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OF
THE LUND UNIVERSITY CHILE EXPEDITION 1948—49

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ON TWO SPECIES
OF CRUSTACEA DECAPODA MACRURA
FROM THE N.W. COAST OF SOUTH AMERICA

BY

L. B. HOLTHUIS
RIJKSMUSEUM VAN NATUURLIJKE HISTORIE,
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INVERTEBRATE
ZOOLOGY
Crustacea

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L U N D
HÅKAN OHLSSONS BOKTRYCKERI
1 9 5 2

The two species dealt with in the present paper were collected by the Lund University Chile Expedition on the N.W. coast of South America during the voyage to and from Chile. It was thought inadvisable to include this material in the report on the Chilean species. Therefore it is made here the subject of a separate note. This seems the more justified, since one of the two species proved to be of outstanding interest.

Penaeus brevirostris KINGSLEY

Material examined:

Puna, near Guayaquil, Ecuador; clayish bottom; depth 14.5 m; leg. I. Vigeland; January 16, 1949. — 1 juvenile male, 70 mm.

The specimen is not yet adult and consequently the petasma is not yet fully developed. It could, however, be identified with certainty as belonging in the present species. The carina forming the postero-dorsal margin of the antennal sulcus is situated exactly as described and figured by BURKENROAD (1938, Zoologica, New York, vol. 23, p. 69, fig. 8.) for the present species.

Distribution. The species is known from the west coast of the American continent from Sinaloa, Mexico to the Bay of Sechura, N. Peru.

Upogebia spinigera (SMITH) (Figures 1 and 2).

Gebia spinigera SMITH, 1871, Ann. Rep. Peabody Acad. Sci., vol. 2+3, p. 92.

Gebia longipollex STREETS, 1871, Proc. Acad. nat. Sci. Phila., 1871, p. 242.

Gebia longipollex LOCKINGTON, 1877, Proc. Calif. Acad. Sci., vol. 7, p. 108.

Gebia spinigera LOCKINGTON, 1878, Ann. Mag. nat. Hist., ser. 5 vol. 2, p. 300.

Gebia longipollex LOCKINGTON, 1878, Ann. Mag. nat. Hist., ser. 5 vol. 2, p. 300.

Gebia spinigera POCOCK, 1890, Journ. Linn. Soc. Lond. Zool., vol. 20, p. 515.

Upogebia (Upogebia) longipollex BORRADAILE, 1903, Ann. Mag. nat. Hist., ser. 7 vol. 12, p. 543.

Upogebia (Upogebia) spinigera BORRADAILE, 1903, Ann. Mag. nat. Hist., ser. 7 vol. 12, p. 543.

Upogebia (Upogebia) longipollex DE MAN, 1928, Siboga Exped., mon. 39a⁶, pp. 23, 35, 39, 51.

Upogebia (Upogebia) spinigera DE MAN, 1928, Siboga Exped., mon. 39a⁶, pp. 23, 39, 45.

Upogebia (Upogebia) sturgisae BOONE, 1931, Bull. Amer. Mus. nat. Hist., vol. 63, p. 161, fig. 11.

Material examined:

Buenaventura, Colombia; under a lump of clay on the beach; leg. H. BRATTSTRÖM & E. DAHL; August 30, 1948. — 2 specimens, a male of 40 mm, and a damaged female of about the same length.

