

27366

Crustaceana 64 (1) 1993, E. J. Brill, Leiden

**PRAOSIA PUNCTATA, A NEW GENUS AND SPECIES OF MANGROVE
LEUCOSIID CRAB (DECAPODA, BRACHYURA) FROM SINGAPORE**

BY

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ABSTRACT

A new genus and species of leucosiid crab, *Praosia punctata*, is described from mangrove swamps in Singapore. *Praosia* is allied to the genera *Nursia* Leach and *Paranursia* Serène & Soh, but can be separated in having four parallel longitudinal ridges on the carapace, the structure of the male abdomen and, a more elongate male second pleopod.

RÉSUMÉ

Un crabe leucosiide appartenant à un nouveau genre et à une nouvelle espèce, *Praosia punctata*, est décrite de marécages de mangrove à Singapour. *Praosia* est apparenté aux genres *Nursia* Leach et *Paranursia* Serène & Soh, mais peut en être séparé par la présence de quatre crêtes longitudinales parallèles sur la carapace, par la structure de l'abdomen du mâle et par le second pléopode mâle plus allongé.

INTRODUCTION

Members of the family Leucosiidae have been reported from a variety of habitats, including sandy, muddy and gravelly bottoms. There are, however, no known records of mangrove leucosiids from South East Asia. In recent years, the authors have obtained specimens of an unusual *Nursia*-like leucosiid crab from mangroves in Singapore which cannot be identified with any known taxon. These specimens proved to be conspecific with a female specimen in the Zoological Reference Collection (National University of Singapore) which had been labelled as '*Nursia punctata* sp. nov.' by the late Dr. Raoul Serène in 1968. This name however, was never validly published.

The Singapore mangrove leucosiid is here recognised as a new genus and new species, *Praosia punctata*. The descriptions of this new genus and species form the text of the present paper. The abbreviations G1 and G2 are used for the male first and second pleopods respectively. Measurements (in millimeters) are of the carapace width and length respectively. Type specimens are deposited in the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore; Muséum National d'Histoire Naturelle (MNHN), Paris, France; and the United States National Museum of Natural History (USNM), Smithsonian Institution, Washington D.C., U.S.A.

TAXONOMY

Praosia gen. nov.

Diagnosis. — Antero- and posterolateral margins of carapace expanded, edges unevenly sinuous, front narrow and produced, anterior hepatic region excavated to form deep sinus; distinct space between edge of floor of orbit and free edge of buccal cavern. Eyes small and retractable into cylindrical orbits; antenna small and excluded from orbital fossa; antennules folded transversely into rectangular fossae with rounded external angles. Third maxilliped completely covering buccal cavity; merus 1.77 times longer than half length of ischium; exopod large and conspicuous; palp three-segmented, concealed behind merus in repose. Male abdomen consisting of five articulated pieces; segments 1, 2, 6, 7 free; 3-5 fused, sutures indistinct; female abdominal segments 1, 2, 3, 7 free, 4-6 fused. Sutures between sternites 2-3 and 3-4 absent on median part, only present as short grooves near lateral margins of plastron. G1 3 times longer than G2, distal half slightly curved, divided into two processes bearing tufts of hair, tip of larger process forming flap; G2 short. Male gonopore coxo-sternal, opening from coxa of last pair of ambulatory legs, penis protruding from under adjacent sternites.

Type species. — *Praosia punctata* sp. nov., designated herein.

Etymology. — The generic name is derived from the Greek 'Praos' meaning mild, gentle and delightful, reflecting the creature's peaceful disposition. The gender is feminine.

Remarks. — With regards to the shield-like carapace and form of the third maxilliped, *Praosia* gen. nov. is closest to *Nursia* Leach, 1817, a genus with some 20 species (fide Serène, 1968; Takeda, 1973). *Praosia*, however, differs significantly from *Nursia* as currently understood in two important aspects, viz., the presence of four parallel longitudinal ridges on the dorsal surface of the carapace and having the last two segments of the male abdomen free, the third to fifth being fused. The type species of *Nursia*, *N. hardwickii* Leach, 1817 (regarded as a junior synonym of *N. lar* (Fabricius, 1798) by Rathbun, 1910), has the ridges radiating from the centre of the carapace and the male abdominal segments three to six are fused (fide Alcock, 1896). The structures of the G1 and/or G2 for *N. lar* are not known and no comparison is possible. The G1 and G2 are known for only two *Nursia* species, *N. persica* Alcock, and *N. plicata* (Herbst) (fide Stephensen, 1945). The G2 of *Praosia* is distinctly different from that of these two species, being much shorter. In any event, the genus *Nursia* as recognised at present is clearly heterogeneous and in need of a revision. Serène & Soh (1976: 9) commented that '... the genus *Nursia* Leach, 1817 is still heterogeneous; it will probably have to be limited s. str. to the species of group 'A' of Ihle (1918), the other species being distributed into other genera, some existing, some new ones to be established'. For this reason, they established a new genus, *Paranursia* Serène & Soh, 1976, for *N. abbreviata* Bell, 1855. The

