

MICROPROSTHEMA GRANATENSE, NEW SPECIES, FROM THE SOUTHERN CARIBBEAN, WITH A KEY TO SHRIMPS OF THE GENUS MICROPROSTHEMA FROM THE WESTERN ATLANTIC AND A NEW RECORD OF ODONTOZONA LIBERTAE (DECAPODA: STENOPODIDEA)

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A B S T R A C T

The shrimp *Microprosthema granatense*, new species, is described and illustrated from material collected in Granate Bay, Caribbean coast of Colombia. This male shrimp was collected together with 3 ovigerous females of the stenopodidean *Odontozona libertae* Gore around the talus pile of the burrow of a tilefish. *Microprosthema granatense* differs from other species of *Microprosthema* mainly by having few spinous processes and spines on the carapace, a larger cornea, different spination of the third maxilliped and third pereopod, and very long and multisegmented fourth and fifth pereopods. Comparisons with other species of the genus are made and a key for the species of *Microprosthema* of the western Atlantic is provided. The record of *Odontozona libertae* constitutes the first for the southern Caribbean.

Reports of stenopodidean shrimps in the southern Caribbean are scarce, due in part to the cryptic behavior of many species and the lack of research on these shrimps in the Caribbean. Within the genus *Microprosthema* only four species have been described for the western Atlantic: *M. semilaeve* (Von Martens, 1872), *M. manningi* Goy and Felder, 1988, *M. looense* Goy and Felder, 1988, and *M. inornatum* Manning and Chace, 1990. When J. Garzon and A. Acero researched coral reef fishes of the Santa Marta region, Colombian Caribbean, stenopodidean shrimps were collected by placing poison around the talus pile of the burrow of a tilefish, *Malacanthus plumieri* (Bloch) in Granate Bay, and the material was given to me for identification. Three specimens were identified as *Odontozona libertae* Gore, 1981, and one male was an undescribed species that is described here as *Microprosthema granatense*, new species, constituting the fifth species for the western Atlantic. At the Smithsonian Institution, I examined material of *Microprosthema* spp. and *Odontozona* spp. and a key was prepared for the known species of *Microprosthema* of the western Atlantic.

RESULTS

Stenopodidea Bate, 1888

Spongicolidae Schram, 1986

Microprosthema Stimpson, 1860

Microprosthema granatense, new species

Figs. 1-4

Type Material.—1 holotype ♂, total length 16 mm, collected in Granate Bay, Caribbean coast of Colombia

(11°18'N, 74°9'W), by placing rotenone around the talus pile of the burrow of a tilefish, *Malacanthus plumieri*, at a depth of 23 m, 19 June 1980; deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM 275993).

Type Locality.—Caribbean coast of Colombia, Granate Bay, in the Tayrona National Marine Park.

Description.—Carapace (Figs. 1, 2a) not especially depressed, with large supraorbital, suborbital, antennal, and branchiostegal spines; 4 small pterygostomial spines. Ventrolateral carapacial angle provided with 8 spines of similar size, 3 most ventral arranged in row. Rostrum reaching end of distal antennular peduncle, armed dorsally with 6 teeth, posteriormost situated behind orbital margin; ventrally with 2 teeth, posteriormost opposite anteriormost dorsal tooth. Cervical groove distinct, bordered by 12 well-developed anteriorly directed spines; 2 more pairs of spines located anterodorsal to cervical groove; postcervical groove less prominent, without spines.

Abdomen (Figs. 1, 2b) broad, depressed, dorsally unarmed, bent at level of third somite; pleura of segments 1-4 ending in sharp process, with 1 adjacent anterior marginal tooth; fourth segment with additional posterior tooth. Somites 1-3 with transverse dorsal carina on posterior half of each somite, directed forward laterally; first and third narrower than second; third shorter than first and second. Third somite longest and broadly produced posteromedially, forming broadly rounded cap over anterior part of fourth somite. Fourth and fifth somites without cari-

