

## Museum Leiden

Mouth of the Suriname River near Resolutie; in shrimp trap; 22 December 1942; D. C. Geijskes. — 1 juvenile.

Description. Rathbun, 1930, p. 114, textfigs. 15b, 16a, 17a, 18b, pl. 50.

Remarks. The specimens have cb. ranging from 26 to 78 mm, and cl. from 13 to 36 mm. The identity of the juveniles with cb. less than 40 mm is not fully certain.

Type localities. Charleston Harbor (S. Carolina, U.S.A.), Tortugas (Florida, U.S.A.), Bahama Islands, Gonaives (Haiti), Cumana (Venezuela).

Distribution. East coast of America from New Jersey (U.S.A.) and Bermuda to Brazil and the West Indian Islands. The species is now reported for the first time from Suriname.

**Callinectes danae** Smith, 1869

## Museum Leiden

Near "Suriname Rivier" lightvessel; trawled; depth 7 m; 12-13 January 1953; H. W. Lijding. — 1 ovigerous female.

Description. Rathbun, 1930, p. 118, textfigs. 15d, 16b, 17b, 18d, pl. 51.

Remarks. The above ovigerous female has cl. 42 and cb. 91 mm.

Type localities. Pernambuco, Bahia, and Rio de Janeiro, Brazil; restricted to Pernambuco by Rathbun (1930, p. 118).

Distribution. East coast of America from Florida (U.S.A.) to S. Brazil and the West Indies. The species has not been reported before from Suriname.

**Callinectes bocourti** A. Milne Edwards, 1879 (textfig. 47; pl. V fig. 2)

"Crabe au pied large" Fermin, 1765, p. 72.

*Cancer parvus* Fermin, 1769, vol. 2, p. 277; Fermin, 1770, vol. 2, p. 249.

"Krab met breede Pooten" Hartsinck, 1770, p. 118.

*Cancer pelagicus* De Geer, 1778, p. 427, pl. 26 figs. 8-11.

"Seereeca" Stedman, 1796, vol. 1, p. 391; Stedman, 1813, p. 406.

"Syrca" Stedman, 1798, vol. 2, p. 103; Stedman, 1799, vol. 2, p. 172.

"Sirika-krab" Teenstra, 1835, vol. 2, p. 443.

*Lupa diacantha* Kappler, 1881, p. 143; Kappler, 1887, p. 202.

"Krab" Jentink, 1888, p. 8.

*Callinectes danae* Tesch, 1914, p. 195.

## Coquette Investigations

20 miles N. of the mouth of the Suriname River; depth 27 m; 6-9 May 1957; sixth voyage. — 1 female. (L)

## Museum Leiden

Shore east of the mouth of the Nickerie River; 3 July 1949; D. C. Geijskes, no. 9761. — 1 male.

Cocos Polder, Coronie; in ditches near the projected pumping installation; muddy bottom; 11 April 1957; L. B. Holthuis no. 1240. — 6 males.

Dike on the north side of the Cocos Polder, Coronie; 11 April 1957; L. B. Holthuis no. 1239. — 14 dry carapaces.

Groningen on the Saramacca River; 13 September 1911; W. C. van Heurn. — 1 male. Mouth of the Suriname River near Braamspunt; in mud of the muddy shore; 5 April 1957; L. B. Holthuis no. 1219. — 4 males, 2 females.

Shore of the Suriname River near "Purmerend" plantation near Leonsberg, N. of Paramaribo; 1 April 1957; L. B. Holthuis no. 1208. — 1 female.

Suriname River, 10 miles above its mouth; 11 February 1954; H. W. Lijding. — 16 specimens.

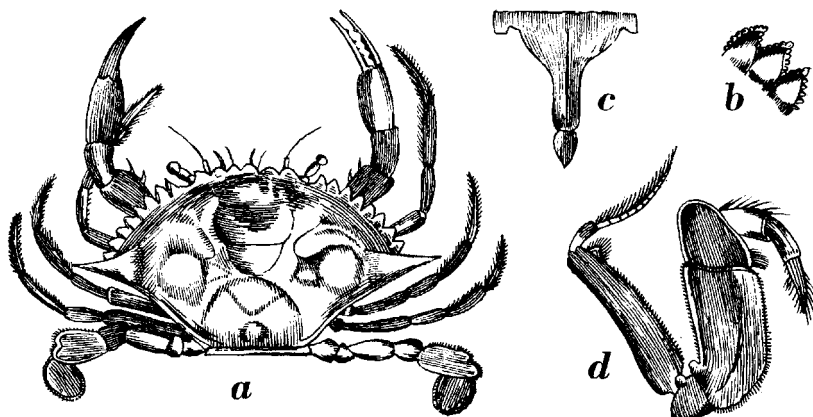


Fig. 47. *Callinectes bocourti* A. Milne Edwards. a, animal in dorsal view; b, detail of antero-lateral margin of carapace; c, abdomen of male; d, third maxilliped. After De Geer, 1778.

"Morgenstond" plantation near Paramaribo; 1911; W. C. van Heurn. — 1 female.

Shore of Suriname River near "Morgenstond" plantation; 15 December 1939; D. C. Geijskes. — 1 male.

In swamp near the Agricultural Experiment Gardens, Paramaribo; 10 June 1911, W. C. van Heurn; 10 March 1939, H. W. C. Cossee; 10 October 1939, D. C. Geijskes. — 3 males, 2 females.

In ditch of the Agricultural Experiment Gardens, Paramaribo; 29 September 1939; D. C. Geijskes. — 1 male.

Paramaribo; 1911, July 1911, W. C. van Heurn; 23 March 1939, H. W. C. Cossee. — 2 males, 2 females.

Plantation near Paramaribo; 1880; J. H. Spitzly. — 1 male.

Suriname River near "La Resource" plantation near Domburg; 19 December 1939; D. C. Geijskes. — 1 female.

Matappica Canal; brackish water; in fish trap; 8 May 1948; D. C. Geijskes. — 2 females.

Small ditch near "Matappica" Fisheries Service Station, near the Matappica Canal; bottom muddy; 6 April 1957; L. B. Holthuis no. 1221. — 2 males, 1 females.

Swamp at 1.2 km S. of the sea shore near the Wiawia Bank; 16 November 1948; 1948-1949 Suriname Expedition no. 2824. — 1 male.

Mouth of the Marowijne River near Galibi; near the river bank; 4 November 1948; 1948-1949 Suriname Expedition no. 2412. — 1 male.

Small creek in plantation near Galibi; 9 November 1948; 1948-1949 Suriname Expedition no. 2516. — 2 males, 1 female.

Mouth of the Marowijne River near Langamankondre; shallow water; 19 September 1948; 1948-1949 Suriname Expedition no. 283. — 3 males.

Suriname; 1910; D. G. J. Bolten. — 1 female.

#### Museum Amsterdam

Caledonia, lower Saramacca River; August-September 1929. — 1 malformed chela (dry).

Paramaribo; don. Koloniaal Museum, Haarlem. — 3 males, 1 female.

Paramaribo. — 1 male.

Suriname; 1922; 1922 Expedition to Hendrik Mt. — 2 females.

Suriname; don. Koloniaal Instituut, Amsterdam. — 2 males, 2 females.

#### Museum Hamburg

Paramaribo; J. Michaelis, received 31 January 1899; 29 February 1908, C. Heller. — 6 males, 2 females.

Suriname. — 1 male.

#### Museum Londen

Suriname River near Paramaribo; large muddy river with a current of several knots; 20 January 1938; I. T. Sanderson, no. 69 Cr. — 1 male.

Description. Rathbun, 1930, p. 128, textfigs. 15g, 16e, 17h, 18f, pl. 55.

Vernacular names. In the Suriname language the species is indicated with the name "srika" or "sirika", also written as "seereeca" or "syryca". Kappler (1881, p. 143) remarked that the name given to this species by the Arowac Indians is "haralubata". According to Graham (1955, p. 32) the species is named "cheriga" or "sheriger" in British Guiana.

Remarks. The specimens examined have cb. ranging between 14 and 155 mm. They agree with Rathbun's description.

In the malformed chela from Caledonia (Museum Amsterdam) the dactylus slightly distally of its base is divided into three branches of equal size, each of which has a more or less normal dactylus shape and is about as long as a normal dactylus would be. The greatest length of the propodus of this chela is 45 mm.

Colour. A remarkable feature in the colour pattern of the species is that the palm of the chela is dark reddish brown above and whitish below, the two colours being sharply separated on the outer surface of the palm. The fingers.

of the chela are reddish brown. The carapace is dark olivaceous. In a field note accompanying the specimen in the collection of the British Museum, I. T. Sanderson remarked that the colour of the living specimen was "deep reddish purple, dirty white below". Coloured figures of the species were provided by Young (1900, pls. 2, 3) who dealt with it under the name *Callinectes diacanthus* (Latreille).

Type locality. Mullins River, 20 miles S. of Belize, British Honduras.

Distribution. West Indies and British Honduras to Brazil.

Occurrence in Suriname. The species is extremely common in the estuaries of the larger rivers, and seems to prefer brackish water. It has been found in the Suriname River as far as near Domburg, and is also found in swamps, ditches and pools with brackish water. The specimen collected by the "Coquette" indicates that it may also be found in the sea.

*Callinectes bocourti* occurs so plentifully in the Suriname coastal area that it is fished for food. It is sold alive on the Paramaribo fishmarket.

The species seems to be able to tolerate much lower salinities than the other Portunidae occurring in this region, which may be the reason that it is the only swimming crab found in the Suriname coastal area; all the other species of this family enumerated here have been caught only out in the sea (the single exception possibly being a juvenile *Callinectes ornatus* taken in a fish trap at Braamspunt in the mouth of the Suriname River). In all of the catches of swimming crabs seen by me, either on the fishmarket or elsewhere in Suriname, no other species but *C. bocourti* was found. For this reason all the records in the literature concerning Suriname swimming crabs may confidently be assigned to the present species.

The first author to mention this species from Suriname was Fermin (1765) who described it as "Le Crabe au pied large, qui differe des autres par les jambes de derriere qui sont larges à l'extrémité, en Latin *Latipes*." The species named *Cancer parvus* by Fermin (1769, 1770) in his later books, is evidently also this species as he assigned the native name "Cirique" to it; his description was, however, copied from Labat's (1724, vol. 1 pt. 2, p. 53) Cirique, which is either a *Pseudothelphusa* or a *Callinectes* from Martinique. Hartsinck (1770) gave only a Dutch translation of Fermin's (1765) description: "de *Krab met breede Pooten*, verschillende van de andere met de Achterpooten die van onderen breed zyn". De Geer (1778) described and figured a species of swimming crab under the name *Cancer pelagicus*. De Geer's account shows that this specimen is a male *Callinectes*, and it even is very probable that it belongs to *C. bocourti*, having a more than superficial resemblance to my Suriname material of that species. As to the origin of his material De Geer does not provide any indication other than stating that the crabs

of this species "se trouvent dans l'océan des deux Indes". Inasmuch as De Geer received Suriname material of Crustacea from Rolander, and as *Callinectes bocourti* is a very common species in Suriname, the possibility that De Geer's specimen of "*Cancer pelagicus*" came from Suriname is rather great. The name *Cancer pelagicus* Linnaeus was incorrectly applied by De Geer to the present species; Linnaeus's species belongs in the genus *Portunus* and is an Indo-West Pacific form. Stedman (1796) mentioned that "crabs, called *seereeca*" are eaten by the Indians; the native name used by him indicates that the present species was evidently meant. Teenstra (1835) gave the following account: "De *sirika-kraab* is, gelijk de Nederlandsche, bruinachtig, en, ofschoon kleiner, dan de blaauwe, de beste van smaak". (The sirika crab is of a brownish colour, like the Dutch crab (= *Cancer pagurus* L.), and, though it is smaller than the blue crab (= *Ucides*), it has a better taste). Kappler (1881) gave a more extensive account of the species: "Eine andere viel seltener Art, in der Kolonie unter dem Namen Sirca, bei den Arowaken als haralubata bekannt (*lupa diacantha*) hält sich nur in See- und Brackwasser auf, lebt von thierischen Substanzen und wird in den Gräben von Paramaribo und in Salzwassersümpfen gefangen. Ihre Schale ist viel platter als die des gewöhnlichen Krabben, an der Seite gezähnt und stachelich, ebenso wie die beiden gleich grossen Scheeren. Sie sind gelblich von Farbe, durch das Kochen aber werden sie krebsth und gleichen im Geschmack europäischen Krebsen". Kappler's later (1887) account is very similar, but he adds that the species does not live in holes (in contrast to *Ucides* and *Ocypode*), that the carapace is "spitzig oval", and that the chelae are "zylinderartig zulaufend". He continued "Sie sind bei 18 cm breit und halb so lang, rötlich-weiss von Farbe, werden aber beim Kochen hochrot, und gleichen im Geschmack mehr den Krebsen als den Krabben. Sie kommen selten ans Land und schwimmen ebenso schnell zur Seite als die Krabben in eben dieser Richtung laufen." The specimen collected by Spitzly (Mus. Leiden) was mentioned by Jentink (1888). Tesch (1914), who identified the Suriname species with *Callinectes danae*, remarked that "In Suriname wordt deze kraab in de zomermaanden of in het voorjaar, wanneer de vervelling juist is afgelopen en het nieuwe pantser nog zacht en week is, in ondiep water langs de kust met de hand gevangen, en tegen 2 of 3 cent per stuk van de hand gedaan" (In Suriname this crab is caught in the summer months or during the spring, when it has just moulted and the shell is still soft; it is taken by hand in the shallow coastal waters and sold for 2 or 3 cents apiece).

**Lupella forceps** (Fabricius, 1793)

## Coquette Investigations

N.N.W. of the mouth of the Marowijne River, about 30 miles offshore; depth 37 m; 29 April-3 May 1957; fifth voyage. — 3 males, 2 females (one ovigerous). (L)

Station 209, between the mouths of the Suriname and Marowijne Rivers, 6° 41' N 54° 33' W; bottom mud and shells; depth 40 m; 14 June 1957. — 1 female. (W)

Description. Rathbun, 1930, p. 133, pl. 57.

Remarks. The carapace breadth of the present specimens varies between 59 and 70 mm, in the ovigerous female it is 61 mm.

Type locality. "In Oceano" (Fabricius, 1793, p. 449).

Distribution. West Indies (Cuba to Martinique), now reported for the first time from Suriname.

**Cronius ruber** (Lamarck, 1818)

## Coquette Investigations

20 miles N. of the mouth of the Suriname River; depth 27 m; 6 to 9 May 1957; sixth voyage. — 1 male. (L)

Description. Rathbun, 1930, p. 139, pls. 62, 63.

Remarks. The single specimen examined has the carapace breadth 30 mm.

Type locality. Brazil.

Distribution. East coast of America from S. Carolina (U.S.A.) to S. Brazil and the West Indies, west coast of America from Lower California to Peru and the Galapagos Islands, and the west coast of Africa from Senegal to Angola. The species is now reported for the first time from Suriname.

## Family Xanthidae

**Glyptoxanthus vermiculatus** (Lamarck, 1818) (pl. VII)

## Coquette Investigations

Between the mouths of the Coppename and Suriname Rivers, 6° 38'—6° 55' N 55° 13'—55° 40' W; depth between 26 and 53 m; 19 to 22 July 1957. — 1 male. (L)

Description. Rathbun, 1930, p. 266, pl. 108 fig. 4, pl. 109.

Remarks. The present specimen has cb. 38 mm, cl. 26 mm. It perfectly agrees with the accounts given of this species in the literature.

Type locality. Unknown.

Distribution. Rathbun (1930) gave as the range of this species: "Curaçao, South America; Angola, West Africa". As Monod (1956, p. 297) has shown, the West African specimens brought by some authors to the present species actually belong to *Glyptoxanthus angolensis* (De Brito Capello). Odhner

(1925, p. 57) synonymized *Actaea maeandrina* Klunzinger, 1913, from the Red Sea with the present form, and even went so far as to consider the present species to be an Indo-West Pacific form, since at that time no fully positive West Indian records of it were known. Rathbun (1930) then proved that the species is definitely West Indian, since the U.S. National Museum possesses a female specimen taken by the Albatross Expedition near Curaçao. The present Suriname specimen seems to be the second to definitely prove the American origin of the species. Suriname and Curaçao at present are the only certain localities whence the species is known; if Odhner's supposition that the type of *Actaea maeandrina* Klunzinger is a juvenile of the present species is correct, then the species inhabits both the Indo-West Pacific and the West Indian regions.

**Medaeus spinimanus** (H. Milne Edwards, 1834)

Coquette Investigations

Station 33, N.E. of the mouth of the Suriname River, 6° 52' N 54° 53' W; bottom mud and shells; depth 51 m; 12 May 1957. — 1 female. (W)

Station 331, between the mouths of the Coppename and Suriname Rivers, 6° 51' N 55° 25' W; bottom mud and shells; depth 53 m; 20 July 1957. — 1 male. (L)

Description. Rathbun, 1930, p. 274, pl. 113.

Remarks. The female specimen has cb. 20 mm and cl. 15 mm, it has the carapace entirely covered by barnacles which are placed the one right next to the other, so that the dorsal structure of the carapace is entirely obscured. The male has cb. 28 mm and cl. 20 mm, it agrees perfectly with Rathbun's description and figure.

Type locality. Unknown.

Distribution. *Medaeus spinimanus* has been reported from the Bahama Islands, Guadeloupe, Dominica and Martinique. It was not known to occur near Suriname.

**Panopeus herbstii** H. Milne Edwards, 1834 (pl. VIII fig. 1)

Museum Leiden

North coast of Suriname near the mouth of the Matappica Canal, N. of the Comme-wijne River; among pieces of wood washed ashore; bottom firm mud; 6 April 1957; L. B. Holthuis no. 1222. — 1 female.

Description. Rathbun, 1930, p. 335, textfigs. 52, 53, pls. 156, 157.

Remarks. The specimen, cb. 32 mm, closely agrees with Rathbun's account of the species.

Type locality. North America.

Distribution. Bermuda and Massachusetts (U.S.A.) to S. Brazil and the West Indies. The species is now reported for the first time from Suriname.

**Eurytium limosum** (Say, 1818) (pl. VIII fig. 2)

"Krab" Jentink, 1906, p. 16.

Museum Leiden

Coronie; near the end of the canal where it empties into the sea; 23 November 1948; 1948-1949 Suriname Expedition no. 4571. — 1 male.

Swamp near "Geijersvlijt" plantation, Paramaribo; 15 December 1939; D. C. Geijskes. — 1 male.

Upper Suriname River; 19 November 1905; P. Buitendijk. — 1 male.

Description. Rathbun, 1930, p. 423, pl. 176 figs. 1, 2.

Remarks. The carapace breadths of the above three specimens range between 25 and 38 mm.

Type locality. "Shores of the northern states" of the U.S.A.

Distribution. Bermuda and New York (U.S.A.) to São Paulo (Brazil) and the West Indies. Graham's (1955, p. 33, pl. 4 fig. 6) Jumbie Crab from British Guiana is this species.

Occurrence in Suriname. In the 1905-1906 annual report of the Leiden Museum the specimen from the Upper Suriname River is mentioned by Jentink as "1 Krab". It is to be regretted that no more accurate indications as to the locality whence this specimen originates are known, it seems improbable that the specimen was found far up the Suriname River.

**Menippe nodifrons** Stimpson, 1859

Coquette Investigations

Station 86, off N.W. French Guiana, 5° 49.5' N 53° 09' W; bottom rocky with mud, coral, and shells; depth 27 m; 22 May 1957. — 2 specimens. (L + W)

Museum Leiden

Among growth on the sides of "Suriname Rivier" lightvessel; found when the ship was docked in Georgetown, British Guiana; 13 June 1950; D. C. Geijskes. — 1 female.

Description. Rathbun, 1930, p. 479, pl. 198 fig. 3, pl. 199.

Remarks. The "Coquette" specimens have cb. 14 and 25 mm, in the other specimen cb. is 18 mm.

Type locality. Indian River, Florida, U.S.A.

Distribution. Florida (U.S.A.) to S. Brazil and the West Indies. The species is now reported for the first time from the Guianas.



***Pilumnus diomedea*** Rathbun, 1894 (textfig. 48)  
Coquette Investigations

Station 337, off the mouth of the Suriname River,  $6^{\circ} 49' - 6^{\circ} 47' N$   $55^{\circ} 21' - 55^{\circ} 18' W$ ; bottom mud and fine shells; depth 49-53 m; 21 July 1957. — 1 male. (L)

Description. Rathbun, 1930, p. 501, pl. 202 figs. 2, 3.

Remarks. The specimen, cb. 19 mm, on the whole agrees with Rathbun's description. The frontal lobes are separated by a deep median incision. In their inner part they bear three distinct spines between which some tubercles or short spinules are visible; in their outer part there is a very strong curved spine near the antenna. The lower orbital margin bears seven or eight spines. In my specimen the fingers of the cheliped are of a dark purplish, almost

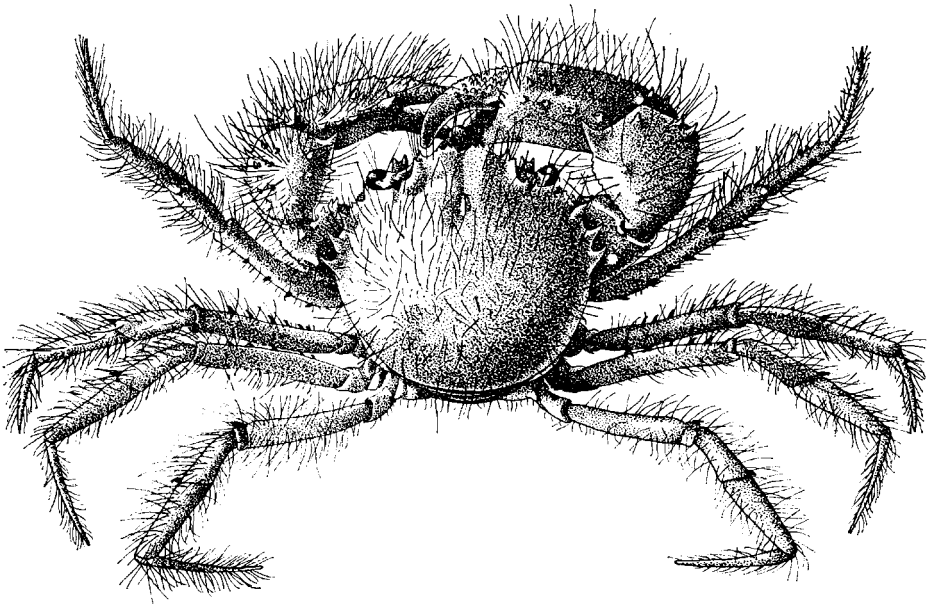


Fig. 48. *Pilumnus diomedea* Rathbun. Specimen from "Coquette" Sta. 337.  $\times 2.3$ .  
W. C. G. Gertenaar del.

black colour, which extends from the tip of the finger to close to its base. No spines are present on the propodus of the walking legs, though they are found on the merus und the carpus.

Type locality. Off Havana, Cuba,  $23^{\circ} 10' 40'' N$   $82^{\circ} 20' 15'' W$ ; depth 184 fathoms.

Distribution. Yucatan Channel and off Cuba; depth 130-184 fathoms. The species is now reported for the first time from Suriname, being found there at a considerably smaller depth than the other specimens reported upon in the literature.

**Carpilius corallinus** (Herbst, 1783),  
**Actaea setigera** (H. Milne Edwards, 1834),  
 and  
**Eriphia gonagra** (Fabricius, 1781)

The occurrence in Suriname of the above three species of Xanthidae is highly dubious. The Hamburg Museum possesses a male of *Carpilius corallinus*, and two males and an ovigerous female of *Eriphia gonagra* labelled "Surinam". Dr. A. Panning of the Hamburg Museum was so kind to inform me that the correctness of the labels of these specimens, like that of the male of *Calappa ocellata* (vid. p. 166 of the present paper), is not at all certain, the material may actually originate from Barbados. *Actaea setigera* was reported from Suriname by Neumann (1878, p. 21), but as pointed out on p. 14 of the present paper, it is more likely that Neumann's so-called Suriname material actually is of Antillean origin. The three Xanthids mentioned here all are rather typical inhabitants of coral reef habitats and therefore could hardly be expected to live on the muddy Suriname coast.

Family Potamonidae

Subfamily Trichodactylinae

**Trichodactylus (Valdivia) serratus** (White, 1847) (textfig. 49, 50a)

*Dilocarcinus* sp. Jentink, 1903, p. 11; Jentink, 1904, p. 6.

