

REDISCOVERY OF *PARACERCEIS EDITHAE* BOONE (ISOPODA,
SPHAEROMATIDAE) WITH SUPPLEMENTARY NOTES ON
MORPHOLOGY AND HABITAT

BY

PETER W. GLYNN

Smithsonian Tropical Research Institute, P. O. Box 2072, Balboa, Canal Zone (Panamá)

Paracerceis edithae Boone, 1930, a eubranchiate sphaeromatid described from Gonave Bay, Haiti, has not been reported since its discovery over 40 years ago. Recent collecting in Puerto Rico indicates that this species may occur abundantly on the deeper sections of offshore coral reefs. Boone's (1930) description of *P. edithae* is deficient in several respects. Only large male specimens are present in the type collection, despite the claim that both sexes were represented. Her description, therefore, was based on the body morphology of large male specimens. As a result, no mention was made of sex or size differences. In addition, the character of the pleopods, stylet, pereopods and mouth parts were also omitted. The object of this paper is to provide a critical redescription of the species, emending and supplementing the original diagnosis where necessary, and to offer information on the habitat.

The material forming the basis of this paper was obtained by SCUBA diving off the southwestern coast of Puerto Rico, in order to extend a shore survey of the Isopoda (Menzies & Glynn, 1968) to greater depths. Coral rock overgrown with filamentous algae and sessile animals was broken loose from the reef base and transported to the surface in fine mesh cloth bags. The rock material was further broken and washed with 5% formalin in order to extract the isopods.

All illustrations were prepared from the Puerto Rican material collected at La Palma Reef, June 15, 1967. The isopods were mounted in glycerin and the drawings made with the aid of a camera lucida attachment. Verification of certain structures was obtained up to a magnification of $200\times$. Where not otherwise specified, the present description is mainly that of the illustrated mature male specimen.

***Paracerceis edithae* Boone, 1930 (figs. 1, 2, 3, 4)**

Paracerceis edithae Boone, 1930: 51-53, fig. 10.

Material. — 27 individuals of both sexes; submerged bank reef, ca. 10 km SSE of La Parguera, Puerto Rico, approx. $67^{\circ}01'W$ $17^{\circ}53'N$; 25 m depth; April 9, 1967; Cat. No. 135516, United States National Museum, Smithsonian Institution, Washington.

26 individuals of both sexes; La Palma Reef, La Parguera, Puerto Rico, $67^{\circ}03'25''W$ $17^{\circ}57'32''N$;