genus *Paranursia* is different from *Praosia* in that male abdominal segments three to six are fused and the apex of the G1 is multilobate with chitinous pieces. The G2 in the type species, *Nursia abbreviata*, was not reported.

There has been some debate concerning the classification of the various leucosiid subfamilies (see Manning & Holthuis, 1981). Manning & Holthuis (1981) remarked that, with the exception of the Eballiinae and Cryptocneminae, confusion still exists concerning the definition, size and composition of the other leucosiid subfamilies. Barnard (1950) resorted to describing the various leucosiid genera without taking into account the subfamilies, his reason being that the proposed subfamilies were neither distinctly nor satisfactorily defined. In this respect, the authors take heed of Alcock's (1896) warning to be cautious of any attempt to split the Leucosiidae into subfamilies and leave the subfamilial classification of *Praosia* to be resolved at a later date.

***Praosia punctata* sp. nov. (figs. 1, 2)**

Nursia punctata — Yang, 1979: 5 (nomen nudum)

Material. Holotype male 9.85 by 8.35 mm (ZRC), Sungei Buloh mangrove, Singapore, leg. P. K. L. Ng, May 1991. Paratypes: 1 male, 5.55 by 4.85 mm (ZRC), leg. C. G. S. Tan, May 1991; 1 female, 10.00 by 8.85 mm (ZRC), leg. C. L. Soh, 23 May 1967 (det. R. Serène as *Nursia punctata* sp. nov., manuscript name); 4 females, 9.95 by 8.35 mm (MNHN), 11.95 by 9.75 mm (USNM), 8.75 by 7.15 mm, 8.80 by 7.05 mm (ZRC), leg. C. G. S. Tan, May 1991; 1 female, 6.25 by 5.20 mm (ZRC), leg. Reef Ecology Study Team, National University of Singapore, May 1991; 13 juveniles, 2.70 by 2.00 mm, 2.65 by 2.15 mm, 2.70 by 2.30 mm, 2.85 by 2.35 mm, 2.95 by 2.40 mm, 3.05 by 2.55 mm, 2.80 by 2.60 mm, 3.00 by 2.60 mm, 3.15 by 2.60 mm, 3.25 by 2.75 mm, 3.95 by 3.30 mm (ZRC), 4.00 by 3.30 mm (MNHN), 4.50 by 3.75 mm (USNM), leg. T. H. T. Tan & D. G. B. Chia, May 1991. All specimens from same locality as holotype.

Diagnosis of male holotype. — Carapace broadly octagonal, slightly broader than long; dorsal surface strongly convex, anterolateral, posterolateral and posterior margins expanded to form rim with short perpendicular black bands, lateral angles obtuse, posterolateral margins unevenly sinuous; dorsal surface weakly granular with numerous large punctations which also extend to ventral surface, regions indistinct; four granular ridges present, one each on cardiac and mid-branchial region, branchial ridge joined by short weak oblique ridge two-thirds from anterior end, cardiac ridges lined with large granules, intestinal region with irregularly-shaped elevation bearing large granules; front very weakly trilobate, produced anteriorly, margin of hepatic region excavated to form deep sinus, floor of sinus with obtuse angle about two-thirds distance from front, upper margin of sinus not confluent with lower margin at outer portion; posterior margin broadly trilobate with central lobe smaller than two lateral ones; pterygostomial region punctate, not swollen. Antennule folded transversely; antennular fossa rectangular, external angle rounded; basal segment of antenna embedded, antennary flagellum excluded from orbit. Eye and orbit small, orbit cylindrical, eye retracts along orbital groove. Merus of third maxillipeds with pointed apex, 1.77 times longer than half length of ischium along