Museum Leiden

Near the Coppename River; 1901; 1901 Coppename Expedition. — 1 ovigerous female. Paramaribo; don. Koloniaal Museum, Haarlem, no. 18. — 1 male.

Coropina Creek near Republiek; 25-30 October 1946; D. C. Geijskes. — 2 males, 3 females.

Coropina Creek near Republiek; in holes in the bank of the creek and among dead leaves on its bottom; 9 April 1957; L. B. Holthuis no. 1231. — 7 males, 5 females.

Swamp near Coropina Creek, near Republiek; 26 April 1943; D. C. Geijskes. — 1 female.

Sectie O, on the railroad at about 70 km S. of Paramaribo; 7 June 1944; D. C. Geijskes. — 1 juvenile.

Feti Creek near its junction with the Litani River, upper reaches of the Marowijne basin; 6 August 1939; D. C. Geijskes. — 1 female.

Litani River near its junction with the Feti Creek, upper reaches of the Marowijne basin; between tree roots; 15 August 1939; D. C. Geijskes. — 1 male.

Suriname. — 1 female.

Museum Amsterdam

Paramaribo; don. Koloniaal Museum Haarlem. — 2 males.

Museum Hamburg

Upper Saramacca River; fresh water; C. Heller; received 28 May 1910. — 1 male. Paramaribo; J. Michaelis, received 30 September 1898; 1908, C. Heller. — 9 males, 2 females.

Para district; fresh water; 10 March 1909; C. Heller. — 1 male.

Upper Para River; J. Michaelis; received 13 June 1901. — 2 males.

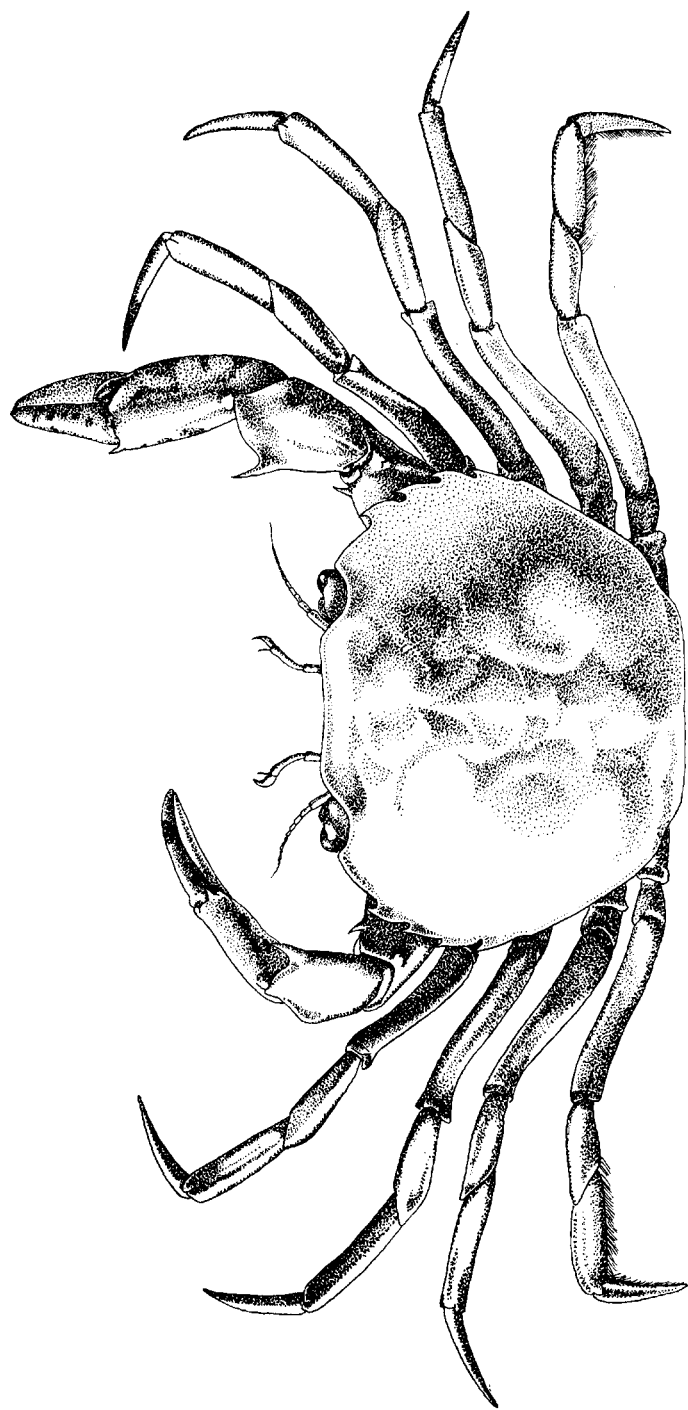


Fig. 49. *Trichodactylus (Valdivia) serratus* (White). Specimen from near Republiek (L. B. Holthuis no. 1231).  $\times 1.8$ . W. C. G. Gertenaar del.

## Museum London

In a small stream near Zanderij; bottom mud; 21 August 1938; I. T. Sanderson no. 74 Cr. — 1 male.

Description. Rathbun, 1906, p. 47, textfig. 111; 1905, pl. 19 figs. 7, 8.

Vernacular name. The native name of the species in the Oajana Indian language of the region of the Litani River is "Waimoh".

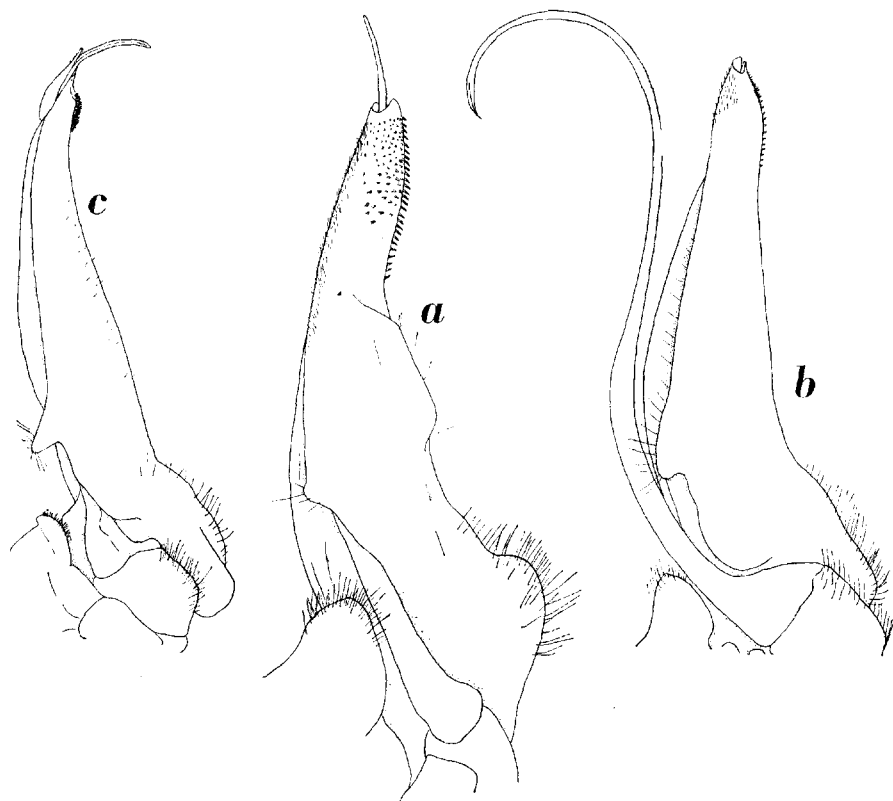


Fig. 50. First and second left male pleopods in posterior view. a, *Trichodactylus (Valdivia) serratus* (White); b, *Trichodactylus (Dilocarcinus) dentatus* (Randall); c, *Trichodactylus (Dilocarcinus) spinifer* (H. Milne Edwards). a, specimen from near Republik (L. B. Holthuis no. 1231); b, specimen from Paramaribo (July 1911, W. C. van Heurn); c, specimen from 1948-1949 Suriname Expedition no. 1360. a,  $\times 13$ ; b, c,  $\times 7$ .

Remarks. The present specimens, which have cb. 6-40 mm and cl. 5-37 mm, agree with Rathbun's description and with that by Coifmann (1938, p. 94). The frontal margin is only very slightly emarginate and directed slightly upwards. The number of antero-lateral teeth varies between 4 and 5 (the orbital tooth excluded), the normal number is 4. The orbital tooth is less

distinctly pointed than the others and the distance between it and the next tooth is larger than that between the other teeth. Sometimes there is an indication of one (seldom two) additional denticles just behind the orbital tooth. The small tooth on the postero-lateral margin is variable in size; sometimes it is distinct though small, sometimes it is hardly at all noticeable. In some specimens traces of one or two more denticles may be observed on the postero-lateral margin. In the large specimens the carapace is naked, though finely punctate, in the smaller individuals a distinct pubescence is visible. The lateral and posterior margins of the carapace are carinate; the carinae being distinct almost throughout their course. The strongly elevated posterior margin, the flat or even somewhat concave front, and the flatter upper surface of the carapace immediately distinguish this species from the other Suriname representatives of the genus. The lower orbital border ends in a strong inner tooth. This inner tooth is separated by a deep and broad rounded incision from a second tooth which is smaller, has the top rounded, and is followed by some eight indistinct crenulations, some of which may be somewhat larger than the rest. Neither the male nor the female has a spine on the ischium of the cheliped; the merus of this leg has a distinct subterminal dorsal spine, a spine on the inner lower margin and an outer antero-ventral spine. The carpus has a single slender spine on the upper margin, and the palm has a small antero-dorsal spine; in the large cheliped of the large males, however, the latter spine is indistinct. Sometimes a carina is visible in the lower half of the outer surface of the palm of the chela.

The specimen mentioned by Jentink (1903, 1904) as *Dilocarcinus* spec. is still preserved in the collection of the Leiden Museum, it is the one labelled Paramaribo.

Colour. The carapace of the preserved specimens is of a dark olive colour with a red mottling consisting mainly of minute red speckles and short stripes. The walking legs have the same dark olive colour on which there are many dark specks. The chelae are dark olive dorsally, being lighter ventrally, and have large roundish dark red spots on the palm and the fingers. Such spots are present on the merus but are less distinct there. I. T. Sanderson in a field note concerning the specimen in the collection of the British Museum stated the colour of the living specimen to be "pale cream with bright violet spots, carapace all deep, violet brown".

Type locality. Unknown.

Distribution. The species is known from British Guiana, Suriname, and Brazil.

Occurrence in Suriname. *Trichodactylus serratus* is now reported for the first time from Suriname, where it seems to be not very rare. Coropina Creek,

whence the species has been collected several times, is a rather wide creek with perfectly fresh and acid water. We found the crabs in rather deep holes in the steep banks of the creek, but also many specimens were obtained by hauling a handnet through the layer of dead leaves on the bottom of the creek at a depth of 0 to 1.5 m.

**Trichodactylus (Dilocarcinus) dentatus** (Randall, 1840) (textfig. 50b, 51)

*Orthostoma dentata* Randall, 1840, p. 122.

*Orthostoma dentatum* Ortmann, 1897, p. 327.

Museum Leiden

Western part of Lucie River, Corantijn River basin, about 3° 32' N 57° 24' W; 1 December 1910; 1910-1911 Corantijn Expedition. — 1 male.

Pool near highway between Coronie and Paramaribo at 2.16 km E. of Coronie; in wood; December 1948; 1948-1949 Suriname Expedition, no. 4167. — 1 female carrying many young.

Three km west of the Coppename River, 7 km S. of the highway between Coronie and Paramaribo; March 1954; J. C. Lindeman. — 2 females (dry).

Agricultural Experiment Garden, Paramaribo; 18 April 1940 and 5 February 1941; D. C. Geijskes. — 15 juveniles.

In the banks of ditches, Paramaribo; July 1911; W. C. van Heurn. — 2 males, 2 females.

Paramaribo; 1911; W. C. van Heurn. — 1 female.

Suriname; 1883; C. J. Hering. — 1 female.

Museum Amsterdam

Near the Lucie River, Corantijn River basin, at about 3° 32' N 57° 25' W; in decayed wood; July-August 1926; 1926 Suriname Expedition to the Wilhelmina Range. — 4 juveniles.

Description. Rathbun, 1906, p. 65; 1905, pl. 20 fig. 4.

Remarks. The specimens vary in cl. between 4 and 52 mm. The female from 2.16 km E. of Coronie (cl. 52 mm) carried numerous young under the abdomen. The specimens closely agree with Rathbun's account of the species. *Trichodactylus dentatus* may immediately be distinguished from the other Suriname species of the genus by the presence of spinules on the distal margin of the front.

Coloured figures of the species were published by Young (1900, pls. 5, 6), who stated that it is named Eeta Crab in British Guiana.

Type locality. "Either from South America or the West Indies". It seems quite possible that Randall's material was collected in Suriname by C. Hering, and for that reason the type locality is restricted here to Paramaribo, Suriname.

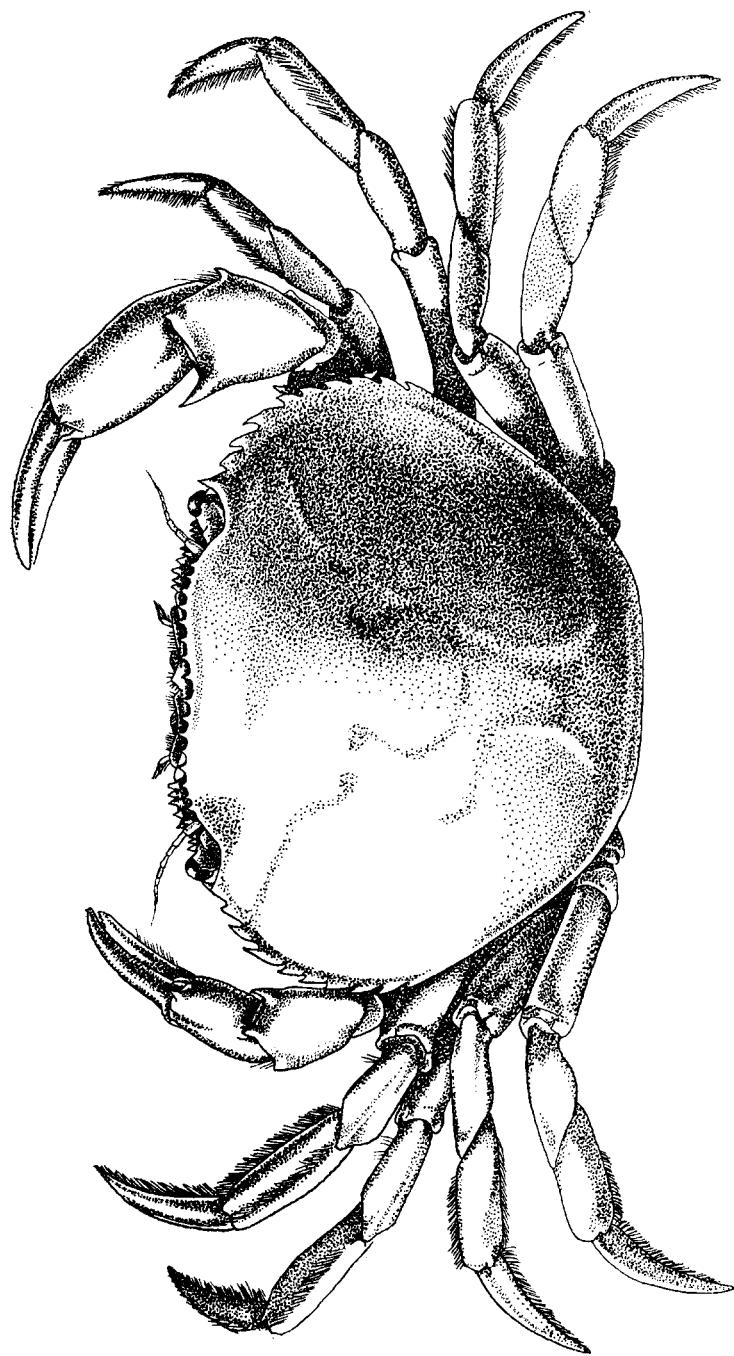


Fig. 51. *Trichodactylus (Dilocarcinus) dentatus* (Randall). Female specimen from Paramaribo (July 1911, W. C. van Heurn).  $\times 1.8$ . W. C. G. Gertenaar del.

Distribution. Venezuela, British, Dutch, and French Guiana, Brazil. The Leiden Museum possesses material of the present species from E. Venezuela and Trinidad.

Occurrence in Suriname. Apart from the doubtful record by Randall, and Ortmann's (1897) observations on the type material, the present species has not before been reported from Suriname. The present material shows it to be not very rare in Suriname, where it evidently occurs closer to the sea coast than the preceding species.

**Trichodactylus (Dilocarcinus) spinifer** (H. Milne Edwards, 1853)  
(textfigs. 50c, 52)

*Dilocarcinus spinifer* Young, 1900, p. 234.

Museum Leiden

Leonsberg, N. of Paramaribo; on the wall of a sluice near the Suriname River; 20 January 1939; D. C. Geijskes. — 1 male.

Swamp near Agricultural Experiment Garden, Paramaribo; 14 December 1939; D. C. Geijskes. — 1 male.

Paramaribo; August 1911; W. C. van Heurn. — 1 female.

Bushcreek near Sectie O, on the railroad about 70 S. of Paramaribo; 4 November 1942, and 7 June 1944; D. C. Geijskes. — 1 male, 1 female.

Makambi Creek near Kabel; 27 September 1938; D. C. Geijskes. — 3 males.

Suriname River near Kabel; 21 to 28 September 1938; D. C. Geijskes. — 1 male.

Third Swamp, 14.6 km S. of the sea shore near Wiawia Bank; 11 October 1948; 1948-1949 Suriname Expedition no. 1360. — 1 male.

Pool at the S. end of the Last Swamp, 13.3 km S. of the sea shore near the Wiawia Bank; 27 November 1948; 1948-1949 Suriname Expedition no. 3965. — 1 female.

Pool at the S. end of the Last Swamp, 13.7 km S. of the sea shore near the Wiawia Bank; 27 November 1948; 1948-1949 Suriname Expedition no. 3966. — 1 female.

Djai Creek, 8.4 km N. of Moengotapoe; 6 October 1948; 1948-1949 Suriname Expedition no. 1181. — 2 males, 2 females.

Acoté, on Tapanahoni River; in swamp; 16 February 1952; 1952 Medical Expedition. — 1 juvenile.

Apisiké, a village on the Upper Paru River, Brazil, just S. of the Suriname border, Grens Range; in forest creek; 20 April 1952; D. C. Geijskes no. 1262. — 1 male.

Museum Berlin

Fresh water near Paramaribo; C. Heller. — 2 males.

Museum Hamburg

Paramaribo; fresh water; 1908; C. Heller. — 2 males, 1 female.

Upper Suriname River; C. Heller; received 28 May 1910. — 1 male.

Museum London

Near Donderberg, about 6 miles east of the railway at 91.5 km S. of Paramaribo; in hole in dry rotten log; high forest without water; 4 November 1938; I. T. Sanderson, nos. 77Cr. and 78 Cr. — 2 males.

Suriname; 1938; I. T. Sanderson, no. 75 Cr. — 1 male.



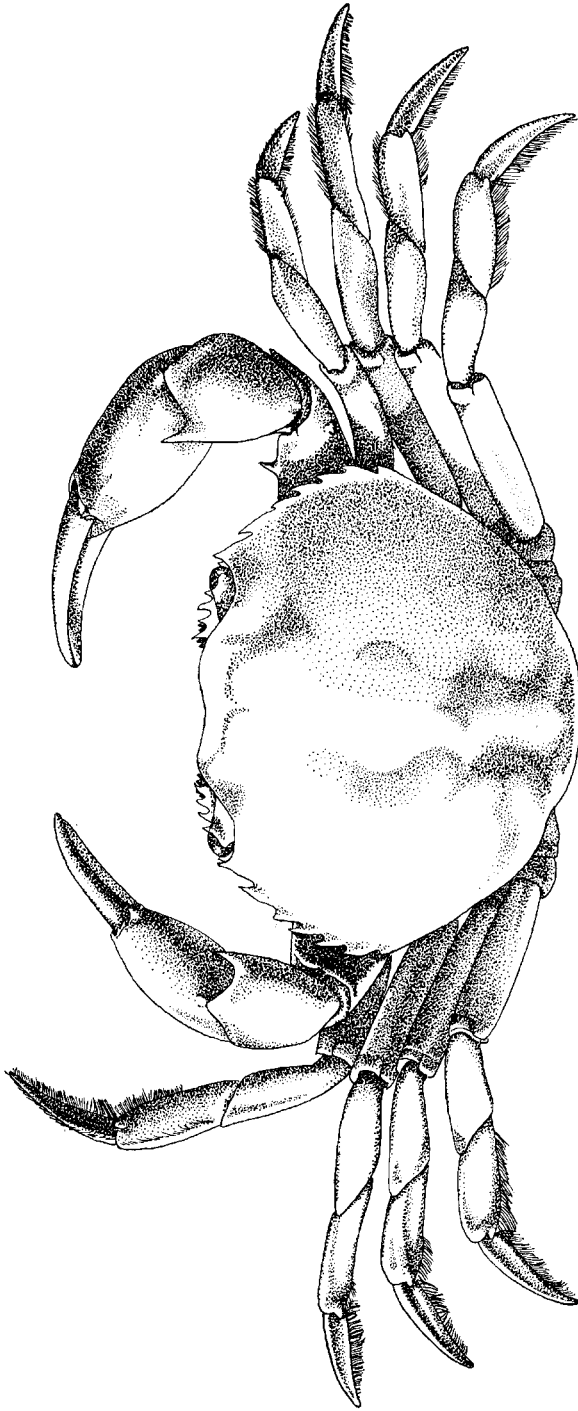


Fig. 52. *Trichodactylus (Dilocarcinus) spinifer* (H. Milne Edwards). Male specimen from 1948-1949 Suriname Expedition no. 1360.  $\times 1.8$ . W. C. G. Gertenaar del.

Description. Rathbun, 1906, p. 60, textfig. 121; 1905, pl. 20 fig. 1.

Vernacular name. The species is named "káboe" (pronounce káhboo) by the bush negroes near Kabel.

Remarks. There is some variation in the depth of the frontal emargination, though in none of my specimens it is as deep as in the male of *Trichodactylus* (*Dilocarcinus*) *septemdentatus* (Herbst)<sup>1</sup>) from Rio Yacuma near Espiritu, Bolivia (leg. W. Forster & O. Schindler, 13-28 April 1954) with which I could compare them. The antero-lateral teeth behind the orbital tooth vary in number from six to seven, though usually the number is six. In my material no lobe is visible behind the last antero-lateral tooth. The number of spines on the lower orbital border varies from 6 to 9. The buccal carina bears 4 or 5 spines.

In the older males (cb. 36 to 50 mm) the ischium of the cheliped shows no spine but an inconspicuous tubercle on the lower surface near the distal margin. In females and young males (cb. 22 to 27 mm) a single slender spine is present there. The merus has a distinct subterminal spine on the dorsal margin and a well developed spine in the middle of the inner lower margin. In the older males about three blunt and very low tubercles may be seen on the lower outer margin of the merus, in the females and young males these tubercles are replaced by slender sharp spines; in all specimens this margin ends in a spine. The carpus shows a distinct inner anterior spine. The palm bears a small antero-dorsal spine. The fingers are slender and curve slightly inwards; they close practically over their entire length both in the males and in the females, and are longitudinally grooved.

The proximal part of the fused part of the male abdomen shows two blunt and wide submedian tubercles.

Rathbun (1906), who had only males of this species at her disposal, described the ischium and lower outer margin of the merus as being without spines. As shown by my specimens such spines are present in the females and young males.

Type locality. Cayenne, French Guiana.

Distribution. Dutch and French Guiana, Brazil.

Occurrence in Suriname. The species has been found in fresh waters in

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1) This species has been dealt with by Rathbun (1906, p. 58) under the name *T. (D.) orbicularis* (Meuschen). Since according Opinions 260 and 261 of the International Commission on Zoological Nomenclature (1954, Opin. Decl. Int. Comm. Zool. Nomencl., vol. 5, pp. 265-296) both the *Museum Gronovianum* (1778) and the *Index to Zoophylacium Gronovianum* (1781) are rejected for nomenclatorial purposes, the names proposed by Meuschen in these two publications are not available, and consequently the specific name *orbicularis* Meuschen cannot be used here.

the coastal region of Suriname from quite close to the sea (Leonsberg) to the anterior mountain range (Kabel); once a specimen has been found deep in the interior (Apisiké). Sanderson who found specimens in holes in a dry rotten log in a high forest remarked in a field note accompanying his above listed specimens no. 77 Cr. and 78 Cr. that "there is no water in this whole forest from August to January, and all crabs are in holes". As far as is known to me the only previous Suriname record of this species is that by Young (1900); it is possible, however, that his indication "Dutch Guiana" is a lapsus for "French Guiana".