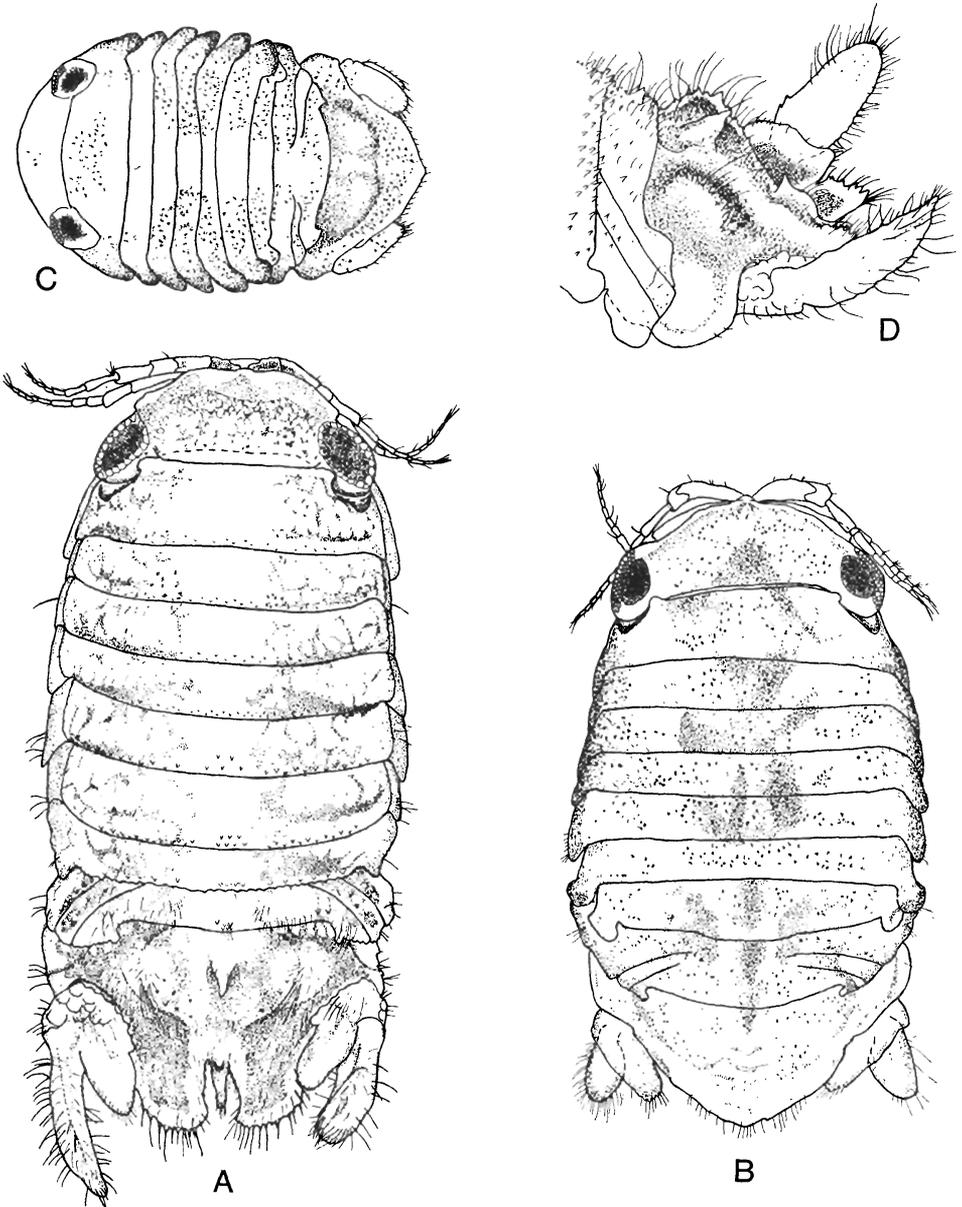


Fig. 1. *Paracerceis editbae* Boone, 1930. A, male, length 3.9 mm; B, female, length 3.1 mm; C, juvenile, length 2.0 mm; D, lateral view of male pleon in A.

20 m depth; June 15, 1967; Cat. No. YPM 7098, Peabody Museum, Yale University, New Haven, Connecticut.

10 male specimens, holotype and paratypes combined; Gonave Bay, Haiti; 10th Expedition of the Department of Tropical Research, New York Zoological Society; February 2 - May 10, 1927; Cat. No. 12398, American Museum of Natural History, New York.