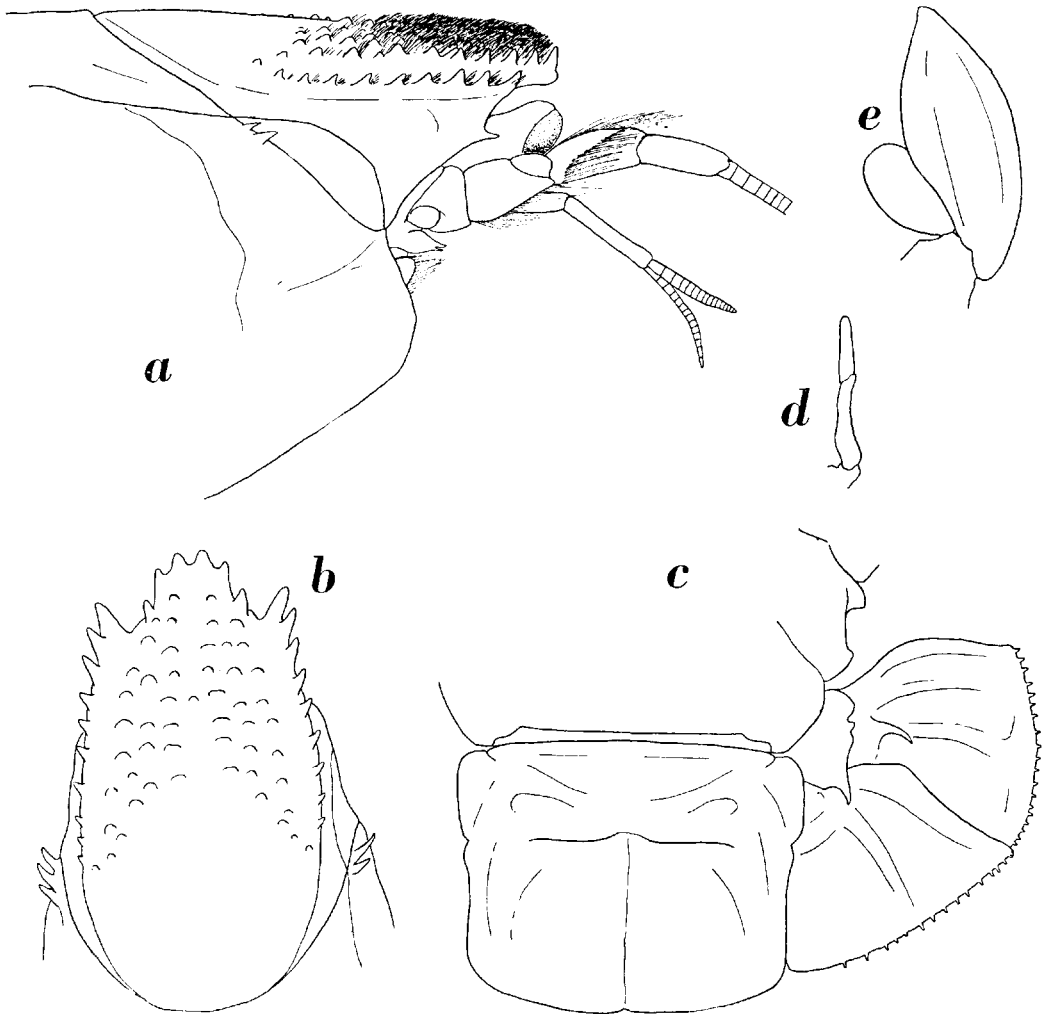


Fig. 1. *Upogebia spinigera* (SMITH). a, anterior part of body in lateral view; b, anterior part of carapace in dorsal view; c, telson and right uropod in dorsal view; d, first pleopod of female; e, second pleopod of female. a—c, $\times 7$; d, e $\times 4.5$.

The rostrum reaches slightly beyond the base of the second segment of the antennal peduncle. It is short, being about half as long as its basal breadth. Each lateral margin bears three spinous teeth. The two anterior teeth are placed close together and give the impression that the anterior margin of the rostrum is notched in the middle. The dorsal surface of the rostrum is thickly beset with tubercles and hairs, the latter are placed closest together in the anterior region and are more scattered posteriorly. In the median region the tubercles are placed up to about the middle of the distance between the tip of the rostrum and the cervical groove. More laterally, however, the tubercles much more closely approach the cervical groove.