Subfamily Pseudothelphusinae

**Potamocarcinus latifrons** (Randall, 1840) (textfigs. 53-56)

*Potamia latifrons* Randall, 1840, p. 120.

"Krabben" Kappler, 1887, p. 202.

*Kingsleya latifrons* Ortmann, 1897, p. 324, pl. 17 fig. 7.

*Potamocarcinus latifrons* Rathbun, 1898, p. 536; Rathbun, 1905, p. 311, textfig. 100, pl. 16 fig. 8; Geijskes, 1954, p. 68.

*Pseudothelphusa* Bakhuis, 1902, p. 839.

"Krab" Geijskes, 1942, p. 23.

Museum Leiden

Avanavero Falls, Kabalebo River, branch of the Corantijn River; March 1920; A. Reyne. — 1 male.

Fallawatra River, branch of the upper Nickerie River; October 1900; 1900 Nickerie Expedition. — 1 female.

Upper Nickerie River; September-October 1900; 1900 Nickerie Expedition. — 1 male.

Coppename River near the beginning of the Langdansoela Falls; 26 July 1943; D. C. Geijskes. — 1 male.

Upper Coppename River below the Sidonkroetoe Falls; 8 September 1901; 1901 Coppename Expedition. — 2 females.

Sidonkroetoe Falls, Coppename River; 30 July 1943; D. C. Geijskes. — 1 female.

Coppename River above the Tonckens Falls, near Magazijn Camp; 1 August 1943; D. C. Geijskes. — 1 female.

Rapids in Zuid Creek, upper Linker Coppename River, near base camp I; 15 August 1943; D. C. Geijskes. — 1 juvenile.

Upper Linker Coppename River near Wilhelmina Range, line I; August-September 1943; D. C. Geijskes. — 1 juvenile.

Coppename River; 1901; 1901 Coppename Expedition. — 2 males, 2 juveniles.

Toekoemoetoe Creek, branch of upper Saramacca River; 15 February 1903; 1902-1903 Saramacca Expedition. — 1 female.

Saramacca River near Mammaprati; 5 March 1958; D. C. Geijskes. — 1 female.

Upper Saramacca River; 1902; 1902-1903 Saramacca Expedition. — 2 males, 1 female.

Falls in the Suriname River near Kabel; 27 September 1938; D. C. Geijskes. — 1 juvenile.

Suriname River near Kabel; 21-28 September 1938; D. C. Geijskes. — 3 males, 1 female.

Suriname River N. of Kabel; shore; 1 September 1955; P. Wagenaar Hummelinck. no. 644. — 2 males.

Suriname River N. of Kabel; among stones in the river and near the shore; 10 April 1957; L. B. Holthuis no. 1236. — 4 males, 6 females, 35 juveniles.

Suriname River near Gingré Soela; 29 November 1955; L. J. Schmidt. — 2 juveniles.

Suriname River near Bakra Oposton; 19 August 1942; L. J. Schmidt. — 1 male.

Suriname River near Mamadam; 17 August 1942; L. J. Schmidt. — 1 female.

Gran Rio, upper Suriname River basin; August 1910; 1910-1911 Corantijn Expedition. — 1 female.

Upper Gran Rio, Suriname River basin; September 1910; 1910-1911 Corantijn Expedition. — 1 female.

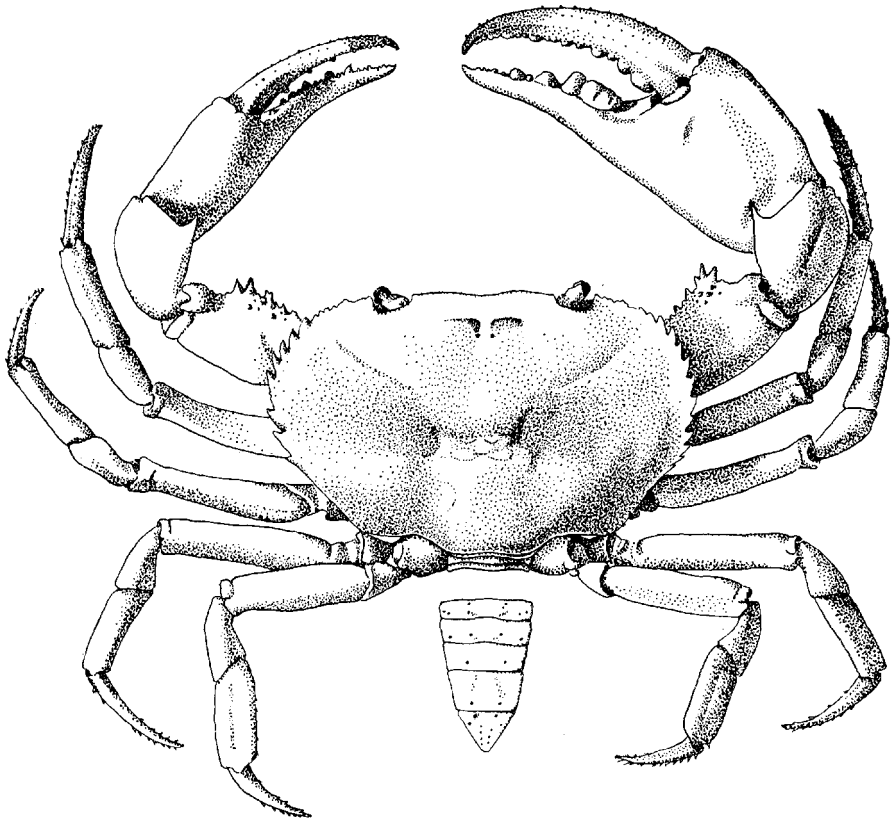


Fig. 53. *Potamocarcinus latifrons* (Randall). Male specimen from Apoema Falls.  $\times 0.7$ .  
W. C. G. Gertenaar del.

Marowijne River near Langatabbetje; in river; 19 February 1952; D. C. Geijskes. — 1 female.

Marowijne River near base camp,  $4^{\circ} 47' N$ ; among stones in the river near the shore; 12, 15, 16, 17, and 24 February 1949; 1948-1949 Suriname Expedition nos. 6418, 6640, 6826, 6923, 7465. — 2 males, 4 females, 2 juveniles.

Marowijne River, French shore opposite base camp,  $4^{\circ} 47' N$ ; in the river; 17 February 1949; 1948-1949 Suriname Expedition no. 6926. — 1 male, 1 female.

Marowijne River near Nassau Range; 1949; 1948-1949 Suriname Expedition. — 1 female.

Marowijne River near Alamoেকে Soela; 10 February 1949; 1948-1949 Suriname Expedition no. 6419. — 1 female.

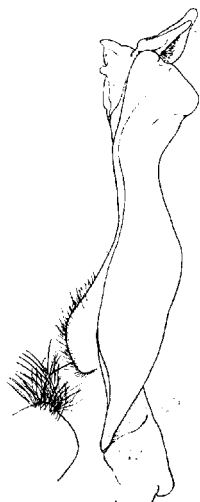


Fig. 54. *Potamocarcinus latifrons* (Randall). Left first male pleopod in posterior view. Specimen from 1948-1949 Suriname Expedition no. 7465.  $\times 4$ .

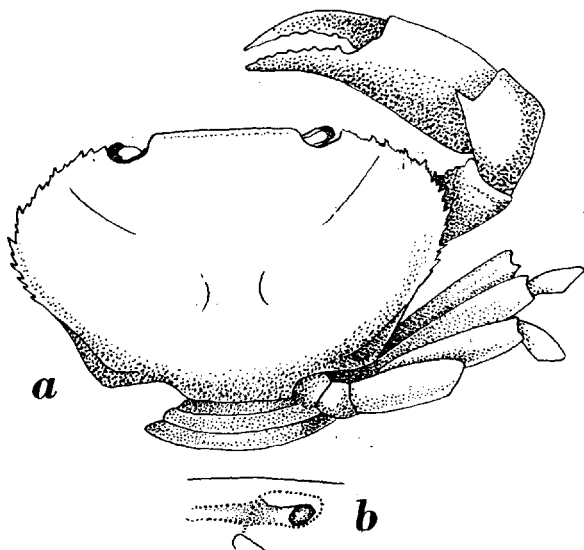


Fig. 55. *Potamocarcinus latifrons* (Randall), holotype. a, animal in dorsal view; b, orbit in frontal view. a, b, natural size. After Ortmann, 1897.

Marowijne River near Gran Creek, Nassau Range; 19 and 23 February 1949; 1948-1949 Suriname Expedition nos. 7029 and 7380. — 8 males, 18 females.

Marowijne River near the Apoema Falls; October 1953; D. C. Geijskes. — 2 males, 3 females.

Tapanahoni River near Manlobbi; river bank; 28 February 1952; 1952 Medical Expedition, no. 346. — 1 male, 1 female.

Gransoela, S. of Visiti, Tapanahoni River; in river among rocks; 8 March 1952; 1952 Medical Expedition, no. 520. — 1 male, 1 female.

Grandasingi Falls, Tapanahoni River; in river among rocks; 9 March 1952; 1952 Medical Expedition, no. 548. — 1 male, 1 female.

Paloemeu River near Kodobakoe Soela, Tapanahoni River basin; 3 July 1952; D. C. Geijskes. — 1 female.

Paloemeu River near Papadron Soela; 31 March 1952; 1952 Medical Expedition. — 1 female.

Lawa River near the junction with the Gonini River, Marowijne River basin; on stones in the river; 15 and 16 August 1903; 1903-1904 Gonini Expedition. — 1 male, 1 female.

Gonini River near Gransoela; rocks in the river; 17 August, 2 and 4 September 1903; 1903-1904 Gonini Expedition. — 1 male, 2 females.

Falls in Lawa River below Cottica; 4 July 1939; D. C. Geijskes. — 1 male, 1 female.

Falls in Lawa River near Bakaviasang Island below Cottica; 4 July 1939; D. C. Geijskes. — 1 male, 1 female.

Litani River near Feti Creek; among stones; 20 August 1939; D. C. Geijskes. — 1 female.

Litani River above Loë Creek; under stones and rubbish; 3 and 4 August 1939; D. C. Geijskes. — 1 male, 1 female.

Litani River near Gransoela; 24 August 1939; D. C. Geijskes. — 2 males.

Upper Litani River near Alama Creek; 2 August 1939; D. C. Geijskes. — 1 male.

Falls in upper Litani River; among stones; 2 August 1939; D. C. Geijskes. — 1 male.

Marowijne basin; 1903-1904; 1903-1904 Gonini Expedition. — 2 juveniles.

Suriname; 1891; H. F. C. ten Kate. — 1 male, 2 females.

Suriname; 1948-1949 Suriname Expedition. — 2 males.

Suriname. — 1 male, 1 female.

St. Martin Group, Netherlands Antilles; 1906; J. Boldingh. — 2 females.

#### Museum Amsterdam

Avanavero Falls, Kabalebo River, Corantijn River basin; March 1920; A. Reyne. — 1 female.

Western part of the Lucie River, Corantijn River basin, at about 3° 32' N 57° 25' W; everywhere in rocky places along the shores; July-August 1926; 1926 Suriname Expedition to the Wilhelmina Range no. 127. — 1 male, 1 female.

Saramacca River; 1922; 1922 Expedition to Hendrik Mt. — 1 female.

#### Museum Hamburg

Upper Suriname River near Berg en Dal, about 70 km S. of Paramaribo; August 1908; C. Heller. — 4 females.

#### Museum London

Camp I on Coppename River above Kaaimanston; herb-covered bank by river; 8 July 1938; I. T. Sanderson, no. 72 Cr. — 1 ovigerous female.

Description. Rathbun, 1905, p. 311, textfig. 100, pl. 16 fig. 8.

Vernacular names. The Suriname name of the species is "kraboe" (Geijs-

kes, 1954, p. 68), which, however, also is used as a term to indicate crabs in general. In Dutch, *Potamocarcinus* is named "rivierkrab" (river crab) or "gewone rivierkrab" (common river crab).

Remarks. The carapace breadths of the present specimens vary between 5 and 89 mm, being 70 mm in the ovigerous female. The species may be immediately distinguished from the other Suriname *Pseudothelphusinae* by that the antero-lateral border of the carapace bears distinct teeth, which are already noticeable in the smallest specimens.

The species exhibits a curious sexual dimorphism in the shape and colour of the dactylus of the second pereopods. In the females and young males this dactylus does not differ in shape and colour from the dactyli of the following legs, but in adult males it is larger, higher, and somewhat swollen, while the distal third is of a black colour. A similar black colour is visible on the tip of the dactylus of the chelipeds of both sexes.

The left first male pleopod is figured here in posterior view (fig. 54). At first sight it seems to differ strongly from the figure provided by Coifmann (1938, p. 97, fig. 1), but the latter evidently represents the right pleopod in external lateral view.

Colour. Preserved specimens are dark reddish or greyish brown above, more yellowish below. The black colour of the tips of the dactyli of the first and second pereopods has already been mentioned above. In the field notes accompanying the material of the British Museum, I. T. Sanderson noted the specimen to be "dull greyish-brown above, yellowish cream below" when living. Young (1900, pl. 4) provided a coloured figure of the species.

Type locality. The type "is supposed to have been brought from Suriname, or the West Indies" (Randall, 1840). As the species does not occur in the Antilles, it is quite evident that the latter locality is not correct; furthermore the species is a very common form in the Suriname interior. Therefore I hereby restrict the type locality to Suriname.

Distribution. British, Dutch, and French Guiana. The specimens in the collection of the Leiden Museum indicated as originating from the Netherlands Antilles probably have been incorrectly labelled and may actually originate from Suriname.

Occurrence in Suriname. This species is probably the most common freshwater crab of Suriname. It has not been found in the coastal region, but only in the interior and in the anterior mountain range. It lives in the larger rivers in clear water among stones, often near falls or rapids. In the smaller creeks it seems to be entirely replaced by the species of the genus *Pseudothelphusa*. The first Suriname record is the one by Randall, who described the species as new; Randall probably based himself on material which was collected in Suri-

name by C. Hering and donated to the Philadelphia Academy of Sciences. Kappler's (1887, p. 202) remark: "Auch in den Flüssen des oberen Landes finden sich Krabben, die häufig ans Land kommen, aber doch meist im reinen Flusswasser leben. Sie sind braun, nicht über 4 cm lang bei einer Breite von 9 cm. Sie werden nicht gegessen" evidently refers to the present species. Ortmann (1897) gave the measurements and a figure of Randall's type, and erected the new genus *Kingsleya* for the species. Rathbun (1898, 1905) referred to the type, but gave no new information on Suriname material. The

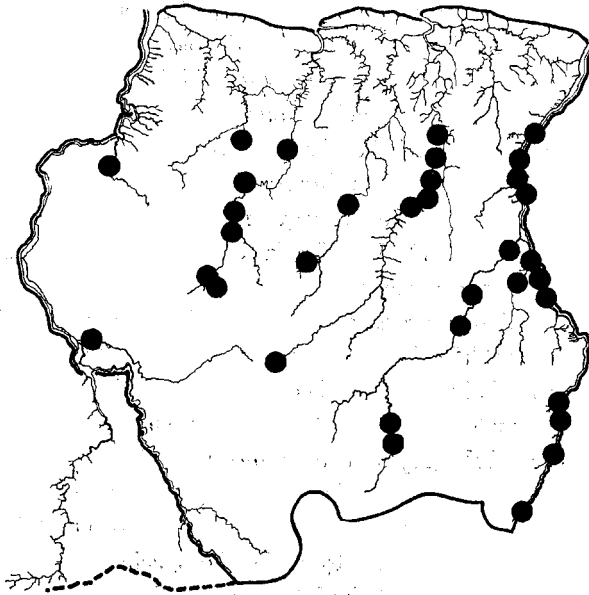


Fig. 56. Map showing the distribution of *Potamocarcinus latifrons* (Randall) in Suriname.

specimens mentioned by Bakhuis (1903) as *Pseudothelphusa* and those which Geijskes (1942, p. 23) casually mentioned in his report are preserved in the Rijksmuseum van Natuurlijke Historie and prove to belong to the present species. Geijskes (1954, p. 68) gave some interesting data on *Potamocarcinus latifrons*: "De gewone rivierkrab die overal tussen stenen te vinden is, wordt bij gebrek aan beter vaak gegeten. De dieren worden gekapt, of met de [p. 69:] hand gevangen en niet zelden treft men ze ook op het aas in de baskieten aan, maar men vangt ze vooral in de masoewa" (The common river crab, which is found everywhere among stones, is often eaten by the bush



negroes for want of something better. The animals are taken by killing them with chopping knives or they are caught by hand. They are also quite often found on the bait of "baskiets", fish traps which are provided with a trap door; but they are mostly obtained in "masoewas", fishing baskets which are made of palm leaves and baited with the intestines of game).

***Pseudothelphusa denticulata*** (H. Milne Edwards, 1853)

(textfigs. 57a-d, pl. IX figs. 1, 2)

Museum Leiden

First forest creek between the Raleigh Falls in the Coppename River and the Voltz Mt.; in the stomach of an electric eel, *Electrophorus electricus* (L.); 22 August 1957; D. C. Geijskes. — 1 male, 1 female.

Region of Kroetoe Mt., near Rechter Coppename River; 24 November 1943; D. C. Geijskes. — 2 juveniles.

Near Tafel Mt.; line III; 6 November 1943; D. C. Geijskes. — 1 male.

In falls of the Koesoewe Creek near first camp, line to Tafel Mt.; 27 March 1958; D. C. Geijskes. — 2 juveniles.

Zand Creek near Kwatta camp, Wilhelmina Range, line I km 3.2; 2 September 1943; D. C. Geijskes. — 1 juvenile.

Bush creek, 5.7 km W. of Linker Coppename River, Wilhelmina Range, line II km 5.7; 16 September 1943; D. C. Geijskes. — 1 juvenile.

Small bush creek near Sectie O on the railroad 69.5 km S. of Paramaribo; 6 February and 4 November 1942; D. C. Geijskes. — 2 males.

Makambi Creek near the railroad at 121 km S. of Paramaribo; near quarry; 30 November 1949; C. Bleys. — 1 female.

Upper course of Makambi Creek near the railroad at 121 km S. of Paramaribo; 30 November 1949; C. Bleys. — 1 female.

Upper course of a small stream (creek I) from the Browns Mt.; 15 September 1938; D. C. Geijskes. — 1 male.

Below waterfall (first fall), Browns Mt.; 17 September 1938; D. C. Geijskes. — 7 juveniles.

Lai Creek near Weyneweg, Moengotapoe; 21 September 1948; 1948-1949 Suriname Expedition no. 415. — 1 male.

Nassau Range, forest 1.5 km W. of the Marowijne River at 4° 47' N; 21 February 1949; 1948-1949 Suriname Expedition no. 7304. — 1 male.

Nassau Range, in forest creek 2 km W. of the Marowijne River at 4° 47' N; 16 and 25 February 1949; 1948-1949 Suriname Expedition nos. 6828 and 7646. — 1 male and 1 juvenile.

Nassau Range, in forest creek 2.1 km W. of the Marowijne River at about 4° 47' N; 19 February 1949; 1948-1949 Suriname Expedition no. 7040. — 1 male.

Nassau Range, in small forest creek 3.6 km W. of the Marowijne River at 4° 47' N; 8 and 11 March 1949; 1948-1949 Suriname Expedition nos. 8357 and 8698. — 4 males, 1 female.

Nassau Range, small creek 5.9 km W. of the Marowijne River at 4° 47' N; 10 March 1949; 1948-1949 Suriname Expedition no. 8642. — 1 female.

Nassau Range, small creek 6.8 km W. of the Marowijne River at 4° 47' N; 8 March 1949; 1948-1949 Suriname Expedition no. 8365. — 1 male.

Nassau Range, in small creek 7 km W. of the Marowijne River at about 4° 47' N; first half of March 1949; 1948-1949 Suriname Expedition. — 1 male. (dry)

Nassau Range, Bleeders Creek, 7 km W. of the Marowijne River at about 4° 47' N;

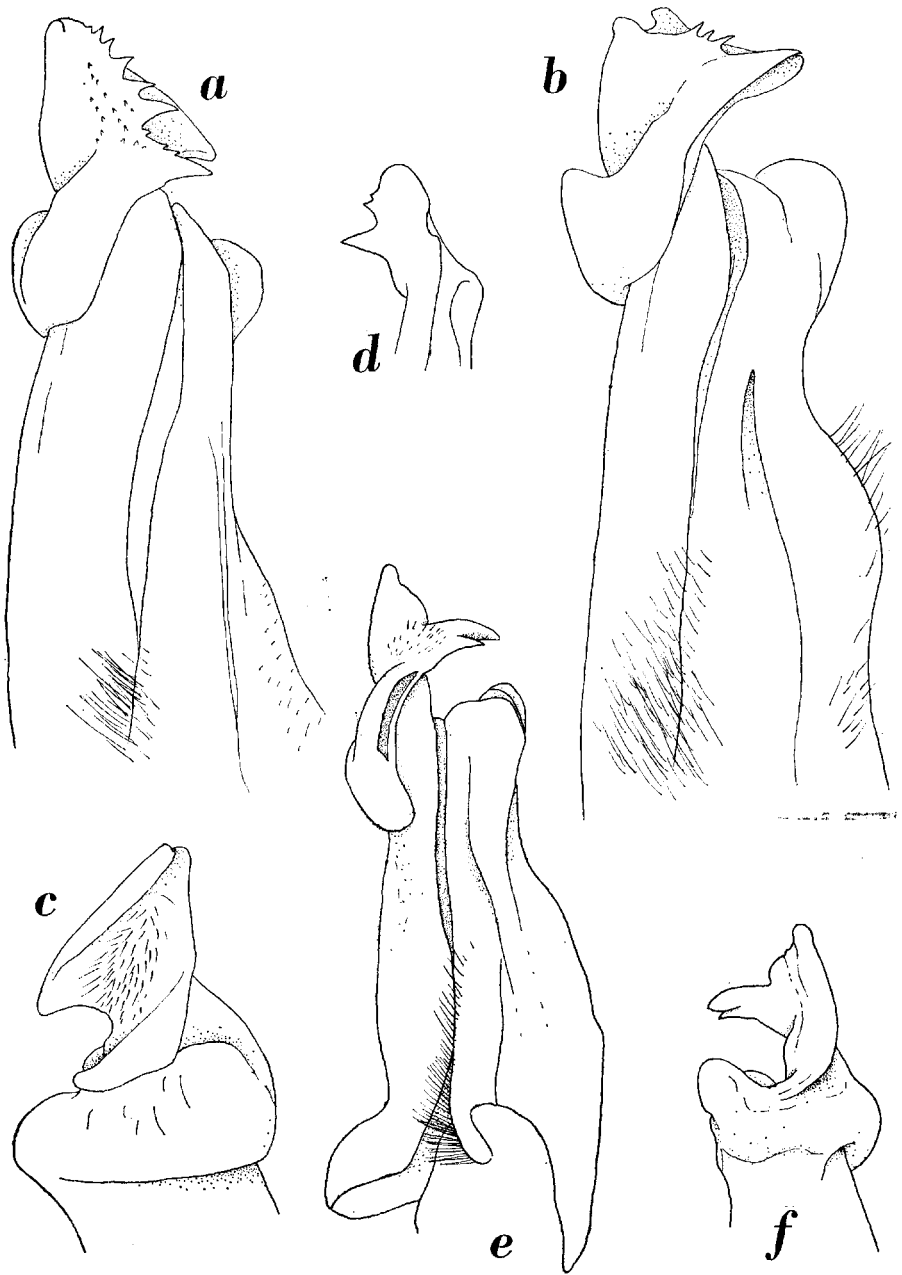


Fig. 57. *Pseudothelphusa denticulata* (H. Milne Edwards). a, b, left first male pleopod in posterior view; c, tip of left first male pleopod in anterior view; d, tip of left first pleopod of juvenile male in posterior view. a, c, specimen from 1948-1949 Suriname Expedition no. 7304; b, d, specimens from 1948-1949 Suriname Expedition no. 8357. *Pseudothelphusa colosii* Coifmann. e, left first male pleopod in posterior view; f, tip of left first male pleopod in anterior view. e, f, specimen from 1948-1949 Suriname Expedition no. 8078. a-c,  $\times 10$ ; d,  $\times 25$ ; e, f,  $\times 7$ .

