

REDISCOVERY OF *SESARMA AEQUATORIALE*
ORTMANN, 1894 IN THE EASTERN PACIFIC
(CRUSTACEA, DECAPODA, GRAPSIDAE)

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Ortmann (1894) described the species *Sesarma aequatorialis* based on three males and a female collected by Reiss in Ecuador. Nobili (1901) reported a single female collected from Esmeraldas, Ecuador. No other material seems to have been reported since then. During a study of the freshwater decapod crustaceans of the Pearl Islands, Panama (Abele and Blum, in press) several specimens of a *Sesarma* were collected that could not be readily identified. Comparison with material in the National Museum of Natural History, Washington, D.C. and subsequently with the type-material of *Sesarma aequatoriale* and *S. sulcatum* Smith, 1870 revealed that the Pearl Islands specimens are conspecific with the former. It was also discovered that *S. aequatoriale* and *S. sulcatum* had been confused in the literature. The present report is a contribution towards a review of the American species of *Sesarma* (see also Abele, 1977); *S. aequatoriale* is redescribed and compared to *S. sulcatum*.

A series of measurements were taken on the available material which included a representative size range of both sexes (Table 1). The following abbreviations are used: *cl*, carapace length measured at midline; *cb*, carapace breadth at midlength; *iw*, width of the frontal region at the distal margin; *aw*, abdominal width measured at the proximal margin of the sixth abdominal segment; *al*, abdomen length (including the telson) measured with the abdomen pressed against the sternum; *rcl*, *rch*, *rcw*; and *lcl*, *lch*, *lcw*, refer to the length, height and width of the right and left chelae; *ml*, *mw*, merus length and width; *c*, carpus length (maximum length along the extensor margin); *p*, propodus length; *d*, dactylus length; AHF refers to the Allan Hancock Foundation, University of Southern California, Los Angeles, California; AMNH to the American Museum of Natural History, New York, New York; MCZ to the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; MIZS to the Museo ed Instituto di Zoologia Sistematica, Università di Torino, Torino, Italy; MZ to Musée Zoologique, Université Louis Pasteur, Strasbourg, France; USNM to the National Museum of Natural History, Washington, D.C.

Sesarma aequatoriale Ortmann, 1894

Figs. 1, 2, 5c, 5d

Sesarma aequatorialis Ortmann, 1894:722, pl. 23, figs. 14, 14k, 14z (type-locality Ecuador).

Sesarma (Sesarma) aequatorialis: Rathbun, 1897:11.—Nobili, 1901:44.

Sesarma (Sesarma s.s.) aequatorialis: Tesch, 1917:128.

Sesarma (Sesarma) aequatoriale: Rathbun, 1918:292, fig. 146.

Sesarma (Sesarma) sulcatum: Rathbun, 1918:289 (in part, see material examined).

Sesarma sulcatum: Crane, 1947:86 (at least ovigerous ♀ and juveniles from Golfito, ♂ = *S. sulcatum*.—Abele, 1976:268 (in part, 1 ♂).

Sesarma aequatoriale: Abele and Blum, in press.

Material examined.—Mexico: Guerrero; 3 ♂, 3 ♀; Velero coll., 4 January 1933; AHF 3–33.—Acapulco; 1 ♀; Hassler Expedition coll.; MCZ 6244.

Costa Rica: Boca del Jesus; 1 ♂; Biolley and Tristan coll.; April 1905; USNM 32315.—Golfito; 1 ovigerous ♀, 3 juveniles; Zaca coll.; 6–7 March 1938; AMNH 13508.

Panama: El Real; 18 ♂, 11 ♀, 1 ovigerous ♀; R. Fish coll.; 26 October 1966; USNM 125916 (4 ♂, 1 ♀); AFH 1967-18 (remaining specimens).—Chucunaque River; 1 ♀; D. Quintero coll.; 26 November 1965; USNM 119853.—La Capitana (Canal Zone); 1 ♂; H. Pittier coll.; USNM 45532.—San Jose Island, Pearl Islands, river at Playa Grande; 1 ovigerous ♀; L. Abele, R. Dressler coll.; 20 May 1973.—Rey Island, Pearl Islands; 1 ♂, 3 ♀; L. Abele, R. Dressler coll.; 19 May 1973.—Diablo mangrove swamp; 1 ♂; L. Abele coll.; 18 February 1969.—Albrook Air Force Base mangrove swamp; 2 ♂, 2 ♀; L. Abele coll.; 6 May 1969.—Same locality; 1 ♂; L. Abele coll.; 18 June 1974.

