague in the Department of Biological Sciences, National University of Singapore, who suddenly passed away at the prime of his life in mid-2011. A world-renowned conservation biologist and ornithologist, Navjot, or “Nav” as I often called him, was always busy writing new papers and books, and regularly thinking up new ideas to challenge scientific dogma. His many bright ideas, infectious enthusiasm for research, and cheeky humour will be sorely missed.

Remarks. — The discovery of a separate species from Guam is surprising. Although the Marshall Islands (where *L. rotundatum* s. str. is present) is just about 1000 km east of it, and the Caroline Islands (where *L. papuomalesiacum* is present) is even nearer, only about 500 km to the southeast; Guam must apparently be sufficiently isolated for *L. navus*, new species, to evolve. Another species, *L. scandens*, is present in Taiwan, about 1000 km to the west of Guam. Speciation within the genus has presumably been the result of historical vicariance, but one must assume that larval dispersal patterns in *Labuanium* are relatively conservative and this has served to maintain their present allopatric distributions.

The most obvious difference with other *Labuanium* species is the colour. The carapaces and chelae of adult *L. navus* are generally an almost uniform greyish-white (Fig. 1), while *L. rotundatum* is uniformly yellow, with the fingers white (Fig. 9). The carapace of adult *L. rotundatum* tends to be more rectangular in shape, with the lateral margins gently convex to almost straight (Figs. 3A, 4), whereas that of *L. navus* is relatively more rounded, mainly because the margin is more arcuate (Fig. 10A). The chelae of adult males of *L. navus* are relatively stouter and higher than those in *L. rotundatum* (Figs. 3C, 6), with the granules on the outer surface relatively larger, fewer in number and spaced further apart (Fig. 11). The male abdomen is also relatively broader in *L. navus* (Fig. 10C) compared to that of *L. rotundatum* (Fig. 5). The G1 structure is most diagnostic, being relatively more slender with a longer distal pectinated part in *L. rotundatum* (about twice the length of that in *L. navus*) (Figs. 7, 8), whereas it is distinctly stouter and the distal pectinated part appears truncated in *L. navus* (Fig. 12).

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