7 March 1949; 1948-1949 Suriname Expedition nos. 8328, 8364. — 1 male, 4 juveniles. Nassau Range, creek 11.2 km W. of the Marowijne River at about  $4^{\circ} 47' N$ ; 15 March 1949; 1948-1949 Suriname Expedition nos. 9007, 9009, 9017. — 4 males, 1 female, 5 juveniles.

Apisiké, a village on the upper Paru River, Brazil, just S. of the Suriname border, Grens Range; 15-20 April 1952; 1952 Medical Expedition. — 1 female.

Small creek near Waremapan Creek, branch of the Litani River, Marowijne basin, Toemoek-Hoemak Range; 31 July 1939; D. C. Geijskes. — 2 males.

#### Museum Amsterdam

Near western part of Lucie River, Corantijn basin, about  $3^{\circ} 32' N$   $57^{\circ} 25' W$ ; in decayed wood; July-August 1926; 1926 Suriname Expedition to the Wilhelmina Range. — 2 females.

#### Museum Hamburg

Paramaribo; November-December 1908; C. Heller. — 1 female.

Description. Rathbun, 1905, p. 305, textfig. 96.

Remarks. The specimens examined have the carapace breadths varying between 6 and 91 mm, the carapace lengths between 5 and 60 mm. In a number of characters the present material proves to be rather variable.

The carapace is rather flat, though it is somewhat arched from before backwards; in some specimens it is more convex than in others. The post-frontal lobes are as a rule visible, though they are not always very distinct. The region between these lobes and the front is flat and almost horizontal, differing in this respect from the other species of *Pseudothelphusa* dealt with here. The cervical groove is straight, becoming indistinct near the antero-lateral margin of the carapace. The upper frontal border is straight, but sometimes interrupted in the middle. The lower frontal border is usually somewhat emarginate in the middle, but in several specimens this emargination is lacking. The antero-lateral margin of the carapace is finely denticulate.

The shape of the male abdomen is also subject to some variation. The telson is triangular, being slightly to distinctly broader than long. The lateral margins of the telson may be about straight or slightly concave.

The fingers of the cheliped are longitudinally grooved and provided with longitudinal rows of tubercles. The grooves are always distinct, even in the juveniles. The teeth of the fingers in the larger chela of the males are large and heavy, they are regularly divided over the cutting edges. The fingers close over their entire length, even in adult males. The palm of the chela in the large males is smooth except for some inconspicuous granules on the upper surface and a distinct single or double row on the lower surface. The latter row is most distinct in its proximal part. In smaller specimens some

granules may be seen on the outer surface of the palm, these granules generally being placed in longitudinal lines.

The first male pleopod also shows some variation. The distal flap may carry anything between three and more than ten teeth, while furthermore the position of its distal end is not always the same in different individuals. In juveniles the distal flap has the inner margin not yet turned outwards, so that the teeth are directed inwards. In very small males (cb. 19 mm or less) only the proximal of the teeth of the distal flap is visible.

Colour. In preserved adult specimens the carapace is generally of a dark purplish black colour, being much darker than the legs which are olive dorsally, more yellowish or greyish brown ventrally. The anterior surface of the merus of the chelipeds is sometimes reddish brown. The fingers of the chela are blackish except in their basal part; the teeth are brownish. In smaller specimens the fingers are reddish brown with greyish brown tips.

According to Rathbun (1905) there seem to be three species of *Pseudothelphusa* in the Guianas which have the male pleopod with the outwards turned inner margin of the distal flap showing a series of teeth which diminish in size distally. These species are *P. denticulata* (H. Milne Edwards, 1853), *P. geayi* Nobili (1904) and *P. angusta* Rathbun (1905). The specimens of *P. denticulata* seen by Rathbun had cb. 33.8 and 45 mm, those of *P. angusta* were 32.7 and 35 mm broad, while the type of *P. geayi* had cb. 73 mm. Rathbun separated *P. geayi* from *P. denticulata* and *P. angusta* by the flatter carapace. In my material this character varies somewhat, but since the convexity of the carapace of neither of the three species has been described or figured in detail, little can be said about the value of this character without a direct comparison of the present material with the types. The difference in the shape of the front of *P. denticulata* and *P. angusta*, as mentioned by Rathbun, seems to be of extremely little value, as both types of front are present in my material, while it proved to be impossible to distinguish two groups on that character. At first view *P. angusta* seems to have the carapace narrower than *P. denticulata*, but on a closer examination also this character proves to be no good. In my larger specimens (cb. 25-91 mm) the ratio cb/cl varies between 1.45 and 1.59, the females as a rule being somewhat broader than the males. Smaller specimens are relatively less broad than the larger. In specimens with cb. 6-20 mm the ratio cb/cl varies between 1.20 and 1.46. In Rathbun's *P. denticulata* specimens this ratio was 1.50 and 1.57, in her specimens of *P. angusta* it was 1.49 and 1.47, and in the type of *P. geayi* 1.49. All these values thus fall within the range shown by my material. There seem therefore to be no clear cut characters which make it possible to separate

the three species, and in my opinion it is highly probable that they should be synonymized. A reexamination of the types, however, is necessary for a final solution of this problem.

Type locality. Cayenne.

Distribution. *P. denticulata* has been reported from British and French Guiana and Brazil, *P. angusta* from French Guiana and Brazil, *P. geayi* from French Guiana.

Occurrence in Suriname. The species is found in small freshwater mountain creeks in the interior of Suriname, extending its range slightly into the southern part of the coastal region. It has never been found together with *Potamocarcinus* (which is essentially a species of the larger rivers), but seems to live in about the same circumstances as the other species of *Pseudothelphusa*. For this reason *Potamocarcinus* is named "river-crab" in Suriname and the *Pseudothelphusa* species "creek-crabs". Though the species is far from rare, until now it has not been reported in the literature as occurring in Suriname. The specimen in the Hamburg Museum probably is incorrectly labelled "Paramaribo", since the species seems not to come that close to the sea coast.

***Pseudothelphusa colosii*** Coifmann, 1938 (textfigs. 57e, f; pl. X figs. 1, 2)

#### Museum Leiden

Bakhuis Range near Coppename River; line V; 11 December 1943; D. C. Geijskes. — 1 female.

Wilhelmina Range, line I; August-September 1943; D. C. Geijskes. — 1 female.

Sara Creek, branch of the Suriname River, near gold placer Van Hemert; May 1941; A. M. H. Hermans. — 1 male.

Suhoza, Suriname River, south of Cassipora Creek; camp V; in forest creek at 15 km from the river; May 1953; J. C. Lindeman. — 1 male (dry).

Nassau Range, 8 km W. of the Marowijne River at about 4° 47' N; 4 March 1949; 1948-1949 Suriname Expedition no. 8078. — 1 male.

Nassau Range, in creek 11.2 km W. of the Marowijne River at about 4° 47' N; 16 March 1949; 1948-1949 Suriname Expedition no. 9062. — 1 male.

In creek near Joeloe, Upper Paloemeu River, Marowijne basin; final camp; 7 April 1952; 1952 Medical Expedition. — 1 male.

Forest creek near Apisiké, Upper Paru River, Brazil, just S. of the Suriname border, Grens Range; 20 April 1952; 1952 Medical Expedition, no. 1262. — 1 female.

#### Museum Amsterdam

Suriname; 1922; 1922 Expedition to Hendrik Mt. — 1 female.

#### Museum London

Camp I on Coppename River above Kaaimanston; in water in hole of tree bole, far from the river; high forest; 2 July 1938; I. T. Sanderson, no. 71 Cr. — 1 female.

Near Donderberg, about 6 miles east of the railway at 91.5 km S. of Paramaribo; in hole in dry rotten log; high forest without water; 4 November 1938; I. T. Sanderson no. 76 Cr. — 1 male.

Description. Coifmann, 1938, p. 102, textfigs. 3, 4b, pl. 3 figs. 3, 4.

Remarks. The carapace breadths of the specimens examined range from 26 to 61 mm, the carapace lengths from 18 to 40 mm.

*Pseudothelphusa colosii* shows some resemblance to *P. denticulata* but differs in a number of points. In the present species the carapace is always more convex than in the most convex specimens of *P. denticulata* seen by me, especially the branchial and gastric regions are more swollen, so that the cervical groove is deeper. The region between the front and the post-frontal lobes is flat like in *P. denticulata*, but it is not horizontal, being directed obliquely downwards anteriorly. The upper frontal margin, like in *P. denticulata*, is carinate and granular; it is usually incised in the middle, the two halves being convex. The orbits are short and are practically entirely filled by the eyes; in *P. denticulata* the orbits are relatively wider and the eyes relatively smaller. The cervical groove in *P. colosii* is sinuous, while in *P. denticulata* it is straight.

In *P. colosii* the fingers of the chelipeds show some longitudinal lines of granules, but they are not grooved, furthermore they are relatively longer than in *P. denticulata*, being as a rule longer than the palm. Even in the adult males the fingers close over their entire length. The cutting edges show several large teeth which are regularly distributed over the edges. The walking legs of the present species are more slender than in the preceding.

The most striking difference between *P. colosii* and *P. denticulata* is the one shown by the first pleopods of the males. In *P. colosii*, like in *P. denticulata*, the inner part of the distal flap of this pleopod is folded over outwards, so that the teeth on the inner margin are now directed outwards. The folded part is much narrower than in *P. denticulata* and the number of teeth is constantly two, of which the proximal is distinctly smaller than the distal. The shape of the pleopod of *P. colosii* is rather similar to that of *P. reflexifrons* (Ortmann), in which, however, the distal end of the flap is much shorter.

Colour. Like in *P. denticulata* the carapace of adult specimens is very dark, almost black; it is far darker than the legs which are olive brown or reddish brown above, and more yellowish brown below. The fingers of the chelipeds are not noticeably darker than the palm, being greyish or yellowish brown. Sanderson described his living specimen no. Cr. 71 (Mus. London) to be "brown above, yellow below; chelae reddish orange at joints".

Type locality. Fawacuri on the Berbice River, British Guiana.

Distribution. *P. colosii*, which has been described only as recently as 1938, to my knowledge has not been reported upon since the original publication. The closely related *P. reflexifrons* was originally described from the upper Amazon River, while Rathbun (1905) mentioned a specimen which was probably incorrectly labelled "Antilles".

Occurrence in Suriname. In Suriname the species inhabits small creeks just as does the preceding species. It is sometimes found out of the water in humid places (e.g., decaying wood), as were the specimens present in the collection of the British Museum. Sanderson, who collected them, made the remark that the forest near Donderberg where one of the crabs was collected, had no water from August to January and that all the crabs then were in holes.

Judging by our material this is the least common of the three species of *Pseudothelphusa* now known from Suriname.

***Pseudothelphusa wymani*** Rathbun, 1905 (textfig. 58; pl. VIII figs. 3, 4)

*Pseudothelphusa Wymani* Rathbun, 1905, p. 291, fig. 83.

„bruine krabben" Geijskes, 1942, p. 65; Geijskes, 1957, p. 242.

*Pseudothelphusa geayi* Geijskes, 1954, p. 69. (not *P. geayi* Nobili)

Museum Leiden

Bakhuis Range, near Coppename River, line V; 11 December 1943; D. C. Geijskes. — 1 male, 1 female, 1 juvenile.

Creek near Tafel Mt.; August 1944; L. J. Schmidt. — 1 female.

Falls near first camp near Tafel Mt.; 27 March 1958; D. C. Geijskes. — 1 male.

Wilhelmina Range near Linker Coppename River, line I; August-September 1943; D. C. Geijskes. — 1 male.

In the forest near the railroad at 121 km S. of Paramaribo; 21 April 1949; D. C. Geijskes no. 9652. — 1 female.

Creek near the railroad at 121 km S. of Paramaribo, W. of high rock; 14 July 1949; C. Bleys. — 1 female (dry).

Lolobroki Creek near the railroad at 121 km S. of Paramaribo, below the fall; 30 November 1949; C. Bleys. — 1 male.

Lolobroki Creek near the railroad at 121 km S. of Paramaribo, above the big fall; 30 November 1949; C. Bleys. — 2 males, 1 female.

Makambi Creek near railroad at 121 km S. of Paramaribo; 30 November 1949; C. Bleys. — 2 males.

South side of Browns Mt., near fall in small creek; 16 September 1938; D. C. Geijskes. — 1 female.

Below second fall in small creek, Browns Mt.; 18 September 1938; D. C. Geijskes. — 1 female.

Small creek near the summit of Browns Mt.; 16 September 1938; D. C. Geijskes. — 1 female, 1 juvenile.

Waktibasoe Creek near goldmining camp near Browns Mt.; 10 August 1958; D. C. Geijskes. — 2 ovigerous females.

Browns Mt.; eating from *Dictyophora*; don. Zoological Laboratory, Utrecht. — 1 female.

Nassau Range, creek 3.6 km W. of the Marowijne River at 4° 47' N; 8 March 1949; 1948-1949 Suriname Expedition no. 8357. — 1 female.

Nassau Range, small creek 5.9 km W. of the Marowijne River at about 4° 47' N; 10 March 1949; 1948-1949 Suriname Expedition no. 8643. — 1 male.

Nassau Range, creek 6 km W. of the Marowijne at about 4° 47' N; 19 February, 5-11 March 1949; 1948-1949 Suriname Expedition nos. 7039, 8043, 8187, 8695. — 6 males, 2 females, 5 juveniles.

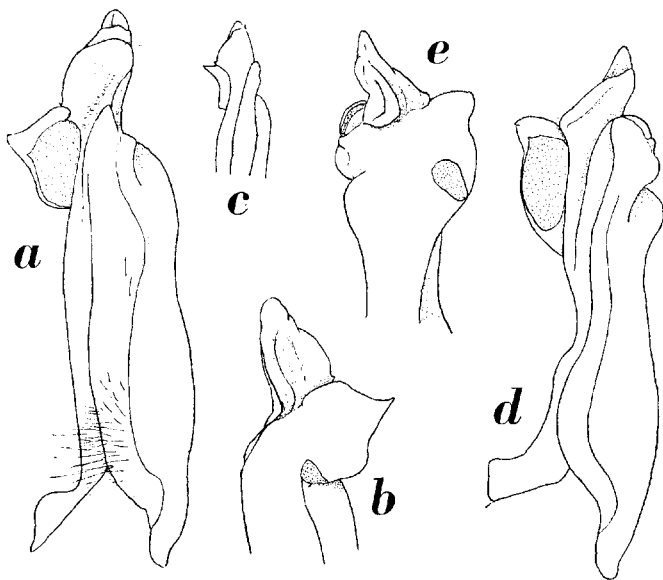


Fig. 58. *Pseudothelphusa wymani* Rathbun. a, c, d, left first male pleopod in posterior view; b, e, top of left first male pleopod in anterior view. a, b, specimen from 1948-1949 Suriname Expedition no. 7957; c, juvenile from 1948-1949 Suriname Expedition no. 7956; d, e, specimen from Bakhuis Range. a-e,  $\times 10$ .

Nassau Range, camp 6 km W. of the Marowijne River at about 4° 47' N; 24 February and 6 March 1949; 1948-1949 Suriname Expedition nos. 7466, 8224. — 2 females.

Nassau Range, near creek 6.8 km W. of the Marowijne River at about 4° 47' N; 2 and 12 March 1949; 1948-1949 Suriname Expedition nos. 7956, 8782. — 1 male, 2 juveniles.

Nassau Range, small creek 7 km W. of the Marowijne River at 4° 47' N; 2 March 1949; 1948-1949 Suriname Expedition no. 7957. — 1 male.

Nassau Range, Bleeders Creek, 7 km W. of the Marowijne River at about 4° 47' N; 7 and 14 March 1949; 1948-1949 Suriname Expedition nos. 8364, 9004. — 1 male, 1 female.

Nassau Range, forest at 9.2 km W. of the Marowijne River at 4° 47' N; 4 and 9 March 1949; 1948-1949 Suriname Expedition nos. 8079, 8544. — 1 male, 1 female.

Nassau Range, creek 11.2 km W. of the Marowijne at about 4° 47' N; 15 March 1949; 1948-1949 Suriname Expedition no. 9009. — 1 male, 2 females.



Nassau Range, 13 km W. of the Marowijne River at about 4° 47' N; 19 March 1949; 1948-1949 Suriname Expedition no. 9372. — 1 male, 1 female.

Nassau Range, creek at 14.5 km W. of the Marowijne River at about 4° 47' N; 16 March 1949; 1948-1949 Suriname Expedition no. 9061. — 1 female.

Lawa River, Marowijne basin; 1903; 1903-1904 Gonini Expedition. — 1 female.

Koelekoele Creek, branch of the Litani River, Marowijne basin, Toemoek-Hoemak Range; 24 July 1939; D. C. Geijskes. — 1 male, 1 female, 1 juvenile.

Fall in Waremapan Creek, branch of the Litani River, Toemoek-Hoemak Range; 30 July 1939; D. C. Geijskes. — 1 male.

Description. Rathbun, 1905, p. 291, fig. 83.

Vernacular name. The Suriname name of the species is "lontoebaka" (cf. Geijskes, 1954).

Remarks. The present species is distinctly smaller than either of the two preceding; the cb. of the present specimens varies between 7 and 41 mm, cl. between 5 and 24 mm (in the ovigerous females cb. is 28 and 29 mm, cl. 17 mm).

The front is directed downwards, not horizontal as in *P. denticulata*, it is also somewhat more convex. The upper margin of the front is distinct, it is rounded, rather irregularly pitted, and bears several indistinct tubercles. In some specimens the postfrontal lobes are distinct, in others they are obscure; a shallow median groove extends from the postfrontal lobes to the upper frontal margin. The orbits are short and entirely filled by the eyes. The cervical groove is straight. As a rule the carapace is rather flat. The antero-lateral margin reaches sometimes to the orbits, but in some specimens it stops just before reaching it.

The fingers of the chelipeds may show longitudinal rows of small pits or granules, but they are not grooved. The fingers are longer than the palm. In the large chela of the adult male the fingers are considerably gaping; this is far less distinct in the females and in the young males. The larger teeth on the cutting edges of the fingers are placed decidedly closer together in the proximal than in the distal part; in the distal part the larger teeth are sometimes separated from one another by small denticles. The walking legs are very slender.

The male abdomen is as figured by Rathbun. In some specimens the lateral margins of the telson are more or less concave.

The first pleopod of the male, as usual, is the most reliable character for the recognition of the species. The shape of this pleopod, as shown by the specimen from the Nassau Range (1948-1949 Suriname Expedition no. 7957) and figured here as textfig. 58a, b, is quite typical. It is shown by practically all the male specimens examined. In the juveniles the various details are not yet fully developed but the general shape is very distinct even there (see textfig. 58c). Some variations were found: in some specimens

the inner pointed lobe is more elongate and may have a more acute lower inner angle than figured here. Two of the males enumerated here, viz., the one from the Bakhuis Range and that from the Wilhelmina Range, differ rather strongly from the usual type (textfig. 58d, e). In these aberrant specimens the distal flap of the pleopod lacks the small tooth on the inner margin, while it is this inner and not the outer margin, which on the posterior surface is raised to a high carina; also in other respects there are differences in the two pleopod types as appears when comparing textfigs. 58a, b with textfigs. 58d, e. As the general structure of these two kinds of pleopod is the same, and as no additional characters can be found to distinguish males with these different types of pleopods, the specimens are provisionally treated here as belonging to a single species. If more material of males with the second type of pleopod will be forthcoming it may be possible to give a better documented opinion on this question. The male specimen from the Bakhuis Range differs from all other specimens in having the lateral margins of the telson very distinctly concave, but the male from the Wilhelmina Range does not differ in this respect from the normal males of *P. wymani*. The dactyli of the chelipeds in the male from the Bakhuis Range show a dark dorsal streak in the distal fourth of their length; this character is not shown by the male from the Wilhelmina Range.

Colour. In my specimens the carapace is olive, reddish, or yellowish brown, and as a rule it is not darker than the dorsal surface of the legs. The legs are sometimes of a marbled olive colour. The chelae are pale olive or yellowish brown, often the fingers are more reddish brown and with the distal part lighter than the proximal. In several specimens the tips of the fingers are dark grey or brown, while sometimes the teeth are of the same colour.

Type locality. Suriname.

Distribution. As far as is known to me, the species has not been reported from outside Suriname.

Occurrence in Suriname. *Pseudothelphusa wymani* inhabits small creeks and rivulets in the mountainous part of Suriname and in the extreme southern part of the coastal region. The first record of the species was that by Rathbun (1905) who based her description of the species on material collected in Suriname by Jeffries Wyman. The brown crabs mentioned by Geijskes (1942, p. 65; 1957, p. 242) are those listed above from the Koele-koele Creek. Geijskes (1954, p. 69) remarked "De kleine ronde kreekkrab, genoemd "lontoebaka" (*Pseudothelphusa geayi* Nobili), wordt weinig gegeten" (the small roundish creek crabs, named "lontoebaka" (*Pseudothelphusa geayi*) are not often eaten); it is probable that the present species is meant.

## Family Goneplacidae

**Speocarcinus carolinensis** Stimpson, 1859

## Coquette Investigations

Station 212, between the mouths of the Suriname and Marowijne Rivers, 6° 45' N 54° 30' W; bottom mud; depth 44 m; 14 June 1957. — 1 female. (W)

Description. Rathbun, 1918, p. 39, pl. 8, pl. 159 fig. 6.

Remarks. In the present specimen, a female with cb. 10 mm, the separation between the first and second antero-lateral teeth is hardly noticeable, so that the margin seems to have but four teeth.

Type localiy. Charleston Harbor, South Carolina, U.S.A.

Distribution. East coast of America from South Carolina to Suriname and the West Indies. The Rijksmuseum van Natuurlijke Historie possesses a specimen from the Gulf of Paria near San Fernando, Trinidad (2 May 1952). *Speocarcinus carolinensis* has not been reported before from Suriname.

**Chasmocarcinus typicus** Rathbun, 1898

## Coquette Investigations

20 miles N. of the mouth of the Marowijne River; depth 27 m; 23-27 April 1957; fourth voyage. — 1 ovigerous female. (L)

Station 2, off the mouth of the Suriname River, 6° 23' N 55° 05.5' W; bottom mud; depth 27 m; 11 May 1957. — 1 male. (L)

Description. Rathbun, 1918, p. 55, textfigs. 23, 24.

Remarks. The carapace breadth of the ovigerous female is 9 mm, that of the male is 10 mm. The specimens agree with Rathbun's description. In the male the penultimate segment of the abdomen has the posterior margin somewhat elevated in the middle, forming there a kind of tubercle.

Type locality. North of Trinidad, 10° 37' 40"-10° 37' 00" N 61° 42' 40"-61° 44' 22" W; depth 31-34 fathoms.

Distribution. N. of Trinidad, and off Cabo Frio, Brazil. The species is now reported for the first time from Suriname. It was known from depths between 31 and 59 fathoms; this range has now become 15 to 59 fathoms.

## Family Grapsidae

**Goniopsis cruentata** (Latreille, 1802-1803) (textfigs. 59, 60)

? *Cancer marmoratus* Fermin, 1765, p. 73.

? *Cancer terrestris, minor* Fermin, 1769, vol. 2, p. 275; Fermin, 1770, p. 248.

? "Gemarmerde Krab" Hartsinck, 1770, p. 118.  
*Cancer ruricola* De Geer, 1778, p. 417, pl. 25, 26 figs. 1-3 (not *Cancer ruricola* L., 1758).

"Duivelskrab" Teenstra, 1835, p. 443.

*Grapsus longipes* Randall, 1840, p. 125.

*Grapsus cruentatus* Gibbes, 1850, p. 181.

*Goniopsis cruentatus* Kingsley, 1880, p. 190; Young, 1900, p. 278.

#### Museum Leiden

Mouth of the Coppename River near Boskamp about 95 km W. of Paramaribo; muddy shore, among plants; 2 April 1957; L. B. Holthuis no. 1214. — 5 males, 3 females (1 ovigerous).

