KONINKL. NEDERL. AKADEMIE VAN WETENSCHAPPEN — AMSTERDAM
Reprinted from Proceedings, Series C, 66, No. 1, 1963

ZOOLOGY



# TWO NEW SPECIES OF FRESH-WATER SHRIMP (CRUSTACEA DECAPODA) FROM THE WEST INDIES

BY

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(Communicated by Dr. L. D. BRONGERSMA at the meeting of September 29, 1962)

In the collection of the Rijksmuseum van Natuurlijke Historie two specimens of Atyid shrimp were found which proved to belong to an undescribed species. These specimens originate from St. Thomas, Virgin Islands, and were obtained by the Museum around 1898.

Material of an other new species of shrimp was very recently received. It was sent in by Dr. R. G. HARTNOLL, who collected it in a cave at the island of Jamaica. The specimens belong to the Palaemonid genus *Troglocubanus* which so far was known only from Cuba. It is a very pleasant duty to thank Dr. HARTNOLL for his kindness in placing these specimens at my disposal.

The abbreviation cl. is used here for carapace length.

## **Atya lanipes** new species (figs. 1, 2)

St. Thomas, Virgin Islands; C. EGGERT. — 2 males 70 and 73 mm (cl. 23 and 25 mm). R.M.N.H. Crust. no. D. 2338.

Description. — The rostrum is triangular in dorsal view, without any indication of lateral teeth. It tapers rather regularly towards the acute tip which reaches to the end of the first segment of the antennular peduncle. The lateral margins are somewhat sinuous. The median part of the rostrum is elevated to a carina, which anteriorly is very distinct and shows a sharp edge which reaches all the way to the tip of the rostrum; posteriorly the carina becomes wider and less conspicuous, to disappear gradually. The proximal half of the lateral margins of the rostrum are elevated so that between them and the median carina there is a concave area. The lower surface of the rostrum also bears a median carina; this carina bears two or three teeth in its distal half. The antennal spine of the carapace is distinct and placed on the lower orbital angle. The pterygostomian angle is forwards produced and ends in a sharp tooth, which reaches distinctly farther than the antennal spine. The carapace is covered by a soft short downy pubescence, but otherwise is smooth.

Also the abdomen is smooth and pubescent. The pleura of the fourth and fifth abdominal somites are bluntly angular posteriorly, but are not

produced into a spine or tooth there. The telson is slightly more than twice as long as wide, it is pubescent, and shows a median depression which is flanked on either side by a longitudinal row of about 6 or 7 spinules. These rows start slightly before the middle of the telson and continue to the postero-lateral angles. Towards the middle of their length these rows converge slightly, to diverge more strongly in the distal part.