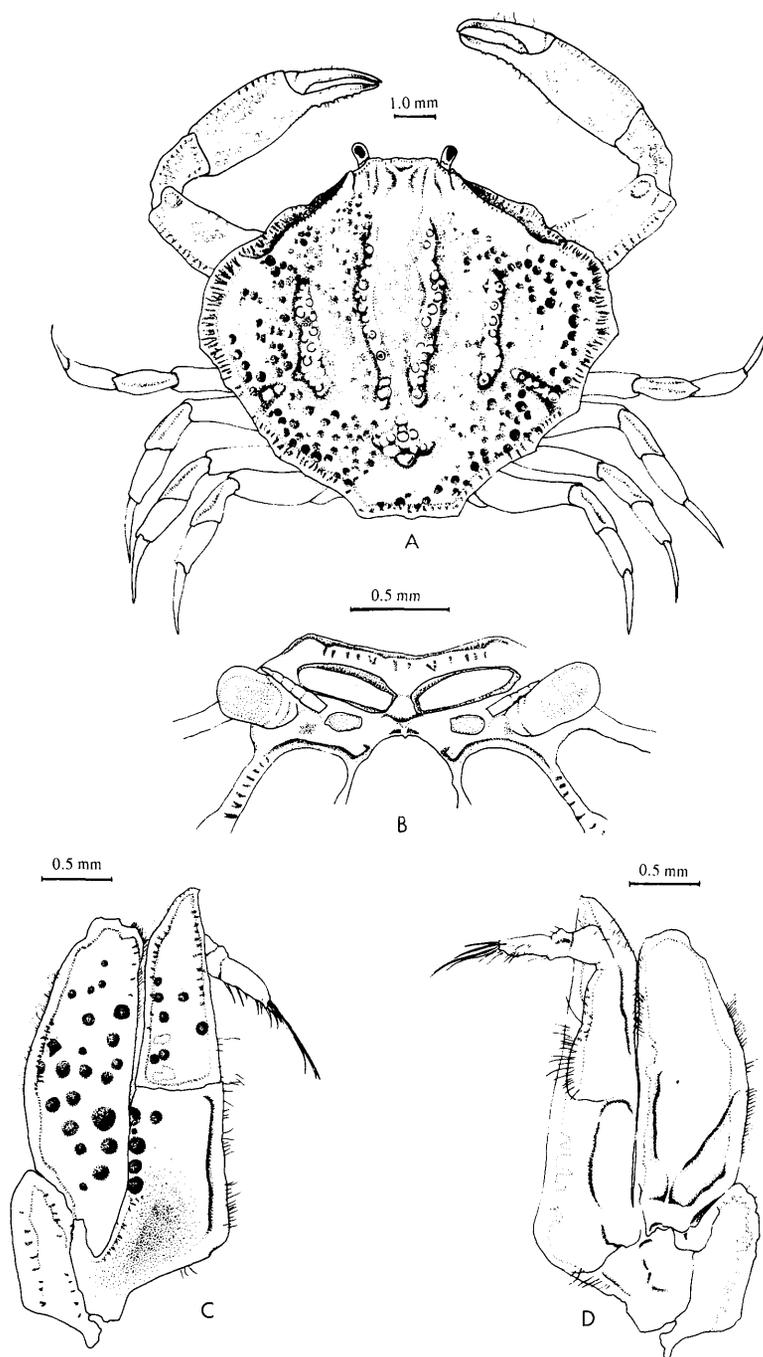


Fig. 1. *Praosia punctata*, gen. nov., sp. nov., holotype male 9.85 by 8.35 mm. A, dorsal view; B, frontal view; C, ventral surface of right third maxilliped; D, dorsal surface of right third maxilliped.

inner margin, outer margin with row of close-set, stiff hairs; exopod much longer than wide, less than twice length of merus, short, stiff hairs along central portion of outer edge; basis expanded, about half length of exopod; palp three-segmented, not visible in external view when in repose, articulating on inner surface of merus at about one-fifth distance from apex.

Chelipeds equal, entirely smooth, slightly shorter than width of carapace; ischio-merus fused, immovable; proximal half of merus expanded; margins of merus, carpus and propodus with short black bands; lower part of distal portion of merus dilated to form auriculated lobe; inner margin of distal two-thirds of palm unevenly serrated, inner margin of immovable finger (excluding tip) dentate; fingers shorter than palm, tips hooked, flattened, with small blunt denticles on cutting edges. Proximally, teeth reduced to small knobs. Ambulatory legs sub-cylindrical; lengths decreasing gradually from first to last pair, smooth glabrous, ischio-basis fused, immovable.

