

**A New Sesarmine Crab of the Genus  
*Sesarmoides* Serène and Soh, 1970  
(Crustacea Decapoda, Brachyura, Grapsidae)  
From Arawe Island, New Britain, Solomon Sea,  
With Notes on the Genus**

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**Abstract**—A new sesarmine crab, *Sesarmoides novabritannia*, new species, is described from New Britain, Papua New Guinea, in the Solomon Sea. The species is closely related to *S. cerberus* (Holthuis) from the Moluccas and *S. jacobsoni* (Ihle) from Java, Indonesia but can be separated by the presence of a distinct epibranchial tooth, less protruding external orbital angle, more pronounced postorbital crista, longer seventh male abdominal segment, and the structure of its male first pleopod. The taxonomy of the genus *Sesarmoides* is also discussed.

**Introduction**

Deposited in the Zoological Reference Collection of the National University of Singapore (ZRC) are a pair of specimens collected from Arawe Island, New Britain, Papua New Guinea, in the Solomon Sea, which had been identified by the late Dr. Raoul Serène as *Sesarmoides cerberus* (Holthuis, 1964) and listed in the ZRC catalogues as such (Yang, 1979). Serène (1968) and Serène and Soh (1970) had probably recorded this species on the basis of these specimens.

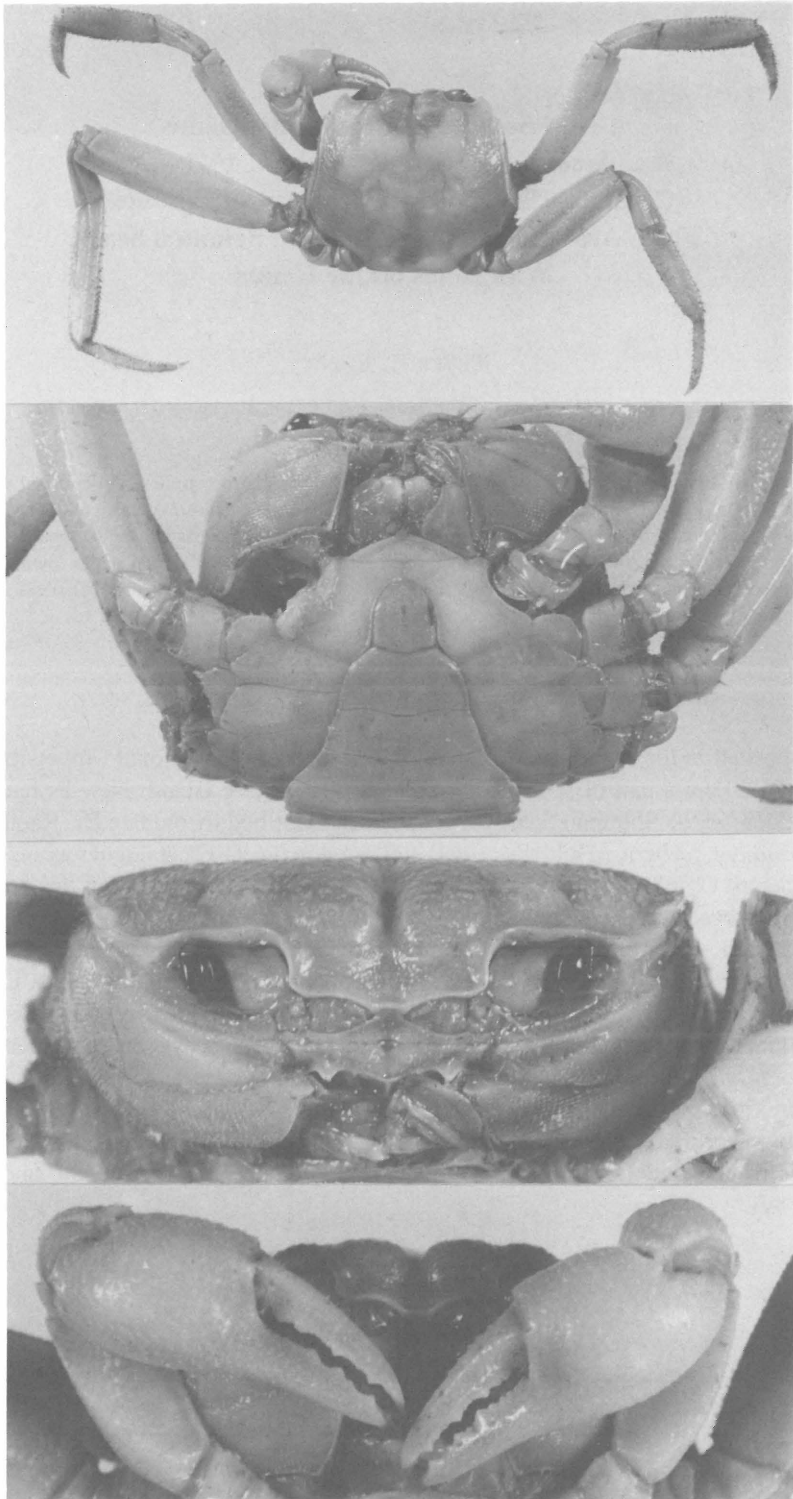
Although the two specimens from New Britain superficially resembled *Sesarma* (*Sesarma*) *cerberus*, which was described from a cave on the island on Nusa Lain, just west of Ambon (ca. 3° 50' 32"S, 128° 4' 44"E), Moluccas, there are several differences that suggest that two distinct taxa are involved. These specimens are herein described as new, *Sesarmoides novabritannia*, new species. A description of the species and notes about its taxonomy, as well as that of the genus *Sesarmoides* Serène and Soh, 1970, forms the subject of the present paper. The abbreviations G1 and G2 are for the male first and second pleopods respectively. All measurements given are of the carapace breadth and length, respectively.

