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A revision of *Neosesarma* (Crustacea: Brachyura: Sesarmidae) with the description of a new species

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ABSTRACT

The Indo-west Pacific mangrove crab genus *Neosesarma* Serène & Soh, 1970, is revised. A new species, *N. hirsutus*, is described from northern Australia. The distribution of *N. rectipectinatum* is extended south to northern Australia and southern Papua. All species can be separated by differences in male claw tuberculation, the length and number of teeth of the pectinated crest on the dorsal surface of the cheliped palm, and the shape of the male first gonopods. □ *Crustacea, Brachyura, Grapsidae, Sesarmidae, mangroves, Indo-West Pacific, new species.*

The present paper is part of an ongoing study of the Sesarminae. Previous papers have dealt with revisions of *Sarmatium* (Davie, 1992) and *Neosarmatium* (Davie, 1994; Rahayu & Davie, 2006), and new species and new records of *Parasesarma* (Davie 1993; Davie & Pabriks 2010); *Metasesarma* and *Geosesarma* (Ng & Davie, 1995); *Perisesarma* (Rahayu & Davie, 2002; Davie, 2003; Davie 2010); *Metaplax* (Davie & Nguyen, 2003); and *Sesarmoides* (Davie & Ng, 2007).

Neosesarma Serène & Soh, 1970, was diagnosed to include a number of Indo-West Pacific species previously included in *Sesarma* (*Sesarma*), viz., *S. gemmiferum* Tweedie, 1936, *S. rectipectinatum* Tweedie, 1950, *S. aequifrons* Rathbun, 1914, and tentatively, *Sesarma laeve* A. Milne-Edwards, 1869. Davie (1994) has shown that *S. aequifrons* is a junior synonym of *S. laeve*, and transferred that species to *Neosarmatium* Serène & Soh, 1970. Collections of sesarmids from northern Australia have revealed the presence of a new species of *Neosesarma* from the Northern Territory, and considerably extend the range of *N. rectipectinatum*.

Abbreviations used in the text are: QM, Queensland Museum, Brisbane; NT, Northern Territory; NHM, Natural History Museum, London; MNHN, Muséum national d'Histoire naturelle, Paris; ZRC, Zoological Reference Collection of the Raffles Museum, National Museum of Singapore.

SESARMIDAE Dana, 1851

Neosesarma Serène & Soh, 1970

Neosesarma Serène & Soh, 1970: 394, 405; Ng *et al.* 2008: 222 (in list).

Type species: *Sesarma gemmiferum* Tweedie, 1936, by original designation. Type locality: Johore Straits, Singapore. Gender neuter.

Diagnosis. Carapace not deeply vaulted; a single acute epibranchial tooth, distinctly separated from exorbital angle by sulcus; anterior frontal margin nearly straight, without well-marked median concavity; antennal peduncle not excluded from orbit; postfrontal lobes subequal in width; not markedly swollen. Male cheliped with a single longitudinal pectinated crest on upper surface of palm separated from inner

margin; a row of regular, more or less conical dactylar tubercles. Posterodistal border of merus of ambulatory legs generally unarmed, but may be denticulate (P2–4 of *N. hirsutus* with 5–8 small spines; P5 with spaced granules).

Species included: *N. gemmiferum* (Tweedie, 1936); *N. hirsutus* sp. nov.; *N. rectipterinatum* (Tweedie, 1950).

KEY TO SPECIES OF *NEOSESARMA*

1. Dactyl of male cheliped with 21–26 tubercles along superior margin; propodus of third walking leg slender, more than 3 times width. *N. hirsutus* sp. nov.
- Dactyl of male cheliped with 6–10 tubercles along superior margin; propodus of third walking leg stouter, less than 3 times width. 2
2. Pectinate crest on upper surface of palm of male cheliped short, consisting of *c.* 18 horny teeth; dactyl of male cheliped with 9–10 tubercles *N. gemmiferum* (Tweedie, 1936)
- Pectinate crest long, consisting of *c.* 60 horny teeth; dactyl of male cheliped with 6–9 tubercles along superior margin *N. rectipterinatum* (Tweedie, 1950)

Neosesarma gemmiferum (Tweedie, 1936)

(Figs 1, 2, 6A, B)

Sesarma gemmifera Tweedie, 1936: 58–61, text-fig. 2, pl. 15, fig. 1; 1950: 342, fig. 1d.

Neosesarma gemmiferum – Serène & Soh 1970: 394, 405, pl. 2A, B; Ng *et al.* 2008: 222 (in list).

Material examined. LECTOTYPE (here designated), ♂ (22.3 × 20.3 mm), NHM-1947.11.18.20, Johore Strait, Singapore, mangrove swamps, Oct. 1934, M.W.F. Tweedie. PARALECTOTYPE, ♀ (24.6 × 23.2 mm), NHM-1947.11.18.19, Johore Strait, Singapore, mangrove swamps, Oct. 1934, M.W.F. Tweedie. Other material: MNHN-B21500, 2 ♂ (27.1 × 24.5; 27.1 × 24.7 mm), river at Ama Keng, Singapore, C.L. Soh, 17.11.1965; QM-W25704, ♂ (20.4 × 18.8 mm); ♀ (19.7 × 17.7 mm), Sungei Buloh, Singapore, mangroves, C. Schubart & Sivasothi, 6.08.1999. ZRC-1987.562, ♂ (25.5 × 21.7 mm), Kranji, Singapore, mangroves, Peter Ng, 1983. QM-W14836, ♀ (19.0 × 16.3 mm), end of Lim Chu

Kang Rd, north-western Singapore, mangroves, P. Davie & P. Ng, 06.09.87. QM-W14871, ♂ (17.25 × 16.5 mm), Lim Chu Kang Rd, north-western Singapore, mangroves, P. Davie & P. Ng, 06.09.1987.

Description. Carapace *c.* 1.1 times broader than long, maximum breadth across exorbital teeth; single epibranchial tooth separated by deep gap; lateral margins slightly convergent posteriorly. Front sharply deflexed, margin finely beaded, almost straight, with only very shallow median emargination. Frontal width *c.* 0.65 times fronto-orbital width. Post-frontal lobes equal in breadth, median pair placed slightly in advance of lateral pair, rugose anteriorly; laterals bounded anteriorly by low polished granules. Regions: gastric region moderately well defined; low slightly rugose ridge separating urogastric and cardiac regions; protogastric lobe extending forward as a groove, becoming deep and narrow between median postfrontal lobes; cardiac and intestinal regions moderately defined. Carapace with dense covering of curved bristles and longer setae, often irregularly tufted; surface smooth, with scattered punctations. Dense setation extends onto pereopods, except for undersurface of meri of walking legs, lower and inner faces of palm of cheliped, and distally on fingers of chelae.

