

ON THE SPECIES OF *SARMATIUM* DANA, 1851
(DECAPODA, BRACHYURA)

BY

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Dana (1851) established the genus *Sarmatium* for the single species *S. crassum* Dana, 1851. Tesch (1917) included five Indopacific species in *Sarmatium* and, since then, several authors have suggested that some other species, previously described as belonging to the genus *Sesarma*, should be included. As originally defined by Dana (1851), the species belonging to the genus *Sarmatium* have, on the upper outer border of the palm of the male cheliped, a conspicuous structure composed of 3 or 4 transverse grooves (separating 4 or 5 raised striae). A new genus briefly characterized by the absence of such a structure will be established to include all species, other than the two mentioned below, previously considered as referable to *Sarmatium*.

Sesarma germaini A. Milne Edwards, 1868 is a valid species of *Sarmatium* and not a synonym of *S. crassum* as supposed by Tesch (1917). Thus the genus *Sarmatium* now includes only two species *S. crassum* Dana, 1851 and *S. germaini* (A. Milne Edwards, 1868). The present paper reports on specimens of *S. germaini* collected in Singapore and Malaysia and compares them with specimens of *S. crassum*.

***Sarmatium germaini* (A. Milne Edwards, 1868)**

Sesarma germaini A. Milne Edwards, 1868: 28; De Man, 1887: 651; De Man, 1891: 51.

Johore Straits, Singapore, C. L. Soh coll., 26 January 1970, 1 ♂, 20 × 21 mm (NMS.1970.1.27.9), 19 January 1970, 1 ♂, 20 × 21 mm, with *Sacculina* (NMS.1970.1.19.37).

Port Swettenham, Malaysia, 1 ♂ (NMS.1964.9.2.52).

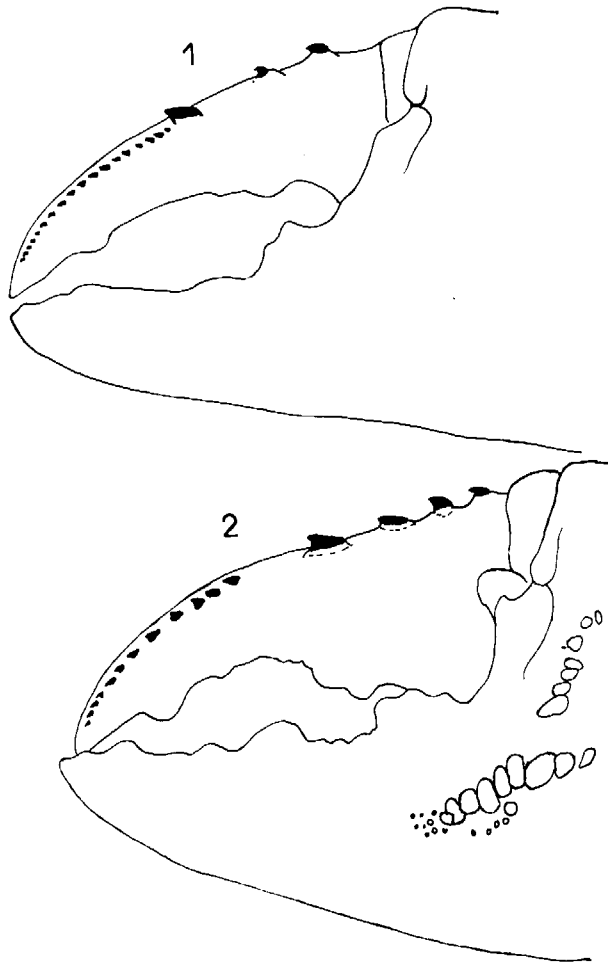
Prai, Malaysia, 1 ♀ (NMS.1964.9.2.54).

Pulau Senang, off Singapore, 1 ♀ (NMS.1964.9.2.59).

The last three lots were identified by Tweedie in 1950 as *S. crassum*.

History. — *Sesarma germaini* A. Milne Edwards, 1868 was described from Poulo Condore (South China Sea) after a specimen measuring 16 × 17 mm. From the very short and insufficient description of A. Milne Edwards, we quote: „Les pattes antérieures du mâle sont lisses et portent en dessus six ou sept très petits bourrelets obliques et parallèles”. This description leaves no doubt that the species belongs to *Sarmatium*, and is sufficiently different from the definition of *S. crassum* to be characterised as a separate species.