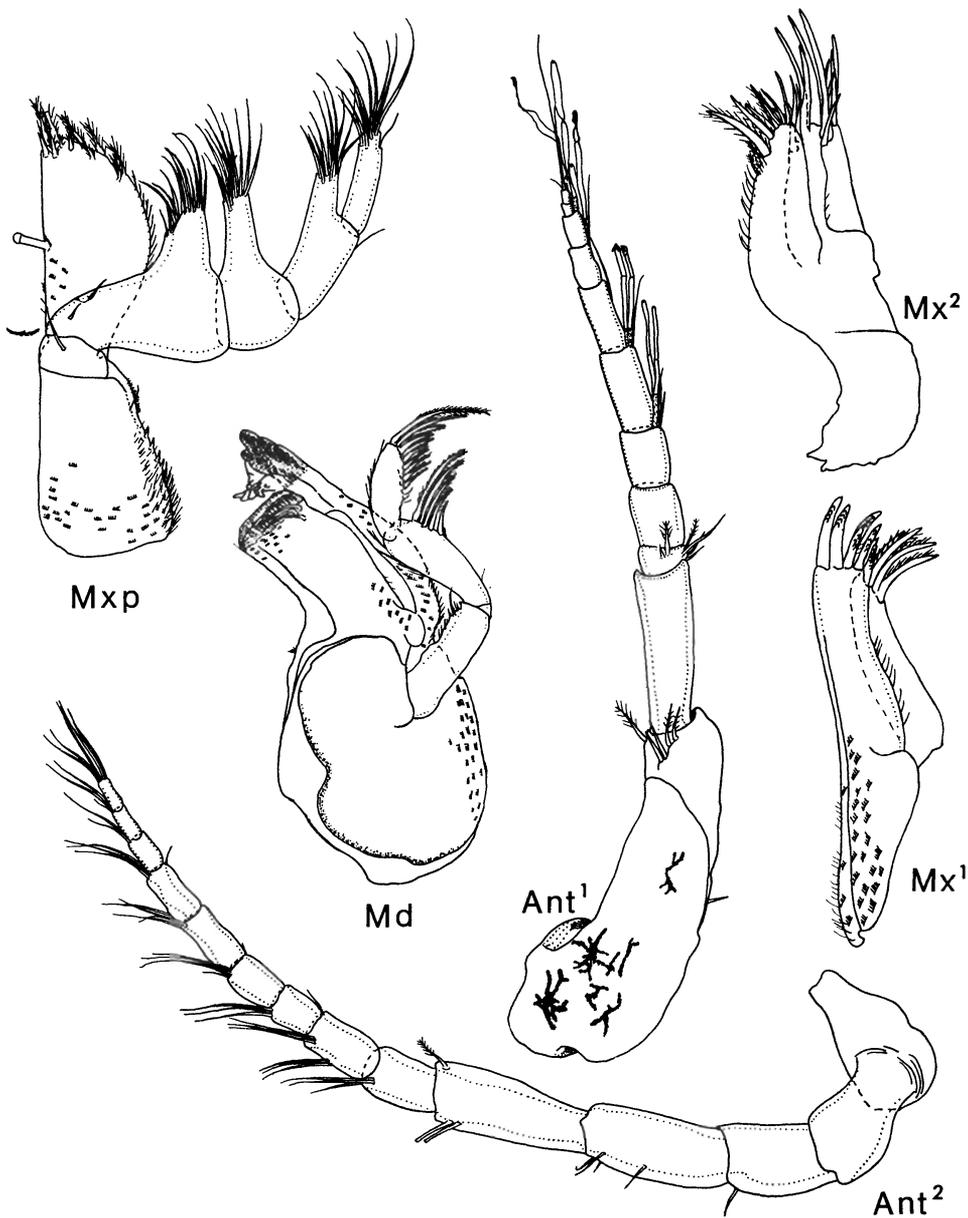


Fig. 2. *Paracerceis edithae* Boone, 1930. Mouth parts from male illustrated in Fig. 1, length 3.9 mm; antennae from 3.8 mm male.

Description. — Body of adult male differs significantly from Boone's description in the following respects: a, not decidedly convex from side to side, but of nearly equal width from first pereonite posteriorly to pleotelson; b, last pereonite and anterior pleonal segment subequal in size; c, anterior pleonal segment with