Chelipeds robust, equal; chela *c.* 1.7 times dactylus length. Merus with upper border bearing small sub-distal tooth; outer surface covered in transverse squamiform markings, and sparsely scattered setae; inner border expanded and flattened distally, rounded or obtusely angled, margin bluntly denticulate. Palm with single longitudinal pectinate crest of about 18 fine horny teeth, continued each end as granular crest (in female reduced to simple granular crest over entire length); upper two-thirds of outer surface sparsely to coarsely granular, often covered with setae on especially in smaller males, but setae may become sparse in large males and females; lower third and ventral surface without setae, punctate, with some obliquely disposed squamiform markings proximo-ventrally; inner surface coarsely

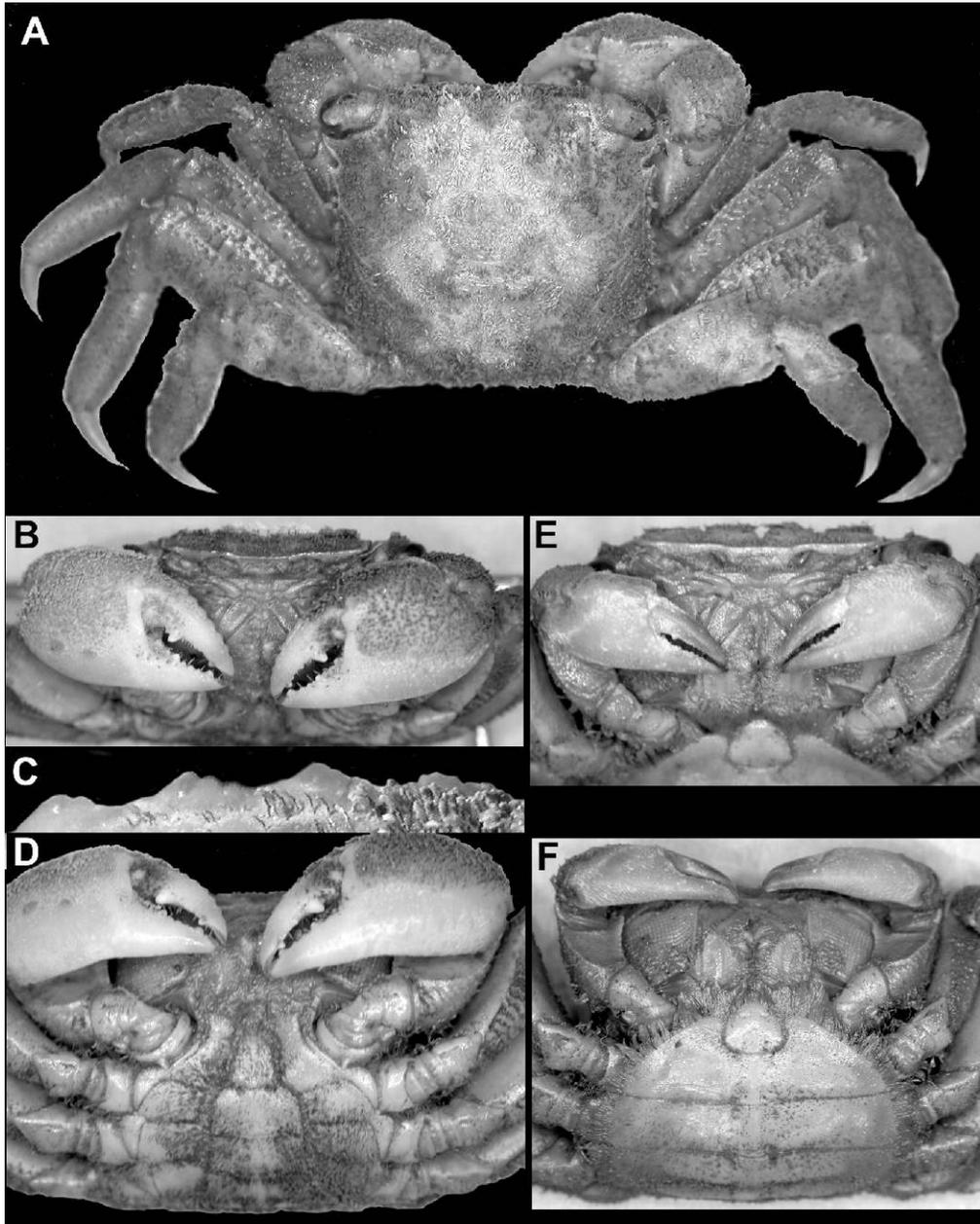


FIG. 1. *Neosesarma gemmiferum* (Tweedie, 1936). A–D: Lectotype male, (NHM-1947.11.18.20); E, F: Paralectotype female (NHM-1947.11.18.19). A, dorsal view; B, frontal view of male carapace and claws; C, magnified lateral view of cheliped dactylar tuberculation; D, sternum and male abdomen; E, frontal view of female carapace and claws; F, female abdomen.

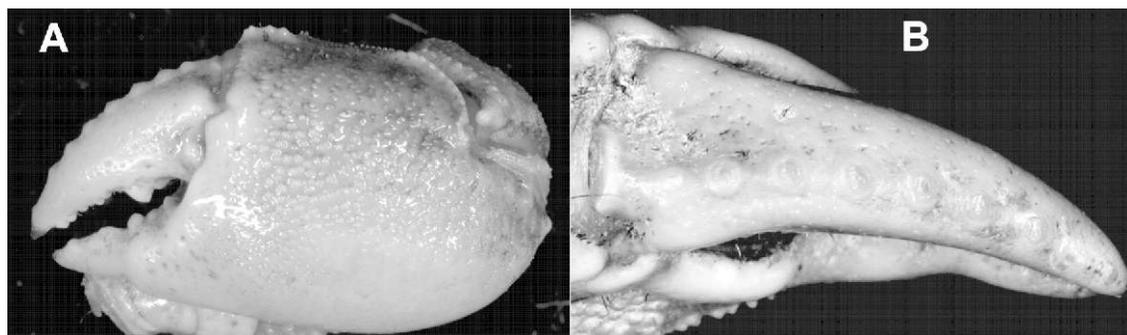


FIG. 2. *Neosesarma gemmiferum* (Tweedie, 1936). ♂ (27.1 × 24.5 mm), MNHN-B21500, Singapore. **A**, frontal view of male chela; **B**, dorsal view of dactylar tuberculation of male chela.