GRAPSIDAE DANA, 1852

SESARMINAE DANA, 1852

*Sesarmoides* Serène and Soh, 1970

*Sesarmoides novabritannia*, new species  
(Pl. 1, Fig. 1)



Pl. 1. *Sesarmoides novabritannia*, new species. Holotype Male, 23.9 by 20.0mm.

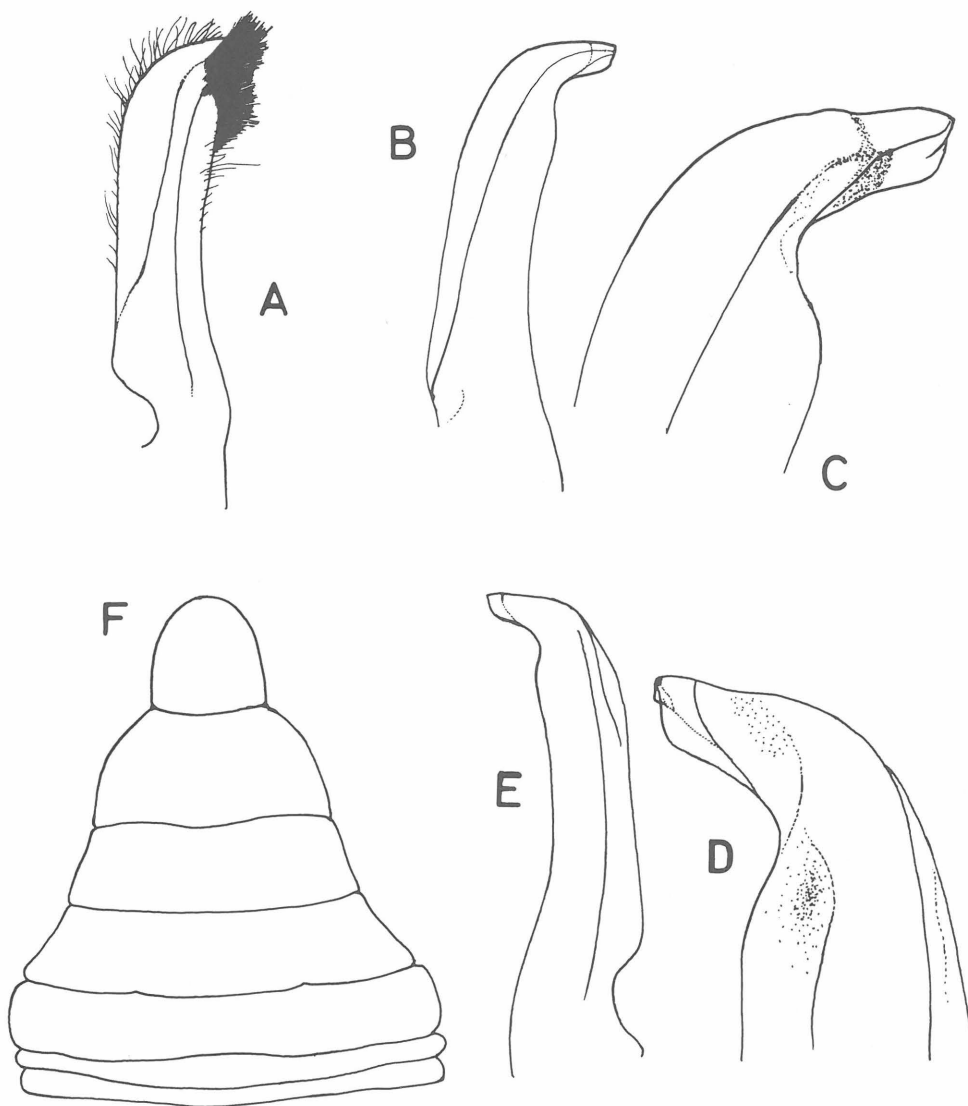


Figure 1. *Sesarmoides novabritannia*, new species. Holotype Male. A, Left G1 (intact); B, E, Left G1 (hairs removed); C, D, Tip of left G1 (hairs removed); F, Male abdomen.

*Sesarma* (*Sesarma*) *cerberus* Serène, 1968, p. 106 (part)

*Sesarmoides cerberus* Serène and Soh, 1970, p. 407; Yang, 1979, p. 53

(not *Sesarma* (*Sesarma*) *cerberus* Holthuis, 1964, p. 65)

DIAGNOSIS: Carapace quadrangular, postorbital cristae distinct, anterolateral margins short, external orbital angle not protruding beyond frontal margin; epibranchial teeth distinct, posterolateral margins slightly concave, distinctly divergent. Ambulatory legs espe-

cially meri, very long. Distal region of G1 densely covered with stiff hairs, including inner surfaces of truncated tip.

**MATERIALS EXAMINED:** Holotype—1 ♂ (23.9 by 20.0mm) (ZRC Nr. 1965.7.29.66), Arawe Island, New Britain, Solomon Sea, ca. 6° 8'53"S, 149°2'13"E, leg. P. H. Hediger, 1933; Paratype—1 ♀ (26.7 by 24.9mm) (ZRC Nr. 1965.7.29.67), same data as holotype.

**DESCRIPTION OF MALE HOLOTYPE:** Carapace quadrangular, surfaces relatively smooth, regions distinct. Postfrontal lobes well developed, convex, separated by deep cleft, postorbital cristae low but distinct, extending laterally to half width of supraorbital margin, separated from postfrontal by shallow depression. Front distinctly deflexed, frontal margin with two rounded lobes, separated by broad, shallow cleft, region near base of each eye with two rounded tubercles. Anterolateral margins not clearly demarcated from postorbital, external orbital angle convex, not extending beyond frontal margin, distinctly separated from well developed epibranchial tooth (first anterolateral tooth). Small notch present behind epibranchial tooth. Posterolateral margins slightly concave, strongly divergent backwards, widest part