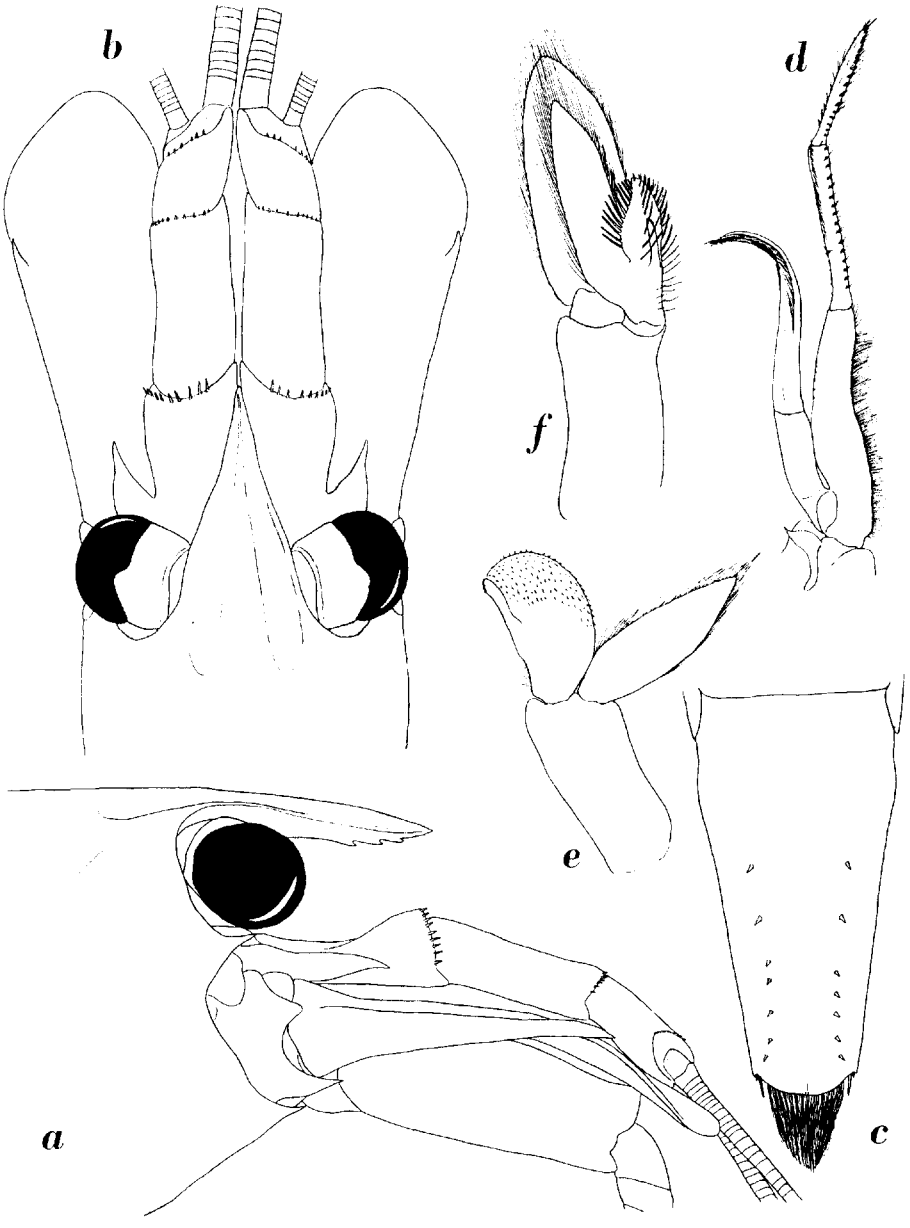


Fig. 1. *Atya lanipes* new species. a, anterior part of body in lateral view; b, anterior part of body in dorsal view; c, telson in dorsal view; d, third maxilliped; e, first pleopod of male; f, second pleopod of male. a–c, e, f, × 5; d, × 3.

The posterior margin of the telson is broadly rounded. In its middle there is a short posteriorly directed spine which is implanted just before the margin and reaches over it with its tip. This spine forms the end of a short median longitudinal carina. At each lateral end of the posterior margin there are two spines, the outer of which is very short, the inner is more than twice as long as the outer and reaches slightly beyond the