Ecuador: 2 ♂, 1 ♀ (syntypes); Reiss coll.; 1874; MZ.—Esmeraldas; 1 ♀; E. Festa coll.; MIZS Cr. 114.

Description.—The carapace is wider than long with low but distinct granules present dorsally along with scattered tufts of pubescence. The cl/cb ratio is 0.834 ± 0.03 for males and 0.840 ± 0.02 for females. The ratio varies with size and is about 0.78 in small males and 0.86 in large males; it is 0.83 in small females and 0.85 in large females (see Table 1). The lateral margins are subparallel although the posterior carapace may widen slightly in small specimens and narrow slightly in large males. The inter-orbital region is subdivided into 4 low lobes; the median sinus is deeper than the submedial pair. The frontal region is concave medially; it is oblique laterally to the lateral margins which flare slightly so that the frontal region widens distally. The tw/cb ratio is 0.597 ± 0.02 in males and 0.588 ± 0.02 in females. The outer orbital angle is extended anteriorly and is acute; a distinct lateral tooth is present posterior to the outer orbital angle. Both the outer orbital angle and lateral tooth are variable in size and are often larger and more acute than in the syntype figured. There are about 7 granular ridges on the lateral surface of the carapace.

The eyes are well developed and pigmented.

Table 1. Morphological measurements of *Sesarma aequatoriale* Ortman, 1894; see text for explanation of abbreviations.

cl	cb	iw	aw	al	rcl	reh	rwl	lcl	loh	low	Fourth pereopod					Fifth pereopod					Coll. no.	
											ml	mw	c	p	d	ml	mw	c	p	d		
Males																						
7.7	9.7	5.3	1.5	5.3	5.2	2.7	1.7	5.2	2.5	1.7	6.5	3.2	3.5	4.2	3.7	4.7	2.3	2.7	3.0	3.0	3.0	AHF 3-33
8.1	10.5	6.2	1.8	5.8	6.0	3.2	2.0	6.0	3.3	2.0	7.8	3.8	4.2	4.7	3.8	5.3	2.8	3.2	3.3	3.3	3.3	AHF 3-33
15.8	19.0	11.5	5.7	9.2	12.3	7.2	4.0	12.7	7.2	4.2	12.7	5.5	6.2	7.5	6.5	9.8	5.0	6.0	6.2	5.7	5.7	AHF 1967-18
16.7	19.7	12.0	5.7	9.3	13.7	7.7	4.3	14.7	8.2	4.5	—	—	—	—	—	10.3	5.3	6.2	6.3	6.0	6.0	AHF 1967-18
17.2	20.5	12.2	5.5	9.5	—	—	—	14.2	8.0	4.8	—	—	—	—	—	11.0	5.3	6.2	6.5	6.2	6.2	AHF 1967-18
18.7	21.7	13.3	6.2	10.3	17.2	9.5	5.7	16.7	9.7	5.7	15.0	6.8	8.7	9.2	7.0	11.7	5.5	7.5	7.7	7.7	6.3	AHF 1967-18
19.0	22.5	13.5	6.5	11.0	17.8	10.5	5.7	17.7	10.5	6.0	15.2	6.8	8.2	9.5	7.7	11.3	5.8	7.2	7.5	6.7	6.7	AHF 1967-18
19.7	23.5	14.5	6.5	11.0	16.7	9.0	5.5	18.3	10.0	6.0	16.5	7.2	8.8	10.2	8.5	12.7	6.0	7.8	8.3	7.7	7.7	Syntype
20.5	23.8	14.5	6.7	11.2	18.8	11.5	7.2	19.0	12.3	6.7	16.8	8.1	9.3	10.3	8.8	—	—	—	—	—	—	Syntype*
20.8	24.1	15.0	6.7	11.8	19.3	12.5	7.2	—	—	—	17.3	7.2	9.3	10.0	7.7	12.8	5.8	8.0	8.2	7.0	7.0	AHF 1967-18
Females																						
8.7	10.5	5.8	7.0	6.3	5.7	2.7	1.7	5.2	2.5	1.7	7.2	3.5	4.0	4.7	4.0	5.3	2.8	3.0	3.3	3.3	3.3	AHF 3-33
15.8	18.7	11.0	15.2	9.5	10.3	4.8	2.8	9.3	5.0	2.8	12.3	5.8	6.5	7.3	5.8	9.3	5.0	4.8	4.7	5.2	5.2	AHF 1967-18
16.0	18.7	10.7	13.3	9.5	10.0	5.0	3.0	10.0	5.0	3.0	13.2	6.3	6.2	7.7	6.7	9.7	4.8	5.8	5.7	5.5	5.5	AHF 1967-18
16.5	20.3	12.3	15.2	11.5	11.5	5.0	3.2	11.5	5.0	3.3	13.7	7.0	7.7	8.5	7.5	10.5	5.2	6.0	6.5	6.2	6.2	Syntype
17.8†	21.0	12.8	16.0	8.3	11.8	5.8	3.3	12.2	5.8	3.5	15.0	7.3	7.7	9.0	7.2	11.5	5.7	6.5	7.0	6.0	6.0	AHF 1967-18
18.3	21.7	12.7	16.2	10.8	12.5	6.0	3.2	12.5	6.0	3.2	13.3	6.2	7.7	8.5	7.7	11.2	5.7	7.0	7.0	6.5	6.5	AHF 1967-18
19.0	22.7	12.8	15.8	11.2	12.5	6.2	3.3	12.5	6.2	3.5	13.8	7.1	7.7	8.8	7.3	—	—	—	—	—	—	AHF 1967-18
19.0	22.8	13.8	17.3	13.0	13.0	6.3	3.5	12.7	6.3	3.5	—	—	—	—	—	12.5	6.0	7.2	7.5	7.0	7.0	AHF 1967-18
20.0*	23.2	14.0	18.3	12.5	13.5	6.5	3.8	13.8	6.7	3.8	16.0	7.7	8.8	10.0	8.0	12.2	6.5	7.7	8.0	7.2	7.2	AHF 1967-18
20.8	24.3	14.7	19.3	15.2	—	—	—	13.7	6.8	4.2	—	—	—	—	—	—	—	—	—	—	—	AHF 1967-18