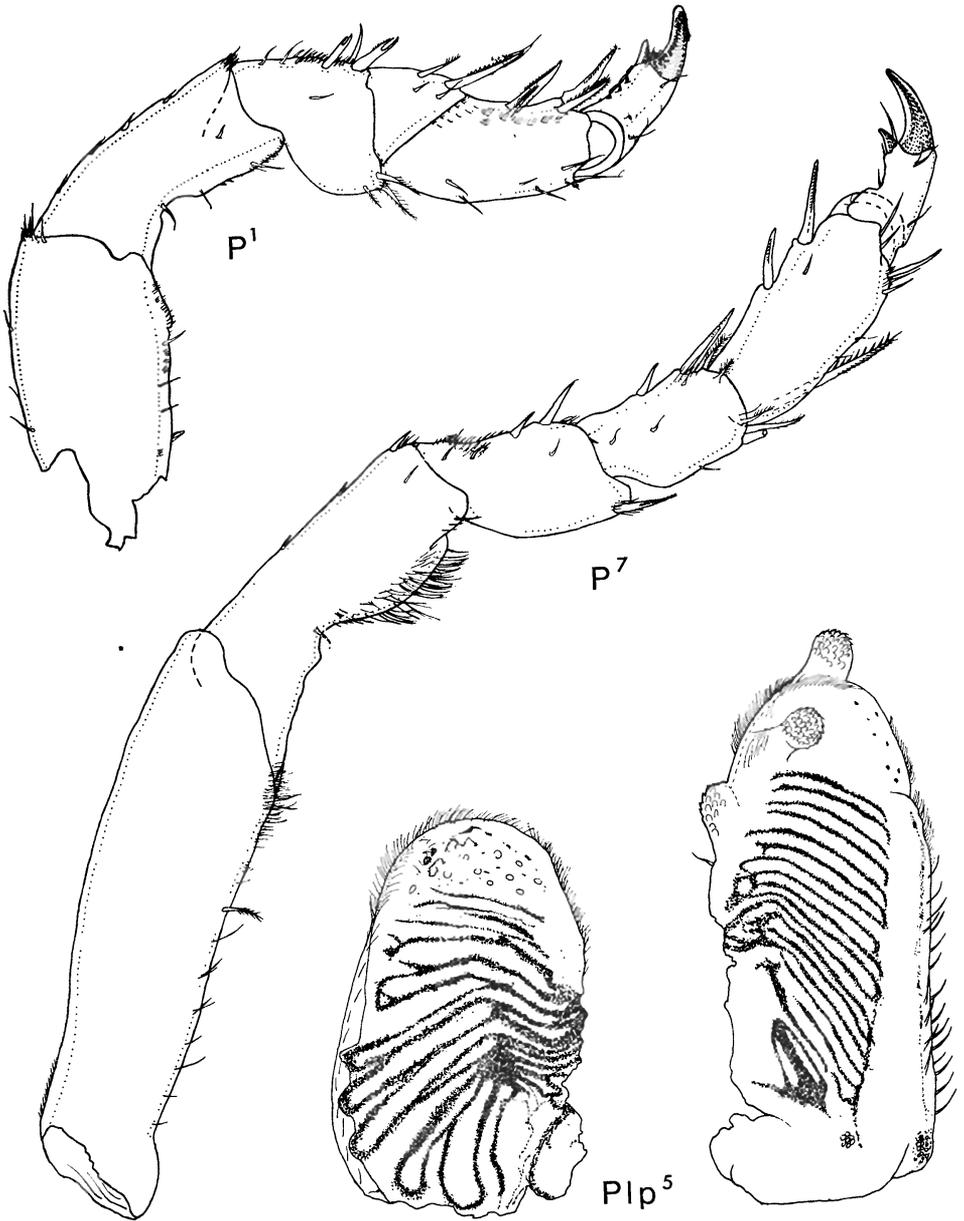


Fig. 3. *Paracerceis edisbae* Boone, 1930. Pereopods and pleopod from male illustrated in fig. 1, length 3.9 mm.

a pair of separate sutures that originate laterally and extend medially to posterior margin of pereonite 7 (omitted by Boone); d, posterior border of anterior pleonite not conspicuously produced and rounded medially, but with nearly even margin medial of pleonal articulations. Postero-lateral margins of anterior pleonite pro-

