

BEAUFORTIA

INSTITUTE OF TAXONOMIC ZOOLOGY (ZOOLOGICAL MUSEUM)
UNIVERSITY OF AMSTERDAM

Vol. 41, no. 15

October 22, 1990

NOTES ON *SALMONEUS ARUBAE* (SCHMITT, 1936) (CRUSTACEA, DECAPODA, CARIDEA)

L. B. HOLTHUIS

Rijksmuseum van Natuurlijke Historie, P.O. Box 9517, 2300 RA Leiden, the Netherlands

ABSTRACT

A redescription is given of *Salmoneus arubae* (Schmitt, 1936), based on new material collected at the Island of Curaçao, the Netherlands Antilles.

Investigations on the interstitial fauna of the Netherlands Antilles carried out in 1984 by Prof. Dr. J. H. Stock of Amsterdam University, and his group of collaborators, produced also interesting material of species that cannot be classed as true members of the interstitial fauna. One of such species is *Salmoneus arubae*, an Alpheid shrimp, described in 1936 after a single incomplete specimen; no new finds of this species have been reported after the original description.

At four occasions prof. Stock collected this *Salmoneus* using a Bou-Rouch pump in the marine interstitial of the S.W. coast of Curaçao; he obtained 5 specimens in all. This new material now makes it possible to complete the original description (the larger first leg was missing in the holotype) and to give some information on the variability of some of the characters of the species.

It is a pleasure to dedicate this paper to Prof. Dr. J. H. Stock Jzn at the occasion of his retire-

ment. The subject of the paper is especially appropriate as it was prof. Stock, who collected the material and immediately recognized it as something of special interest.

The drawings illustrating this article are made by Mr. C. H. J. M. Fransen, curator of Crustacea of the Rijksmuseum van Natuurlijke Historie, to whom I express here my deep gratitude for helping me in this respect.

Salmoneus arubae (Schmitt, 1936)

Jousseumea arubae Schmitt, 1936: 366-367, pl. 12 figs. a-g.

Salmoneus arubae - Chace, 1972: 79.

Material

1. J. F. Kennedy Boulevard, 500 m E. of Concorde Hotel, Willemstad, S.W. coast of Curaçao, Netherlands Antilles, 12°07'13"N 68°57'50"W; collected with Bou-Rouch biophreatic pump at 1 m seaward of highwater line, at a sediment depth of 0.5 m; sediment coarse sand, salinity 40‰; 29 May 1984; J. H.

Amsterdam Expeditions to the West Indian Islands no. 68.