granular, granules not extending onto fixed finger. Dactylus slightly incurved, moderate gape between fingers. Upper margin, on mature males, with 9–10 tubercles, distal 2 or 3 small and indistinct; tubercles all isolated, each surrounded at base by raised rim; longitudinally oval in dorsal view, proximal slope longer (Fig. 2); 2 transverse grooves on proximal slope (Fig. 1C). Female chela with 5–6 very small dactylar tubercles, confined to basal half.

Walking legs relatively short; with dense covering of setae; broad meri armed with anterior sub-distal spine. Third leg: merus *c.* 1.9–2.1 times longer than wide; combined length of carpus and propodus slightly longer than merus (*c.* 1.1 times); propodus *c.* 2.9 times longer than wide.

Male abdomen with telson *c.* 1.1 times longer than wide; length 1.1–1.2 times length of penultimate segment; sixth somite *c.* 1.9 times wider than long. Female abdomen with telson deeply sunken into sixth somite. Male G1 stout, but relatively slender; subdistally widened into broad sloping shoulder; apex corneous, somewhat truncated, not divided into lobes.

Colour. ‘... mainly dark brown with some of the margins and rugosities purplish. The chelae are pale yellowish, and the movable finger is usually marked with some irregular purple blotches.’ ‘Each tubercle is ... surrounded ... by a slightly raised reddish rim, the tubercles them-

selves being pale yellow. This contrast in colour ... gives the tubercles the appearance of being ... as gems are set in a ring.’ (Tweedie 1936).

Remarks. Males of this species are easily identified by the 9–10 characteristically shaped dactylar tubercles on the claw, and the presence of *c.* 18 horny teeth forming the pectinate crest on the upper surface of the chela (the other three species each have more than 20). The male G1 is also distinctive, but of the other described species, it is most similar to *N. hirsutus* sp. nov. (cf. Fig. 6A, B with 6G–I).

Distribution. Singapore: Johore Strait; Serangoon River. Malaysia: Port Swettenham, Selangor (Tweedie 1936). Kuching, Sarawak (Tweedie 1950).

Habitat. Mangrove associated; in soft muddy areas; log infaunal, and often associated with crevices in trees and fallen logs.

Neosesarma rectipectinatum (Tweedie, 1950)
(Figs 3–5, 6C–F)

Sesarma rectipectinata Tweedie, 1950: 348–50, figs 2d, 4a–d.

Neosesarma rectipectinatum — Serène & Soh 1970: 394, 405 (in list); Ng *et al.* 2008: 222 (in list); Rahayu & Setyadi 2009: 49, 2 colour figs.

Material examined. LECTOTYPE, here designated, ♂ (21.0 × 17.7 mm), NHM-1951.2.15.1–2, Labuan, Borneo, G. Nunong, August 1938. PARALECTOTYPE, ♀ (23.8 × 20.8 mm), same data as lectotype. Other Material: QM-W25696, ♀ (18.1 × 16.2 mm), ♂ (21.4 × 19.0; 19.6 ×

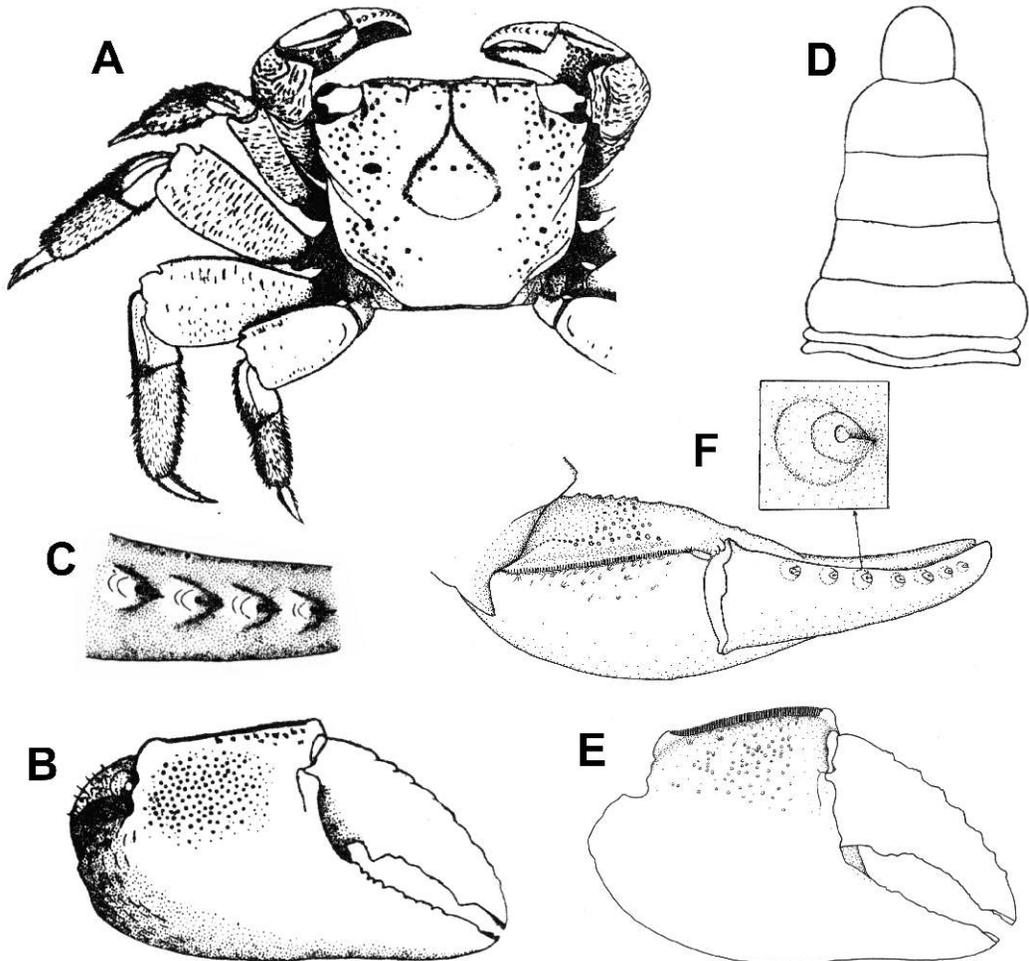


FIG. 3. *Neosesarma rectipectinatum* (Tweedie, 1950). Original figures (Tweedie 1950: fig. 4a–d) of syntype ♂ from Labuan: **A**, dorsal view of carapace and legs; **B**, chela; **C**, dactylar tubercles in dorsal view; **D**, male abdomen. QM-W4575, holotype ♂ (28.3 × 23.7 mm), Trinity Inlet, Cairns NEQ. **E**, male chela; **F**, dorsal view of chela showing dactylar tuberculation with magnified view of an individual tubercle.