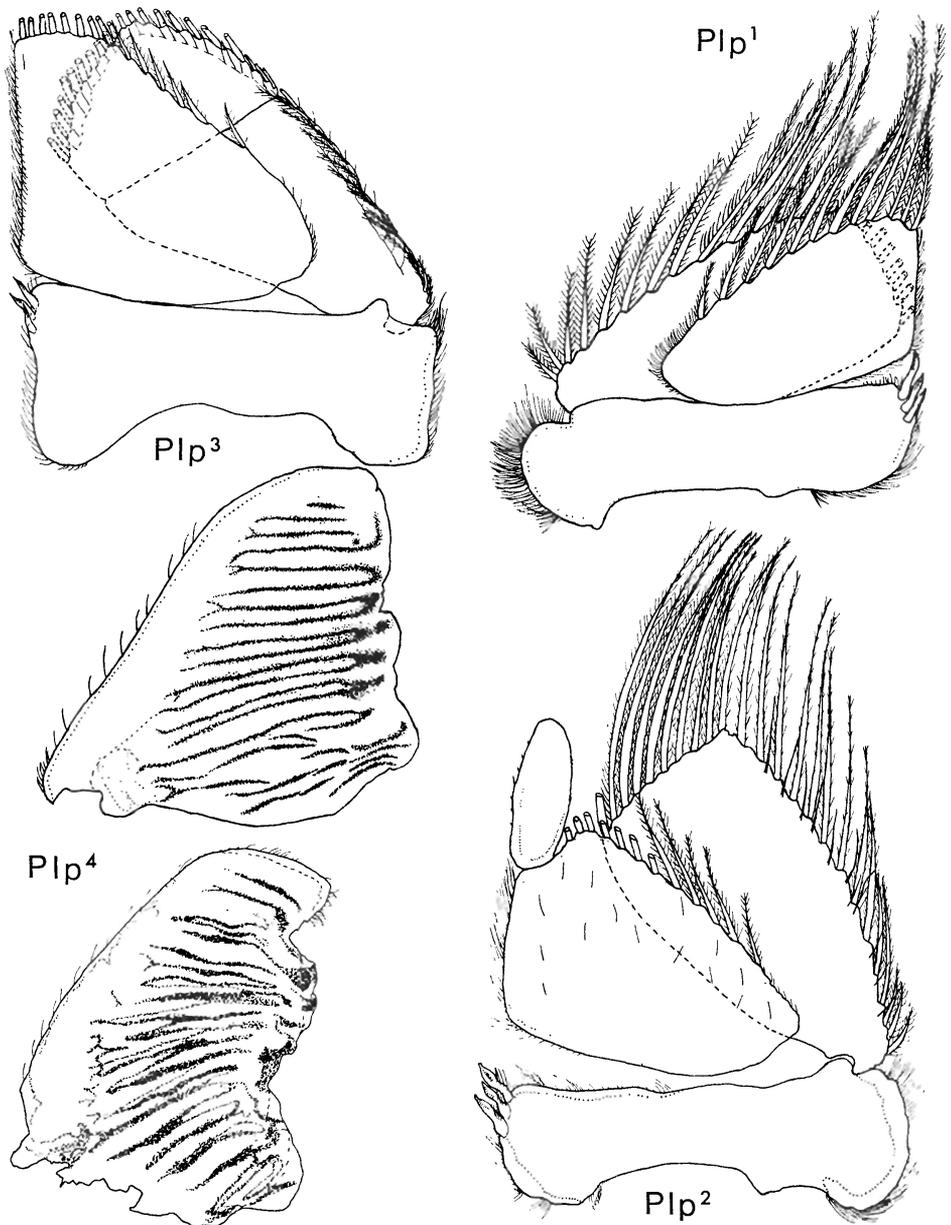


Fig. 4. *Paracerceis edithae* Boone, 1930. Pleopods from male illustrated in fig. 1, length 3.9 mm.

duced behind. Denticle in notch with broad-based spine at point of origin with pleotelson. Posterior border of pleotelson strongly crenulate. Rear half of body, from pereonite 4 or 5, densely hirsute. Body surface granulate, becoming spinose posteriorly. In side view pereonites 4 through 7 appear to possess two flanges

along posterior border due to linear arrangement of the spines. Mean body length of 13 mature male specimens 3.4 mm (table I).