* Illustrated

† Ovipigerous

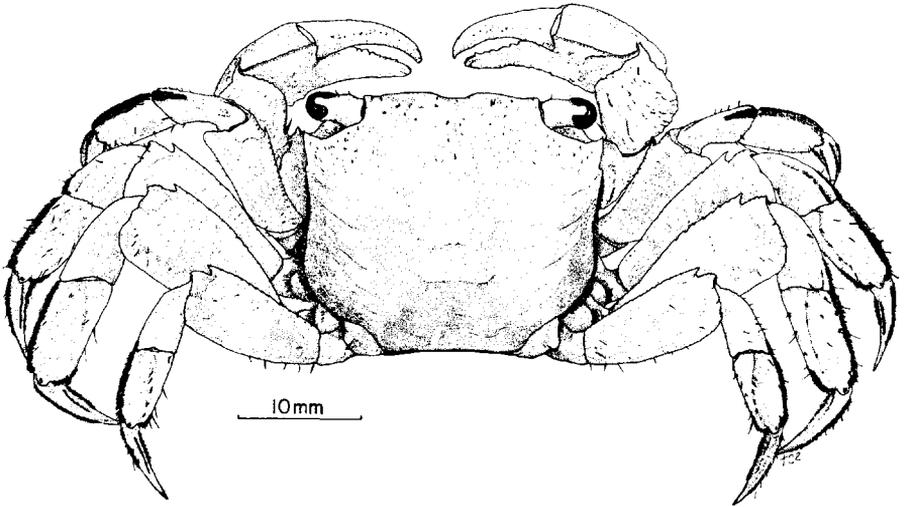


Fig. 1. *Sesarma aequatoriale*, syntype male, Muséum Zoologique, Université Louis Pasteur, Strasbourg.

The basal antennular segment is wide and short. The basal antennal segment is expanded laterally to form a part of the orbit and is expanded ventrally delimiting a part of Verwey's groove. There is a subtriangular area beneath Verwey's groove delimited by grooves. The pterygostomial and adjacent regions are covered by short hairs.

The third maxillipeds are gaping with an oblique row of pubescence on the merus. There is thick pubescence on the sternum below and between the third maxillipeds which extends posteriorly to the level of the telson.