17.3 mm), Mandai, Singapore, mangroves, C. Schubart, 29.12.1999. QM-W25702, ♂ (24.3 × 21.3 mm), Mandai, Singapore, mangroves, C. Schubart, 15.10.1999. QM-W29110, ♀ (20.9 × 17.9 mm), Mandai Swamp, Singapore, D. Maitland, Nov. 1984. QM-W24932, ♂ (15.4 × 13.7 mm); ♀ (21 × 18.6 mm), West Ajkwa River mouth near P.T. Freeport Cargo Dock area, southern Irian Jaya, Indonesia, mangroves, J.R. Hanley, 09.07.1998, 4°49.2'S, 136°51.3'E. ZRC-2003.0476, ♂

(18.9 × 15.9; 13.6 × 10.5; 14 × 11.7 mm); ♀ (18.1 × 15.3; 11.8 × 10.4 mm), Ajkwa, Irian Jaya, Indonesia, stn A41/I/B, D.L. Rahayu, 16.10.2001. ZRC-2003.0474, ♂ (19.3 × 16.6 mm); ♀ (22.2 × 19.2; 15 × 14.1 mm), Irian Jaya, Timika, Sungai Tipoeke, Indonesia, D.L. Rahayu, 29.03.2002. ZRC-2003.0477, ♂ (20.4 × 17.6 mm); ♀ (8.6 × 7.3 mm), Kamora, Irian Jaya, Indonesia, stn Kam3/II/A1, D.L. Rahayu, 21.10.2002. QM-W29111, ♂ (21 × 18.5 mm), Portside, G. Setyadi, 29.07.1999.

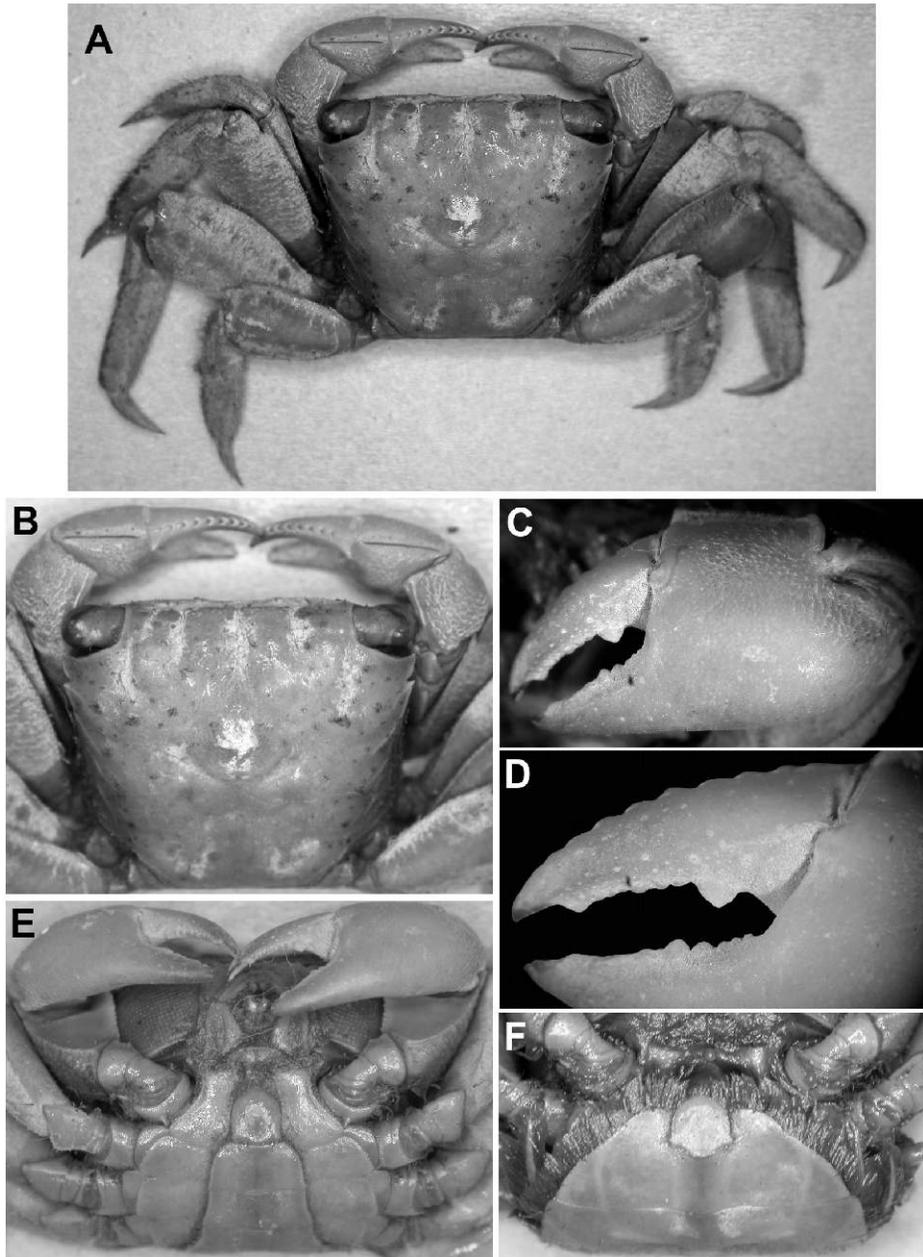


FIG. 4. *Neosesarma rectipectinatum* (Tweedie, 1950). A-E, lectotype ♂ (21.0 × 17.7 mm), NHM 1951.2.15.1-2, Labuan, Borneo; F, paralectotype ♀ (23.8 × 20.8 mm), NHM1951.2.15.1-2, same data as lectotype. A, dorsal view; B, magnified view of carapace; C, chela; D, magnified view of fingers of chela; E, sternum and male abdomen; F, female abdomen.