TABLE I

Size measurements (mm) of the body of *Paracerceis edithae* Boone, 1930, illustrating the relatively greater width of mature female specimens. Length measured from anterior border of cephalon to posterior border of pleotelson; width is maximum dimension of pereon

Males			Females				Immatures
length	width	l/w	length	width	l/w	brood	length
3.1	1.6	1.9	2.6	1.5	1.7	+	1.8
3.2	1.6	2.0	2.8	1.8	1.6	—	1.8
3.2	1.5	2.1	2.8	1.7	1.6	+	1.9
3.2	1.8	1.8	2.9	1.7	1.7	+	2.1
3.3	1.8	1.8	2.9	1.6	1.8	+*	2.1
3.3	1.6	2.1	3.0	1.8	1.7	+	2.1
3.4	1.7	2.0	3.1	1.8	1.7	—	2.8
3.4	1.8	1.9	3.1	1.8	1.7	—	3.0 ♂
3.4	1.8	1.9					3.1 ♂
3.6	1.9	1.9					
3.6	1.9	1.9					
3.8	1.8	2.1					
4.0	1.8	2.2					
Mean 3.4		2.0	2.9		1.7		

* with 32 eggs.

Young males (ca. 3 mm body length) reveal incipient sculpturing of pleotelson as well as terminal cleft and denticle.

Female body robust, slightly convex marginally at level of pereonites 5 and 6. Mean length-width ratio in females 1.7, in males 2.0 (table I). Median anterior area of pleotelson swollen, without distinct lateral elevations or medial spine. Mid-posterior border of pleotelson of large individuals slightly concave. Body surface sparsely setose posteriorly and devoid of granulations or spines. Mean body length of mature specimens 2.9 mm. One 2.9 mm female contained 32 eggs developing in internal pouches.

Immature individuals relatively broad anteriorly.

Uropod exopods in males elongate, stout, erect and flexed medially. Uropod rami in females subequal in size, short, not reaching apex of pleotelson.

First and second antennae nearly equal in length in both sexes. First antenna, peduncular articles 1 and 2 thick, stout, article 1 about twice length of 2 and with denticulate forward margin; article 3 narrow; flagellum of 9 articles and 9 aesthetascs; the number of these structures often varies slightly among different individuals. Second antenna, basal articles slender, flagellum of 8 articles each with tufts of setae apically.

Mouth parts. Mandible, incisor with 4 sclerotized teeth, palp articles 2 and 3

with numerous plumose setae. First maxilla, exite with 10 teeth, endite with 4 combed setae. Second maxilla, endite with 6 combed setae and few small simple setae, 2 outer lobes each with 6 long simple setae. Maxilliped, palp articles 2, 3 and 4 with greatly expanded lobes bearing numerous setae apically, inner face of exite with ridge provided with setae along its length, lateral border of prodopodite with short spines and dense setal fringe. Mouth parts of non-brooding females similar to those in male; mouth parts of a brooding female were metamorphosed. Mandible, incisor and molar smooth, without cutting surfaces. Maxilliped, palp article lobes shortened, setae absent.

Pereopods increase in length posteriorly. P1 through P7 with stout combed setae medially on articles 4, 5 and 6. P7 article 5 nearly encircled distally with stout setae. Adult female pereopods as in male.

Pleopods 1 through 3 with numerous plumose marginal setae (PMS) and typically 3 coupling hooks. Plp1 endopod with 12 PMS, exopod with 25 PMS. Plp2 endopod with 12 PMS, smaller simple setae on surface; stylet short, less than length of endopod, inflated, inserted on apex. Plp3 endopod with 14 PMS, exopod with 36 PMS; exopod jointed with distal member about 1/3 length of ramus. Plp4 rami with 8 to 10 pairs of branchial folds each. Plp5 exopod with 10 pairs of branchial folds, apical squamiferous protuberances very high, medial squamiferous area low, lateral border setose with slight indentation distally (this is an incipient cleft and not an articulation); endopod densely setose along apical margin, 10 pairs of branchial folds. In some males apical cleft on Plp5 exopod extends about one-half way across ramus, but does not form a complete articulation. Pleopods similar in females.