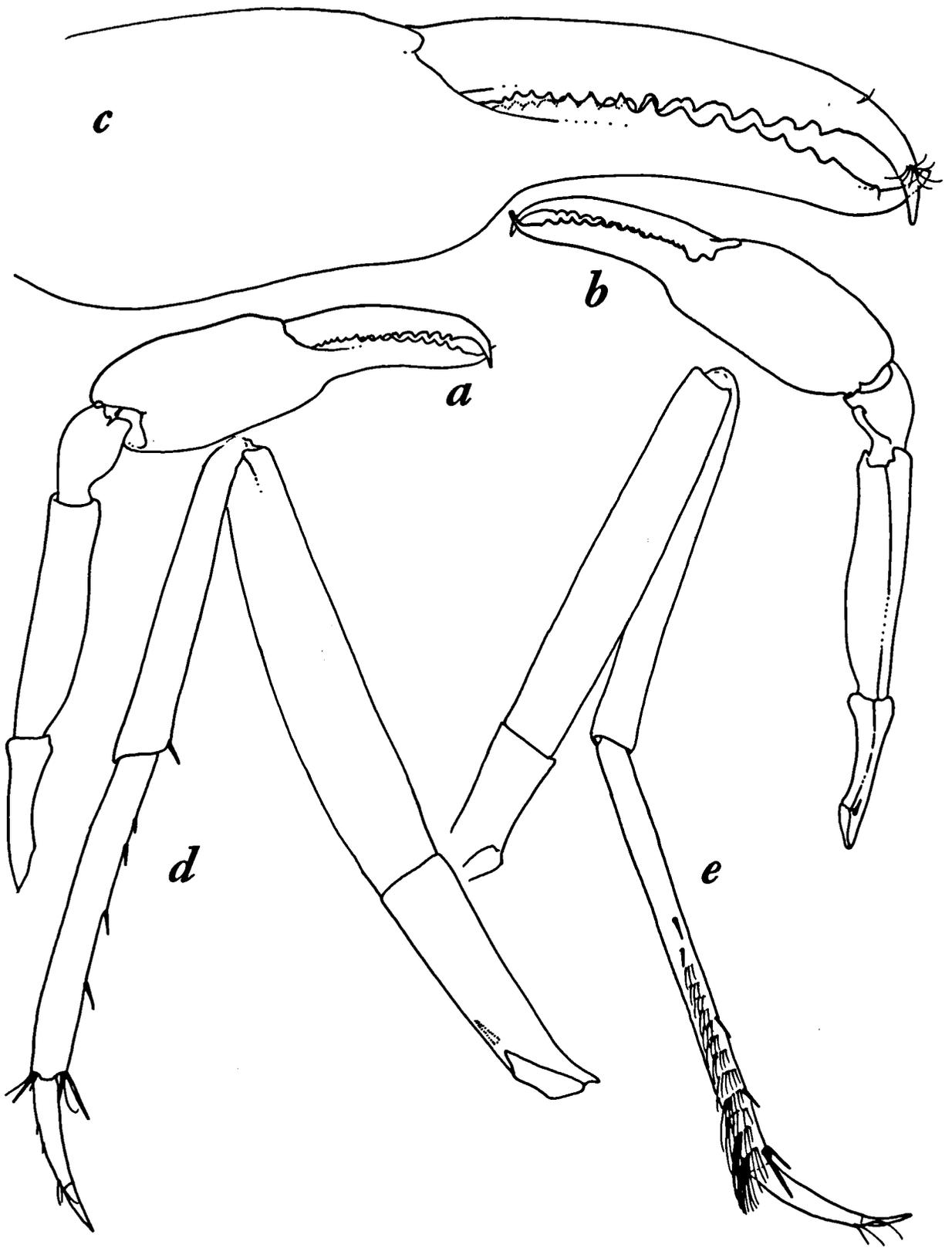


Fig. 1. *Salmoneus arubae* (Schmitt, 1936), specimen from Sta. 84-127. a-c, large first pereiopod. a, inside view; b, outside view; c, chela; d, third pereiopod, inside; e, fifth pereiopod. a, b, $\times 24$; c-e, $\times 60$.

Stock, no. 84-127. - 1 specimen, cl. 4.5 mm, tl. 11 mm.

2. Same locality and collecting gear; taken at 3 m seaward of highwater line at a sediment depth of 0.75 m; sediment coarse sand and coral grit, salinity 40‰; 30 May 1984; J. H. Stock, no. 84-133. - 1 specimen, cl. 5 mm, tl. 13 mm.

3. Same locality and collecting gear; taken at 3.5 m seaward of highwater line at a sediment depth of 0.75 m; sediment coarse, mostly sand and coral rubble; 1 June 1984; J. H. Stock, no. 84-139. - 2 specimens, cl. 1.3 and 1.8 mm.

4. Blauw Baai, S.W. coast of Curaçao, slightly N.W. of Piscadera Baai and Willemstad, 12°08'12"N 68°58'57"W; eastern part of beach, collected with Bou-Rouch pump in the surf zone; sediment of very fine pebbles; 23 May 1984; J. H. Stock, no. 84-93. - 1 specimen, cl. 1.5 mm.

DESCRIPTION

The rostrum is rather variable in shape. In some specimens it reaches almost to the end of the third segment of the antennular peduncle, in most it does not advance beyond the end of the second segment. It usually is wider and blunter than that of *Salmoneus evermanni* (Rankin, 1898), but in some specimens the tip narrows more strongly than shown in Schmitt's figure. The lateral teeth are short and wide in all specimens, in some they are more conspicuous than in others, but they are never so narrow as in *S. evermanni*. All specimens show a short median longitudinal ridge dorsally on the tip of the rostrum; this ridge usually does not extend posteriorly behind the level of the lateral teeth, and, as also indicated by Schmitt (1936), is only visible when the upper surface of the rostrum is superficially dried. In the young specimens, the surface of the carapace is smooth and shiny, usually slightly pitted. In all specimens there is a longitudinal low and blunt ridge, or actually an elongated elevated area, in the anterior half of each lateral surface of the carapace, with a parallel groove above it. In the larger specimens the median surface of the

carapace between the two longitudinal ridges is provided with small irregular rounded and elongate depressions, that give the surface a somewhat rough and eroded appearance. The posterior branchial region of the carapace sometimes shows an oblique not very distinct ridge in the larger specimens, while an indication of a median cervical depression may be noted. As some of the specimens are slightly shrivelled by the action of the preservative, it is difficult to be certain which features are natural and which are caused artificially. Below the longitudinal ridges, the lateral surface of the carapace is pitted as is also the dorsal surface of the abdominal somites. The telson agrees well with the figure provided by Schmitt (1936).