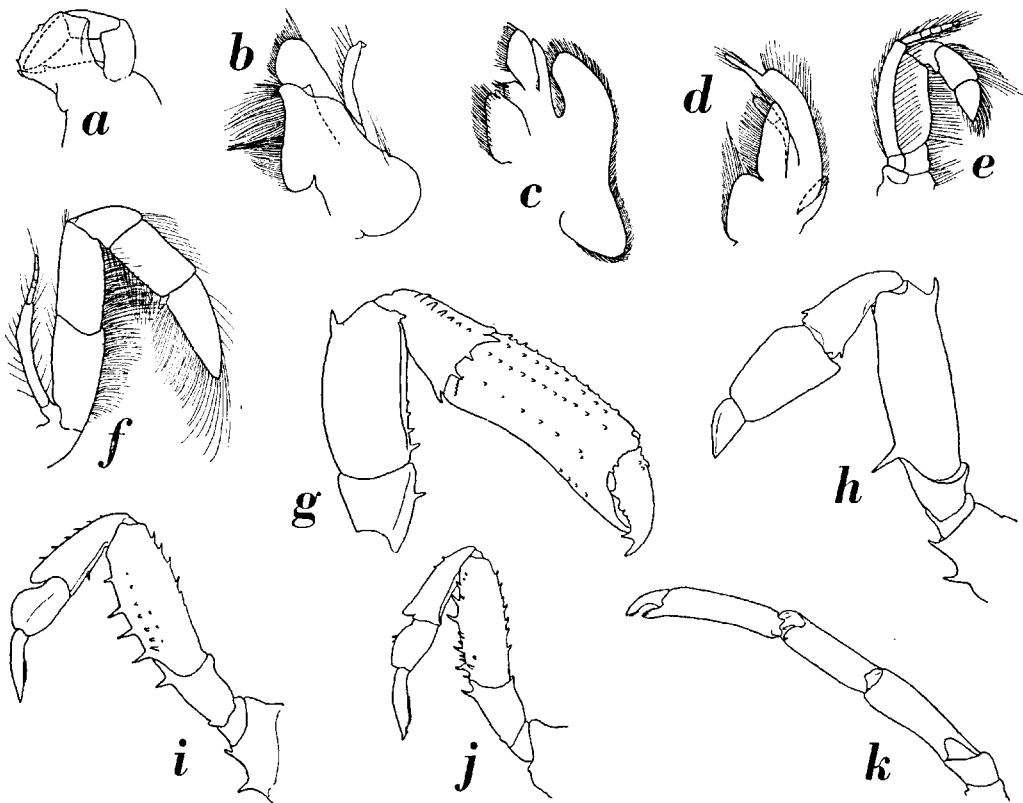


Fig. 2. *Upogebia spinigera* (SMITH). a, mandible; b, maxillula; c, maxilla; d, first maxilliped; e, second maxilliped; f, third maxilliped; g, first pereopod; h, second pereopod; i, third pereopod; j, fourth pereopod; k, fifth pereopod. a, $\times 20$; b, $\times 10$; c—f, $\times 7$; g—k, $\times 4.5$.

All the tubercles bear in the anterior half short stiff setae. The lateral frontal teeth are about half as long as the rostrum and end in a strong spine. Posteriorly of this spine there is a straight ridge which bears a row of 9 or 10 spines and extends backwards to about $\frac{2}{3}$ of the distance between the frontal spine and the cervical groove. Posteriorly the spines diminish in size. The groove between the rostrum and the frontal teeth in the anterior part is distinct, but becomes obsolete posteriorly. A short median groove is present in the ultimate third of the rostrum. At the level of the eye there is a distinct spine on the anterior margin of the carapace. The cervical groove is distinct and rather deep. Two or three sharp spines are placed on the posterior margin of the cervical groove just below the linea thalassinica. In one of my specimens two small spinules are visible below the two larger. The linea thalassinica is distinct. Scattered hairs fringe the lateral margin of the carapace.

The abdomen is of normal shape. The lateral margins of the pleurae are provided with hairs, which are especially dense in the posterior part of the second, the whole of the third and fourth, and in the anterior part of the fifth segment. The sixth ab-

dominal segment is 1.5 times broader than long. The telson is about as long as the sixth segment. It is distinctly broader than long, being broadest at the base. At $\frac{1}{3}$ of its length it is rather suddenly constricted. Somewhat behind the middle of the telson there is a distinct and sharp transverse carina. The postero-lateral angles of the telson are broadly rounded. The posterior margin is slightly convex, with a very small notch in the middle.

The eyes reach to or slightly beyond the end of the rostrum.

The antennular peduncle reaches with its second segment beyond the rostrum. This second segment is about half as long as the first. The third segment is as long as the first and second together. There are two short simple flagella which are shorter than the third segment. No spines are present.