of carapace at base of second pair of ambulatory legs. Regions lining supraorbital, anterolateral and posterolateral margins with oblique rugose striae. Eyes well developed, cornea distinct, pigmented. Verwey's grooves distinct, branchiostegite covered with reticulate network of very short, stiff setae. Posterior margin of epistome with broad median lobe, lateral lobes acute.

Chelipeds slightly unequal, left larger, palms swollen. Surfaces of palm, carpus, and merus tuberculate. Fingers approximately equal to length of palm, those on right cheliped longer. Tips of fingers corneous, hoof-like, cutting edges with two to three large sharp teeth and several denticles, base of dactylus with tufts of stiff hair. Dorsal margin of both dactyli with seven to eight forward pointing tubercles.

Ambulatory legs long, especially the merus and propodus, third pair longest. Merus with distinct dorsal subterminal spine. Surfaces of all segments slightly rugose.

Male abdomen triangular, third segment broadest, segments progressively more trapezoidal from third to sixth. Lateral margins of sixth segment distinctly convex. Seventh segment triangular, lateral margins straight, almost parallel, tip rounded, approximately equal in length to sixth.

G1 relatively short, stout, distal part strongly bent outwards, tip truncate, corneous. Inner surface of distal region with numerous stiff hairs, outer surface very densely covered with longer such hairs, especially towards tip, extending into the inner surfaces, on the groove formed by the dorsal and ventral folds. G2 short.

**FEMALE PARATYPE:** The female specimen agrees with the male in most nonsexual aspects. The right epibranchial tooth however, is indistinct, appearing almost confluent with the external orbital angle but the notch below it remains visible. The left epibranchial tooth is distinct, though not as strong as that of the male, but the notch below it is indistinct. The fingers of the chelipeds are longer (relative to the palm), and the palm is also not swollen. The female abdomen is rounded, covering most of the sternum.