QM-W8834, ♂ (12.1 × 10.8 mm), Field Island, mouth of South Alligator R., NT, inside rotting log, *Rhizophora* zone, fairly wet, soft muddy substrate (Acc. no. K189), 01.06.2009, P. Davie. QM-W20682, ♂ (18.6 × 16.4 mm), side branch of Norman R., near Karumba, Gulf of Carpentaria, NW Qld, mangroves, mid-estuary, mud, salinity 15 ppt, P. Davie & J. Short. QM-W16747, ♂ (14.1 × 12.3; 9.9 × 9.7; 11.3 × 8.9; 9.1 × 8.0 mm), Fishbone Creek, eastern Cape York, Qld, P. Davie & J. Short, 25.10.1990, 10°57'S, 142°28'E. QM-W16755, ♂ (22 × 19.1 mm), Muddy Bay, Cape York, Qld, P. Davie & J. Short, 26.10.1990, 10°44'S, 142°33'E. QM-W16835, ♂ (8.3 × 7.5 mm), Harmer Creek, eastern Cape York, Qld, Australia, P. Davie & J. Short, 31.10.1990. QM-W16823, ♂ (20.6 × 18.0 mm), Harmer Creek north, eastern Cape York, Qld, P. Davie & J. Short, 31.10.1990, 11°50'S, 142°57'E. QM-W18173, ♀ (22.5 × 19.1; 21.7 × 18.4; 24.7 × 20.8; 16.1 × 10.4 mm); ♂ (23.4 × 20.1 mm), Starke R., inlet just south of mouth, FN Qld, *Rhizophora*, log infauna, salinity 35 ppt, P. Davie & J. Short, 11.11.1992, 14°47.9'S, 145°01.3'E. QM-W4575, ♂ (28.3 × 23.7 mm), Trinity Inlet, Cairns NEQ, 3.12.1974, R. Timmins. QM-W29112, ♂ (20.3 × 17.1 mm), some data as holotype. QM-W4580, ♂ (26.5 × 22.6 mm), Southern tip of Admiralty Island, Trinity Inlet, Cairns, NEQ, 12.12.1974, R. Timmins. QM-W8816, ♂ (21.2 × 18.0 mm), Trinity Inlet, Cairns NEQ, 8.12.1975, R. Timmins. QM-W8814, ♂ (18.4 × 15.8 mm), Trinity Inlet, Cairns NEQ, 14.12.1975, R. Timmins. QM-W8817, ♀ (22.7 × 19.9 mm), Barron R., Cairns NEQ, 11.12.1975, R. Timmins.

Description. Carapace *c.* 1.14–1.2 times broader than long, maximum carapace breadth across exorbital teeth; single small epibranchial tooth. Lateral margins shallowly concave, slightly convergent posteriorly. Front sharply deflexed with broad, shallow, median concavity. Frontal width 0.63–0.65 times fronto-orbital width. Post-frontal lobes equal in breadth, varying from low and rounded to moderately prominent; mesogastric, cardiac and intestinal regions faintly defined; varying sized clumps of short setae most numerous on hepatic and branchial regions, and anterior margins of post-frontal lobes.

Chelipeds robust, equal; chela length 1.65–2.0 times chela height (former ratio for 28.3 mm male, latter for 20.3 mm male); 1.65–1.75 times dactylus length. Merus with upper border ending in a small, sharp spine; outer surface

covered in transverse rows of squamiform granules; inner border expanded and flattened distally. Dactylus curved, robust, leaving only small gape; upper margin with 6–9 prominent tubercles, lowest distally; proximal slope slightly the longer, rounded, formed by three step like 'wrinkles'; distal slope straight or slightly convex; each tubercle with a disto-medial longitudinal keel, with distinct sulcus on inner side (Fig. 3F). Outer face of palm with band of small tubercles posterior to dactylus, rest of outer surface and dactylus itself smooth, except for proximal row of granules on ventral border. Superior face of palm of male with single pectinate crest of 56–63 tall teeth; border behind pectinate crest composed of irregular prominent tubercles which extend in band down inner face. Inner face smooth behind dactylus and onto immovable finger. Female chela less massive, no gape between fingers; length twice height; dactylar tubercles less prominent than males, as few as five, and characteristic shape less defined; pectinate crest of palm reduced to row *c.* 50 granules continuous to carpus articulation.

Walking legs relatively short; meri broad, armed with anterior sub-distal spine; propodi and distal part of carpi covered with mat of setae. Third leg: merus 1.7–2.0 times longer than wide (north Queensland specimens tend to appear a little broader than other samples); propodus *c.* 2.5 times longer than wide, 1.4–1.8 times dactyl length; combined length of carpus and propodus slightly longer than merus (*c.* 1.1 times).

Male abdomen relatively narrow; telson 1.1–1.36 times longer than wide, length 1.1–1.2 times length of sixth somite; sixth somite 1.9–2.1 times wider than long. Female abdomen with telson deeply sunken into sixth somite. Male G1 stout, but relatively slender; not widened subdistally, but distally broadly tapering towards tip; apex corneous, produced as a tubular elongation, not conspicuously divided into lobes (Fig. 6C–F).