The stylocerite usually reaches to or almost to the end of the second segment of the antennular peduncle, it hardly ever reaches beyond. The inner branch of the upper antennular flagellum is very short and its free portion consists of about 5 or 6 segments.

The scaphocerite is about 0.5 to 0.6 times as wide as long. The outer tooth is distinct, it sometimes attains the end of the lamella, but usually falls short of it.

The larger first pereiopod, which lacks in the holotype, is well developed and differs greatly from the shorter leg in size and shape. It is present in both larger specimens. The fingers are about as long as the palm, they are slender and are laterally compressed, straight with only the tips strongly curved; the two tips are crossing. The cutting edges bear about 15 distinct teeth, the proximal of which are the smallest and placed close together; the teeth are placed over the full length of the cutting edge, only the extreme distal part being unarmed. Just outside this unarmed portion there is a small rounded knob-like tubercle. The teeth on the cutting edge are triangular and sharply pointed. The palm is swollen, being distinctly wider and higher than the fingers combined. The lower margin of the palm merges with that of the fixed finger under a sigmoid curve. The palm is oval in transverse section and shows no ridges, teeth or twists, its surface is smooth. The carpus is half as long as the palm; it is short and cup-

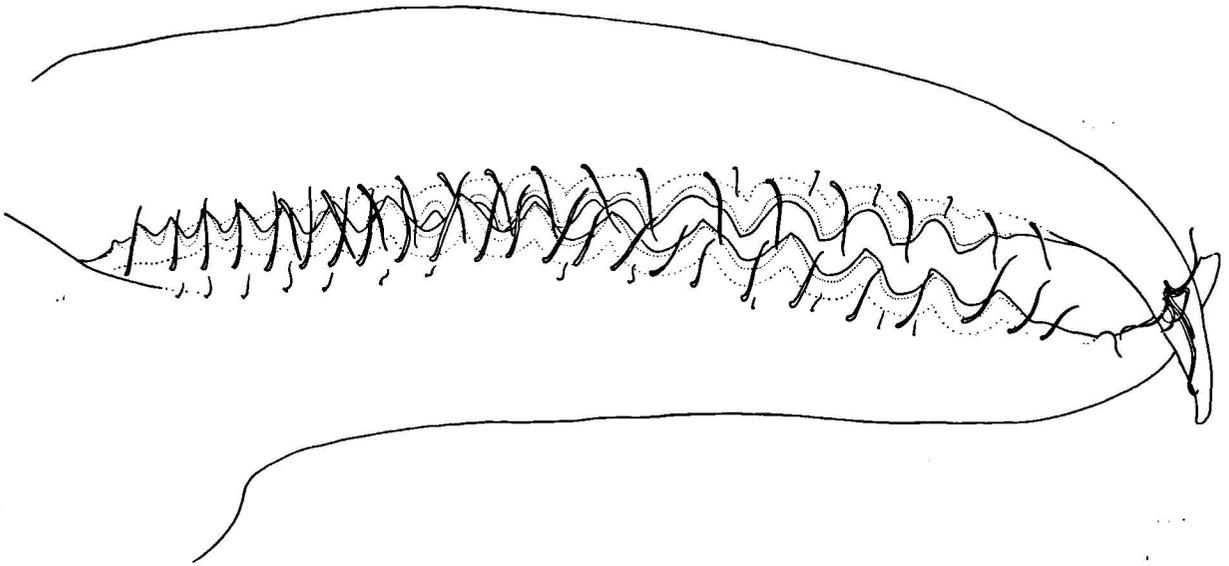


Fig. 2. *Salmoneus arubae* (Schmitt, 1936), fingers of large first cheliped. $\times 120$.

shaped, being slightly constricted near the anterior margin and distinctly narrowed in the basal part. The anterior margin shows a blunt inner lobe. The merus is longer than the palm and about four times as long as wide. It shows no teeth or spines. The lower surface is flattened or somewhat concave. The ischium is about $3/4$ as long as the merus and likewise unarmed but for a movable spinule in the basal part of the outer surface. The smallest of the examined specimens has both first legs; these are slightly different in size, and their shape is rather similar. This evidently is due to the fact that the animal is not yet full grown.

The second leg is well described and figured by Schmitt (1936).

The third leg is slightly more slender than the one figured by Schmitt. In all specimens in which this leg is still present, the dactylus is slightly less than half as long as the propodus, being usually slightly longer and more slender than shown in Schmitt's figure. The character of the short dactylus distinguishes this species immediately from *S. evermanni* in which the dactylus is more than half ($5/7$ according to Christoffersen, 1982: 94) as long as the propodus. The posterior margin of the propodus carries 4

small spines and a larger one distally. The carpus is about as long as the propodus and has a small distoventral spinule. The merus is almost as long as the propodus and dactylus together, it is wider than the distal three segments. The ischium is about as long as the merus and bears a movable spine in the basal part.