**REMARKS:** The new species belongs to the same group as *Sesarmoides jacobsoni* (Ihle, 1912) and *S. cerberus* (Holthuis, 1964). *Sesarmoides novabritannia*, new species, however, can be easily separated from *S. jacobsoni* by its much longer ambulatory legs, more convex anterolateral margin, a frontal margin that lacks lateral lobules, longer and better developed eyes, broader male abdominal segments, and a longer G1 in which the cor-

neous tip is more strongly bent and very densely covered with stiff hairs. From *S. cerberus*, *S. novabritannia* can be separated by its shorter external orbital angle (below the level of the frontal margin, not beyond as in *S. cerberus*), slightly less convex anterolateral margin, a prominent epibranchial tooth (not low), more pronounced postorbital lobes, the seventh male abdominal segment equal in length to the sixth (shorter in *S. cerberus*), and a G1 with a more truncate corneous tip in which the stiff hairs present in the distal areas are much denser and more extensive, covering even the inner surfaces. It is also pertinent to note that the type locality of *S. novabritannia* is more than 2000km from that of *S. cerberus*.

Although *S. jacobsoni* and *S. cerberus* are cavernicolous species and probably troglobites, there is no indication that *S. novabritannia* has similar habits. Dr. Hediger, who collected the type specimens, made no reference to caves or freshwater on his label, and specimens of *S. novabritannia* have no morphological features which clearly suggest they are cavernicolous. It must be noted however, that *S. jacobsoni* and *S. cerberus* are regarded as freshwater cavernicoles mainly on the basis of the collector's data and their unusually long legs, which are often associated with cave dwellers. The eyes of *S. jacobsoni* are reduced, but the cornea is still pigmented, whereas in *S. cerberus*, they are longer but still do not fill the orbit. The eyes of *S. novabritannia* are similar to those of *S. cerberus*. The true color of *S. novabritannia* is not known because of its long preservation, as was the case for *S. jacobsoni* and *S. cerberus*. The preserved color of all three species is however, very pale, and is likely to be similar to the living color of many known cavernicoles. There is, thus, every likelihood that *S. novabritannia* is also a freshwater cavernicole.

The genus *Sesarmoides* was established by Serène and Soh (1970) on the basis of its flattened carapace, the lateral borders (posterolateral margins) being strongly divergent backwards, presence of a swollen and globular basal antennular segment, an epistome with a strong transverse rim and deep median notch, a frontal breadth that is clearly less than that of the posterior border of the carapace, and the ambulatory legs being long and slim. Eight taxa were recognised by them as belonging to the genus, six Indo-Pacific: the type *S. kraussi kraussi* (De Man, 1887), *S. kraussi borneensis* (Tweedie, 1950), *S. longipes* (Krauss, 1843), *S. jacksoni* (Balss, 1934), *S. jacobsoni* and *S. cerberus*; and two Atlantic (Jamaican): *S. verleyi* (Rathbun, 1914) and *S. jarvisi* (Rathbun, 1914). Another Jamaican species, *Sesarma cookei* was described as new by Hartnoll (1971), and by Serène and Soh's (1970) classification, it would also have to be placed in the genus *Sesarmoides*.

The present author however, has some doubts as to the validity of this classification especially considering the complexity and difficulty of sesarmin taxonomy in general, the extremely wide and disjunct distributions, and the wide range of habitats of the genus. It remains to be seen whether the numerous similarities observed between these species (especially the Atlantic and Indo-Pacific taxa) are really phylogenetic or merely brought about by convergent evolution. Abele and Means (1977), in dealing with *S. jarvisi* and *S. cookei*, chose to maintain both species in the genus *Sesarma sensu lato*. The same would apply for *S. verleyi*. A separate genus for the three species; however, seems to be preferable. Abele (*in litt.*, 2 March 1987) classifies all the American sesarmines in one genus, *Sesarma sensu lato*. For comparative purposes, these three species are provisionally retained in the genus *Sesarmoides*.

Only three species are known to be cavernicoles: *S. jacobsoni*, *S. cerberus* and *S. verleyi* (*vide* Hartnoll, 1964a, 1964b; Hobbs *et al.*, 1977; Holthuis, 1986). It would be interesting to note whether or not *S. novabritannia* is also a cavernicole.