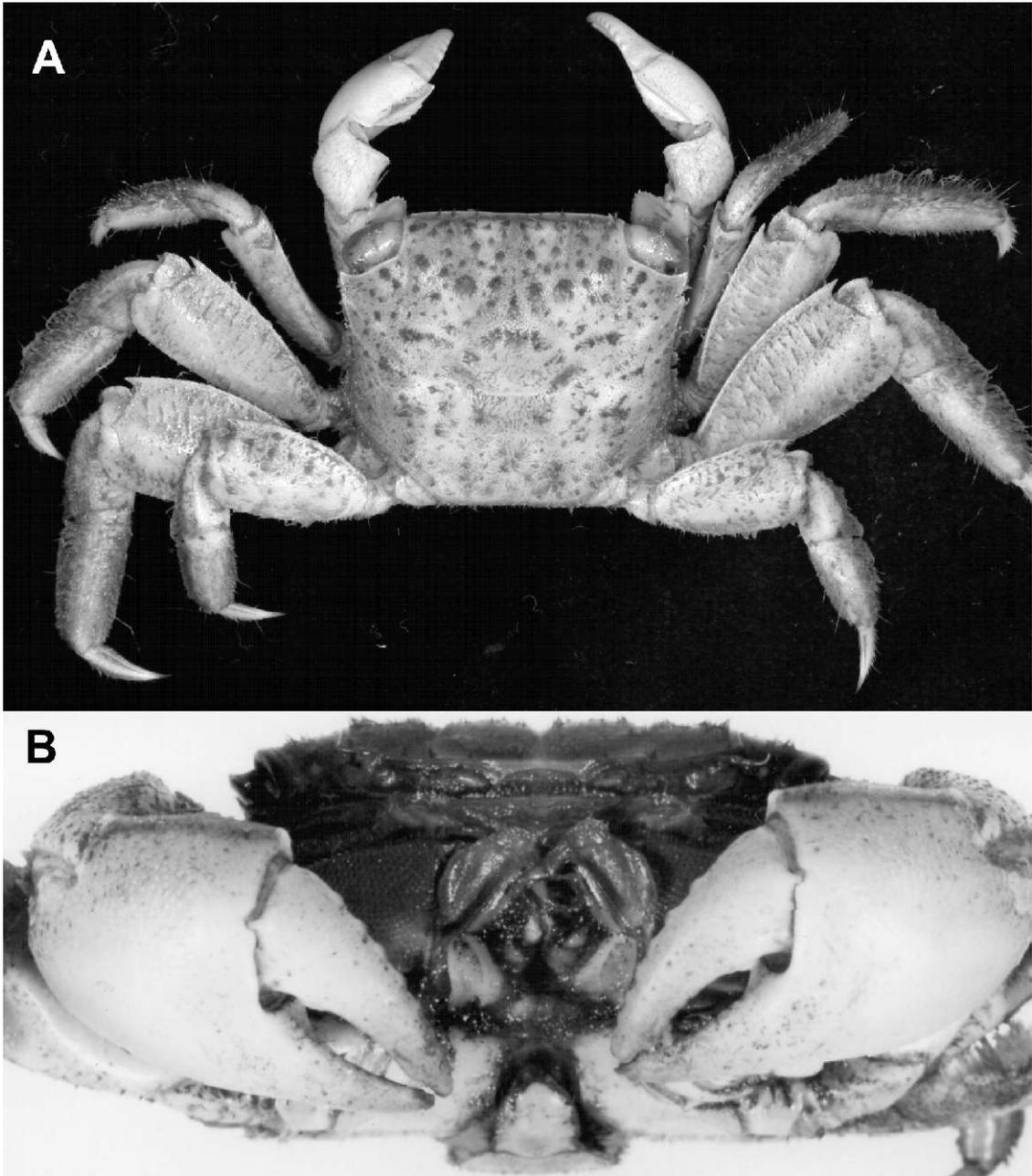


FIG. 5. *Neosesarma rectipectinatum* (Tweedie, 1950): A, dorsal view (QM-W8816, ♂ (21.2 × 18.0 mm), Trinity Inlet, Cairns NEQ). B, frontal view (QMW4575, holotype ♂ (28.3 × 23.7 mm), Trinity Inlet, Cairns NEQ).

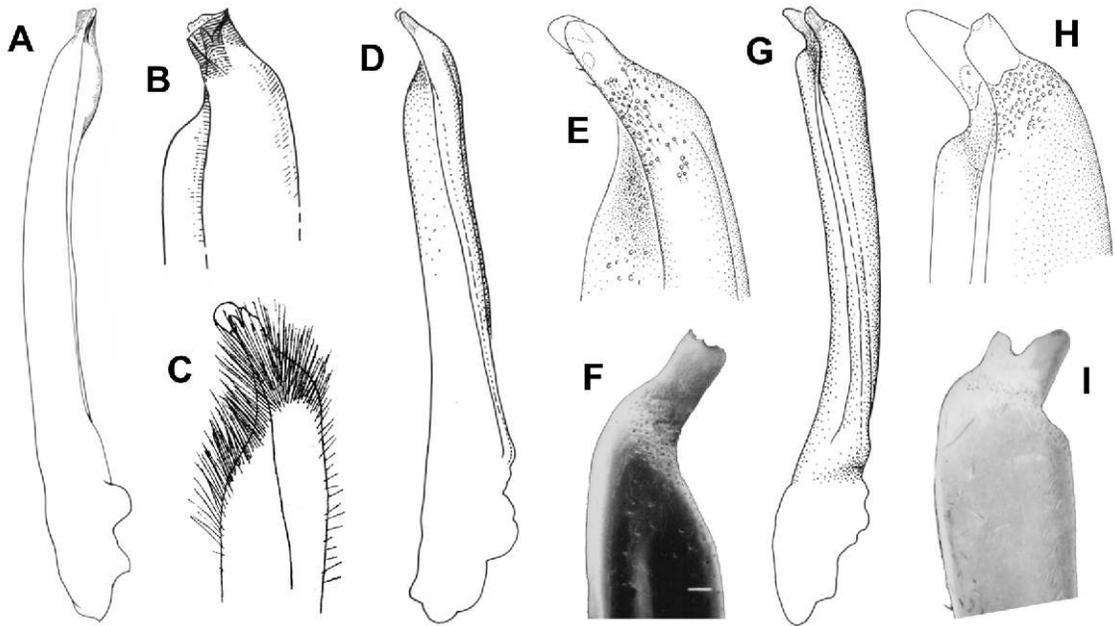


FIG. 6. Male first gonopods: **A, B**, *Neosesarma gemmiferum* (Tweedie, 1936); **C**, *N. rectipectinatum* (Tweedie, 1950) (after Tweedie 1950: fig. 2d, but reversed for better comparison); **D–F**, *N. rectipectinatum* (QM-W4575, (28.3 × 23.7 mm), Trinity Inlet, Cairns); **G–I**, *N. hirsutus* sp. nov. (QM-W8786, holotype (23.8 × 21.0 mm), Field Island, Kakadu, NT).