The chelipeds are sexually dimorphic. The male chelipeds are large and robust. The posterior mesial and lateral borders of the merus are weakly serrated; the serrations of the former end proximal to the distal margin. The anterior mesial margin is toothed. The carpus is covered with short rows of granules. There is a distinct row of large granules along the dorsal margin of the palm which extends beyond the distal margin. The lateral part of the palm is smooth to punctate while the mesial surface has about 10 large tubercles arranged in a poorly defined dorsoventral row. The immovable finger narrows distally to a corneous spooned apex; about 7-13 unequal teeth are present. The movable finger has a row of 10-14 acute tubercles along the upper surface; there is a large basal tooth and about 8 smaller teeth proximal to a larger tooth which is present proximal to the corneous spooned tip. The female chelipeds are considerably smaller than those of equal-sized mature males. The palm lacks tubercles on the

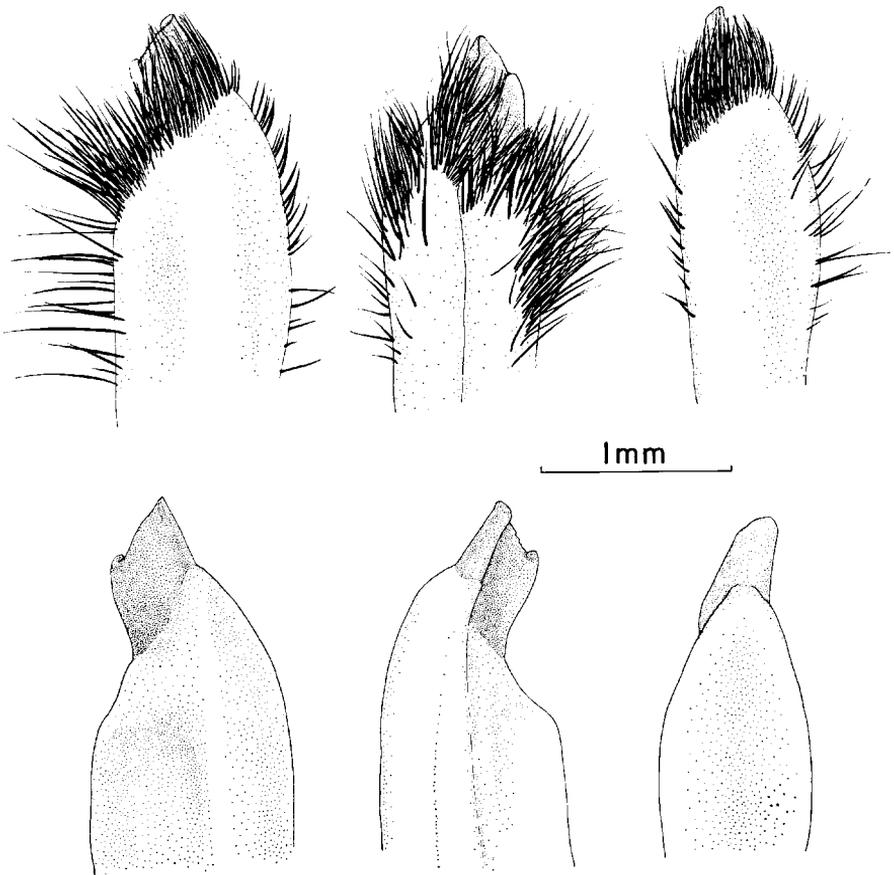


Fig. 2. Right male gonopods of *Sesarma aequatoriale*, syntype male. Top row; posterior, anterior and mesial views. Bottom row; denuded in same views.

mesial surface and the movable finger has only 5 or 6 weak tubercles on the upper surface. The walking legs increase in length in the order: first, fourth, second and third. For the third walking leg (fourth pereiopod) the merus is about 1.6 times the length of the carpus which is only slightly shorter than the propodus; the dactylus is about $\frac{5}{6}$ times the length of the propodus. The merus length is about twice the width ($^{ml}/_{mw} = 2.19 \pm 0.13$ in males, 2.06 ± 0.12 in females); there are transverse rows of granules present and a large subdistal tooth on the dorsal margin. The merus of the fourth walking leg (fifth pereiopod) is broader than the third ($^{ml}/_{mw} = 2.03 \pm 0.10$). The walking legs have a ventral and dorsal row of thick pubescence extending from the dorsal distal part of the carpus to the