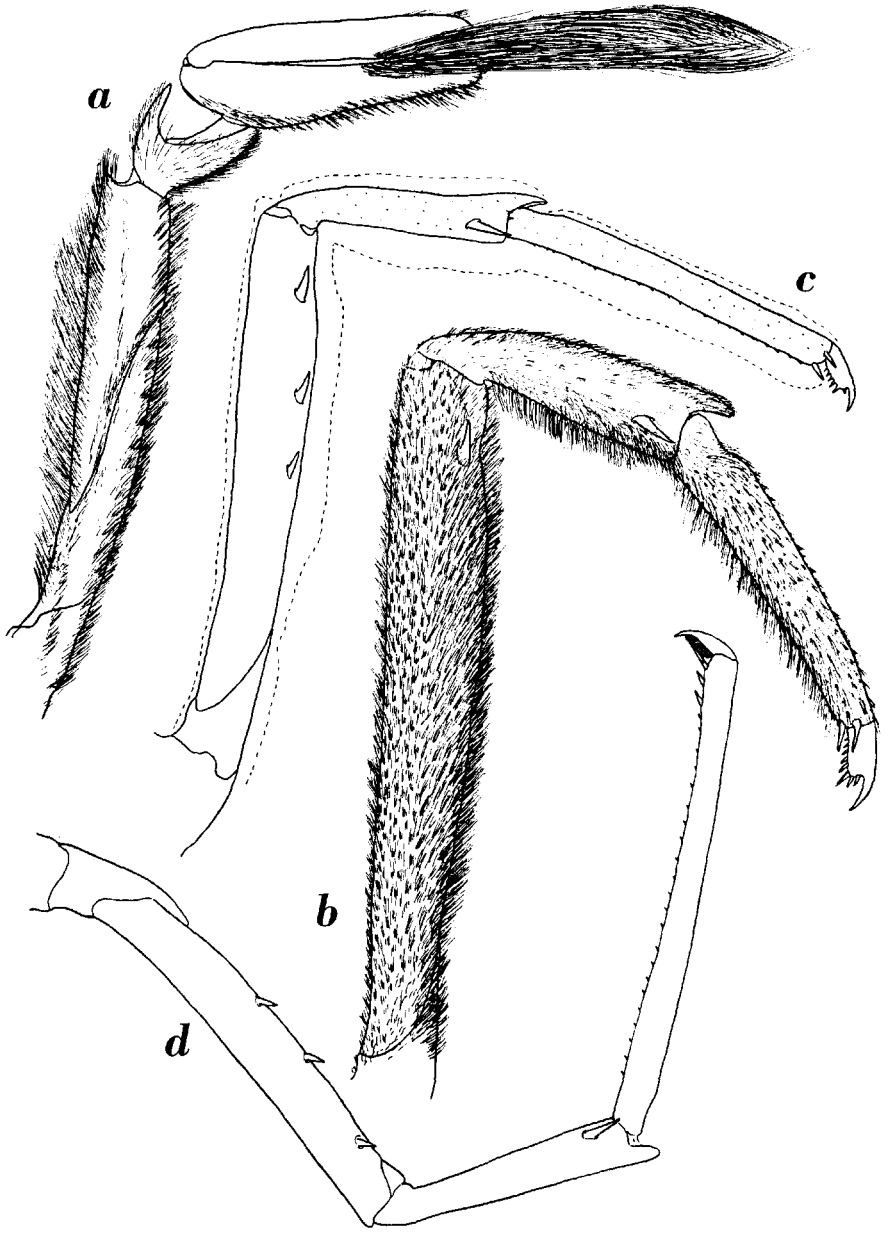


Fig. 2. *Atya lanipes* new species. a, first pereiopod; b, third pereiopod; c, fourth pereiopod (the dotted line indicates the outline of the pubescence, which otherwise is not figured); d, fifth pereiopod (pubescence not figured). a–d, × 5.

end of the telson. The postero-lateral angle of the telson is hardly at all produced and does not reach beyond the outer lateral spine. A transverse row of about 16 long plumose setae is implanted on the posterior margin, occupying all the space between the inner lateral spines. In the basal part of these setae a kind of articulation or a chitinous plug is visible.

The eyes are well developed. The cornea is globular, pigmented and slightly longer than the peduncle.

The antennular carina is high, with the upper margin truncate and the anterior margin slightly concave. The antennular peduncle is slender and has the anterior margin of all three segments with a row of short spinules. The stylocerite is pointed and reaches about 3/4 of the length of the basal segment. The second segment of the peduncle is about as long as the basal and distinctly longer than the third.

The antennal peduncle bears a strong tooth below the base of the scaphocerite. The peduncle itself reaches almost to the end of the antennular peduncle. The scaphocerite overreaches the antennular peduncle; its outer margin ends in a strong tooth, which is far surpassed by the lamella. The distal part of the lamella is widened so that it even projects beyond the outer margin proximal of the final tooth.

The third maxilliped reaches about to the end of the antennular peduncle; it is quite slender. It and all the legs are covered by a downy pubescence. The branchial apparatus is complete: all pereiopods have a pleurobranch, two arthrobranchs are present at the base of the third maxilliped and one on that of the first pereiopod, epipods are found on the maxillipeds and the first four pereiopods, all maxillipeds but none of the pereiopods have exopods. The first and second pereiopods are very similar. The dactylus and propodus are of equal length and form a chela without palm by that they articulate at their bases. The tips of the fingers bear the usual very long brushes of hair. The carpus is deeply excavated anteriorly for the reception of the basal part of the chela. The merus is rather slender, being about three times as long as broad. The third leg reaches with part of the propodus beyond the scaphocerite. The dactylus is short and ends in a strong dark coloured claw. Behind this claw the posterior margin of the dactylus is convex and bears a row of about 7 spinules, which become smaller proximally; for part of its length this row is double. The propodus is 3.5 times as long as the dactylus. The distal margin bears a strong spine externally. The outer surface of the propodus bears numerous very small and blunt spinules, each of which is surrounded by a tuft of long woolly plumose hairs. The spinules are so small and the hairs so long that the latter completely obscure the former. On the inner surface of the propodus the spines are stronger, but here too they are largely obscured by the pubescence. The pubescence is longest and most dense on the ventral surface of the propodus. The carpus is slightly shorter than the propodus; it bears a strong movable spine in the distal part of the ventro-external margin. The pubescence