Penes absent.

P. edithae can be distinguished readily with reference to the male pleotelson, with its single denticle and broad-based spine, and the anterior median spine located between two lateral swellings. In addition, the body is densely setose and bears numerous spines along the posterior margins of pereonites 4 through 7.

DISCUSSION

Study of the type collection has confirmed the identity of the Puerto Rican and Haitian material. Since the holotype was combined with the paratypes, it is not now possible to distinguish the specimen upon which the original illustration was based. The bodies of several specimens appear distorted so that the lateral convexity alluded to by Boone may represent an artefact of preservation. From the relatively high proportion of females present in the Puerto Rican collections, it is likely that the Haitian sample with 10 males shows an unrepresentative bias in the sex ratio. The mean size of the type lot (body length, 4.2 mm; range, 4.1-4.7 mm) indicates that only the largest individuals were retained.

Four species of *Paracerceis* are known at present from the western Atlantic Ocean with distributions ranging from the Caribbean Sea north along the eastern

coast of the USA. *Paracerceis tomentosa* Schultz & McCloskey, 1967, occurs off the North Carolina coast; *P. caudata* (Say) has been found as far north as New Jersey (Richardson, 1905), but is predominately a warm water species (Miller, 1968); *P. nuttingi* (Boone, 1921) and *P. edithae* are currently reported only from the Caribbean Sea. *Dynameniscus carinata* (Richardson, 1906), once considered a species of *Paracerceis* (Richardson, 1905), should not be united under the latter genus (contra Menzies & Frankenberg, 1966).

Hansen's (1905) early diagnosis of *Paracerceis* has been little modified by the descriptions of new species. A minor difference was noted by Menzies & Glynn (1968), who found a single denticle in the pleotelson notch of an immature male of *P. nuttingi*. *P. edithae* also has a single denticle in the apical notch. The nature of this character in *P. tomentosa* can only be ascertained after the discovery of male specimens. Although Boone (1921) observed that the Plp4 exopod of *P. nuttingi* was articulated, examination of both sexes from Puerto Rico (Sta. VII-9, Menzies & Glynn, 1968) failed to reveal this condition. Typically only the exopods of Plp3 and Plp5 are articulated, and the latter may be incompletely jointed. The stylet is of uniform appearance in the genus, being short, inflated and articulated apically or nearly so.

P. edithae was present in two of the three collections made between 20 m and 25 m. The respective density estimates for the bottom areas sampled on the submerged bank reef near the edge of the insular shelf and the patch reef (La Palma) closer to shore were 110 and 130 individuals per m². The talus bottom of La Palma reef is probably subject to greater sedimentation, less circulation and lower levels of radiant energy than is the elevated platform farther offshore.

The data now available on depth distributions in the Caribbean region suggest that *P. caudata*, abundant in the intertidal zone, is displaced by *P. edithae* in deeper waters. It must be pointed out, however, that *P. caudata* does occur up to 116 m depth off the Georgia shelf (Menzies & Frankenberg, 1966). Other isopods occurring at high density on the submerged bank reef were *Cirolana parva* Hansen, 1890 and *Stenetrium occidentale* Hansen, 1905. The only other sphaeromatid found was *Geocerceis barbarae* Menzies & Glynn, 1968, at an estimated density of 16 individuals per m². Generally, the density and diversity of isopods obtained from these collections compare favorably with those found along the shore and in the shallower coral reef zones.

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ZUSAMMENFASSUNG

Die Morphologie von *Paracerceis edithae* Boone, 1930 wird vervollständigt. Neue Charakteristika werden herausgearbeitet, inklusive Grössenunterschiede und Sexualdimorphismus. Kollektionen von der Südwestküste Puerto Ricos lassen erkennen, dass diese Art in grosser Individuendichte (bis zu 130 Individuen pro m²) die kalkigen Felsböden des Korallenriffs in 20 bis 25 m Tiefe besiedelt.

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