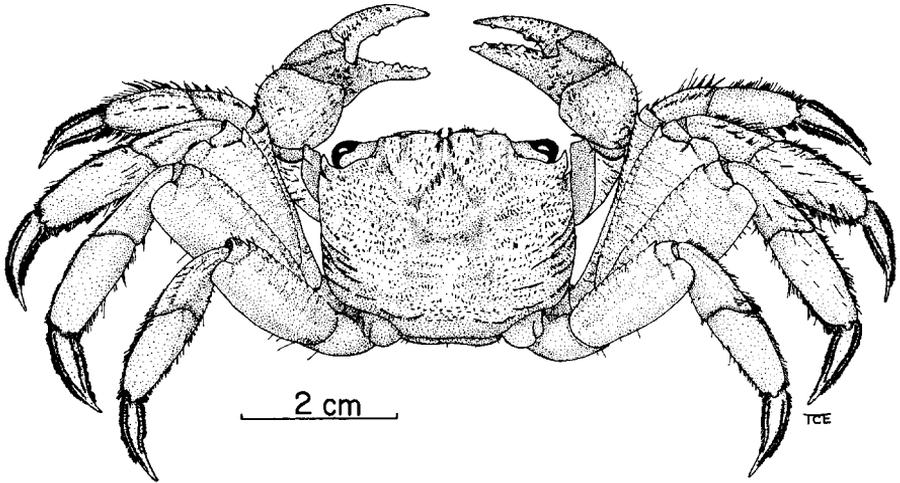


Fig. 3. *Sesarma sulcatum*. Male from the Pacific coast of Panama.

distal margin of the propodus where it continues as 3 narrow rows on the dorsal surface of the dactylus; ventrally the row begins on the distal part of the propodus and continues as 3 narrow rows on the dactylus. The ventral surface of the propodus is armed with about 5 closely-set pairs of spines in 3 indistinct rows; on each side of the ventral distal margin there are about 6 dark-colored spines.

The male abdomen is subtriangular in outline; the length and width of the telson are subequal. The endpiece of the male gonopod is relatively long and there is a sinus on the distolateral margin. The exact form of the sinus is somewhat variable and may consist of only a concavity. In almost all (80%) of the specimens examined the endpiece was damaged to some extent along the sinus margin.

The female abdomen is semicircular in outline. The female gonopore and operculum are figured (Fig. 5d).

Measurements.—Males, *cb* 9.7 to 24.1 mm; females, *cb* 10.5 to 24.3 mm; ovigerous females *cb* 16.4 to 21.0 mm; males larger than about *cb* 19.0 appear to be sexually mature while females appear to attain sexual maturity at about *cb* 16.0 mm.

Type-locality.—Ecuador.

Distribution.—This species is known from Acapulco, Mexico, Costa Rica, Panama and Ecuador.

Habitat.—*Sesarma aequatoriale* is a semiterrestrial species which occurs in and adjacent to fresh and brackish water streams and rivers. Specimens of *S. aequatoriale* and pseudothelphusid crabs were collected from Rio Chepillo (actually a small stream) on Isla Rey in the Pearl Islands, Panama.