here is similar to that of the propodus; the horny spinules on the outer surface are still smaller than those of the propodus and can hardly be discerned. The merus is somewhat longer than carpus, propodus and dactylus combined. It is slender and has a pubescence like that of the propodus; no spinules were observed on the outer surface, but a strong movable spine is present in the distal part of the ventro-external margin. The fourth leg reaches about to the end of the antennal peduncle. It is very similar to the third in shape, spinulation, and pubescence. The propodus is four times as long as the dactylus. The carpus and propodus are about as long as those of the third leg, but the merus is distinctly shorter and more slender. The merus is much shorter than carpus and propodus combined. In the distal half of its ventro-external margin it shows three strong movable spines, the distalmost of which is largest. The fifth leg reaches slightly less far than the fourth. The dactylus ends in a strong claw; the posterior margin of the dactylus is less convex than that in the fourth and third legs, and bears a row of comb-like arranged spinules of equal size. The propodus is about 6 times as long as the dactylus; its ventral margin ends in a strong spine which almost attains the base of the distal claw of the dactylus; near this strong spine the anterior margin of the propodus bears two strong but somewhat shorter spines. The posterior margin of the propodus bears a double row of about 24 spinules. These spinules as well as the spinules on the outer surface are obscured by the woolly pubescence, which is similar to that of the previous two legs. The carpus is slightly more than half as long as the propodus. The merus measures about 4/5 of the length of the propodus. The spinulation and pubescence of the carpus and merus is similar to that of these segments of the fourth pereiopod.

The endopod of the first pleopod of the male is very wide, almost semicircular, and provided with small downward directed spinules on the anterior surface. The appendix interna is slender but does not reach the end of the endopod. The appendix masculina of the second male pleopod is broad and leaf-like, it is about half as long as the endopod and about twice as long as the appendix interna. On its lateral margins a fringe of slender spines is implanted; these spines show a kind of articulation or a chitinous plug in the basal part. Similar spines, arranged in two longitudinal rows are also placed on the posterior surface of the appendix masculina; between these two rows lies the appendix interna. The uropods are much longer than the telson. The diaeresis of the exopod bears 24 to 27 small blunt spinules. The process of the protopodite which reaches over the base of the exopod is ovate, it ends in a sharp point and has both margins convex.

Type. — Holotype is the largest of the two specimens, the smaller being the paratype.

Remarks. — The present new species differs from all known East American species of the genus by the total absence of lateral teeth on