A. Milne Edwards (1868) and De Man (1887) briefly suggested a relation-



Figs. 1, 2. Inner surface of propodus and dactylus of cheliped. 1, *Sarmatium germaini* (A. Milne Edwards); 2, *Sarmatium crassum* Dana.

ship between *Sesarma germaini* and *S. smithi*. De Man (1891) on re-examining the type specimen of *S. germaini* in the Paris Museum, stated that he "cannot find any important difference" between *S. germaini* and *S. crassum* and that A. Milne Edwards was of the same opinion. However, he wrote: "This species finally at first sight may be recognized by the six or seven parallel, transverse and smooth, characteristic crests or ridges, with which the upper margin of the palm is ornamented": the italics are from De Man, who identified with some reserve as *S. germaini*, a female measuring 8.40×11.25 mm. The species has never been illustrated. The senior author of the present paper was able to re-examine the holotype of *S. germaini* in the Paris Museum (April 1970); it is a dry female and not a male as indicated by De Man (1891). The transverse striae on the upper outer surface of the palm are not very strongly marked but clear, the dactylar tubercles are not at all indicated. Two of the specific characters of *S. germaini*,

as shown by our specimens, are also clear on the cheliped of the type specimen: 1) the upper part of the outer surface of the carpus is distally ornamented with closely arranged, very small, flat tubercles resembling minute vesicles; 2) the lower margin of the palm is straight and marked on the outside by a groove.

Observations. — A comparison of our largest specimen of *S. germaini* with a male specimen of *S. crassum* also collected in Singapore (NMS.1970.1.23.14, 23 × 24 mm) demonstrates that the two species differ in the following respects:

1. The second anterolateral tooth of the carapace is less well marked in *S. germaini*, being faintly indicated in some specimens and not at all in others. This tooth is always distinct in *S. crassum*.

2. On the upper outer surface of the palm of the cheliped of *S. germaini* there are seven transverse grooves separating eight swollen ridges, of which the proximal ridge is by far the longest. In *S. crassum* there are only three grooves separating four swollen ridges, of which the second (not the proximal) is by far the longest. In both species an irregular row of chitinous, comb-like denticles is developed on the anterior margin of each of the swollen ridges. Some of these rows of denticles are worn down, but that on the distal ridge is always well developed. In *S. germaini*, the row of denticles on the first proximal ridge is nearly worn down, whereas it is the most developed in *S. crassum*. Between this region of grooves and swollen ridges and the upper margin of the palm, there is an area which, in the natural condition, is covered with short dark hairs (removed in our photograph) and is strongly granular. This area is better developed in *S. germaini* than in *S. crassum*.

3. On the proximal half of the upper edge of the dactylus, in *S. germaini*, there are three large, acute, chitinous tubercles, followed immediately by a row of 17 closely-set, small, acute tubercles. In *S. crassum* there are four large proximal tubercles on the proximal half of the dactylus, followed at some distance, by a row of 12 widely-spaced, small, acute tubercles.

4. In *S. germaini*, on the outer surface of the palm, there is on the lower border a longitudinal slight depression. This groove starts near the proximal end of the palm, continuing as far as the middle of the fixed finger and delimits proximally a somewhat concave area on the outer palmar margin and a flattened area on the lower palmar surface. In *S. crassum*, there is no indication on the outer surface of the palm of a distinct flattening or of a low longitudinal ridge. Moreover, the lower border of the palm is regularly and slightly convex and rounded (not flattened) in cross section.

5. In *S. germaini* there is no trace of a granular line on the inner surface of the palm. In *S. crassum* there is a row of 12 rounded granules on the inner palmar surface, parallel to the inner border; this row consists of an upper nearly vertical half, and a lower nearly longitudinal half.

6a. In *S. germaini* the inner angle of the carpus of the cheliped is short and subacute; in *S. crassum* this angle is much longer and more acute.