In the antenna the anterior margin of the scaphocerite is rounded, no spine is present. Neither of the other joints of the antenna bears a spine. The epistome, however, near the base of the antenna has a blunt lobe, which ends in two distinct spines.

The mandible bears a few small teeth on the cutting edge only. The palp consists of three distinct joints. The lower endite of the maxillula is very broad, the upper endite is narrower. The palp is slender, its extreme tip suddenly narrowed. The lower endite of the maxilla is bilobed, the upper lobe, however, is extremely small. The upper endite also is formed by two lobes, the upper of which is longer than the lower. The palp is well developed and the scaphognathite is large. In the first maxilliped the endites of basis and coxa are separated by a deep notch, the upper of these endites is more slender than the lower. The palp consists of two joints. The exopod has the flagellum not articulate, the basal part is broadened. The epipod is small and oval. The second maxilliped is normal in shape. The exopod is well developed, the flagellum consists of some 5 joints. A small epipod is present. The third maxilliped has the dactylus somewhat longer than the propodus, which is again longer than the carpus. The merus and ischium are of about equal length, each being about as long as the dactylus. The exopod is well developed, and bears a jointed flagellum. A short and narrow epipod is present.

The branchial formula runs as follows:

	maxillipeds			pereiopods				
	1	2	3	1	2	3	4	5
pleurobranchs	—	—	—	—	—	—	—	—
arthrobranchs	—	—	2	2	2	2	2	—
podobbranchs	—	—	—	—	—	—	—	—
epipods	1	1	1	—	—	—	—	—
exopods	1	1	1	—	—	—	—	—

The first pereiopods are strong and equal. They reach with part of the merus beyond the rostrum. The dactylus is decidedly longer than the fixed finger. It bears

some sharp tubercles in the basal part of the upper margin. Somewhat before the middle the cutting edge bears a large tooth. Anteriorly of this tooth there is a row of about 5 smaller teeth, which diminish in size anteriorly. A single large and sharp tooth is placed anteriorly of these smaller teeth just before the tip of the fixed finger. Some longitudinal rows of long hairs are present on the dactylus. In one of my specimens the cutting edge of the fixed finger has a broad and blunt inconspicuous tooth, while in the other specimen a row of 5 rather sharp teeth is placed in the basal part of the cutting edge of this finger. The palm is less than twice as long as the dactylus, it is three times as long as high. The outer surface bears several longitudinal rows of small spinules. Three of these rows are placed in the upper half of the palm, they are very distinct and consist of about 10 spinules each. On the lower half of its outer surface the palm shows one row of about 6 spinules in the middle and a much shorter row of 4 spinules in the anterior part near the lower margin. The palm is somewhat prolonged in the postero-ventral region, where it has a transverse crenulate groove. The inner surface of the palm has similar rows of spinules as the outer, the spinules themselves are, however, far less conspicuous. Two anteriorly converging rows of hairs are present on the inner surface. The anterior margin of the palm on both surfaces between the bases of the dactylus and the fixed finger bears two teeth. The carpus is somewhat more than half as long as the palm, it is narrowing posteriorly. The anterior margin bears one large dorsal and one large ventral spine. Between these spines the outer part of this margin is provided with two more spines, the lower being somewhat stronger than the upper. The inner part of the anterior margin bears three small spines slightly below the dorsal spine; these spines are placed close together. A strong spine furthermore is placed in the lower third of the inner part of the anterior margin. Behind this latter spine there is a longitudinal row of three spines, which diminish in size posteriorly. There is also a longitudinal row of spines behind the antero-dorsal spine. This row, however, consists of 6 spines which increase in size posteriorly, the smallest spine being placed just behind the antero-dorsal tooth. No other spines are present on the carpus. There is, however, a longitudinal groove on the inner surface. A row of hairs runs over the upper part of the inner surface, at its end it curves upwards and runs in front of the postero-dorsal spine to the base of the carpus, being very dense in the basal part. Similar dense tufts of hair are present in the upper anterior region of the carpus. The merus is almost as long as the palm. It is of about the same height throughout its length and is only somewhat narrowing anteriorly. The upper margin in the anterior third bears a distinct spine, sometimes a smaller second spine is visible in front of the larger. The lower margin of the merus near the base bears a strong spine, while some three smaller spines (which diminish in size anteriorly) are placed on the posterior part of this margin in front of the larger spine. Sometimes these additional spines are absent. A row of long hairs is placed on the lower margin, while a second row is situated on the outer surface, parallel and close to this margin. The ischium is short and bears one spine on the lower margin. Here there are two similar rows of hair as on the merus. The coxa bears a lower spine, the basis is