Abdomen with 5 articulating pieces, narrow; segments 1, 2, 6 and 7 (telson) free, segment 1 partially under carapace, visible in ventral view, segments 3-5 fused, immovable, sutures indistinct; width of segment 2 reaches base of last ambulatory leg; segment 7 slightly longer than segment 6, narrow, tapering gradually, with apex ending close to lower edge of buccal cavern; segment 6 with proximal peg-like tubercle; lateral margins of segments 3-7 with transparent rim, edges of rim with short black bands; gonopore coxo-sternal; sternum punctate, sternites interrupted, suture lines of 1 to 3 distinct only near lateral margins, sternal knob present on sternite 5. G1 stout and straight along most of its length, divided distally into two processes, larger process bent and flattened out distally to form flap with median groove; subdistal tuft of hair present, smaller process with tuft of hair at tip, similar tufted lobe present beside it; rest of pleopod glabrous; G2 straight, less than one-sixth length of G1, distally flattened into spear-shaped structure; proximal inner margin with short hairs; basal segment expanded to form petaloid structure with tuft of hairs on inner side.

Female and juvenile paratypes. — Three female specimens are larger than the male holotype, but the key non-sexual characters do not differ. The mature female abdomen is highly punctate, completely covering the sternites; segments 1-3 are dome-shaped, segment 1 is hidden by the carapace, segments 3-6 are fused, the sutures being indistinct. The abdomens of juvenile females are more triangular and do not completely cover the sternites, but the fusion of the segments is similar to that in mature females. In mature females, the lateral borders of the carapace are also more expanded, the peg-like teeth on the distal cutting edge of the movable finger of the cheliped is absent; the cutting edges of the fingers are distinctly blade-like, with the cutting edge of the immovable finger slightly smoother distally, and the inner margin of the propodus entirely smooth, compared to mature males. The eggs are round, small (diameter ca. 0.38 mm) and are completely covered by the abdomen. The carapace markings