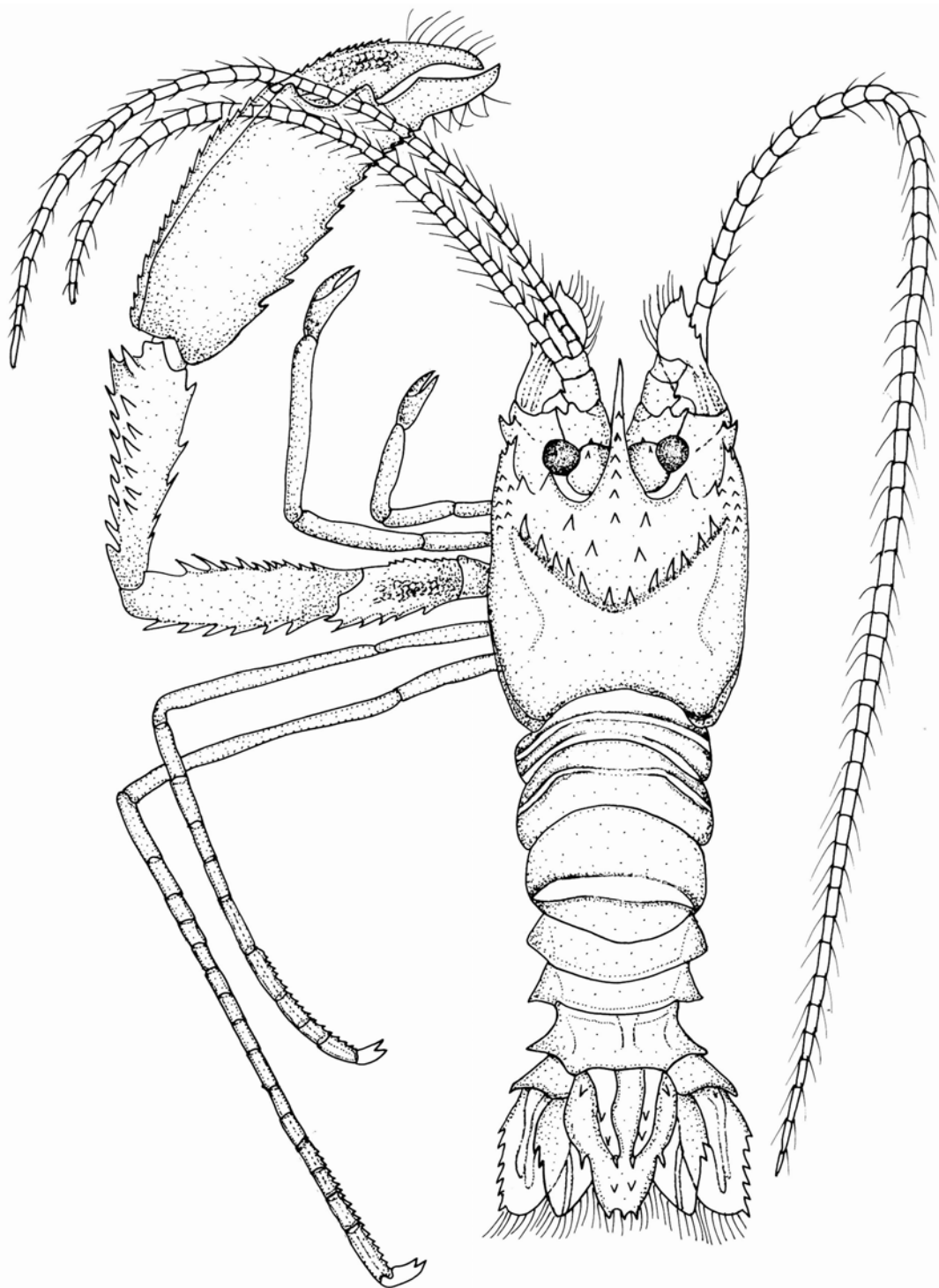


Fig. 1. *Microprosthema granatense*, new species, holotype male. Granate Bay, Caribbean coast of Colombia (USNM 275993). Scale bar = 2.0 mm.