unarmed. The second legs with the carpus reach beyond the rostrum. The dactylus is highest at the base and narrows anteriorly, it is about half as long as the propodus. The upper side of the dactylus is thickly covered with hairs, while furthermore some hairs are present on the rest of its outer surface. The propodus becomes higher posteriorly, its postero-ventral angle is somewhat produced. Both upper and lower margin bear a longitudinal row of hairs, moreover several hairs are present on the outer surface, especially in the distal part. The carpus is about as long as the propodus, but it is narrower. It narrows posteriorly. Both the upper and the lower margin of the carpus bear a distinct spine slightly behind the anterior margin. A Λ -shaped row of hairs is present on the inner surface. The merus is about twice as long as the propodus. It is of the same height throughout its length. A strong anteriorly directed spine is present on the dorsal margin slightly before its anterior end, while a strong, more or less posteriorly directed spine stands on the ventral margin near the base. Two parallel rows of long hairs run over the lower margin. The ischium is short and unarmed. The basis is still shorter and unarmed too. The coxa bears two strong spines on its lower margin. The third leg reaches to or somewhat beyond the end of the scaphocerite. The dactylus is slender, it is of about the same length as the propodus, and is narrowing to a sharp point. The lower margin shows a row of comb-like arranged spinules, which starts at about $\frac{1}{3}$ of the length of the dactylus from its base and extends anteriorly. Some distance before the tip of the dactylus this row of spinules curves up on the inner surface of the segment. The propodus is high, being more than half as high as long. It bears a large and dense tuft of hairs in its antero-ventral part. Furthermore there are three longitudinal rows of plumose hairs on the outer surface; the upper of these rows runs close along the upper margin, the second extends over the middle, while the third is placed close to the lower margin. The carpus is 1.5 times as long as the propodus, it is narrowing posteriorly and forms a dorsal lobe over the base of the propodus. It is triangular in transverse section. A single spinule is visible in the centre of the lower surface. The upper margin, too, bears some small spinules. Hairs are present in the anterior part of the outer surface, they are especially dense at the antero-dorsal lobe. The merus is more than twice as long as the propodus. On its lower margin it bears 4 strong spines, the proximal of these are strongest. The dorsal margin of the merus is also provided with spinules, about 6 in number and decreasing in size proximally. Furthermore there are two rows of spines in the lower half of the outer surface, parallel to the lower margin. The lower of these two rows is the longer and consists of about 7 spines, the upper row bears fewer spines. On the inner surface spinules are present near the upper and lower margins. The ischium is about as long as the propodus and bears a strong antero-ventral spine. It shows a sharp longitudinal carina in the lower part of the inner surface. The basis is very short and unarmed. The coxa bears two strong ventral spines, at the base of the proximal of which in both my specimens (male and female) the female genital aperture is found. In one of the specimens the distal spine is lacking. The fourth leg strongly resembles the third, but is smaller. The dactylus is exactly like that of the third leg. The propodus is somewhat shorter