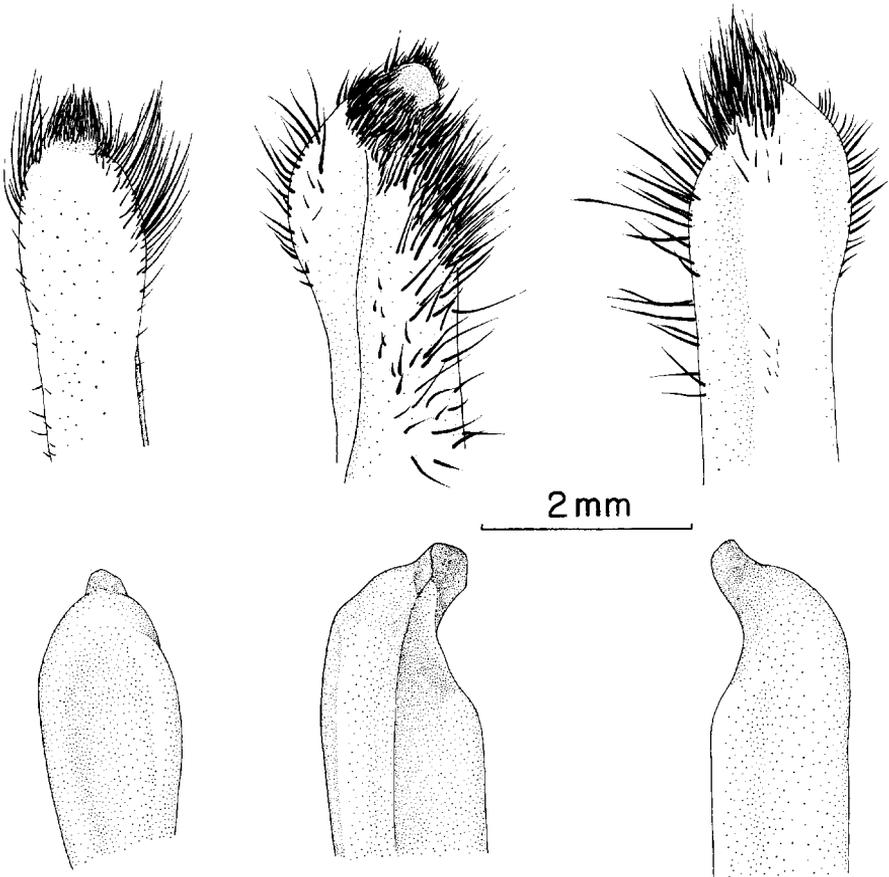


Fig. 4. Right male gonopods of *Sesarma sulcatum* from the Pacific coast of Panama. Top row; mesial, anterior and posterior views. Bottom row; denuded in same views.

An ovigerous female was collected from a large unnamed river which empties into Playa Grande, Isla San Jose, Pearl Islands, Panama. Specimens were also collected from mud flats adjacent to a brackish stream in a brackish water mangrove swamp on the mainland of Panama. All of the specimens I collected were under rocks and debris; none was in a well defined burrow. The salinity range of *S. aequatoriale* is 0 to 22.4‰, although the species appeared to be more common around lower salinity water. In freshwater streams *S. aequatoriale* occurs with pseudothelphusid crabs; at higher salinities it occurs at various localities with *S. sulcatum*, *S. rhizophorae* Rathbun, 1906, *S. rubinofforum* Abele, 1973 and *S. occidentale* Smith, 1870.

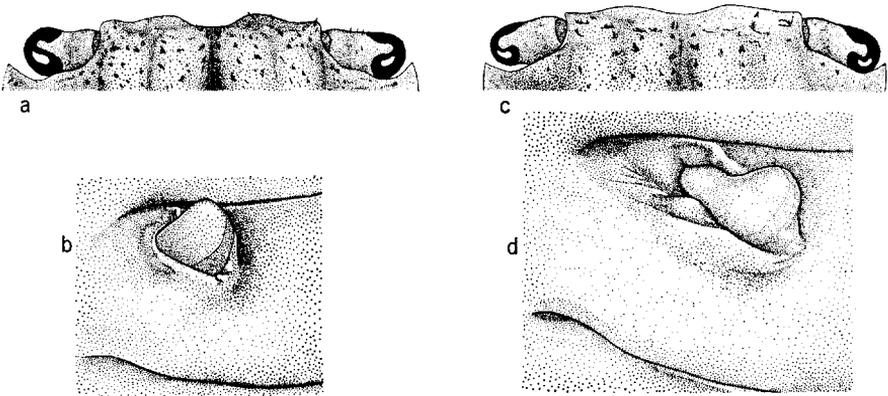


Fig. 5. Left, *Sesarma sulcatum*: a, frontal region of male; b, female gonopore, both specimens from the Pacific coast of Panama (AHF 1967-18). Right, *Sesarma aequatoriale*: c, frontal region of syntype male; d, female gonopore. Views of frontal regions angled vertically compared to Figs. 1 and 3 to show differences in the depth of the median sinus.

Remarks.—During the present study I examined two male and one female syntypes of *S. aequatoriale*, the female holotype of *S. sulcatum* and all material referred to either species in the AHF, AMNH, MCZ and USNM. With the exception of the syntypes all material of *S. aequatoriale* was included under the name *S. sulcatum*. This accounts for the absence of records of *S. aequatoriale* in the literature and is understandable since the two species are morphologically very similar and are in part geographically and ecologically sympatric.

Rathbun correctly described and figured *S. sulcatum* but specimens of *S. aequatoriale* were included in her "material" section (USNM 32315, 45532, 45569). The two species can be separated by the following characters: the carapace of *S. aequatoriale* has the frontal region weakly concave and the dorsal surface lightly grooved with widely scattered tufts of pubescence while the carapace of *S. sulcatum* has the frontal region deeply concave and the dorsal surface deeply grooved and usually with close-set tufts of pubescence (compare Figs. 1 and 3; 5c and 5a); the male gonopod of *S. aequatoriale* has a relatively longer endpiece and is less robust than the male gonopod of *S. sulcatum* (compare Figs. 2 and 4); the female gonopore of *S. aequatoriale* differs from that of *S. sulcatum* (compare Figs. 5d and 5b); *S. aequatoriale* is sexually mature at approximately *cb* 19 to 20 mm while *S. sulcatum* is sexually immature at this size and does not appear to reach sexual maturity until approximately *cb* 28 to 30 mm.

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