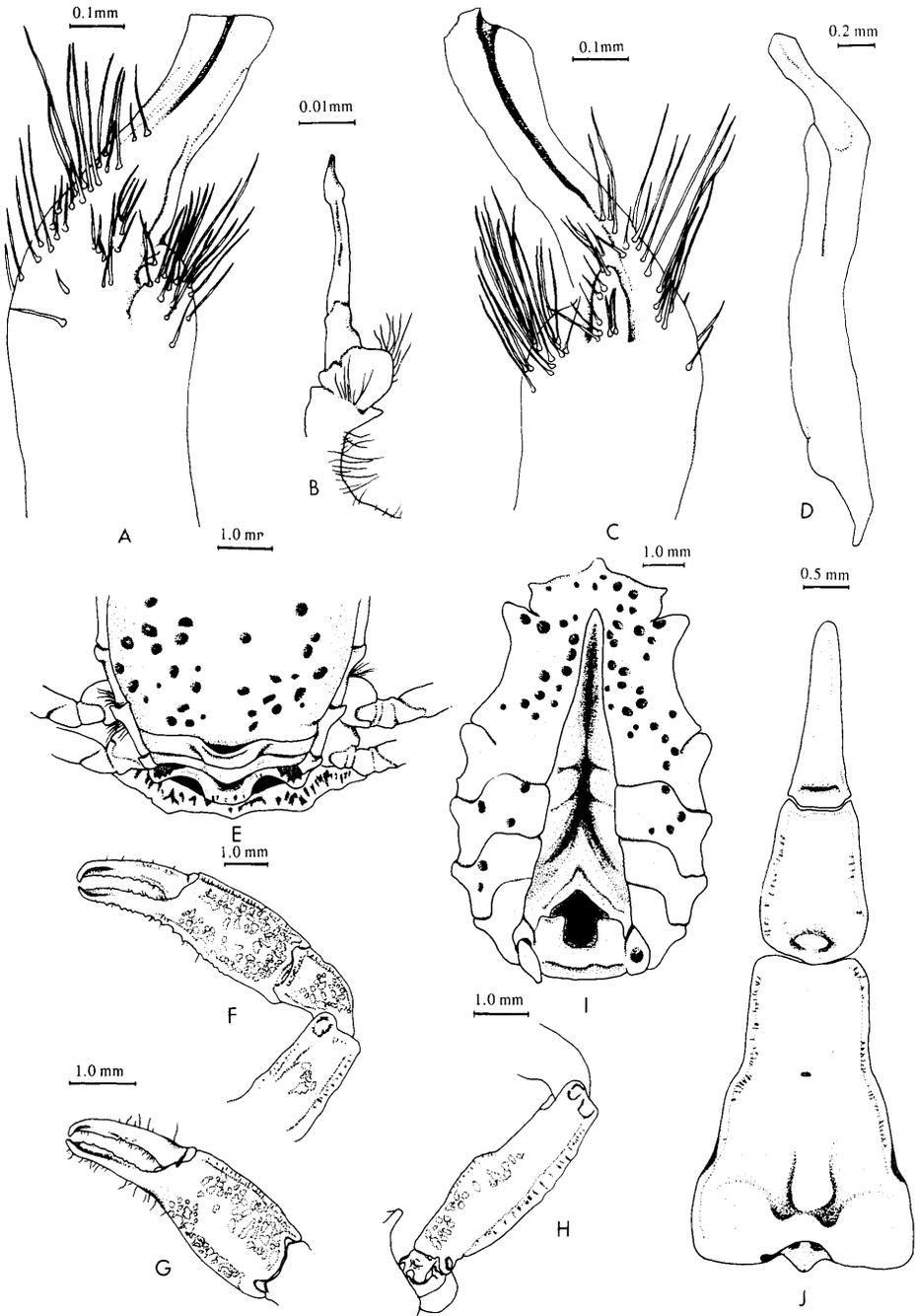


Fig. 2. *Praosia punctata*, gen. nov., sp. nov., A—D, F, I, J, holotype male, 9.85 by 8.35 mm; E, G, H, paratype female, 10.00 by 8.85 mm. A, tip of right G1 ventral view; B, right G2 ventral view; C, tip of right G1 dorsal view; D, Right G1, denuded; E, ventral view of posterior margin of carapace; F, male right chela; G, female right chela; H, right merus; I, sternal plastron; J, abdomen excluding segments 1 and 2.

in juveniles are almost identical to those in the adults except that there is a more distinct light brown border on the margins. This border is darker coloured compared to that of the adults and merges gradually with the rest of the carapace.

Etymology. — The species name ‘punctata’ means ‘spotted’, alluding to the external appearance of the carapace of the cleaned animals.

Remarks. — In 1968, the late Dr. Raoul Serène identified and labelled a female specimen from the Sungei Buloh Kechil mangrove in Singapore as ‘*Nursia punctata* sp. nov.’ Serène, however, never published the name. The ZRC’s catalogue (see Yang, 1979) lists this species under Serène’s manuscript name. As neither a description nor figure accompanies the use of this name in Yang (1979), ‘*Nursia punctata*’ is a nomen nudum. Serène’s specimen proves to be identical to what is here described as *Praosia punctata*. As Serène may have deposited other type specimens in other locations under his manuscript name, the authors have retained the name *punctata* to avoid possible confusion in the future.

Ecology and biology. — Most of the present specimens were collected from high mangroves at low-tide from littoral mud pools either partially buried in mud or algae. One specimen was dredged from the mangrove bed of Sungei Buloh. *Praosia punctata*, although a wholly mangal species, appears to have rather broad preferences—from supralittoral to sublittoral zones. Other inhabitants of the pools included the hymenosomatid, *Elamenopsis mangalis* Ng, 1988, the ocypodid *Ilyogynnis microcheirum* (Tweedie, 1937) and another leucosiid, *Ebalia malefactorix* Kemp, 1915. Kemp (1915) had reported a preference of *E. malefactorix* for low salinity waters. This agrees well with the conditions under which the specimens of both *P. punctata* and *E. malefactorix* were found.

It is interesting to note that when caught, specimens of *Philyra* would simulate death by adopting a ‘cataleptic attitude’ (sensu Kemp, 1915), folding and holding their legs with the ischial and meral segments directed vertically downwards from the carapace. *Praosia punctata* and *Ebalia malefactorix* would also simulate death on capture, but instead, hold their legs normally, with the meral segments tucked beneath the carapace (Kemp, 1915; present observations).

ACKNOWLEDGEMENTS

The authors would like to acknowledge the Reef Ecology Study Team, Department of Zoology, National University of Singapore, which collected a specimen under the ‘ASEAN-Australia Marine Science Project: Living Coastal Resources’ and the partial support of National University of Singapore research grant RP 900360. Dr Raymond Manning kindly reviewed the manuscript and his helpful comments are very much appreciated. We would also like to thank Dr. Chou Loke Ming, Mr. Kelvin Lim, Ms. Diana Chia, Mr. Tommy Tan, Mr. N. Sivasothi and other friends in the Reef Ecology Laboratory for their kind assistance and encouragement.

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