than the dactylus. The outer surface of the propodus is entirely covered with hairs, the inner surface bears just a tuft of hairs in the antero-ventral part. There is a row of four spines on the inner surface close and parallel to the upper margin; some more spinules are placed slightly below this row. A longitudinal row of 6 rather strong spinules extends backwards from the above mentioned antero-ventral tuft of hairs. The carpus is as long as the dactylus and half the propodus combined. The outer surface bears hairs especially in the antero-dorsal region. Two spinules are present in the basal half of the upper margin. On the inner surface several spinules are present, e.g., some arranged in a row somewhat below the upper margin, several near the anterior margin, while there is also a row in the lower half of the surface. The merus is about as long as the propodus and dactylus together. The lower margin bears a row of 5 strong spines. The outer surface is provided with three rather strong spinules near the base of this lower row, while three very small spinules are present near its distal part. The upper margin bears 6 or 7 spinules. In its lower half the inner surface of the merus bears a long row of some 20 spinules, moreover some scattered spinules are placed near the lower and near the upper margin. The ischium bears one strong antero-ventral spine. Its inner surface is provided with a longitudinal carina, which bears two spinules in its distal part. The basis and coxa are unarmed. The fifth leg fails by far to reach the end of the rostrum. It is chelate and has the dactylus distinctly longer than the fixed finger. The dactylus is somewhat less than half as long as the palm, it is slender and like the dactyli of the third and fourth legs it bears a row of comb-like arranged spinules in the distal part of the lower margin. The fixed finger bears about 6 small teeth. The palm is cylindrical and smooth. A thick coat of hairs is present in the anterior and ventral parts of the outer surface of the propodus, obscuring almost entirely the fixed finger. The inner surface of the palm bears two longitudinal rows of hair. The carpus is somewhat shorter than the palm, while the merus is as long as the palm. The ischium is very short. None of the joints bears any spine or tooth, but there is a strong tooth near the outside of the base of the coxa. The male genital aperture is visible in my male specimen only, it is very small and is situated at the inner side of the anterior margin of the coxa.

The first pleopod is absent in the male, in the female it is present and consists of two elongate joints. The second to fifth pleopods in both sexes are large, they have a small ovate endopod and a much larger and more triangular exopod. No appendix is visible. The uropods are broad. The protopod bears a curved spine, which reaches over the base of the endopod. The endopod is about triangular in outline. The dorsal surface bears two blunt longitudinal carinae, one over the middle and one along the outer margin. The posterior margin is almost straight and bears a considerable number of small spinules. The exopod bears three dorsal carinae in its outer half, one of these lies on the outer margin. Here, too, the posterior margin bears numerous spinules. A strong curved spine is present in the basal part of the dorsal surface of the exopod.

The male specimen was parasitized by a Bopyrid Isopod.

SMITH's (1871) excellent description fits in almost every detail for my material. SMITH does not mention the small spinules of the carpus of the second legs, those of the carpus and merus of the third and fourth legs and those of the propodus of the fourth leg; almost all the larger spines were, however, observed by him. Since the small spinules often are hardly distinguishable because of their size and transparency, it is obvious that they were overlooked by SMITH. The length of the animal described by SMITH is given as 4.10 mm, this certainly is an error for 41.0 mm, since the length of the carapace is stated by SMITH to be 13.0 mm. SMITH's specimens thus are about as long as those collected by the Lund University Chile Expedition.

STREETS (1871) described a new form named by him *Gebia longipollex*. DE MAN (1928, p. 51) already remarked that STREETS' species probably is identical with *Upogebia spinigera* (SMITH). STREETS' description is very incomplete, but the characters given agree with those shown by the present material except for STREETS' statement that the legs of the third to fifth pairs are unarmed. It is, of course, possible that STREETS overlooked the spines. DE MAN (1928) suggested that the spines in STREETS' material might be not yet developed since his specimen is rather small, being 28 mm (1.12 inch) in length.

Though the descriptions of *Gebia spinigera* and *Gebia longipollex* were published in the same year, the name given by SMITH has priority over that given by STREETS. As DE MAN (1928) pointed out SMITH's paper was published in March, while that of STREETS did not appear till December.

The description and figure given by BOONE (1931) of her new species *Upogebia sturgisae* leave not the least doubt that this is identical with *Upogebia spinigera* (SMITH). Judging by BOONE's figure her type specimen is 42 mm long.

Distribution. The species is known from the following localities: Gulf of Fonseca, N.W. Nicaragua (SMITH, 1871), Ascredoras Island, 20 miles N.W. of Corinto, W. Nicaragua (SMITH, 1871), Patillo Point, Panama (BOONE, 1931), Isthmus of Panama (STREETS, 1871), Fernando Noronha, off N.E. Brazil (POCOCK, 1890). It is not known whether STREETS' material came from the Atlantic or the Pacific side of the Isthmus of Panama. It would be interesting to compare POCOCK's Atlantic material with specimens from the Pacific coast. The present material provides a considerable extension of the known range of distribution of the species.

Little is known of the habitat of the species. BOONE states that it was taken »at extreme low tide, on sandy beach with scattered rocks and stones».

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