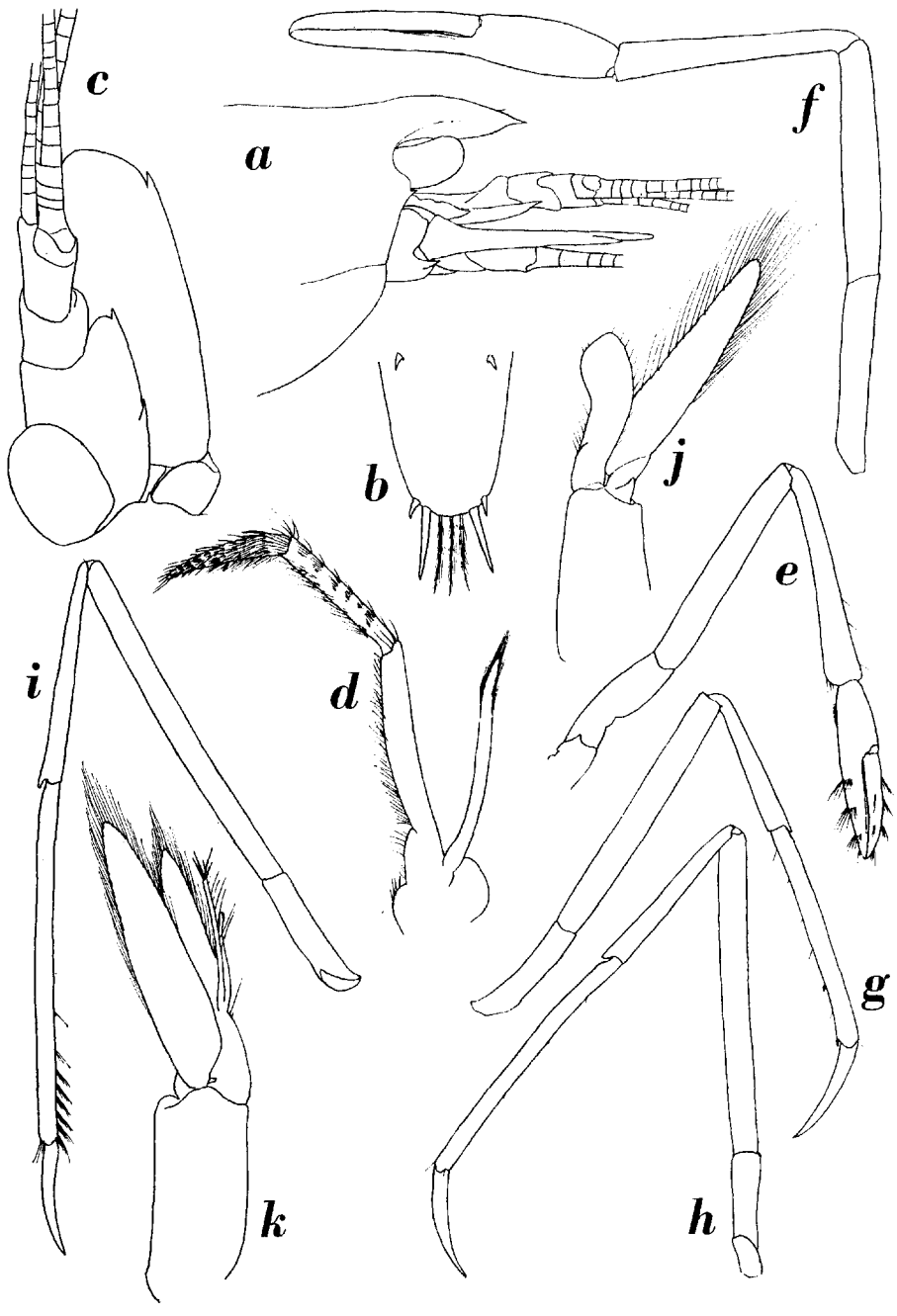


Fig. 3. *Troglocubanus jamaicensis* new species. a, anterior, part of body in lateral view; b, top of telson; c, eye, antennula, and scaphocerite, in dorsal view; d, third maxilliped; e, first pereiopod; f, second pereiopod; g, third pereiopod; h, fourth pereiopod; i, fifth pereiopod; j, first pleopod of male; k, second pleopod of male. a, × 9; b, × 25; c, × 17; d–k, ×12.

the rostrum, and by the very slender legs, which even in the adult males (and the size of the present specimens and the development of the copulatory organs indicate them as adult males) do not show the horny squames found in the other species. *Atya lanipes* shows most resemblance to *Atya africana* Bouvier from West Africa, which undoubtedly is its closest relative. From BOUVIER's species it may be distinguished, however, by the slender third pereiopods of the adult male, and by the different shape of the endopod of the first pleopod and that of the appendix masculina of the second pleopod of the male.

**Troglocubanus jamaicensis** new species (fig. 3)

Stream in limestone cave near Lucky Hill Cooperative Farm near Goshen, Jamaica; 11 March 1962; R. G. HARTNOLL. — 1 male 19 mm (cl. 8 mm), 2 females 17 and 22 mm (cl. 7 and 9 mm). R.M.N.H. Crust. no. D. 17446.

Description. – The rostrum reaches almost or quite to the end of the second segment of the antennular peduncle. The dorsal margin is convex; in the male and the larger female it is entire, in the younger female it has a small tooth just over the posterior margin of the orbit. The ventral margin of the rostrum bears no teeth. The tip of the rostrum is rather narrow and is sharply pointed. The lower orbital angle is broadly rounded; some distance below it the anterior margin of the carapace bears a minute antennal spine. No other spines are present on the carapace. There is a distinct branchiostegal suture.