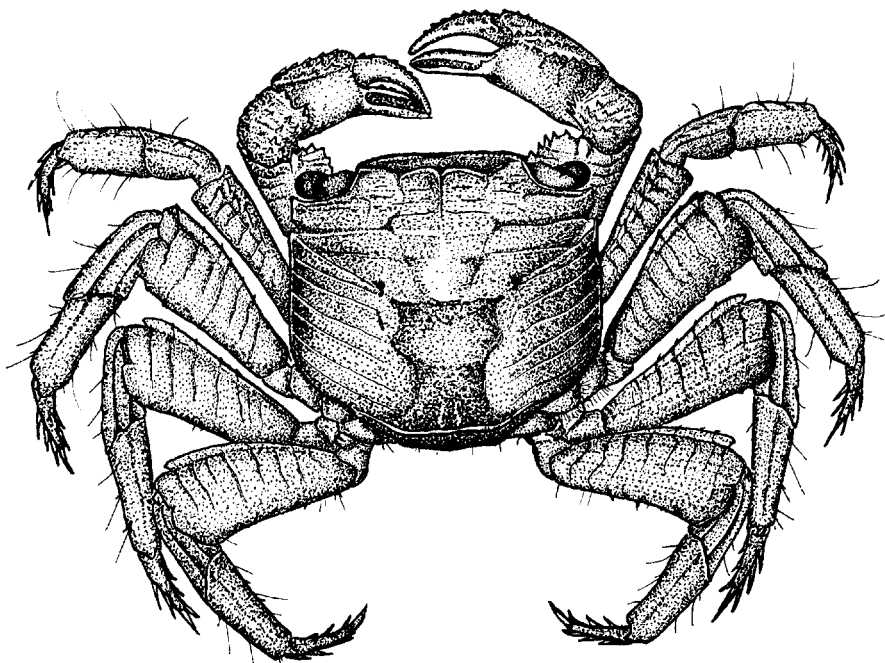


Fig. 59. *Goniopsis cruentata* (Latreille). Specimen from the bank of the Suriname River near Combé  $\times 0.9$ .

Shore of Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; in mangroves, close to the water's edge; 1 April 1957; L. B. Holthuis no. 1208. — 2 males, 1 female.

Combé, just N. of Paramaribo; 17 March 1939; H. W. C. Cossee. — 1 male.

Bank of Suriname River near Combé, N. of Paramaribo; 5 May 1942; D. C. Geijskes. — 1 female.

Paramaribo; 1911; W. C. van Heurn. — 1 male, 1 female.

Plantation "Lust en Rust", east bank of Suriname River near Paramaribo; 13 March 1939; H. W. C. Cossee. — 1 female.

Ditch near the Fisheries Service Station "Matappica", at Matappica Canal, N. of the Commewijne River, about 2 km from the sea shore; in holes in the sides of the ditch; 6 April 1957; L. B. Holthuis no. 1221. — 4 males, 2 females.

In parwa (= *Avicennia nitida* Jacq.) forest at the sea shore near Wiawia Bank; under pieces of wood washed ashore; 12 November 1948; 1948-1949 Suriname Expedition no. 2621. — 4 males, 4 females.

Galibi at west bank of the mouth of the Marowijne River; in small creek near coconut plantation; 9 November 1948; 1948-1949 Suriname Expedition nos. 2413 and 2513. — 3 males, 4 females.

Suriname; 1901 Coppename Expedition. — 1 male.

#### Museum Amsterdam

Paramaribo; don. Koloniaal Museum Haarlem. — 1 male, 1 female.

#### Museum Berlin

Suriname; H. B. Möschler. — 1 female.

#### Museum Philadelphia

Suriname; C. Hering. — 1 male, 1 female: syntypes of *Grapsus longipes* Randall (dry).

Description. Rathbun, 1918, p. 237, textfig. 136, pl. 57.

Vernacular names. In Suriname the present species is indicated with the Dutch names "duivelskrab" (devil's crab) or "rode duivelskrab" (red devil's crab). The former of these names, however, seems also to be in use for *Sesarma rectum* Randall and *Uca maracoani* (Latr.). In a letter of 1 April 1825 Dieperink indicated the present species as "Vierkante-krabbe" (= quadrangular crab), but since Teenstra (1835, p. 443) in the same period used the name "Duivelskrab", it seems likely that the latter name was in common use at that time and that the former may have been invented by Dieperink. The Suriname name of the species is "didibrie-kraboe" (= devil's crab).

Remarks. The carapace breadths of the specimens examined range between 19 and 51 mm; the ovigerous female has cb. 33 mm, the largest female cb. 45 mm.

A coloured figure of this crab was provided by Rathbun (1901, pl. 1 lower figure). The brightness of the various colours is subject to considerable variation, and the red of the legs and body may be much more showy than in the just mentioned illustration. In a letter of 27 August 1827 to Temminck, Dieperink wrote "deze Krappe is zeer zonderling heeft fraai roodgekleurde pooten welke zwart gespikkeld. Zijn onderlijf is de kleur geel" (this crab is very peculiar and has beautifully red coloured legs with black speckles. Its abdomen is of a yellow colour).

Type locality. "Les îles de l'Amérique méridionale".

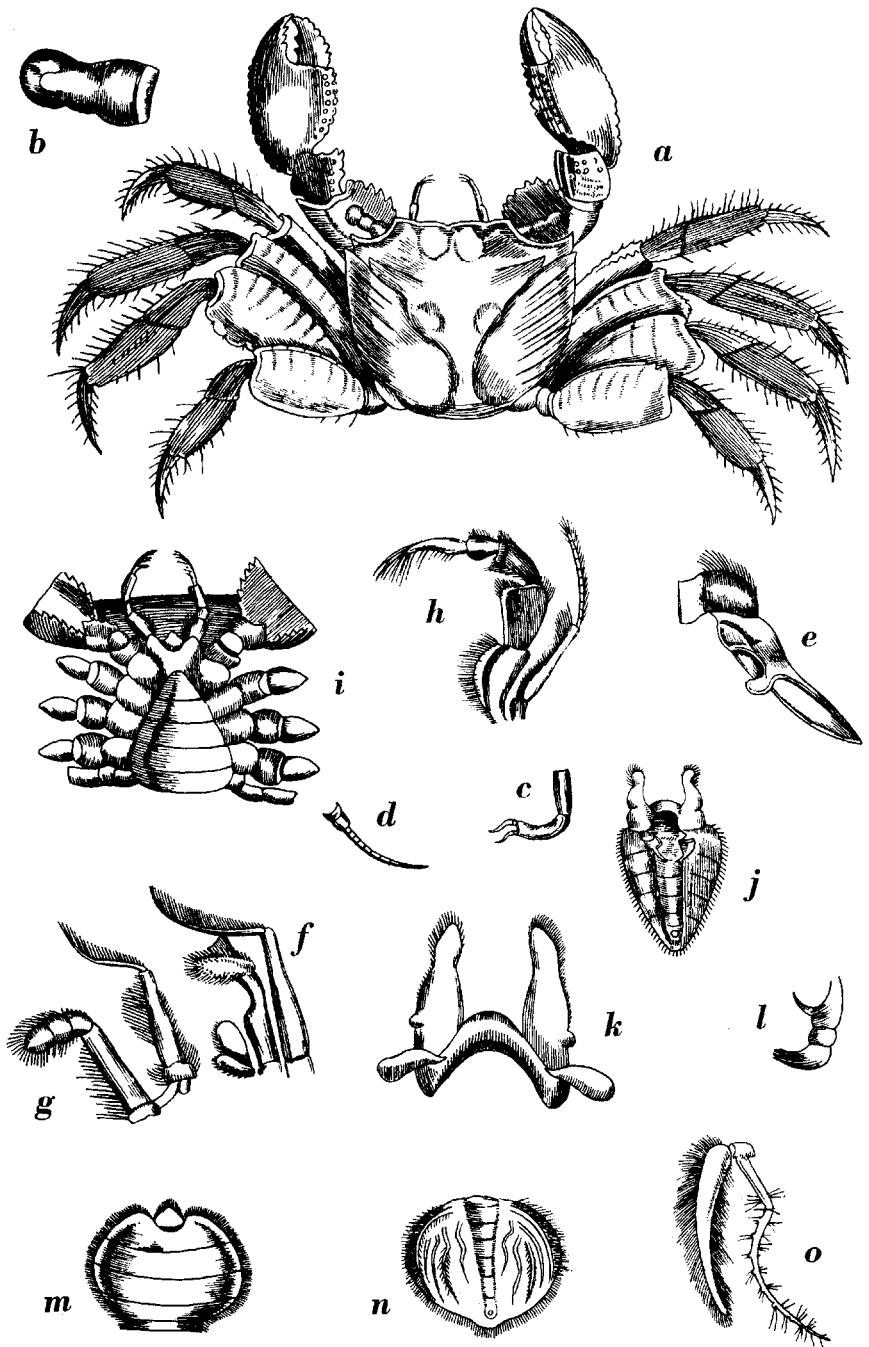


Fig. 60. *Goniopsis cruentata* (Latreille). a, animal in dorsal view; b, eye; c, antennula; d, antenna; e, mandible; f, first maxilliped; g, second maxilliped; h, third maxilliped; i, abdomen and sternum of male in ventral view; j, abdomen of male in dorsal view; k, first pleopods of male; l, second pleopod of male; m, abdomen of female in ventral view; n, abdomen of female in dorsal view; o, pleopod of female. After De Geer, 1778.

Distribution. East coast of America (Bermuda, the Bahamas and Florida to Brazil and the West Indies) and the west coast of Africa (Senegal to Angola).

Occurrence in Suriname. *Goniopsis cruentata* is one of the common crabs of the estuaries of the Suriname rivers and may be found in considerable numbers on the muddy banks of rivers and ditches where there is some vegetation; it is also frequently found in mangrove swamps. As Young (1900) remarked "they live more on the land than in the water", though they are always found in humid places close to the water's edge. Its often bright red coloration and striking colour pattern make this one of the most conspicuous crabs of the coastal area. Like most Grapsids *Goniopsis* is a fast runner and for that reason is hard to catch.

Probably the first Suriname record of this species is that by Fermin (1765) who speaks of "le Crabe marbré, dont la tête est lisse & parsemée de différentes couleurs, en Latin *Cancer Marmoratus*". This description is quite insufficient, but seems to fit best for the present species. Fermin's (1769 and 1770) *Cancer terrestris, minor* may also refer to the present species, though Fermin's description is practically literally copied from Labat's (1724, vol. 1 pt. 2, p. 47) account of the Tourlouroux from Martinique which is a species of *Gecarcinus*. Hartsinck's (1770) description of the "Gemarmerde Krab" is a mere translation of Fermin's (1765) account of *Cancer Marmoratus*. The first certain record of the species from Suriname is that by De Geer (1778), who gave an extensive description and good figures of a specimen "que M. Rolander m'a envoyés de Surinam". De Geer considered his specimen to belong to *Cancer ruricola* L., a quite different species, which at present is named *Gecarcinus ruricola* (L.), and which inhabits the West Indian Islands and Florida. De Geer's remark (p. 418) that the specimens "vivent sur terre & sur les montagnes, où ils se font des trous dans le sable pour s'y cacher" clearly refers to *Gecarcinus* and not to *Goniopsis*. Teenstra (1835) speaks of "de allersierlijkst ge-teekende duivelskrab" (the most elegantly ornated devil's crab), with which he evidently meant to indicate the present species. Randall (1840) described a new species of crab, *Grapsus longipes*, which was collected by C. Hering in Suriname; this proves to be identical with *Goniopsis cruentata*, as has already been pointed out by Gibbes (1850) and Kingsley (1880), both of whom examined Randall's type.

***Pachygrapsus gracilis*** (De Saussure, 1858) (pl. X fig. 3)

Museum Leiden

Mouth of Coppename River near Boskamp, about 95 km W. of Paramaribo; muddy

shore; 2 April 1957; L. B. Holthuis no. 1214. — 5 specimens (1 with a Sacculifid parasite).

Mouth of the Suriname River near Braamspunt; in holes of pieces of wood washed ashore on a muddy sand beach; 5 April 1957; L. B. Holthuis no. 1219. — 39 specimens (4 ovigerous).

Shore of the Suriname River near "Purmerend" plantation, Leonsberg, N. of Paramaribo; 1 April 1957; L. B. Holthuis no. 1208. — 1 male, 1 ovigerous female.

Ditch near the Fisheries Service Station "Matappica", at Matappica Canal, N. of the Commewijne River, about 2 km from the sea shore; 6 April 1957; L. B. Holthuis no. 1221. — 10 specimens (3 ovigerous).

Sea shore near the mouth of the Matappica Canal; among pieces of wood washed ashore on a muddy sand beach, and in holes of a tough clay bottom; 6 April 1957; L. B. Holthuis no. 1222. — 11 specimens (5 ovigerous).

Description. Rathbun, 1918, p. 249, pl. 60 fig. 3, pl. 61 fig. 1.

Remarks. The specimens agree with Rathbun's description of the species. The carapace breadths in my material vary between 5 and 19 mm, being 7 to 19 mm in ovigerous females. A character in which *P. gracilis* differs from *P. transversus* (Gibbes) is the lack of a large tuft of whitish hairs on the anterior (= inner) surface of the propodus of the second pereopod. This tuft is absent in all the specimens of *P. gracilis* seen by me and present in all specimens of *P. transversus*.

Rathbun (1918, p. 249) stated the colour of the present species to be pinkish. My specimens from Braamspunt, which were found in very dark pieces of drift wood, were in life of a very dark, almost black colour. The other specimens mentioned here were light to dark greyish brown. Preserved specimens, which have been in alcohol for little over a year and a half, still show the same colours. The upper surface of the body and the legs is closely beset with dark blackish brown chromatophores. The abdomen is paler and the chelae are more yellowish brown.

Type locality. St. Thomas, West Indies.

Distribution. From Bermuda, the Bahamas and Florida to northern Brazil and the West Indies.

Occurrence in Suriname. The species is now reported for the first time from Suriname. It was found on the beach in pieces of driftwood, in holes in a tough clay at the sea coast, and farther to the interior in a muddy habitat.

### **Planes minutus** (Linnaeus, 1758)

*Nautilograpsus minutus* Kingsley, 1880, p. 202; Young, 1900, p. 286.

Museum Philadelphia

Suriname; C. Hering. — 1 female (dry).

Description. Rathbun, 1918, p. 253, pl. 63; Chace, 1951, p. 81, figs. 1a, 2a, d, g, j, k, l, 3a-h, 4-8.



Remarks. The above cited specimen of the Philadelphia Museum, a damaged female, seems to be the only specimen of this species known from Suriname. This locality lies somewhat outside the general range of the species as shown by Chace (1951, fig. 8). The capture closest to Suriname is that of 20 specimens taken at  $11^{\circ}05' N$   $50^{\circ}01' W$ . It remains possible that Dr. Hering did not collect the specimens in Suriname, but somewhere on the Western Atlantic during his voyage from Suriname to Philadelphia.

Chace (1951) showed that there are two species of *Planes*, the one being confined to the Atlantic region, the other to the Indo-West Pacific. Linnaeus's (1758, p. 625) description of *Cancer minutus* was probably based on both forms. His indication "*It. wgoth. 137. t. 3. f. 1*" refers to his 1747 *Cancer cantonensis*, while the specimens dealt with by Sloane, Kalm, and Osbeck belong to the Atlantic species. In order to definitely settle the identity of Linnaeus's species, I select here the specimen figured by Sloane (1725, p. 270, pl. 245 fig. 1) as the lectotype of *Cancer minutus* Linnaeus, 1758. This action definitely links the specific name *minutus* to the Atlantic species.

Type locality. "*Habitat in Pelagi Fuco natante*" (Linnaeus, 1758, p. 628). By the above lectotype selection the type locality is restricted to "on the *Sargasso* and other Submarine Sea-Plants, on the Northside of *Jamaica*" (Sloane, 1725, p. 270).

Distribution. Northern Atlantic Ocean south of the line connecting Newfoundland with the south coast of England and the southern North Sea. The few records from the S. Atlantic and Kerguelen need confirmation.

### **Aratus pisonii** (H. Milne Edwards, 1837) (pl. XI fig. 1)

? "Crabe appellé soldat" Fermin, 1765, p. 73.

? "Krab Soldaat" Hartsinck, 1770, p. 118.

#### Museum Leiden

2.7 to 3 km N. of the highway between Coronie and Paramaribo at 21.6 km E. of Coronie; 21 December 1948; 1948-1949 Suriname Expedition no. 4417. — 1 female.

Shore of Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; mangroves; 1 April 1957; L. B. Holthuis no. 1208. — 1 male, 1 ovigerous female.

Combé, N. of Paramaribo; 17 March 1939; H. W. C. Cossee. — 1 male, 2 females. Agricultural Experiment Garden, Paramaribo; in trench; 10 February 1939; D. C. Geijskes. — 1 female.

Paramaribo; 1911; W. C. van Heurn. — 1 male.

Commewijne River; 24 August 1911; W. C. van Heurn. — 1 male.

Matappica Creek, branch of the Commewijne River, near Alliance; on piling of a small pier; 6 April 1957; L. B. Holthuis no. 1220. — 2 females.

Ditch near Fisheries Service Station "Matappica" at the Matappica Canal; on the woodwork of a small sluice; 6 April 1957; L. B. Holthuis no. 1221. — 3 males, 4 females (1 ovigerous).

Northcoast of Suriname just W. of the mouth of the Matappica Canal; 6 April 1957; L. B. Holthuis no. 1222. — 1 female.

Marowijne River near Albina; muddy creeks with slightly brackish water; 7 September 1939; D. C. Geijskes. — 1 ovigerous female.

Description. Rathbun, 1918, p. 323, pl. 96.

Remarks. The carapace breadth of the present specimens varies between 13 and 21 mm, in the ovigerous females between 16 and 21 mm. The ovigerous females were found in the months of April and September.

Type locality. Antilles.

Distribution. East coast of America from the Bahamas and Florida to Brazil and the West Indies; west coast of America from Nicaragua to Peru. Graham's (1955, p. 36, pl. 4 fig. 9) Shield-back Crab from British Guiana belongs to the present species.

Occurrence in Suriname. The species lives in mangrove swamps and on the shores of estuarine waters. It may often be seen walking out of the water on branches of mangrove trees or on wooden pilings of the waterfront. Fermin (1765) mentioned "le Crabe appellé soldat" as inhabiting Suriname. Possibly he took this name from Barrière (1741, p. 184), who in his description of the natural history of French Guiana dealt with: "*Cancer lutarius*, quadratus. *Cancellus marinus*, minimus, quadratus. Sloan. *Hist. Nat. Jam. Cancer terrestris*, quadratae figurae Marcq. Crabe appellé Soldat". Sloane's species is *Planes minutus* (L.), the one described by Marcgraf is *Aratus pisonii*. Barrère's species, therefore, may have been *Aratus*, though it remains possible that he had a species of *Sesarma*, or even a mixture of several species before him. It is impossible to find out which species was actually meant by Barrère, and this is still more true for Fermin's material. According to Dieperink, in the MS. list accompanying the material which he sent to Leiden in 1827 the name "Soldaatje" is used in Suriname to indicate species of *Uca*. Hartsinck (1770) only translated Fermin's sentence concerning "le crabe appellé soldat". Therefore no certain Suriname records of this species have until now been published.

### ***Sesarma (Sesarma) curacaoense* De Man, 1892 (pl. XI fig. 2)**

Museum Leiden

Muddy shore of a ditch near Boskamp, near the mouth of the Coppename River, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 1 male, 1 female.

Muddy shore of the Coppename River near its mouth near Boskamp; 2 April 1957; L. B. Holthuis no. 1214. — 3 males, 3 females.

Shore of the Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; 1 April 1957; L. B. Holthuis no. 1208. — 1 male, 1 female.

Ditch near Fishery Service Station "Matappica" near Matappica Canal; muddy bottom; 6 April 1957; L. B. Holthuis no. 1221. — 1 male.

Description. Rathbun, 1918, p. 293, textfig. 147, pl. 78 figs. 1, 2, pl. 160 fig. 3.

Remarks. The present species belongs to the smaller Suriname representatives of the genus. In the material examined, the cb. of the males ranges between 13 and 19 mm, that of the females between 8 and 16 mm.

*S. curacaoense* is to be distinguished from the other species of *Sesarma* treated here by having a distinct tooth on the lateral margin of the carapace behind the outer orbital tooth. The dactyli of the chelipeds are not broadened, neither in the male nor in the female. The upper margin of these dactyli bears 6 or 7 horny tipped tubercles in their proximal half. The upper surface of the palm bears a distinct and sharp, bifurcated carina. The meri of the walking legs are far less broad than those of *S. rectum* or *S. benedicti*, but are wider than those of *S. ricordi*. The upper part of the propodi and carpi of all walking legs shows a dense cover of short dark hairs, between which there are scattered long bristles. Several narrow longitudinal strips of this velvety pubescence are visible on the dactyli.

Type locality. Curaçao.

Distribution. Cuba, Jamaica, Porto Rico, Curaçao, Suriname, Brazil. The species is now for the first time reported from Suriname, where, as shown by our material, it proves to be far from rare.

Occurrence in Suriname. The species was found on exposed muddy banks of large rivers, in small ditches, and among mangroves.

***Sesarma (Holometopus) rectum*** Randall, 1840 (textfig. 61; pl. XI fig. 4)

*Grapsus (Pachysoma)* aff. *haematocheir* De Haan, 1835, p. 62.

*Sesarma recta* Randall, 1840, p. 123; Kingsley, 1880, p. 217; Ortmann, 1897, p. 331, pl. 17 fig. 8; Tesch, 1914a, p. 249.

*Sesarma (Holometopus) recta* Tesch, 1917, p. 190.

*Sesarma (Holometopus) rectum* Rathbun, 1918, p. 298.

#### Coquette Investigations

Station 28, N.E. of the mouth of the Suriname River, 6° 48' N 54° 54' W; bottom shells; depth 46 m; 12 May 1957. — 1 female. (W)

#### Museum Leiden

Coronie Polder near Coronie; shore of the canal leading to the sea; mud; 11 April 1957; L. B. Holthuis no. 1242. — 1 male.

2.6 to 2.7 km N. of the highway from Coronie to Paramaribo at 21.6 km E. of Coronie; 21 December 1948; 1948-1949 Suriname Expedition no. 4418. — 1 male.

Muddy shore of a ditch near the mouth of the Coppename River near Boskamp, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 8 males, 15 females.

Muddy shore of the mouth of the Coppename River near Boskamp; 2 April 1957; L. B. Holthuis no. 1214. — 12 males, 5 females (1 ovigerous).

Shore of the Saramacca River near Carl François, about 80 km W. of Paramaribo; among driftwood; 2 April 1957; L. B. Holthuis no. 1210. — 2 females.

Saramacca River near Groningen; September 1911; W. C. van Heurn. — 1 male.

Between "Suriname Rivier" lightvessel and the coast; trawled; 27 July 1953; D. C. Geijskes. — 1 male.

Shore of Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; mangroves; 1 April 1957; L. B. Holthuis no. 1208. — 5 males, 3 females.

Near ferry, Leonsberg, N of Paramaribo; 8, 10, and 28 December 1939; D. C. Geijskes. — 14 males, 14 females (4 ovigerous).

Shore of the Suriname River between Leonsberg and Paramaribo; muddy shore, 19 October 1939; D. C. Geijskes. — 5 males, 13 females.

Shore of Suriname River near plantation "Morgenstond", N. of Paramaribo; 15 December 1939; D. C. Geijskes. — 2 males, 3 females.

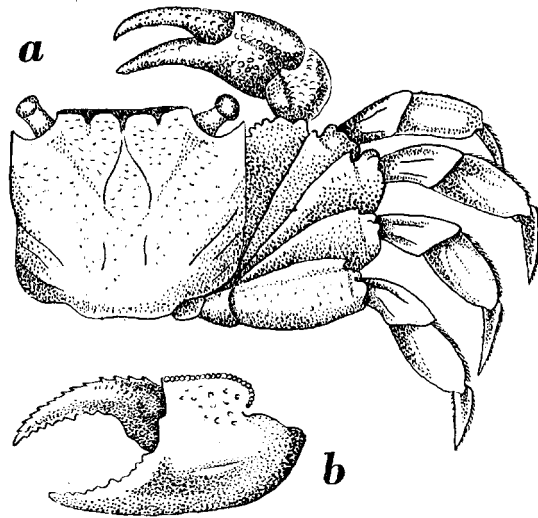


Fig. 61. *Sesarma rectum* Randall. a, holotype in dorsal view; b, left cheliped of holotype in lateral view. a, b, natural size. After Ortmann, 1897.

Combé, N. of Paramaribo; 17 March 1939; H. W. C. Cossee. — 2 males.

Sommelsdijkse Creek near Agricultural Experiment Garden, Paramaribo; 21 October 1939; D. C. Geijskes. — 3 males, 3 females.