The fifth leg has the dactylus less than $2/5$ as long as the propodus. The distal part of the pro-



Fig. 3. Locality off J. F. Kennedy Boulevard, Willemstad, where *Salmoneus arubae* (Schmitt) was collected. The Bou-Rouch pump in the photograph is at 4 m seawards of the highwater line. Photograph J. H. Stock, 1984.

podus carries several transverse rows of hairs and some spinules in the posterior part. The carpus is somewhat shorter than the propodus and almost as long as the merus. The ischium is less than half as long as the merus and is unarmed.

The largest specimen most likely is a female, judging by the wide pleura, which form, what may have been a brood pouch. It, like the other large specimen, has a distinct appendix masculina on the second pleopod; a feature also found in the females of all other species of *Salmoneus* checked thusfar on this point (Carvacho, 1989: 253-256).

Size. — Schmitt's holotype has a total length of 13 mm. The largest two specimens of the present material have a total length of 13 and 11 mm (cl. 5 and 4.5 mm). The carapace lengths of the smaller specimens varies from 1.3 to 1.8 mm.

Colour. — The colour of a living specimen (no. 84-133) was described by prof. Stock (in litt., 4 August 1986) as follows: "Carapace dorsally orange-brown, eye black, rest of the body unpigmented".

Habitat. — The holotype was collected by Dr. P. Wagenaar Hummelinck from "between corals from a "Schorrenfläche", about 1 foot deep"; the indicated depth is that of the water. All the present specimens were collected with a Bou-Rouch biophreatic pump in the marine interstitial; a description of this pump is given by Bou & Rouch (1967: 369-370). The pump was driven into the substrate at fixed distances (50 cm apart) seaward of the highwater line; it was pushed into the sediment up to depths of 50 to 75 centimeters, from which depths the interstitial water was pumped into a net which caught the organisms. In all instances the sediment was quite coarse, consisting of coarse sand, coral grit, coral rubble and fine pebbles. All stations were truly marine, the salinity being about 40‰. Of some of the stations the more conspicuous accompanying fauna was noted, as follows: Polychaeta (sta. 127, 139),

Oligochaeta (127, 133, 139), Sipunculida (127), Nematoda (139), Mollusca (*Caecum*) (127, 133), Pycnogonida (139), Ostracoda (139), Copepoda (Harpacticoida and Cyclopoida) (133, 139), Amphipoda (Hadziidae, 127, 133, 139; *Bogidiella*, 139; *Psammogammarus*, 139), Tanaidacea (133), Isopoda (*Curassanthura*, 127), Thermosbaenacea (*Halosbaena acanthura* Stock, 1977; 127, 133, 139).

Distribution. — So far the present species has only been reported from two islands of the Netherlands Antilles: Curaçao and Aruba, both lying off the north coast of Venezuela. The holotype was collected at Punta Braboe on the S.W. coast of Aruba, slightly N.W. of Oranjestad, at 12°32'N 70°04'W (18 July 1930, leg. P. Wagenaar Hummelinck). The present material originates from two localities on the S.W. coast of Curaçao: J. F. Kennedy Boulevard, Willemstad, and Blauw Baai, slightly N.W. of Willemstad.

LITERATURE

- BOU, C. & R. ROUCH, 1967. Un nouveau champ de recherches sur la faune aquatique souterraine. Comptes Rendus hebdomadaires Académie des Sciences, Paris, (D) 265 (4): 369-370.
- CARVACHO, A., 1989. Sur l'appendix masculina chez *Salmoneus* (Decapoda, Alpheidae). Crustaceana, 57 (3): 253-256.
- CHACE, F. A., 1972. The shrimps of the Smithsonian-Bredin Caribbean Expeditions with a summary of the West Indian shallow-water species (Crustacea: Decapoda: Natantia). Smithsonian Contributions to Zoology, 98: i-x, 1-179.
- CHRISTOFFERSEN, M. L., 1982. Distribution of warm water alpheoid shrimp (Crustacea, Caridea) on the continental shelf of eastern South America between 23° and 35° lat.S. Boletim Instituto oceanografico São Paulo, 31: 93-112.
- SCHMITT, W. L., 1936. Macruran and anomuran Crustacea from Bonaire, Curaçao and Aruba. Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930. No. 16. Zoologische Jahrbücher, (Syst.) 67: 363-378, pls. 11-13.

Received: November 7, 1989