*Sesarmoides jacksoni* was described from a single small male collected from a coastal terrace at Grime's Cave in Christmas Island (10° 26'32"S, 105° 39'37"E) (Balss, 1934). Gibson-Hill (1947) however, notes that Grime's Cave is ". . . a sea cave, at the foot of the coastal cliff" (p. 43), and the crab's normal habitat ". . . is certainly the shore terrace above the cliff" (p. 43). The following account of the species (as *Sesarma jacksoni*) by George (1978) helps shed more light on the habits of this poorly known species—"The flattened smooth carapace, the relatively long spiderly legs, the uniform dark brown carapace and the pink-cream claws serve as distinguishing features for the smallish (2.5cm C.W. [carapace width]) crab. It also has the 2 pairs of hair fringed branchial openings between the first and second and the second and third walking legs. Mr. Dave Powell commented that it liked to avoid rain by sheltering in damp places in the house. This suspected high humidity habitat on the shore terrace was confirmed by finding specimens in February in the dark about 30 feet down in Daniel Roux Cave (one was a female in berry and they appear red with white legs by torch light), on the steps of the Administrative building after rain, on Mr. Powell's porch and on the damp floor of the change room at the Christmas Island swimming pool" (p. 12). In the Western Australian Museum (WAM) are the following specimens: 1 ♂ (WAM 529-85a), Silver City, leg. D. Merton, xi.1978; 1 ♀ (WAM 529-85b), Golf Course, leg. D. Merton, xi.1978; 1 ♀ (ovigerous) (WAM 530-85), Change Room, Christmas Island Swimming Pool, leg. D. Merton, 15.iv.1978; 3 ♂♂, 1 ♀ (ovigerous) (WAM 531-85), Daniel Roux Cave, 30 feet below entrance, leg. R. W. George, 21.ii.1978; and 1 ♂, 2 ♀♀ (WAM 532-85), on shore terrace, Rocky Point and above Flying Fish Cove, leg. D. Powell & V. Russel, 13.ii.1978 (Jones, *in litt.*, 4 March 1987). All were collected in Christmas Island. The species was also listed by Jones (1985). *Sesarmoides jacksoni* is thus, neither a true cavernicolous nor completely freshwater species. The other Indo-Pacific taxa are free living, with *S. kraussi kraussi*, *S. kraussi borneensis*, and probably *S. longipes*, being mangal species.

Nothing is known about the habits or life cycle of any species of Indo-Pacific *Sesarmoides*. As for the freshwater taxa, it is not known whether *S. jacobsoni* and *S. cerberus* have the large eggs and abbreviated larval development of related freshwater sesarmines of the Indo-Pacific genus *Geosesarma* De Man, 1892 (*vide* Soh, 1969; Ng and Lim, 1987) and the Jamaican *Metopaulias* Rathbun, 1896 (*vide* Hartnoll, 1964b). *Sesarmoides jacksoni* almost certainly has small eggs, requiring to return to the sea to spawn. Gibson-Hill (1947) wrote that ". . . crabs move about principally at night, and seem to travel to the sea to spawn during the first two months of the year" (p. 44). Tweedie (1947) recorded an ovigerous female from Christmas Island but his specimen is not in the ZRC, and its whereabouts is unknown. An examination of the ovaries of *S. kraussi kraussi*, *S. kraussi borneensis*, and *S. novabritannia* did not reveal any developed eggs so their egg size remains unknown. Hartnoll (1964b) however, examined the ovaries of a mature female of *S. verleyi* and found ova exceeding 1.0 mm in diameter. Abele and Means (1977) subsequently collected ovigerous females of *S. jarvisi* with clutches of only 7 to 18 eggs measuring some 1.32 mm before hatching; and mature females of *S. cookei* with about 21 eggs of approximately 1.25 mm in diameter in the ovaries. It seems therefore, that all the

Atlantic *Sesarmoides* at least, have large eggs, small clutches and abbreviated larval development.

#### ACKNOWLEDGEMENTS

The author is most grateful to Dr. Diana Jones of the Western Australian Museum for copies of her unpublished report, Dr. R. W. George's unpublished manuscript, permission to quote from them, and information about *S. jacksoni*. Thanks are also due to Professor Lawrence Abele (Florida State University) for his helpful comments about the American sesarmines. Permission by Mrs. C. M. Yang to examine the specimens in the ZRC is also greatly appreciated. Photographs were kindly taken by Mr. H. K. Yip, Department of Zoology, National University of Singapore. This study has been partially supported by research grant RTF 006/84 to the author from the Singapore Institute of Biology.

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