Saramacca Canal near Lelydorpweg, Paramaribo; 16 December 1939; D. C. Geijskes. — 1 male, 1 female.

Suriname River near Paramaribo; brackish water; 1907; M. D. Horst. — 1 male. Paramaribo; July 1911; W. C. van Heurn. — 3 males, 4 females.

Paramaribo; 1911; W. C. van Heurn. — 3 males (1 dry).

Paramaribo; 17 March 1939; H. W. C. Cossee. — 3 males, 5 females.

Shore of the Para River near its confluence with the Suriname River, between Paramaribo and Domburg; muddy shore; 31 March 1957; L. B. Holthuis no. 1202. — 2 males, 2 females.

Domburg, S. of Paramaribo; under pieces of wood in a small creek emptying in

the Suriname River; muddy bottom; 31 March 1957; L. B. Holthuis no. 1204. — 4 males, 3 females.

Suriname River near plantation "La Resource" near Domburg; 19 December 1939; D. C. Geijskes. — 3 males, 3 females.

Eastern shore of the Suriname River near plantation "Lust en Rust"; 13 March 1939; H. W. C. Cossee. — 2 males, 3 females.

Galibi on the Marowijne River; small creek near plantation; 9 November 1948; 1948-1949 Suriname Expedition no. 2514. — 1 male, 1 female.

Suriname; D. C. Geijskes. — 1 female.

#### Museum Amsterdam

Suriname. — 1 male, 1 female.

#### Museum Hamburg

Paramaribo; brackish water, in mud; J. Michaelis, received 31 January 1899; C. Heller, received 4 August 1908. — 11 males, 9 females.

#### Museum Philadelphia

Suriname; C. Hering. — 1 male (holotype).

#### Museum London

Suriname; W. Gillespie. — 4 males, 2 females (1 ovigerous).

Description. Rathbun, 1918, p. 298, pl. 82.

Vernacular names. According to a label accompanying Van Heurn's material from Paramaribo (July 1911) the species is named "duivelskrab" (devil's crab) in Suriname. If this information is correct, the species shares this name with *Goniopsis cruentata*. Graham (1955, p. 34, pl. 5 figs. 2, 3) reported this species from British Guiana under the name "Square-backed Land Crab".

Remarks. The carapace breadths of the specimens examined vary between 13 and 33 mm, in the ovigerous females between 18 and 30 mm. The latter were collected in the months of April and December.

As shown by the above measurements *S. rectum* attains a much larger size than any of the other species of the present genus dealt with in this paper. Furthermore it differs from *S. curacaoense*, but agrees with the other species, in having no distinct tooth on the lateral margin of the carapace behind the outer orbital tooth. The chelipeds are characterized by the presence of a single sharp carina on the dorsal margin of the palm. The dactyli of the chelae are not broadened at the base in either sex; the upper margin bears a row of more than 10 tubercles. The walking legs have the meri strongly broadened, in adult specimens they are more than half as broad as long. The propodi and sometimes the extreme distal part of the carpi, apart from a few long bristles, bear a field of numerous densely

placed short hairs on the upper margin; five narrow longitudinal strips of such hairs are present on the dactyli.

Colour. The legs and the larger part of the carapace are of a dull greyish purple tinge. The anterior part of the cephalothorax and the chelipeds are yellow.

Type locality. Suriname.

Distribution. The species is known from Trinidad, Tobago, British and Dutch Guiana, and Brazil (S. to São Paulo). In the collection of the Leiden Museum there are three males and two females from Lambeau River near the sea coast, Tobago, British West Indies (15 January 1955, P. W. Hummelinck no. 656A).

Occurrence in Suriname. The species is quite common in the estuaries of the Suriname rivers. It digs holes in the muddy banks of the rivers and ditches. According to Graham (1955, p. 34) in British Guiana they "are very common on waste ground just above high water mark, especially in the winter season, when they breed. At very high spring tides they climb on to grass stems and other vegetation out of reach of the waves".

The first mention of this species from Suriname is that by De Haan (1835, p. 62), who in his description of the Japanese *Grapsus* (*Pachysoma*) *haematocheir* (= *Sesarma haematocheir* (De Haan)) remarked: "Clar. Dieperink e Paramaribo misit speciem affinem lateribus integris, manibus latere exteriore laevibus; in qua vero thorax fasciculatus parte antica, manus flavae margine supremo acutae granulatae, carpi quadrati granulati, frons profunde sinuata, femora valde dilatata". Dieperink's specimens are no longer extant, but their identity is perfectly clear from De Haan's short but excellent description. De Haan did not give a name to the species. Randall (1840), who described a male collected by C. Hering in Suriname, was the first author to provide the species with a valid name. Randall's type is still preserved in the Philadelphia Museum. Kingsley (1880) mentioned this type, while Ortman (1897) gave an additional description and a figure of it. Tesch (1914a) casually mentioned the occurrence of the species in Suriname; in his 1917 paper the same author dealt with material from Paramaribo preserved in the Leiden Museum (leg. M. D. Horst and W. C. van Heurn). Rathbun (1918) gave an excellent description and illustration of the species, of which she had examined the type.

***Sesarma* (*Holometopus*) *ricordi*** H. Milne Edwards, 1853 (pl. XI fig. 3)

Museum Leiden

Muddy shore of Coppename River near Boskamp, 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1214. — 1 female.

Eastern shore of the mouth of the Suriname River near Braamspunt; 5 April 1957; L. B. Holthuis no. 1219. — 1 male.

North coast of Suriname just W. of the mouth of the Matappica Canal; 6 April 1957; L. B. Holthuis no. 1222. — 8 males, 3 females.

#### Museum Amsterdam

Suriname; don. Koloniaal Instituut. — 1 female.

Description. Rathbun, 1918, p. 308, pl. 89.

Remarks. The carapace breadths of the above specimens range from 12 to 23 mm. The present species resembles *S. rectum* and *S. benedicti* in having no teeth on the lateral margin of the carapace behind the external orbital tooth. It may at once be distinguished, however, by the slender legs. In the males the legs are more slender than in the females, while in the larger specimens they are more slender than in the smaller. In the small female no. 1214, the meri of the fourth pereopods are only 2.6 times as long as wide; in the next larger female this ratio is 2.7, while in fully adult specimens the merus is three times as long as broad. The chelae of the male have the fingers normal, they are not excessively broadened at the base. The palm does not show a dorsal carina. The upper surface of the postfrontal lobes is practically smooth, though it may bear short hairs which are uniformly arranged and not in transverse or oblique rows or in tufts. The pubescence of the legs resembles that of *S. benedicti* and differs from that of *S. rectum*. Conspicuous dark tufts of hairs are visible on the sternal surface between the bases of the second and third and between those of the third and fourth pereopods.

Type locality. Haiti.

Distribution. From Bermuda, the Bahama Islands and S. Florida to Brazil and the West Indies.

Occurrence in Suriname. The species is now reported for the first time from Suriname. Most specimens were collected there on the beach of the Atlantic Ocean among pieces of driftwood (usually dead trees); one was found on the muddy bank of the Coppename River. The specimens from near the mouth of the Matappica Canal were collected in the evening and were noted to be extremely agile and hard to catch; they were found there in great numbers. The name "Beach Crab" given by Rathbun (1918) to this species is very appropriate for the Suriname specimens: the present species being the only representative of the genus *Sesarma* found there on the beach.

Tesch (1914a, p. 249) stated: "*S. [esarma] cinerea, chiragra* en *recta* zijn in Suriname waargenomen." (*S. cinerea, chiragra*, and *recta* have been observed in Suriname). It seems likely that the name *S. cinerea* got in here by

mistake, since in Tesch's (1917) revision of the genus *Sesarma* he does not mention any Suriname material or record for this or any related species.

***Sesarma (Holometopus) benedicti* Rathbun, 1897 (textfig. 62)**

*Sesarma recta* De Man, 1892, p. 249, pl. 10 fig. 4. (not *Sesarma recta* Randall, 1840)

*Sesarma benedicti* Rathbun, 26 April 1897, p. 90; Ortmann, 20 July 1897, p. 371.

*Sesarma chiragra* Ortmann, 20 July 1897, p. 331; Tesch, 1914a, p. 249.

*Sesarma (Holometopus) benedicti* Tesch, 1917, p. 132; Rathbun, 1918, p. 316, pl. 93.

Museum Leiden

Muddy shore of a ditch near the mouth of the Coppename River near Boskamp, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 1 female.

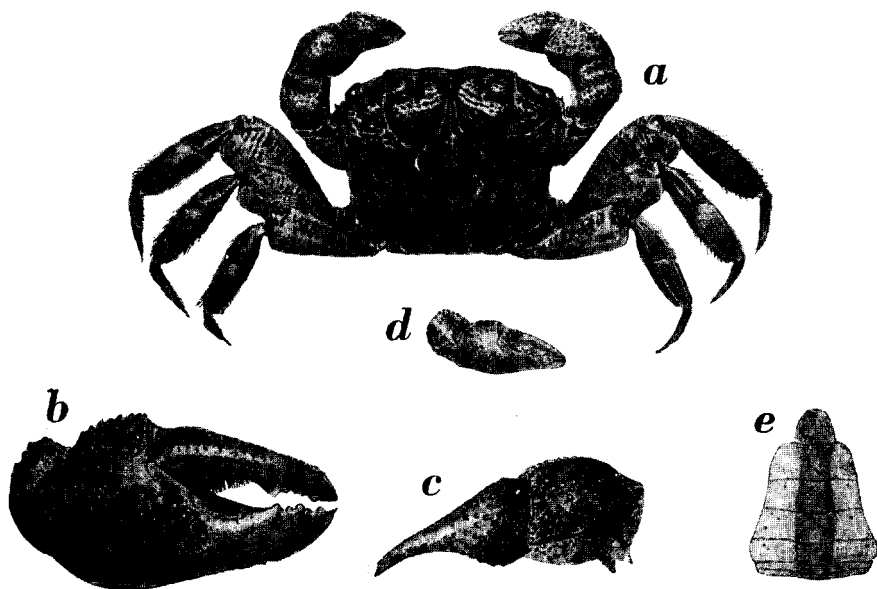


Fig. 62. *Sesarma benedicti* Rathbun. a, male syntype in dorsal view; b, chela of male syntype in lateral view; c, chela of male syntype in dorsal view; d, chela of female syntype in lateral view; e, abdomen of male syntype. a,  $\times 1.5$ ; b, c,  $\times 3$ ; d, e,  $\times 2$ . After De Man, 1892.

Shore of Saramacca River near Carl François, about 80 km W. of Paramaribo; among driftwood; 2 April 1957; L. B. Holthuis no. 1210. — 15 males, 9 females (1 ovigerous).

Paramaribo; 1911; W. C. van Heurn. — 1 male.

Suriname River near Paramaribo; 1907; M. D. Horst. — 1 male.

Shore of the Para River near its confluence with the Suriname River, between Paramaribo and Domburg; muddy shore; 31 March 1957; L. B. Holthuis no. 1202. — 6 males, 7 females.

Domburg, S. of Paramaribo; under pieces of wood in a small creek emptying in the



Suriname River; muddy bottom; 31 March 1957; L. B. Holthuis no. 1204. — 5 males, 1 female.

Suriname River near plantation "Thorarica", S. of Domburg; in swamp creek; 6 February 1957; D. C. Geijskes. — 6 males, 9 females.

Mouth of Marowijne River near Christiaankondre; August 1957; A. C. J. Burgers. — 17 males, 8 females (2 ovigerous).

Albina on the Marowijne River; 25 July 1911; W. C. van Heurn. — 1 male.

Marowijne River near Albina; in muddy creeks with slightly brackish water; 7 September 1939; D. C. Geijskes. — 16 males, 11 females.

Shore of Marowijne River near Albina; among pieces of wood; 1 November 1948; 1948-1949 Suriname Expedition no. 2402. — 3 males, 4 females.

Marowijne River near Zwampoeckondre; among stones on the river shore; 7 February 1949; 1948-1949 Suriname Expedition no. 6393. — 2 males, 2 females.

Pakira Creek near Bigibajakondre on the Marowijne River; 8 February 1949; 1948-1949 Suriname Expedition no. 6394. — 12 males, 2 females.

Marowijne River near the mouth of the Pakira Creek; 8 February 1949; 1948-1949 Suriname Expedition no. 6395. — 1 male.

Eastern shore of the Marowijne River, opposite the base camp at 4° 47' N; 17 February 1949; 1948-1949 Suriname Expedition no. 6925. — 1 female.

Suriname; H. F. C. ten Kate. — 3 males, 3 females (2 ovigerous) (lecto- and paratypes of *Sesarma benedicti* Rathbun and of *S. chiragra* Ortmann).

#### Museum Amsterdam

Suriname; H. F. C. ten Kate; coll. J. G. de Man. — 1 male, 1 female (paratypes).

#### Museum Berlin

Paramaribo; received August 1908; C. Heller. — 1 male (in spirit), 1 female (dry).

Upper Commewijne River; February 1908; C. Heller. — 5 males, 2 females (1 ovigerous).

#### Museum Hamburg

Paramaribo; brackish water, in mud; J. Michaelis, received 31 January 1899; C. Heller, received 4 August 1908. — 2 males, 1 female.

Paramaribo; 1908; C. Heller. — 7 males, 4 females.

Description. Rathbun, 1918, p. 316, pl. 93.

Remarks. The present species never attains the size of full grown specimens of *S. rectum*, with which it agrees in the absence of a tooth on the lateral margin of the carapace behind the outer orbital tooth. The carapace breadths of the above specimens range between 7 and 22 mm, in the ovigerous females between 13 and 20 mm. The males of *Sesarma benedicti* may be immediately distinguished from those of related species by the conspicuous broadening of the basal part of the dactylus of the chelipeds, while the palm of the male chelae usually has a bluish or purplish colour. Both males and females differ from specimens of *S. rectum* by having the dorsal margin of the palm of the chela not provided with a single sharp longitudinal carina,

but with either scattered tubercles or with a few very short oblique rows of tubercles. In *S. benedicti* the meri of the walking legs are rather broad, but less wide than in *S. rectum*. The propodi do not show the dense short pubescence found in *S. rectum*, in the present species the dorsal part of the propodi bears only several longer or shorter bristles. The dactyli do not show any short velvety pubescence either, they only bear longitudinal rows of bristles.

The species was reported upon for the first time by De Man (1892) who gave an excellent description and good figures of the above mentioned Suriname material collected by Dr. H. F. C. ten Kate. With some doubt De Man referred this material to *Sesarma rectum* Randall. In 1897 two authors (Mary J. Rathbun and A. E. Ortmann) independently arrived at the conclusion that De Man's material does not belong in Randall's species and both proposed a new name for the species described by De Man. Rathbun suggested the name *Sesarma benedicti*, Ortmann that of *S. chiragra*. As Rathbun's paper was published on 26 April 1897 and that by Ortmann on 20 July 1897, Rathbun's name *benedicti* has priority, a fact which was recognised by Ortmann in an addendum (p. 371) to his paper. The material collected by Dr. ten Kate and described as *S. rectum* by De Man thus is the type material of both *S. benedicti* and *S. chiragra*. From this material I have now selected the largest male specimen (cb. 20 mm) to serve as the lectotype for both *Sesarma benedicti* Rathbun and *S. chiragra* Ortmann, which thereby become objectively synonymous.

Type locality. Suriname.

Distribution. The species is known from Key West, British and Dutch Guiana, and from the coast of Brazil south to Rio de Janeiro.

Occurrence in Suriname. The species is common on the banks of the various Suriname rivers in brackish or almost fresh water. It has often been found under wood or stones on the river banks. De Man (1892) was the first to report the species from Suriname, basing himself on the material collected by H. F. C. ten Kate. Tesch (1917) listed the Suriname material of this species collected by Ten Kate, Horst and Van Heurn preserved in the Leiden Museum.

#### Family Gecarcinidae

#### **Ucides cordatus** (Linnaeus, 1763) (textfig. 63)

"Lant-krabben" Keye, 1659, p. 73; Keye, 1667, p. 73.

"Landt-krabben" Anonymous, 1676, p. 39.

*Cancer cordatus* Linnaeus, 1763, p. 414; Linnaeus, 1767, p. 1039; Fabricius, 1775, p. 400; Stadius Müller, 1775, p. 1099, pl. 34 fig. 1; Herbst, 1783, p. 131, pl. 6 fig. 38; Olivier, 1791, p. 151; Fabricius, 1793, p. 439; Collin, 1822, p. 8; Holthuis, 1958a, p. 84.

- Cancer Cordatus* Houuttuyn, 1769, p. 316, pl. 104 fig. 1; Merian, 1771, vol. 2, p. 50.  
 "Crabe jaune" Fermin, 1765, p. 73.  
 "A species of large Land Crabs" Bancroft, 1769, p. 202.  
*Cancer ruricola* Bancroft, 1769a, p. 123 (not *Cancer ruricola* L.).  
 ?*Cancer violaceus* Fermin, 1769, vol. 2, p. 276; Fermin, 1770, vol. 2, p. 249.  
 "Geele Krab" Hartsinck, 1770, p. 118.  
*Cancer Ruricola* Bancroft, 1782, p. 160.  
*Ocypode cordata* Latreille, 1802-1803b, p. 37.  
 "Spinnekrabben" Kunitz, 1805, p. 198.  
 "Land Crab" Von Sack, 1810, p. 274.  
 "Landkrebs" Von Sack, 1821, vol. 1, p. 230.  
 "Land-kreeft" Von Sack, 1821a, vol. 2, p. 247.  
 "Blaauwe krab met geelachtige schaduwen" Teenstra, 1835, p. 443.  
*Uca una* Kappler, 1881, p. 142; Kappler, 1887, p. 200; Ortmann, 1894, p. 733; Thompson, 1901, p. 4.  
*Uca laevis* Kappler, 1881, p. 143; Kappler, 1887, p. 201.  
*Uca cordata* Young, 1900, p. 250.  
*Gecarcinus ruricola* Penard, 1908, p. 401.  
*Ucides cordatus* Tesch, 1914a, pp. 248, 250.

## Museum Leiden

- Cocos Polder near Coronie; just outside the sea dike; in holes in mud bottom; 11 April 1957; L. B. Holthuis no. 1239. — 5 males.  
 Muddy shore of a ditch near the mouth of the Coppename River near Boskamp, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 1 male, 1 female.  
 Muddy shore of the Coppename River near its mouth, Boskamp; 2 April 1957; L. B. Holthuis no. 1214. — 8 males, 6 females.  
 Bank of Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; in holes of muddy bottom in mangroves; 1 April 1957; L. B. Holthuis no. 1208. — 3 males, 3 females.  
 Leonsberg, near ferry, N. of Paramaribo; 10 December 1939; D. C. Geijskes. — 1 female.  
 In big trench of "Morgenstond" plantation, Leonsbergse weg, N. of Paramaribo; 19 October 1939; D. C. Geijskes. — 1 male.  
 Combé, N. of Paramaribo; 17 March 1939; H. W. C. Cossee. — 1 female.  
 Sommelsdijkse Creek, Agricultural Experiment Garden, Paramaribo; 21 October 1939; D. C. Geijskes. — 1 female.  
 Suriname River near plantation "La Resource"; 19 December 1939; D. C. Geijskes. — 1 male, 1 female.  
 Plantation "Lust en Rust", eastern shore of Suriname River, N.E. of Paramaribo; 13 March 1939; H. W. C. Cossee. — 3 males.  
 In mud of parwa (= *Avicennia nitida* Jacq.) forest, sea coast near the Wiawia bank; 12 November 1948; 1948-1949 Suriname Expedition no. 2623. — 1 male.  
 Small creek in plantation near Galibi on the Marowijne River; 9 November 1948; 1948-1949 Suriname Expedition nos. 2515 and 3413. — 6 males, 3 females.  
 Suriname; C. F. Kraepelin & H. Holm. — 2 males.  
 Suriname; 1891; H. F. C. ten Kate. — 1 male, 1 female.  
 Suriname; 1910; D. G. J. Boltzen. — 1 male.

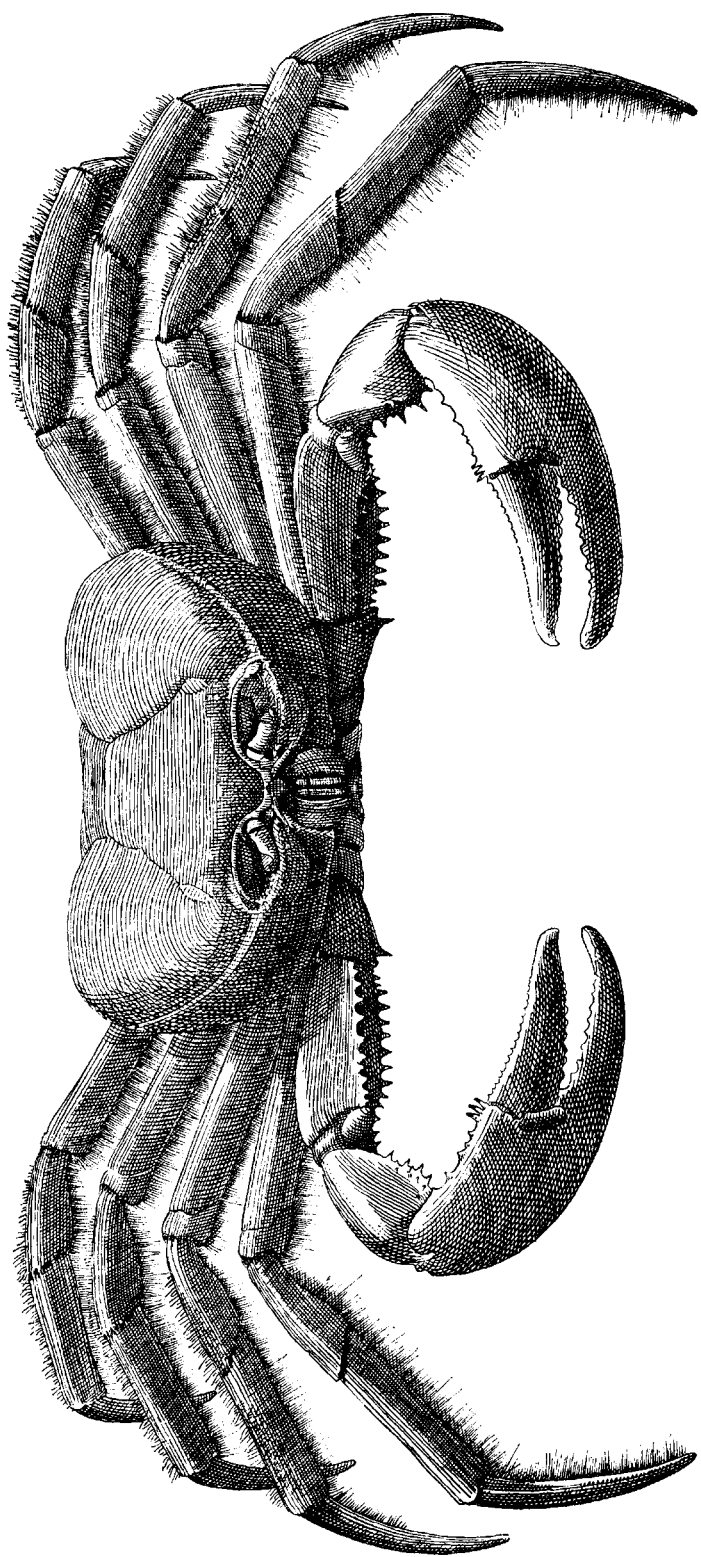


Fig. 63. *Ucidetes cordatus* (L.). Male specimen. After Houttuyn, 1769.

## Museum Philadelphia

Suriname; C. Hering. — 1 male.

## Museum Hamburg

Mouth of the Suriname River; 4 August 1908; C. Heller. — 3 males.  
Paramaribo; 1909; C. Heller. — 2 males.

Description. Rathbun, 1918, p. 347, textfig. 158, pls. 110-113, 159 figs. 3, 4.

Vernacular names. In the Suriname language the species is generally indicated as "kraboc". According to Kappler (1881, 1887) the Caribs of Suriname use the name "waiamu" for the females and "kusa" for the males; the Arowac name for the latter being "kwa". In British Guiana the species is indicated with the names "Buck crab" or "common crab" (Young, 1900, p. 250; Graham, 1955, p. 30).

Remarks. The carapace breadths of the present specimens range from 27 to 92 mm.

Colour. The colour of the carapace is usually bluish with some yellowish areas, while the legs are pinkish. The hairs on the legs are dark brown or almost black. Coloured figures of both the male and the female have been published by Young (1900, pls. 1, 7), who indicated them with the names *Uca cordata* and *Uca una* respectively.