The abdomen is smooth. The pleurae of the first three somites are broadly rounded, those of the fourth and fifth are narrower and end in a blunt angle. The sixth somite is somewhat longer than the fifth and measures about 3/4 of the length of the telson; its pleura are triangular with a narrowly rounded top, the postero-lateral angle shows a truncated process which reaches over the base of the telson and bears a sharp posteriorly directed spine in the upper part of the posterior margin. The anterior pair of dorsal spinules of the telson is placed some distance behind the middle of the telson; the posterior pair is placed closer to the anterior pair than to the posterior margin of the telson; in the smaller female only one pair of dorsal spinules is present. The posterior margin of the telson is rounded. There is a pair of spines in each postero-lateral angle. The outer of these spines is short, the inner is distinctly more than twice as long and much stronger. Between the inner spines the posterior margin bears three plumose setae.

The eyes are ovate with a bluntly rounded anterior end. They reach almost to the end of the stylocerite. The cornea is strongly degenerate and possesses no pigment.

The stylocerite is short, blunt and pressed against the basal segment of the antennular peduncle; it attains about the middle of the outer margin of that segment. The outer margin of the basal segment ends in

a distinct tooth, which almost reaches the end of the second segment; the anterior margin of the basal segment is convex. The second segment is broader than but about as long as the third. The fused part of the two rami of the upper flagellum consists of four articles; the free part of the shorter ramus of about 12 to 16 articles, it is about 4 to 6 times as long as the fused part.

The scaphocerite is broadly ovate, being about twice as long as broad. The outer margin is convex and ends in a distinct tooth, which is far overreached by the lamella. The lamella has a broadly rounded top. The antennal peduncle reaches about to the middle of the scaphocerite. Near the base of the scaphocerite the antennal peduncle shows a strong and sharply pointed external tooth.

The third maxilliped reaches about to the end of the scaphocerite. The first leg reaches with the chela or part of the carpus beyond the scaphocerite. The fingers are about 1.5 times as long as the palm. The carpus is about 4/3 as long as the chela and slightly shorter than the merus. The second legs are equal. They are far stronger than the first and reach with the chela beyond the scaphocerite. The fingers are slender, the combined height of the fingers is less than that of the palm; the cutting edges show no teeth. The palm is slightly swollen and measures 3/4 of the length of the fingers. The length of the carpus is 3/4 that of the chela and about as great as that of the merus. The third legs reach with the dactylus and a small part of the propodus beyond the scaphocerite. The dactylus is about half as long as the propodus, it is simple. The posterior margin of the propodus bears a few inconspicuous spinules. The carpus is 2/3 as long as the propodus and somewhat more than half as long as the merus. The fourth leg reaches with part of the propodus beyond the scaphocerite. The dactylus is about as long as that of the third leg, but the propodus is longer, being about 2.5 times as long as the dactylus. The carpus measures 2/3 of the length of the propodus, while the merus is distinctly longer than the propodus. The fifth pereiopod is the longest, it reaches with half the propodus beyond the scaphocerite. The propodus is three times as long as the dactylus; its posterior margin bears several transverse rows of rather long hairs in the distal part. The carpus is 2/3 as long as the propodus. The merus is as long as the propodus.

The endopod of the first pleopod of the male is ovate with the inner margin distinctly concave; it is more than half as long as the exopod. The appendix masculina of the second male pleopod is elongate and slender, it is distinctly longer than the appendix interna, but shorter than the endopod; it bears bristle-like hairs on the top and along the inner margin. The outer margin of the uropodal exopod ends in a fixed tooth to the inner side of which a small movable spine is placed.

Type. – Holotype is the single male specimen of the present material, the two females are paratypes.

Remarks. – The present species cannot be identified with any of the

four known species of the genus, all of which inhabit Cuba. From *Troglocubanus eigenmanni* (Hay) the new species differs by the short and practically unarmed rostrum and by having the antennal spine placed on the anterior margin of the carapace. *T. inermis* (Chace) differs from *T. jamaicensis* by lacking the antennal spine. *T. gibarensis* (Chace) has two or three dorsal teeth on the rostrum, and in that species the dactyli of the pereiopods are much shorter. *T. calcis* (Rathbun) probably is closest to the new species, but may be distinguished from it by the rostrum which reaches beyond the antennular peduncle, and by the much shorter dactyli of the last three pereiopods.

The occurrence of the genus *Troglocubanus* in Jamaica is of extremely great interest and it is an indication of the zoogeographical relationship between the two islands.

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