6b. In *S. germaini* there is an area, closely beset with very small vesicular

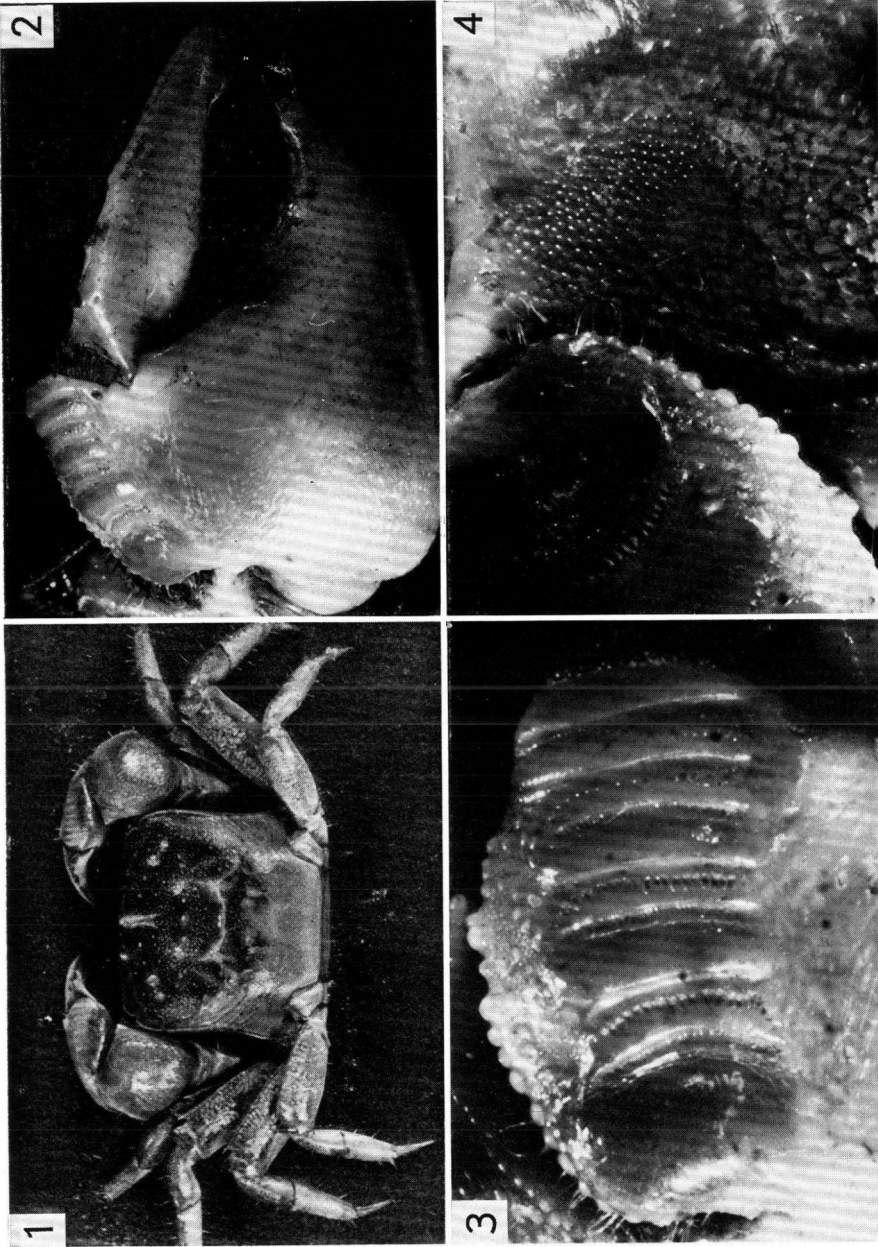
granules, on the upper outer anterior part of the carpus (into which the upper border of the palm can be fitted). In *S. crassum*, this area is finely striated, the very narrow and parallel salient ridges being placed close together. These structures have not been mentioned in the literature; perhaps they form part of some stridulating apparatus.

7. The colour of the palm of the cheliped is yellowish light brown in *S. germani* whereas it is brownish red in *S. crassum*.