Colour (Australian specimens). Carapace and dorsal surface of legs a dirty purple-grey with lighter mottling. Chelae, and ventral surfaces of legs and sternum yellow-cream. Frontal strip and epistome sometimes deep purple, otherwise as for rest of the carapace. Also see colour photographs in Rahayu & Setyadi (2009: 49).

Remarks. *Neosesarma rectipectinatum* is characterised by having the pectinate crest on the top of the cheliped palm consisting of *c.* 60 horny teeth, and running for most of the length of the palm. The Australian and Papuan samples examined differ slightly from the Singapore specimens by the dactylar tubercles being slightly more prominent, and often the most proximal is obsolete so that the tubercle count is 6–8 versus 8–9 in the Singapore specimens and the type series. Nevertheless, the shape of the tubercles is essentially the same, albeit that the

proximal slope is formed by more distinct step like ‘wrinkles’ in the Australian specimens (probably because the tubercles are slightly higher). The corneous distal slope is however identical in its peculiar ‘keeled’ shape, with its inner sulcus (Fig. 3F). Because the specimens from across the distributional range are otherwise virtually identical, including the shape of the male gonopods, I must conclude that the observed small differences in tuberculation are simply due to regional variation and do not amount to a real specific level difference.

Distribution. Labuan (type locality); Singapore (present material); southern coast of Papua in south-eastern Indonesia. In Australia from about Cairns, in northeastern Queensland west into the Gulf of Carpentaria, and the Northern Territory.

Habitat. Mangrove associated. Typically in soft muddy areas within the forest. Log infaunal, and often associated with crevices in trees and fallen logs. In burrows, and on open substrate among *Avicennia* pneumatophores. Also in burrows in steep eroding banks. Favours zones inundated by most tides; lower and middle estuary.

Neosesarma hirsutus sp. nov.

(Figs 6G–I, 7, 8)

Material examined. HOLOTYPE: QM-W8786, ♂ (23.8 × 21.0 mm), Field I., Kakadu, NT, May, 1979, P. Davie (Acc. No. K171). PARATYPES: QM-W8830, 3 ♂ (25.7 × 22.3; 26.4 × 23.6; 24.2 × 21.3 mm), 2 ♀ (29.5 × 26.3; 21.0 × 18.7 mm), Darwaronga River, Northern Territory, *Rhizophora* zone, mudbank, 10.10.1975, D. Grace. QM-W8831, ♂ (29.2 × 25.4 mm), Djigagila Ck., Nilingombi Islands, NT, 4.9.1975, D. Grace. QM-W8793, ♂ (30.0 × 26.4 mm), ♀ (21.4 × 19.4 mm), Woolen R., NT, 1 km upstream of mouth of Creek B, *Rhizophora*/mudbank, D. Grace, 16.9.1975, D. Grace. QM-W8832, ♀ (27.7 × 24.2 mm), Darwaronga River, NT, 7.5 km from mouth, east bank, *Rhizophora*/*Ceriops* zone, 9.10.1975, D. Grace. QM-W29113, ♀ (23.7 × 20.9 mm), Field I., Kakadu, NT, from crevices in dead trunk about 2 m above mud in seaward *Rhizophora* zone, 3.05.1979, P. Davie (Acc. No. K171). QM-W8787, ♂ (23.8 × 21.3 mm), Field Island, Kakadu, NT, May, 1979, P. Davie (Acc. No. K181). QM-W8833, ♀ (18.3 × 16.5 mm), western bank of mouth of West Alligator River, Kakadu National Park, from rotten log in *Rhizophora* zone, 4.05.1979, P. Davie (Acc. No. K227). NTM Cr001684, ovig. ♀ (25.0 × 22.5 mm), 12°34.2'S, 130°56.3'E, NT, mangrove, 17.05.1984, J.R. Hanley. QM-W19161, M (19.9 × 17.5 mm), Middle Arm, Darwin, Australia, edge of channel in *Sonneratia*/*Rhizophora* zone, tidally inundated, salinity 32 ppt (low tide), P. Davie, 29.06.1982, 12°32'S, 130°50'E.

Description. Carapace. Fronto-orbital width 1.1–1.15 times greater than mid-line carapace length. Single epibranchial tooth protruding slightly more than external orbital angles and forming greatest carapace width. Lateral margins concave, slightly convergent posteriorly. Front sharply deflexed with broad median concavity, lateral angles acute. Frontal width *c.* 0.65 times fronto-orbital width, and 2.9–3.3

times maximum orbital length. Post-frontal lobes equal in breadth, outer pair with finely granulate crest on leading edge, median pair rounded but also bearing less prominent crest slightly behind that of outer pair. Carapaces of holotype and specimens QM-W8787 and W8833 have dense clumps of short dark setae giving '*Clistocoeloma*-like' appearance (Fig. 7A), but in other specimens setae not so thick as to obscure carapace surface (e.g. Fig. 8).

Chelipeds relatively robust, fronto-orbital width 1.3–1.6 times chela length, more in immature males (× 2.1 for 12.1 mm specimens). Chela length 1.6–1.8 times dactyl length. Single longitudinal pectinate crest of 33–41 horny teeth; becoming raised granular rim proximally and distally. In females and immature males, boundaries of pectinate crest not clearly defined and consequently 'pectinations' may number over fifty, although they are low and often almost granulate. Outer surface of palm and fixed finger smooth or only microscopically granular. Dorsal surface with short setae either side of pectinated crest, may be thick or sparse. Inner surface with large granules evenly scattered, except on fixed finger and near gape; granules slightly larger centrally. Dactyl only slightly recurved, gape between fingers small. Upper margin with 21–26 tubercles, decreasing in size distally, but all obvious; evenly spaced, distal slope longer. Female chela much smaller than male; only slightly granular on inner face; dactylar tubercles also smaller; becoming indistinct distally.

Walking legs. Dorsal surfaces of all legs covered with clumps of short setae especially either side of propodus, and to a lesser extent, carpus. Inside surfaces of merus smooth and naked. Third ambulatory leg a little less than twice width of carapace (*c.* 1.8–1.9); merus 1.9–2.2 times longer than wide, 2.0–2.4 times length of dactyl; propodus elongated and slender, *c.* 3.4 times longer than wide, 1.4–1.7 times length of dactyl. Posterodistal border of merus of ambulatory legs 1–3 denticulate (5–8 small spines) reminiscent of *Nanosesarma*.