Type locality. Suriname.

Distribution. West Indies (Cuba, Jamaica, Puerto Rico, St. Thomas), Atlantic coast of S. America from Panama to S. E. Brazil.

Occurrence in Suriname. The species is very common in the coastal area of Suriname where it lives not far from the sea in holes which it digs in the mud. Sometimes these holes are situated in exposed places, sometimes they are found under mangrove vegetation. The burrows are directed about vertically and are up to about 70 cm deep; they are as wide as a man's arm. The crabs enter their holes sideways, folding their chelipeds in front of the body. At certain times of the year the crabs seem to leave their burrows in huge numbers and then are caught by the natives (see below under Economic Importance). The published information concerning this so-called "crab-carnival" is rather scarce. Kappler (1881, p. 143) gave the following account: "Im Monat August ist der Krabbentanz oder ihr Karneval, wo verschiedene Arten dieser sonderbaren Geschöpfe wie nährisch auf dem Ufer umherlaufen, sich verfolgen und einander die Scheeren abzukneipen suchen. Vermuthlich ist dies ihre Begattungszeit. Auf diesen Karneval folgt die Fastenzeit, denn sie ziehen sich gleich nachher in ihre Löcher zurück, wo sie ihre Schalen abwerfen, und erst, wenn die neuen erhärtet sind, wieder ans Tageslicht kommen." Kappler's (1887, p. 201) account is practically

identical; he only adds that the burrows are closed when the crabs retire in them after the "carnival". Van Capelle (1926, p. 405) stated: "In Juli en September zamelen de I.[ndianen] massa's kr.[abben] in, om ze als voedsel te gebruiken. In deze maanden houden de dieren hun "carnaval", waarbij zij in menigte over den modder rondloopen en dan dikwijls gevechten leveren. Men ziet ze dan hunne holen in en uitkruipen, en kunnen dan met de handen gevangen worden". (In the months of July and September the Indians gather great numbers of crabs to be used as food. In these months the animals have their "carnival"; they run around in masses and often fight each other. At that time they may be observed to enter and leave their burrows, and they can be caught by hand). Slightly different is the account given by Schomburgk (1848, vol. 2, p. 443), based on observations made in British Guiana: "August und September sind die Monate, in welchen die Landkrabben (*Gecarcinus ruricola* und *Uca una*) aus den Morästen dem Meere zueilen, um ihre Eier abzulegen... Im Februar sieht man die Krabben ebenfalls aus ihren Löchern kommen, und dieses scheint die Zeit ihrer Befruchtung zu sein. Die Männchen fangen an, ihre schöne Farbe und ihren Wohlgeschmack zu verlieren, werden mager, und eine unangenehme, bittere, flüssige Materie füllt den ganzen Körper, die sich nach der Begattungszeit wieder verliert, von wo sie dann wieder nach und nach fetter werden. Gegen Ende Juli nehmen die Krabben wieder zu, und bereiten sich zur Ablegung ihrer Schale vor. Zu dem Ende füllen sie ihre Löcher mit Grashalmen und Blättern, begeben sich dann hinein, verstopfen den Zugang und bleiben ohne Bewegung, bis die alte Schale durch eine neue ersetzt worden ist. Wie lange dieser Zustand währt, lässt sich nicht genau bestimmen". Modern observations on these phenomena are highly desirable.

The first account of Suriname specimens of this species found in the literature is that by Otto Keye (1659) who described the animals as "Lantkrabben, dewelcke haer inde Bosschen houden ende haere holen inde aerde hebben / gelyck hier te Lande de Conynen doen" (land crabs, which live in the woods and have their burrows in the ground, like the rabbits in our country). With "woods" the mangrove forests of the coastal area are evidently meant. The text concerning the crabs as given by Keye (1667) and Anonymus (1676) is literally the same as that of Keye (1659). Linnaeus (1763) gave the first scientific name to the species. His description, which is based on Suriname material collected by Dahlberg, runs as follows: "*Cancer brachyurus cordatus*, thorace laevi cordato integerrimo, chelis subtus muricatis. *Habitat* Surinami. *Majusculus*. Testa cordata apice posteriora respiciente, laevis, margine subcarinato; disco lateribus gibbo; in medio quasi

*H. depressum*. *Inter oculos vix emarginata*. *Oculi cylindrici*. *Palpebra inferior crenulata*. *Chelae laeves, sed subtus valde muricatae verrucis conicis nigris*. *Brachia triangula angulis muricatis*. *Pedes reliqui omnes subtus maxime barbati*". Fermin's (1765) description of the species is rather vague, but can hardly be intended for a different form: "Le Crabe jaune, dont les pattes sont extrêmement longues & velues". One would hardly describe this species as yellow, though the males do have the carapace bluish with yellowish. In the 12th edition of his *Systema Naturae* Linnaeus (1767) repeated his 1763 diagnosis, in which, however, the word "cordato" is changed to "undato"; this is evidently a lapsus. Houttuyn (1769) copied Linnaeus's 1767 diagnosis (with the lapsus) and gave a Dutch translation both of this diagnosis and of the 1763 description, adding some remarks of his own, which, however, add little to our knowledge of the species; furthermore Houttuyn provided a good figure of a specimen from his collection, which figure is reproduced here (textfig. 63). Bancroft (1769) gave the following account of the present species: "Besides the Sea Crabs on the Coast of *Guiana*, there is a species of large Land Crabs living in the mud, in which their holes are made, and which cover all the shores of the sea, and rivers near the sea, at low water, when they appear in the greatest numbers. The body is quadrangular, each angle being two inches and a half long. It is supported by a great number of legs and has two large claws, in shape and size nearly resembling those of a Lobster. Their shells, in different places, are either of a dull white, or a blueish colour". In the German and Dutch translations of Bancroft's work (1769a, 1782) the latin name *Cancer Ruricola* is incorrectly given to this species, accompanied by a citation from P. Browne's (1756, p. 423) account of Jamaica material of *Gecarcinus ruricola* (L.). Fermin's (1769, 1770) description of *Cancer violaceus* was copied from Labat (1724, vol. 1 pt. 2, p. 50), who dealt with a species of *Gecarcinus* from Martinique; as has already been shown above (p. 8), Fermin probably meant to indicate the present species with that name. Hartsinck (1770) gave a Dutch translation of Fermin's (1765) remark on the "Crabe jaune". Stadius Müller's (1775) description is an abbreviated German translation of Houttuyn's account, while his figure is an exact copy of that published by Houttuyn. Fabricius (1775, 1792), Herbst (1783), Olivier (1791) and Latreille (1802-1803) repeated statements by previous authors and do not add anything new to our knowledge of the species, except that Latreille mentioned the occurrence of the species in Cayenne. Collin (1822) just listed the name *Cancer cordatus* among the animal species known to him from Suriname. Kunitz (1805) gave again original observations on the species: "vorzüglich sind die Spinnkrabben geachtet. Letztere haben 2 grosse Scheeren,

6 haarige Füße, und einen plattrunden Körper, der mit einer dünnen krebsartigen Schale überzogen ist, und halten sich in den Spalten und Oeffnungen der Ufer auf". Von Sack (1810) made the following remark about the present species: "the largest of all [crabs] is of a purple colour; but... they do not differ in their shape from those in Europe."; the German and Dutch edition do not add anything new. Teenstra (1835, p. 443) remarked: "*Krabben* vindt men er tevens zeer groot, en in eene oneindig grootere hoeveelheid, dan de *kreeften*; leverende tevens een' der smakelijkste en gezochste schotels op. Gekookt zijn dezelve, evenals de Nederlandsche, rood, ofschoon zulks met de witte krabben het geval niet is; derzelve visch, vooral uit de knijpers, is zeer blank en vast. Fermin telt vier verschillende soorten van de hier zijnde *krabben* op, onder welke de blaauwe met geelachtige schaduw de grootste is" (One also finds large crabs here, which are infinitely more numerous than the lobsters; they make one of the most tasteful and appreciated dishes. They are red when cooked, like the Dutch species (*Cancer pagurus* L.); this is not true, however, for the white crabs. Their meat, especially that of the chelae, is white and firm. Fermin enumerated four different species of crab as occurring here, of these the one coloured blue with shades of yellow is the biggest). Kappler (1881, 1887) distinguished two species of the present genus, which he indicated with the names *Uca una* and *Uca laevis*, both names being originally introduced by H. Milne Edwards, 1837. As shown by later authors these two "species" are nothing but the male and female of *Ucides cordatus* (L.). Kappler (1881, pp. 142, 143) described *Uca una* as follows "Ihre Schale ist beinahe vier, das ganze Thier aber wohl zwölf Zoll breit und drei Zoll lang. Die Füße sind dicht behaart und rothbraun, die Schale bläulich oder gelblich.", a description which in 1887 (p. 201) he altered to "Die Krabbe hat eine ovale Schale von 7 cm Breite bei 5 cm Länge von gelblicher oder bläulicher Farbe. Mit den braunen, dicht behaarten Füßen ist sie bei 25 cm breit. Von den beiden Scheeren, womit sie schmerzhaft kneipen können, bleibt die eine immer kleiner als die andere und erreicht die grössere manchmal eine Länge von 7 cm bei 5 cm Breite". The character of the hairy legs shows that these specimens are the males of *Ucides*. *Uca laevis* was described (Kappler, 1881, p. 143) as being "viel grösser... , ihre Schale mehr gewölbt und hellblau gefärbt; die eine Scheere ist bei ihnen immer ziemlich grösser als die andere", while the 1887 version (p. 201) is: "sie ist viel grösser, türkisblau und gelblich, die Schale mehr gewölbt, die Füße sind ohne Haare und die eine Scheere übermässig gross.", which proves (by the character of the naked legs) to be based on female specimens. It is interesting to note that Kappler considered *U. una* to be a species from the sea shore, while



*U. laevis* was supposed by him to occur "stellenweise am Ufer der Flüsse". As to the abundance of the species in Suriname Kappler (1881, p. 142) remarked: "Es ist unglaublich, welche Massen von Krabben den Seestrand bewohnen. Soweit die Schlammküste sich erstreckt, also etwa acht Stunden lang, ist sozusagen Loch an Loch, und zwar sind dieselben gewöhnlich keine zwei Fuss auseinander und immer mehr als einen Fuss tief. Die Krabben sitzen da vor ihren Löchern und nähren sich von Thier- und Pflanzenresten". In 1887 (pp. 200, 201) Kappler wrote about the "unermessliche Menge von Krabben der Gattung *Uca una*, die den beinahe ganz aus blauem Thon bestehenden niederen, von der hohen Meeresflut überschwemmten, 56 Stunden langen Küstenstrich bevölkern. Oft sieht man stundenlang am Meeresufer die [p. 201:] Löcher dieser Tiere, die selten mit mehr als drei Fuss Abstand von einander liegen und stets bewohnt sind". Ortmann (1894), Young (1900), and Thompson (1901) mentioned the occurrence of the species in Suriname, without adding new information. The Penard brothers (1908) mentioned this species (under the incorrect name *Gecarcinus ruricola*) as the prey of the crab-falcon. Tesch (1914) described the species and repeated some of the information given by Kappler.

Economic importance. From an economic point of view the present species is, with *Callinectes bocourti*, the most important Suriname crab. It is eaten by all classes of the population of Suriname. The animals are cooked and then prepared in various ways. There is no export of crabs. In certain seasons (July to September) they are far more plentiful than at others and therefore are mostly caught then. They are considered to be quite a delicacy. Already Keye (1659) remarked that "dese zijn boven alle andere seer smaeckelyk ende delicaet" (they are more tasty and delicate than any of the other crabs). Bancroft (1769) stated: "They have an agreeable, though somewhat earthy taste, and are much eaten by all the inhabitants, whether Whites, *Indians*, or Negroes". Fermin's (1769, vol. 2, p. 279) account of the catch of crabs in Suriname evidently is largely based on Labat's (1724) book, his description of how to cook and serve the crabs seems to be original (p. 278): "La meilleure maniere d'accomoder les *Crabes*, est de les faire, premièrement, cuire dans l'eau avec du sel. Secondement, de les ouvrir, d'en tirer toute la chair, les oeufs & la graisse, & de les faire ensuite étuver avec du beurre, dans leur propre jus, d'y joindre du biscuit en poudre, un peu de poivre, & beaucoup de jus de citron; & quand le tout est ainsi préparé de les servir. Je puis assurer que c'est un manger extrêmement délicat. On les fait aussi cuire simplement dans l'eau, & on les mange avec du pimentade: ce qui est du goût des Créoles, des Naturels du pays, & des Negres; mais qui ne seroit pas du mien". According to Kunitz (1805) these crabs

are "vorzüglich . . . geachtet", while he gave the following account of two ways to serve them: "Man verspeisst hier die Krabben auf zweyerley Art. Einmal in Wasser abgesotten, wo ihr Unrath mit grünem Pfeffer zu einer Sauce gemacht wird, oder man schält sie auch aus, lässt sie, nachdem man sie gewürzt, in Butter braten und mit feingeriebenem Weissbrode überstreuen". Von Sack (1810) mentions "that being so plentiful here, they serve as one of the principal articles of food to the Indians and negroes". Surprising is Teenstra's (1835) statement "de blaauwe wordt niet gegeten" (the blue crab is not eaten), while he clearly meant to indicate the present species; some mistake must have been made here. Kappler (1881, pp. 141-143) again provided important information. He gave a vivid account of the way in which the Indians of the region of the Marowijne caught the crabs at the mouth of that river: "während die Weiber trockenes Holz zusammensuchten, um Feuer zu machen, wateten die Männer durch die Mangrovegesträuche in einem zähen Schlamm, indem sie bei jedem Schritte bis an die Kniee einsanken, längs der Küste hin und kamen nach einer halben Stunde so beladen mit den schönsten [p. 142:] und grössten Krabben, (*Uca una*), zurück, dass sie dieselben kaum schleppen konnten" (pp. 141, 142). "Bei niederem Wasserstand sitzen die Krabben immer vor ihren Löchern, wittern sie aber Gefahr, so schliessen sie die Scheeren fest an die Brust, und fliehen schnell zurück. Da sie in dem engen Loch die Scheere nicht ausbreiten können, so kann sie der Indianer, indem er in das Loch greift und beide Scheeren dem Thiere fest an den Leib drückt, herausnehmen, ohne dass sie diese Waffen gebrauchen können" (p. 143). He furthermore spoke of the "grosse Töpfe auf dem Feuer, worin die Krabben gekocht wurden, nachdem man sie zuvor im Sumpfe abgewaschen hatte" (p. 142). The ease with which the crabs are caught is shown by Kappler's (p. 146) remark that "die Indianer noch über 20 Körbe Krabben in weniger als zwei Stunden geholt hatten". The way in which the Indians ate the crabs was described as follows (p. 142): "Als die Krabben gekocht waren, ging es an ein Essen, dem zuzusehen eine Lust war; die Scheeren und Füsse wurden zerklopft, um dass süsse Fleisch zu bekommen; in die Schale voll von grünem Fett und einem schwarzen bittern Unrath drückten die Indianer in Pfefferbrühe geweichtes Cassavebrod und fuhren so mit Essen fort, bis auch der letzte Krabbe zerklopft war. Das Krabbenessen ist, wenn man blos Scheeren und Füsse nimmt, eine langweilige Arbeit, womit man wohl ein paar Stunden zubringen kann, ehe man recht satt wird". The town population ate the crabs in the following way (p. 142): "In Paramaribo gehört eine Krabbenpastete unter die ersten Leckerbissen des Landes. Das weisse Fleisch der Scheeren und Füsse wird mit Chalotten, Petersilien, Weckmehl, Butter

und Gewürze zu einem Teige gewiegt, die sorgfältig gewaschenen Schalen damit gefüllt und diese im Ofen oder unter einem Aufzugdeckel gar gebacken. Zur Sauce wird das Fett, das sich an den Seiten der Schale befindet, mit etwas Butter gequirt, zerriebene Citronenschalen, Gewürznelken, Muskatblüthe und spanischer Pfeffer hinzugethan und das Ganze kochend heiss mit einem Wasserglas voll Cognac oder Rum verdünnt; die Sauce sieht dunkelgrün aus und wird mit den Pastetchen gegessen". According to Tesch (1914, p. 250) this crab dish is named *kraboe-hoso* in Suriname.

**Cardisoma guanhumi** Latreille, 1825 (pl. XII)

Museum Paramaribo

Mouth of Suriname River near "Purmerend" plantation, Leonsberg, N. of Paramaribo; caught in a shrimp trap; May 1957; H. W. Lijding. — 1 male.

Description. Rathbun, 1918, p. 341, textfig. 155, pls. 106, 107.

Remarks. The carapace breadth of the above specimen, a full-grown male, is 100 mm.

Colour. The carapace of the living specimen was noted to be slate-blue.

Type locality. Brazil.

Distribution. Bermuda, the Bahamas and S. Florida to S. Brazil and the West Indies.

Occurrence in Suriname. In Suriname the present species is only known from the above specimen, which was taken in a highly unusual place. The species is namely one of the typical land crabs of the West Indies, and it is difficult to explain how the present specimen got caught in a shrimp trap. More information on whether and where the species actually occurs in Suriname would be highly welcome.

Family Ocypodidae

**Ocypode quadrata** (Fabricius, 1787) (pl. IX fig. 3)

*Cancer albicans minor littoralis* Fermin, 1765, p. 73.

*Cancer albicans, minor* Fermin, 1769, vol. 2, p. 276; Fermin, 1770, vol. 2, p. 249.

"Witte Krab" Hartsinck, 1770, p. 118.

"Land Crab" Von Sack, 1810, p. 274.

"Landkrebs" Von Sack, 1821, vol. 1, p. 230.

"Land-kreeft" Von Sack, 1821a, vol. 2, p. 247.

"Sandkrabbe" Kappler, 1887, p. 201.

Museum Leiden

Right bank of the mouth of the Suriname River near Braampunt; in holes in the sandy part of the beach; 5 April 1957; L. B. Holthuis no. 1219. — 7 males, 5 females.

Beach near the mouth of the Matappica Creek; 20 October 1940; D. C. Geijskes. — 1 female.

Beach near the Wiawia Bank, N. E. Suriname; dug out of holes in the sand; 11 November 1948; 1948-1949 Suriname Expedition no. 2618. — 6 males, 1 female.

Beach near the mouth of the Marowijne River near Galibi; dug out of the sand; 9 November 1948; 1948-1949 Suriname Expedition no. 2517. — 1 male, 3 females.

Description. Rathbun, 1918, p. 367, pls. 127, 128 (as *O. albicans* Bosc).

Remarks. The carapace breadths of the males examined vary between 22 and 47 mm, those of the females between 21 and 32 mm.

Type locality. Jamaica.

Distribution. East coast of America from Bermuda and Rhode Island (U.S.A.) to S. Brazil and the West Indies. Graham (1955, pp. 37, 77) reported upon this species from British Guiana and named it "White Land Crab" or "Ghost Crab".

Occurrence in Suriname. The species is only found on the sea coast where there are sandy beaches. It lives in holes which it digs in the sand somewhat above high tide mark. The holes are rather deep; they are much narrower than those of *Ucides*, so that in order to obtain the specimens one has to actually dig them out. The animals are fast runners, and when pursued flee either in their holes or in the water. They are nocturnal and seldom leave their holes in the daytime. The first record of this species from Suriname is that by Fermin (1765) who named the species "le Crabe blanc, en Latin *Cancer albicans minor littoralis*". Fermin (1769, 1770) with the name "*Cancer albicans, minor*" evidently also meant to indicate the present species, though his description is copied from that by Labat (1724, vol. 1 pt. 2, p. 50) of "les crabes blancs" which are specimens of *Cardisoma guanhumi* from Martinique. Hartsinck's (1770) remark concerning the "witte Krab" is a translation of that by Fermin (1765) on the "Crabe blanc". Von Sack's (1810) second species of land crab which "is large and white" can hardly be anything but the present species. The German and Dutch translations of Von Sack's book do not give any additional details. Kappler's (1887) account of the species gives, as is usual with this author, an excellent characterization: "die Sandkrabbe, ist kaum 12 cm breit und 4 cm lang, gelblich-weiss von Farbe mit mehr eckiger als gewölbter Schale; sie lebt am sandigen Seestrand in selbstgegrabenen Löchern, [p. 202:] flüchtet aber, wenn sie von ihrem Loche entfernt ist, sich sogleich ins Wasser. Auf dem Feuer geröstet, schmeckt sie sehr gut".

### ***Uca (Uca) maracoani*** (Latreille, 1802-1803) (pl. XIII)

Museum Leiden

Coronie; 26 June 1911; W. C. van Heurn. — 5 males, 2 females.

East bank of the mouth of the Coppename River near Boskamp, about 95 km W. of

Paramaribo; soft mud; 2 April 1957; L. B. Holthuis no. 1214. — 10 males, 4 females (1 ovigerous).

East bank of the mouth of the Suriname River near Braamspunt; soft mud; 5 April 1957; L. B. Holthuis no. 1219. — 15 males, 1 female.

Bank of the Suriname River near the ferry, Leonsberg, N. of Paramaribo; 10 December 1939; D. C. Geijskes. — 5 males, 2 females.

Bank of the Suriname River near plantation "Morgenstond", N. of Paramaribo; 15 December 1939; D. C. Geijskes. — 2 males, 2 females.

Suriname River near Paramaribo; 23 March 1939; H. W. C. Cossee. — 1 male. Paramaribo; 1911; W. C. van Heurn. — 1 male, 1 female.

Suriname River near plantation "La Resource"; 19 December 1939; D. C. Geijskes. — 4 males, 1 female.

Fisheries Service Station "Matappica" at Matappica Canal, about 2 km from the sea coast; in muddy ditch; 6 April 1957; L. B. Holthuis no. 1221. — 1 male.

Mouth of Matappica Canal; tidal zone, in mud; 15-30 August 1957; A. C. J. Burgers. — 49 males, 89 females (1 ovigerous).

Sea shore near Wiawia Bank, N. E. Suriname; high up the beach in mud; 12 November 1948; 1948-1949 Suriname Expedition no. 2622. — 6 males, 1 female.

Description. Rathbun, 1918, p. 378, pl. 130 figs. 2, 3, pl. 131 fig. 3.

Vernacular name. According to Dieperink (see below) the species is named in Dutch "Duivelskrab" (Devil's crab); however, this name seems to be used mostly for *Goniopsis*.

Remarks. The specimens have the carapace breadths varying between 10 and 45 mm. The ovigerous females have cb. 30 and 33 mm, the largest female has cb. 35 mm.

In the juvenile males the fingers of the large chela are less than twice as long as the palm, while the fixed finger is not as much twisted at the tip as in the adults. One of the large specimens from near Boskamp has the carapace and the large chela as if crumpled; though the specimen is perfectly hard-shelled it looks at first glance like a poorly preserved soft-shelled one.

The species may be immediately recognized from all other Suriname fiddler crabs by the very high and flattened fingers of the large chela of the male and by the very narrow rostrum which is constricted at the base.

Type locality. "Le continent de l'Amérique méridionale" (Latreille, 1802-1803b, p. 46). Restricted by Rathbun (1918, p. 378) to Brazil.

Distribution. N. E. coast of the South American continent from Venezuela to S. E. Brazil (Rio de Janeiro). An old record (by Sloane, 1725) of the species from Jamaica is very doubtful. Graham (1955, p. 33, pl. 4 fig. 4) dealt with British Guiana material of this species which she named "Scissors Crab"; the identification on her p. 77 with *Uca pugnax* is incorrect.

Occurrence in Suriname. *Uca maracoani* is now for the first time reported from Suriname. It was found there in holes in the soft mud of that part of the river banks which had no vegetation and which was exposed at

low tide only. In such localities the species was observed in fairly large numbers. In a handwritten list of the specimens sent by him on 24 May 1825 to the Leiden Museum Dieperink mentioned "Twee duivelskrabben zijn van de kleinste. Zij worden voor vergiftig gehouden en by Linnaeus pl. 104.2 afgebeeld" (Two devil's crabs, belonging to the smaller species. They are considered to be poisonous and are figured on pl. 104 fig. 2 of Houttuyn's). The reference to Houttuyn distinctly shows that the present species is meant.

***Uca (Minuca) mordax*** (Smith, 1870) (textfig. 64a-c;  
pl. XIV fig. 2, pl. XV fig. 2)

Museum Leiden

Cocos Polder, Coronie; bank of a ditch south of the east-west dike which divides the polder in two halves; just above water level; 11 April 1957; L. B. Holthuis no. 1237. — 2 males, 1 female.