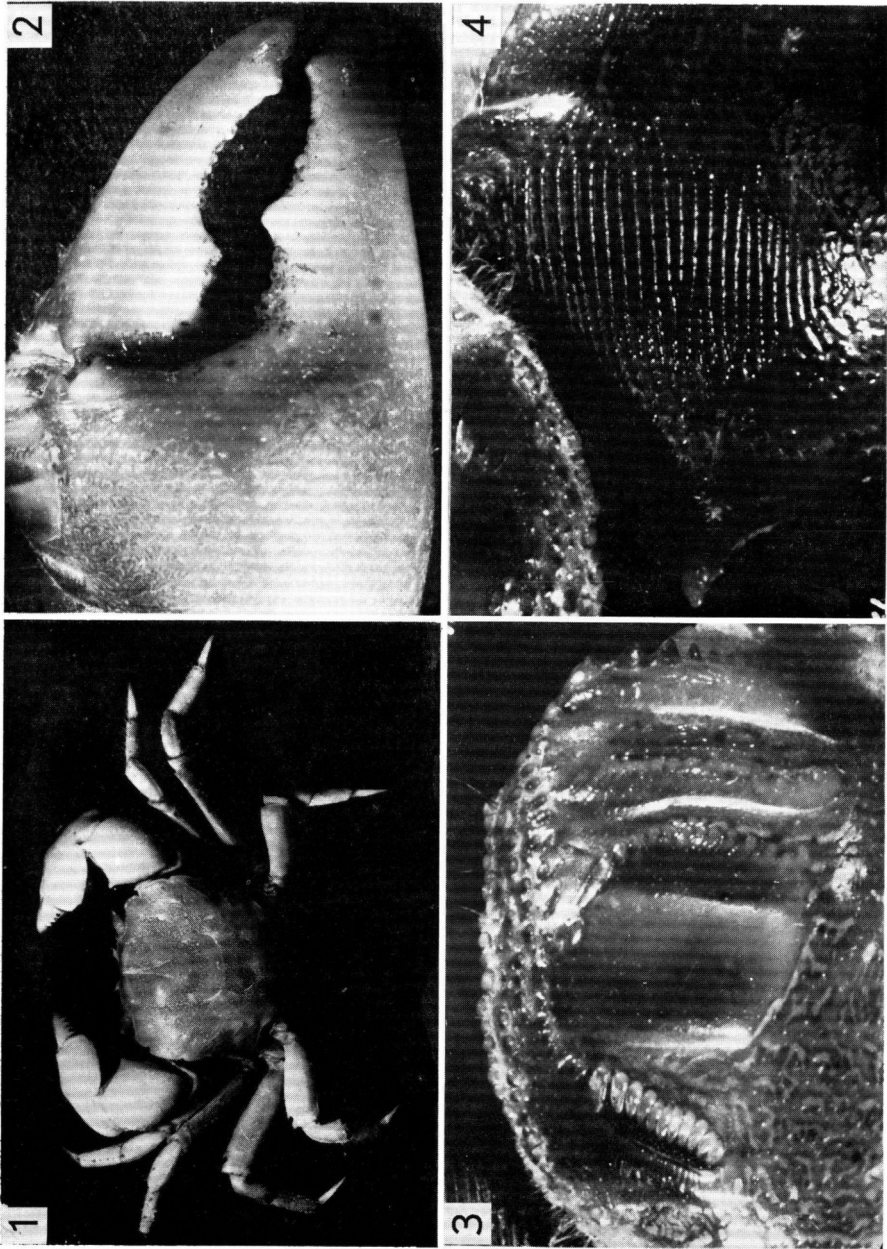
In both species, the female has no dactylar tubercles on the cheliped and the transverse ridges on the upper border of the palm are feebly developed or absent. However, the presence of the longitudinal corrugation on the lower border of the palm, which is flattened, enables one to separate the female of *S. germani* from that of *S. crassum* which has the lower border of the palm more convex and rounded.

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Sarmatium germaini (A. Milne Edwards), male of 20×21 mm (NMS.1970.1.27.9). 1, entire animal; 2, outer surface of heliped; 3, transverse grooves and ridges of the upper outer surface of palm; 4, upper outer distal surface of carpus.



Sarmatium crastum Dana, male of 23 × 24 mm (NMS.1970.1.23.14). 1, entire animal; 2, outer surface of cheliped; 3, transverse grooves and ridges of the upper outer surface of palm; 4, upper outer distal surface of carpus.