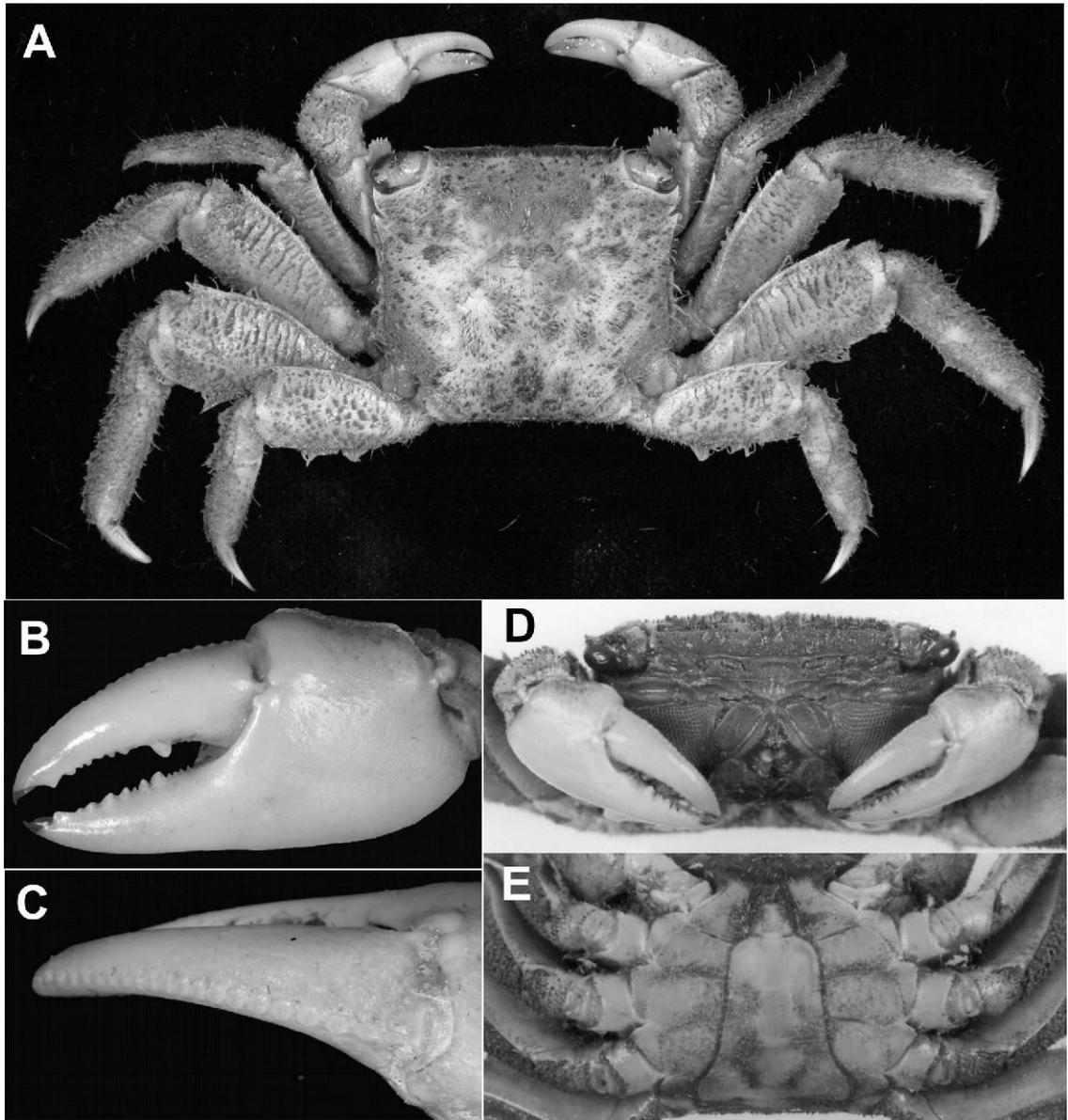


FIG. 7. *Neosesarma hirsutus* sp. nov.: A, dorsal view; B, left chela; C, dorsal view of dactylar tuberculation of chela; D, frontal view; E, sternum and abdomen. A, D, E, QM-W8786, holotype ♂ (23.8 × 21.0 mm), Field Island, Kakadu, NT; B, C, QM-W8793, ♂ (30.0 × 26.4 mm), Woolen R., NT



FIG. 8. Dorsal view of *Neosesarma hirsutus* sp. nov., ♂ (29.2 × 25.4 mm) QM-W8831, Djigagila Ck., Nilingombi Islands, NT

Fourth ambulatory leg without spines but with spaced granules; spines most prominent on smaller individuals.

Male abdomen relatively narrow. Telson 1.1–1.3 times longer than wide; length 1.0–1.2 times length of penultimate segment, but longer in smallest immature male (1.33). Penultimate segment *c.* 1.8 times wider than long. Female abdomen with telson deeply sunken into sixth somite. Male G1 stout, but relatively slender; prominent subdistal shoulder on inner face; apex corneous, somewhat truncated, divided into two deep lobes, inner being slightly broader and more projecting.

Remarks. *Neosesarma hirsutus* sp. nov. is immediately separable from all other *Neosesarma* species by the slightly more slender walking legs (propodus of third walking leg more than 3 times width), but most significantly by the much more numerous dorsal dactylar tubercles (21–26 versus a maximum of

10 in other species). Its closest relative, certainly in terms of the shape of the male G1, is *N. gemmiferum* (compare Figs 6A, B and 6G–I). It can also be separated from that species by the length of the pectinate crest on upper surface of the palm of the male cheliped – in *N. gemmiferum* it is relatively shorter, consisting of *c.* 18 horny teeth, whereas in *N. hirsutus* there are 33–41 horny teeth. Finally, the first 3 pairs of walking legs of *N. hirsutus* are unusual in having the posterodistal border of the merus with 5–8 small spines.

Etymology. Name refers to the thick clumps of setae that cover the carapace and legs, and that makes identification easy, at least within the north Australian region where they occur. It is used here as a noun in apposition.

Habitat. Typically occurs in crevices in logs or trees, or in dead timber up to a height of at least 2 m, in seaward mangrove zones, or on creek banks; typically in high saline areas. Appears to

prefer soft mudbanks in *Rhizophora*, or *Sonneratia/Rhizophora* and *Rhizophora/Ceriops* mangrove forest associations.

Distribution. Presently only known from the Northern Territory, Australia.

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