Cocos Polder, Coronie; bank of a ditch on the south side of the outer (= sea) dike; 11 April 1957; L. B. Holthuis no. 1238. — 4 males.

Muddy bank of ditch near the mouth of the Coppename River near Boskamp, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 4 males, 8 females (1 with Sacculinid).

Muddy shore of the Coppename River near its mouth, Boskamp; 2 April 1957; L. B. Holthuis no. 1214. — 11 males, 3 females.

Bank of the Saramacca River near Carl François, about 80 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1210. — 15 males, 6 females.

Saramacca River near Groningen; September 1911; W. C. van Heurn. — 1 female.

Bank of Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; 1 April 1957; L. B. Holthuis no. 1208. — 8 males, 4 females (2 ovigerous).

East bank of the mouth of the Suriname River near Braamspunt; mud; 5 April 1957; L. B. Holthuis no. 1219. — 1 male.

Bank of Suriname River near the ferry, Leonsberg, N. of Paramaribo; 28 December 1939; D. C. Geijskes. — 1 female.

Plantation "Morgenstond", N. of Paramaribo; in coffee field near trench; 19 October 1939; D. C. Geijskes. — 2 males.

Charlesburgweg, Paramaribo; in trench; 5 January 1940; D. C. Geijskes. — 5 males.

Agricultural Experiment Garden, Paramaribo; in trenches; 10 February, 25 September, 21 October, and 7 December 1939; D. C. Geijskes. — 47 males, 17 females.

Saramacca Canal, Lelydorpse weg, Paramaribo; 16 December 1939; D. C. Geijskes. — 10 males, 4 females.

Paramaribo; 1911, and October 1911; W. C. van Heurn. — 24 males, 16 females (3 ovigerous).

Suriname River near plantation "La Resource", S. of Paramaribo; 19 December 1939; D. C. Geijskes. — 1 male.

Bank of the Para River near its confluence with the Suriname River, between Paramaribo and Domburg; muddy shore; 31 March 1957; L. B. Holthuis no. 1202. — 1 male, 2 females (1 ovigerous).

Domburg, S. of Paramaribo; under pieces of wood in a small creek emptying into the Suriname River; muddy bottom; 31 March 1957; L. B. Holthuis no. 1204. — 6 males, 1 female.

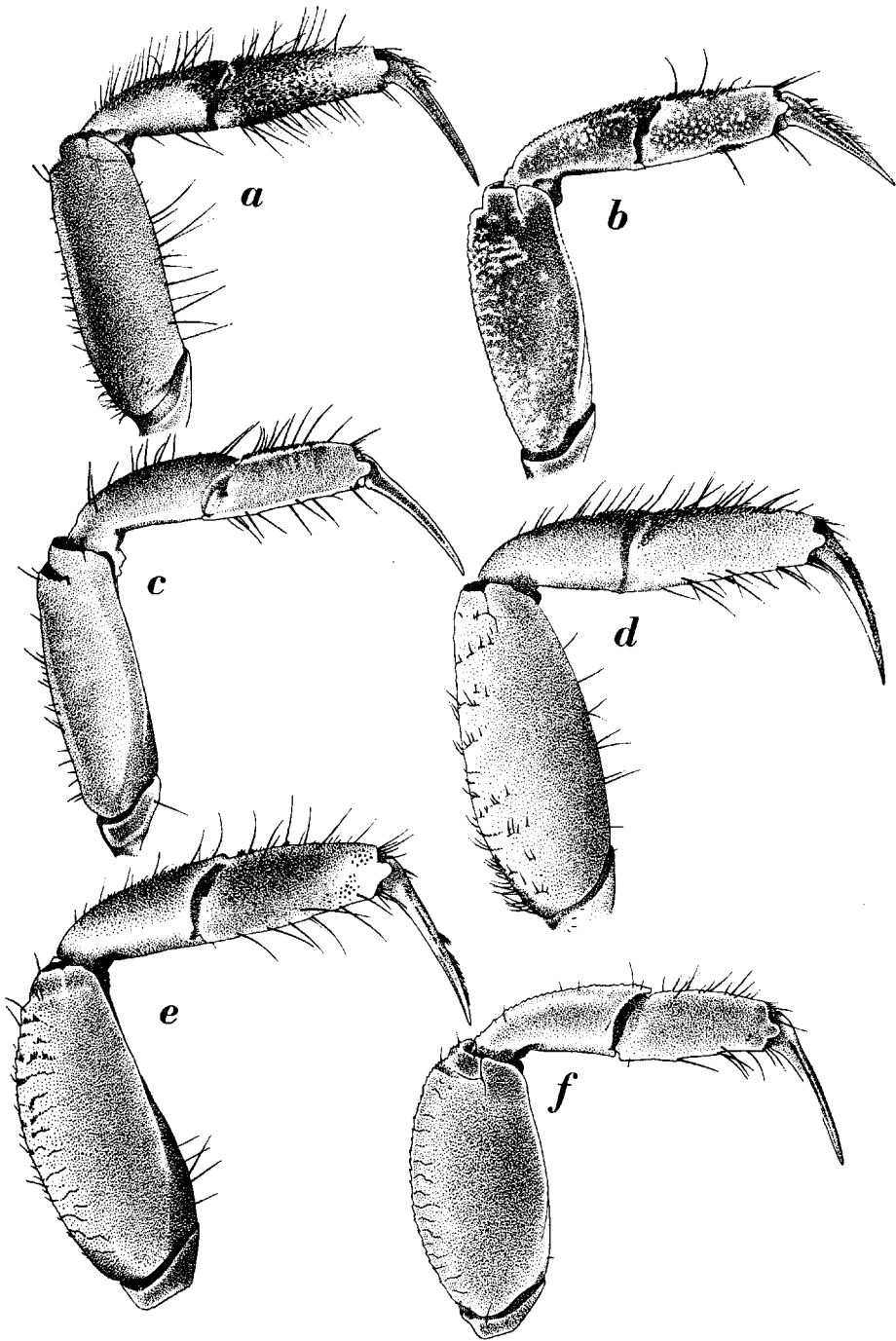


Fig. 64. *Uca mordax* (Smith). a, second pereiopod of male; b, fifth pereiopod of female; c, fifth pereiopod of male. *Uca rapax* (Smith). d, second pereiopod of male; e, fifth pereiopod of male; f, fifth pereiopod of female. a,  $\times 3.2$ ; b,  $\times 3.5$ ; c-f,  $\times 4$ . H. Heijn del.

Suriname River near plantation "Thorarica", S. of Domburg; in swamp creek; 6 February 1957; D. C. Geijskes. — 6 males, 2 females.

North coast of Suriname just west of the mouth of the Matappica Canal; 6 April 1957; L. B. Holthuis no. 1222. — 1 female.

Mouth of the Marowijne River near Galibi; small creek near plantation; 9 November 1948; 1948-1949 Suriname Expedition no. 2512. — 5 males, 2 females.

Mouth of the Marowijne River near Christiaankondre; August 1957; A. C. J. Burgers. — 3 males, 1 female.

Muddy creeks near the Marowijne River at Albina; slightly brackish water; 7 September 1939; D. C. Geijskes. — 8 males, 4 females.

Albina on the Marowijne River; 25 July 1911; W. C. van Heurn. — 4 males.

Suriname; 1890; H. F. C. ten Kate. — 1 male.

Suriname; 17 September 1894; Miss M. Koning. — 2 males, 2 females.

Suriname; 1939; D. C. Geijskes. — 1 male.

#### Museum Amsterdam

Suriname. — 2 males.

#### Museum Berlin

Paramaribo; brackish water; 28 August 1908; C. Heller. — 2 males, 3 females.

Paramaribo; H. B. Möschler. — 1 female.

Upper Commewijne River; February 1908; C. Heller. — 1 female.

Suriname; J. Michaelis. — 19 males, 53 females.

#### Museum Hamburg

Paramaribo; J. Michaelis, received 31 January 1889; C. Heller, received 4 August and 16 December 1908. — 16 males, 10 females (1 ovigerous).

Paramaribo; November-December 1908; C. Heller. — 2 males, 3 females.

Description. Smith, 1870, p. 135, pl. 2 fig. 3, pl. 4 fig. 4; Crane, 1943, p. 37; Crane, 1943a, p. 31, textfigs. 1A-C, pl. 1 figs. 3, 4.

Remarks. The carapace breadth of the specimens examined varies between 5 and 26 mm, the ovigerous females having the carapace breadth ranging from 10 to 20 mm.

With the four following the present species forms the broadfronted group (subgenus *Minuca* Bott, 1954) of the genus *Uca* as represented in Suriname. The differences between these five species are not very striking so that several of the species have been confused by previous authors. The main distinctive characters of *U. mordax* are the following: The breadth of the front when measured at the base (i.e., at the spot where the upper and lower margins of the eyebrow meet) is more than  $\frac{1}{3}$  of the anterior breadth of the carapace. The teeth on the lower orbital margin are inconspicuous in the inner part, becoming somewhat larger externally. The suborbital region is hairy. As a rule the large chela of the adult male does not show a distinct lower carina. The upper part of the outer surface of the palm is strongly



curved inward so that it might be considered to form the upper surface of the palm. The dorsal marginal carina of the carpal cavity on the inner surface of the palm at first runs parallel to the upper margin of the palm, then curves downwards and is directed somewhat forwards in its extreme distal part. Anteriorly to this margin the inner surface of the palm is distinctly concave and smooth. Below this concavity the surface shows many distinct tubercles. The upper of these tubercles are sometimes arranged in a horizontal row which more or less forms a continuation of the dorsal marginal carina of the carpal cavity, which thereby seems to extend to the base of the dactylus. The two rows of tubercles near the lower part of the base of the dactylus diverge strongly. The oblique ridge which extends from the lower margin of the palm to the carpal cavity is distinct and bears various tubercles, which are not arranged in a single row. Where the ridge reaches the cavity there are several distinct tubercles, but no distinct upwards directed row is formed. The tip of the fixed finger is trifid. The upper margin of the meri, the upper part of the carpi, and the entire propodi of the first three pairs of walking legs are covered with a short velvety pubescence in which there are a few long and stiff dark bristles. The fifth pereopod (= fourth walking leg) differs from the previous legs by having the propodus with a velvety pubescence only in the proximal part of the upper and sometimes also in the distal part of the lower margin. In juvenile specimens the pubescence is generally less extensive. The legs of the present species are slender, being distinctly more narrow than in *U. rapax*. In the female they are wider than in the male (textfig. 64a-c). The male pleopod of this species has been accurately figured by Crane (1943a).

Type locality. "Canals at Pará" (= Belém), Brazil.

Distribution. The species is known with certainty from the north coast of the South American continent, from Venezuela to N. Brazil. It has been reported from the larger part of the West Indies, but these reports all need confirmation. Most, if not all, the Antillean specimens referred to as *U. mordax*, namely, actually belong to a distinct species, *U. affinis* (Streets). This species differs from *U. mordax* in the following points: (a) the denticles on the lower orbital margin, and especially those in its external part, are larger and more distinct, (b) the lower margin of the palm of the large chela of the male has practically always a distinct carina, (c) the dorsal marginal carina of the carpal cavity on the inner surface of the large chela is not curved forwards, but follows the margin of the cavity and ends in a group of distinct tubercles, (d) the oblique carina extending from the lower margin of the chela to the carpal cavity shows a more or less distinct row of tubercles, which at the carpal cavity curves upwards

following the margin of the cavity, (e) the posterior of the two rows of tubercles near the base of the dactylus consists of larger tubercles, which are placed closer together, and (f) the lower half of the propodi of the walking legs does not show any velvety pubescence. The Leiden Museum possesses an extensive series of specimens of *U. affinis* from the West Indies (St. Thomas, St. Croix, Anguilla, St. Martin, Nevis, Barbuda, Antigua, Tobago, Aruba, Curaçao, Bonaire, Aves Islands) among which there are syntypes of the species (St. Martin, leg. H. E. van Rijgersma, don. Mus. Philadelphia). This material clearly shows that the differences between the two species are constant. Some of the West Indian specimens mentioned by Rathbun (1918) under *Uca mordax* were compared with material of *U. affinis* now in the Leiden Museum and proved to be conspecific with it. Rathbun's (1918, pl. 134 figs. 3, 4) plate shows a specimen (from British Honduras), which might be *Uca vocator* (Herbst) (see p. 274). The only certain records of the species therefore are those by Crane (1943) from Venezuela and by Smith (1870) from Belém, Brazil. The Leiden Museum possesses furthermore 4 males and 2 females from Ilha do Marajó near Belém, N. Brazil (near farm of L. Santos, 8 June 1954, leg. W. Forster & O. Schindler, don. Mus. Munich).

Occurrence in Suriname. Though there are no previous Suriname records of the species, it is quite common there. It is found near the mouths of the rivers in muddy places where the water is salt or brackish. It is found higher up the rivers than any of the other species and probably can tolerate lower salinities; this conclusion checks quite well with Crane's (1943) observations. The name for the fiddler crabs, "odi odi botoman" (= bye, bye, man in the boat) therefore probably is mainly based on this species.

***Uca (Minuca) rapax*** (Smith, 1870) (textfigs. 64d-f, 65;  
pl. XIV figs. 4-6, pl. XV fig. 3)

Museum Leiden

Cocos Polder, Coronie; bank of a ditch south of the east-west dike which divides the polder in two halves; just above water level; 11 April 1957; L. B. Holthuis no. 1237. — 4 males, 4 females.

Cocos Polder, Coronie; bank of a ditch on the south side of the outer (= sea) dike; 11 April 1957; L. B. Holthuis no. 1238. — 4 males.

Cocos Polder, Coronie; in dry mud north of the outer dike; 11 April 1957; L. B. Holthuis no. 1239. — 9 males, 4 females.

In parwa (= *Avicennia nitida* Jacq.) forest between the Cocos Polder and the sea, Coronie; rather dry muddy bottom; 11 April 1957; L. B. Holthuis no. 1241. — 13 males, 4 females.

Coronie; June 1911; W. C. van Heurn. — 8 males, 2 females.

Up to 3 km N of the highway between Coronie and Paramaribo at 21.6 km E. of

Coronie; 21 December 1948; 1948-1949 Suriname Expedition nos. 4413, 4416. — 26 males, 7 females (1 ovigerous), 1 intersex.

2.6 to 2.7 km N. of the highway Coronie-Paramaribo at 21.6 km E. of Coronie; 21 December 1948; 1948-1949 Suriname Expedition no. 4419. — 5 males, 1 female.

3 km N. of the highway Coronie-Paramaribo at 21.6 km E. of Coronie; parwa (= *Avicennia nitida* Jacq.) forest, clayish bottom; 20 December 1948; 1948-1949 Suriname Expedition no. 4410. — 2 females.

Muddy bank of ditch near the mouth of the Coppename River near Boskamp, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 7 males, 4 females.

Muddy shore of Coppename River near its mouth, Boskamp; 2 April 1957; L. B. Holthuis no. 1214. — 20 males, 3 females.

Bank of the Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; 1 April 1957; L. B. Holthuis no. 1208. — 10 males, 10 females.

East bank of the mouth of the Suriname River near Braamspunt; mud; 5 April 1957; L. B. Holthuis no. 1219. — 21 males, 4 females.

Suriname River near Paramaribo; 1907; M. D. Horst. — 1 male, 2 females.

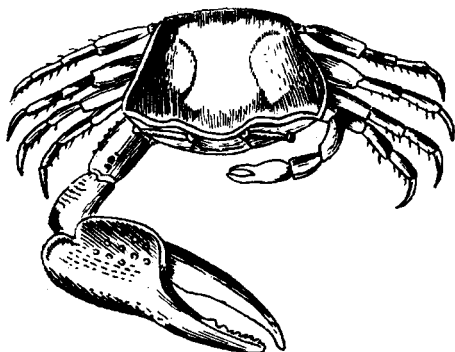


Fig. 65. *Uca rapax* (Smith)? After De Geer, 1778.

Fisheries Service Station "Matappica" at Matappica Canal, about 2 km from the sea coast; in muddy ditch; 6 April 1957; L. B. Holthuis no. 1221. — 4 males, 2 females.

Mouth of Matappica Canal; mangroves; 15-30 August 1957; A. C. J. Burgers. — 102 males, 54 females (1 ovigerous).

Sea shore near the Wiawia Bank, N. E. Suriname; parwa (= *Avicennia nitida* Jacq.) forest, muddy bottom; 12 November 1948; 1948-1949 Suriname Expedition no. 2632. — 6 males, 2 females (1 ovigerous).

Suriname; 1939; D. C. Geijskes. — 1 female.

#### Museum Amsterdam

Paramaribo; Koloniaal Instituut. — 14 males, 1 female.

Suriname; Koloniaal Instituut. — 3 males.

#### Museum Hamburg

Paramaribo; C. Heller; received 4 August 1908. — 1 female.

Description. Rathbun, 1918, p. 397, pl. 140; Crane, 1943, p. 40, figs. 1A-C.

Remarks. The carapace breadth of the specimens examined varies between 9 and 34 mm, the ovigerous females having cb. 12 to 27 mm. The species

attains a larger size than *Uca mordax*. The main differences between the two are:

1. The front in *U. rapax* is less than  $1/3$  of the anterior breadth of the carapace.

2. The teeth on the lower orbital border are distinct, especially the external being conspicuous.

3. The palm of the large chela in the male, even in very large specimens, shows a distinct lower carina.

4. The dorsal marginal carina of the carpal cavity follows the margin of the cavity, and in its distal part is directed downward. It is not connected with the base of the dactylus by a row of tubercles.

5. The oblique carina in the lower half of the inner surface of the palm of the large chela shows a distinct row of tubercles, which near the carpal cavity sometimes curves upwards, following the margin of the cavity.

6. The two rows of tubercles on the inner surface of the palm near the base of the dactylus are parallel and stand close together.

7. Between the posterior of these rows and the carpal cavity there are only a few very small tubercles.

8. The first three walking legs show a short velvety pubescence on the upper margin of the merus and in the upper part of the carpus and propodus. The lower part of the latter two joints, even in old specimens, is without this velvety pubescence, though stiff and long bristles are scattered all over the legs.

9. The walking legs in *U. rapax* have the merus wider than in *U. mordax*.

10. The male pleopods differ in shape (cf. Crane, 1943, fig. 1A-C, and Crane, 1943a, fig. 1A-C).

Among the material collected east of Coronie (1948-1949 Suriname Expedition nos. 4413, 4416) an interesting aberrant specimen was found. This specimen, cb. 19 mm, has both chelipeds rather well developed, each being somewhat smaller than the large chela of a normal adult male. The two chelae are of practically the same size, measuring 16 mm. The tubercles, the ridges and the carpal cavity on the inner surface of the palm are far less distinct than in normal males. The width of the merus of the pereopods is about intermediate between those found in normal males and in normal females of this species. The abdomen is distinctly wider than that of a male, but much narrower than that of a female. Four pairs of pleopods are present, resembling those of a female, but in the first two the exopod is rather poorly developed. In my opinion the specimen has to be considered an intersex, as it combines male characters (large chela), with female (equal chelipeds; pleopods) and intermediate characters (walking legs; breadth of

abdomen). I do not know of any previous record of this phenomenon in *Uca rapax*, but Smith (1870a, p. 557) reported upon a male specimen of *Uca pugnax* (Smith), named by him *Gelasimus palustris*, from near New Haven, Connecticut, U.S.A., in which the "left cheliped is exactly like the larger cheliped of ordinary specimens, while the right one differs only in being a very little smaller, and in having the fingers slightly more incurved at the tips. In this character of equal chelipeds it agrees with the genus *Heloecius*. The specimen was very lively, and used both hands with equal facility". Morgan (1920, pp. 227, 228, fig. 1D) reported on a male of *Uca pugilator* (Bosc) with two large chelae and stated "It is interesting to note in the case of this male with two large claws that it differs from the ordinary males by doubling the kind of difference that distinguishes the normal male from the female. It can scarcely be said to be an inter-sex, for the difference is not in the direction of the opposite sex, but away from it. If some designation is called for, it might be said to be a super-male, or at least an over-clawed male". Unfortunately Morgan does not mention the other sexual characters of his specimen, which, if a true male, certainly is different from the Suriname specimen, which actually does have the features of an intersex (pl. 14 figs. 5, 6).

Type locality. Colon (= Aspinwall), Atlantic coast of Panama.

Distribution. S. Florida to Brazil and the West Indies. Graham (1955, p. 34, pl. 4 fig. 7) dealt with material from British Guiana, to which she gave the name "Mud Crab".

Occurrence in Suriname. *Uca rapax* is found in great numbers in the muddy areas of the coastal region of Suriname, in mangrove forests along the coast, as well as along the rivers and in ditches. In the Cocos Polder near Coronie the banks of the ditches were riddled with the holes of myriads of *Uca*, most of them belonging to the present species (pl. 2 fig. 2). *Uca rapax* is not found as far up the rivers as *U. mordax*, probably it does not tolerate the lower salinity there; Crane (1943) came to a similar conclusion with Venezuelan material. As far as I know, the species has not been reported before from Suriname. There is a possibility, however, that the specimen described and figured by De Geer (1778, p. 430, pl. 26 fig. 12) as *Cancer vocans* from "l'ocean de l'Amérique" is a specimen of the present species collected by Rolander in Suriname (fig. 65).

***Uca (Minuca) vocator*** (Herbst, 1804) (textfigs. 66, 67;  
pl. XIV fig. 1, pl. XV fig. 1)

Museum Leiden

Shore east of the mouth of the Nickerie River; 3 July 1949; D. C. Geijskes. —  
1 ovigerous female.

Cocos Polder, Coronie; in ditches near the projected pumping installation; muddy bottom; 11 April 1957; L. B. Holthuis no. 1240. — 1 female.

Dike on the north side of the Cocos Polder, Coronie; bank of ditch on the south side of the dike; 11 April 1957; L. B. Holthuis no. 1238. — 9 males.

Cocos Polder, Coronie; bank of a ditch south of the east-west dike which divides the polder in two halves; just above water level; 11 April 1957; L. B. Holthuis no. 1237. — 2 males.

2.6 to 2.7 km N. of the highway from Coronie to Paramaribo at 21.6 km E. of Coronie; 21 December 1948; 1948-1949 Suriname Expedition no. 4419. — 1 male, 1 female.

Muddy bank of ditch near the Coppename River near its mouth, Boskamp, about 95 km W. of Paramaribo; 2 April 1957; L. B. Holthuis no. 1213. — 2 males, 2 females.

Muddy shore of the Coppename River near its mouth, Boskamp; 2 April 1957; L. B. Holthuis no. 1214. — 2 males.

Bank of the Suriname River near plantation "Purmerend", Leonsberg, N. of Paramaribo; 1 April 1957; L. B. Holthuis no. 1208. — 1 male.

Agricultural Experiment Garden, Paramaribo; in trench; 25 September, 21 October, and 7 December 1939; D. C. Geijskes. — 11 males, 7 females.

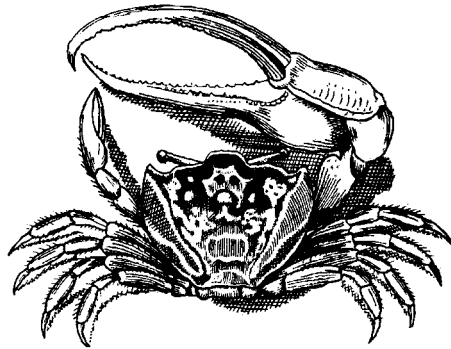


Fig. 66. *Uca vocator* (Herbst). After Herbst, 1804.

Paramaribo; 1911; W. C. van Heurn. — 1 female.

Bank of the Para River near its confluence with the Suriname River, between Paramaribo and Domburg; muddy shore; 31 March 1957; L. B. Holthuis no. 1202. — 23 males, 16 females (1 ovigerous).

Mouth of Matappica Canal; mud, mangroves; 15-30 August 1957; A. C. J. Burgers. — 21 males, 4 females (1 ovigerous).

Sea shore near the Wiawia Bank, N.E. Suriname; parwa (= *Avicennia nitida* Jacq.) forest, muddy bottom; 12 November 1948; 1948-1949 Suriname Expedition no. 2632. — 5 males, 2 females.

Galibi on the Marowijne River; small creek near plantation; 9 November 1948; 1948-1949 Suriname Expedition no. 2512. — 2 males, 1 female.

Suriname; don. Zoological Laboratory Utrecht. — 1 male.

#### Museum Berlin

Paramaribo; sea shore; C. Heller. — 1 male.

Paramaribo; brackish water; 28 August 1908; C. Heller. — 4 males, 1 female.