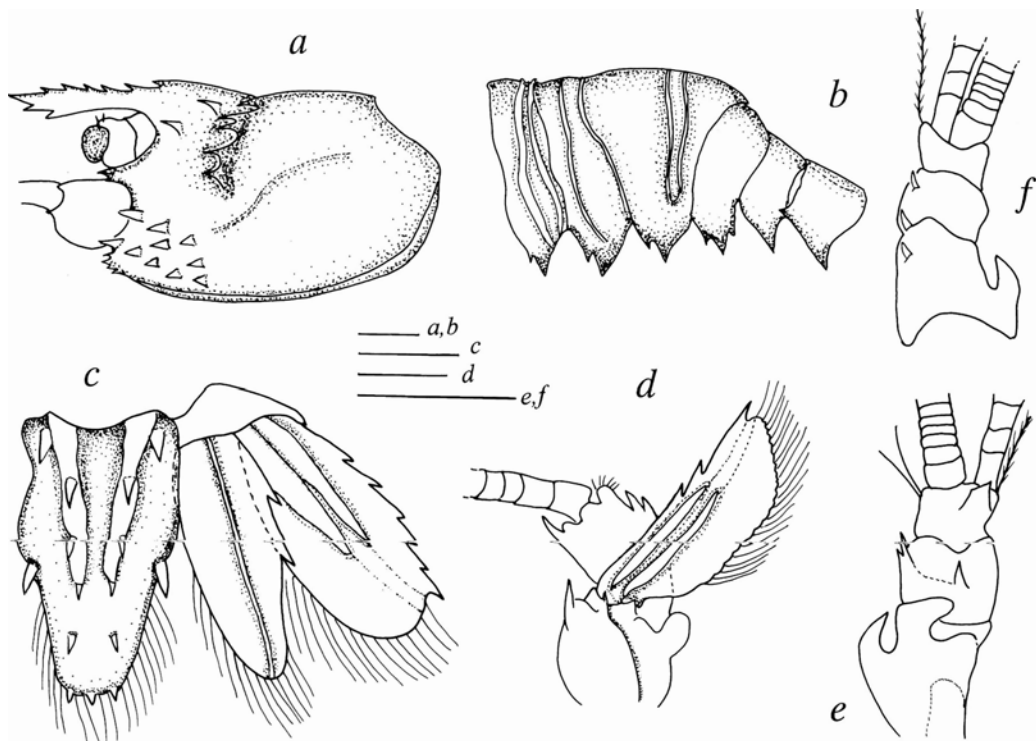


Fig. 2. *Microprosthemella granatense*, new species. a, carapace, lateral view; b, abdomen, lateral view; c, telson and uropods, dorsal view; d, right antennal peduncle and scaphocerite, dorsal view; e, left antennule, dorsal view; f, left antennule, ventral view. Scale bars = 1.0 mm.

nae. Pleura of fifth and sixth somites directed backward posteriorly, ending in sharp process but without marginal spines. Sixth somite with 2 short indistinct dorsal longitudinal ridges from median part of anterior margin, 1 spine directed forward at juncture with pleuron of fifth segment.

Telson (Fig. 2c) triangular, about 1.7 times as long as wide, armed with pair of strong lateral teeth near midlength, deeply sulcate mesially with 3 strong dorsal teeth on each ridge flanking mesial sulcus, 1 anterior large pair and 1 posterior small pair located outside ridges. Uropods about equal in length to telson. Outer margin of uropodal exopod with 6 teeth including terminal one, pair of longitudinal carinae reaching about three-fourths its length; outer margin of uropodal endopod with 2 teeth and 1 longitudinal carina.

Eyes with cornea approximately same length as eyestalk with 2 dorsal spinules (Fig. 1). Antennal peduncle (Fig. 2d) 2-segmented; basal segment strong, oval, sculpted with longitudinal carina, outer margin with strong spine, inner margin with distinct rounded laminate process; distal segment with outer

margin ending in acute spine, inner margin with small rounded process and two strong sharp spines in anterior half. Scaphocerite about 2.5 times as long as wide, lobate, narrow at base, outer margin with 3 (right side) and 2 (left side) sharp, strong teeth; inner margin strongly convex, fringed with long plumose setae. Dorsal surface with 2 distinct straight longitudinal carinae reaching about half its length.

Antennular peduncle (Fig. 2e, f) with basal segment bearing suboval flap projecting distomesially from dorsolateral side; stylocerite well developed, hooklike, almost reaching level of anterior margin; ventromesial spine near distal margin. Second segment with 2 dorsolateral spines on outer margin and 1 mediodorsal spine; 2 other ventromesial spines near outer margin; third segment smallest bearing another subquadrate flap projecting distomesially from dorsal margin; single, long, strong seta near distal margin.

Mouth parts (Fig. 3a-f). Mandible (Fig. 3f) robust with short, fused molar and incisor processes. Molar and incisor surface with few irregular processes; palp 3-segmented, well

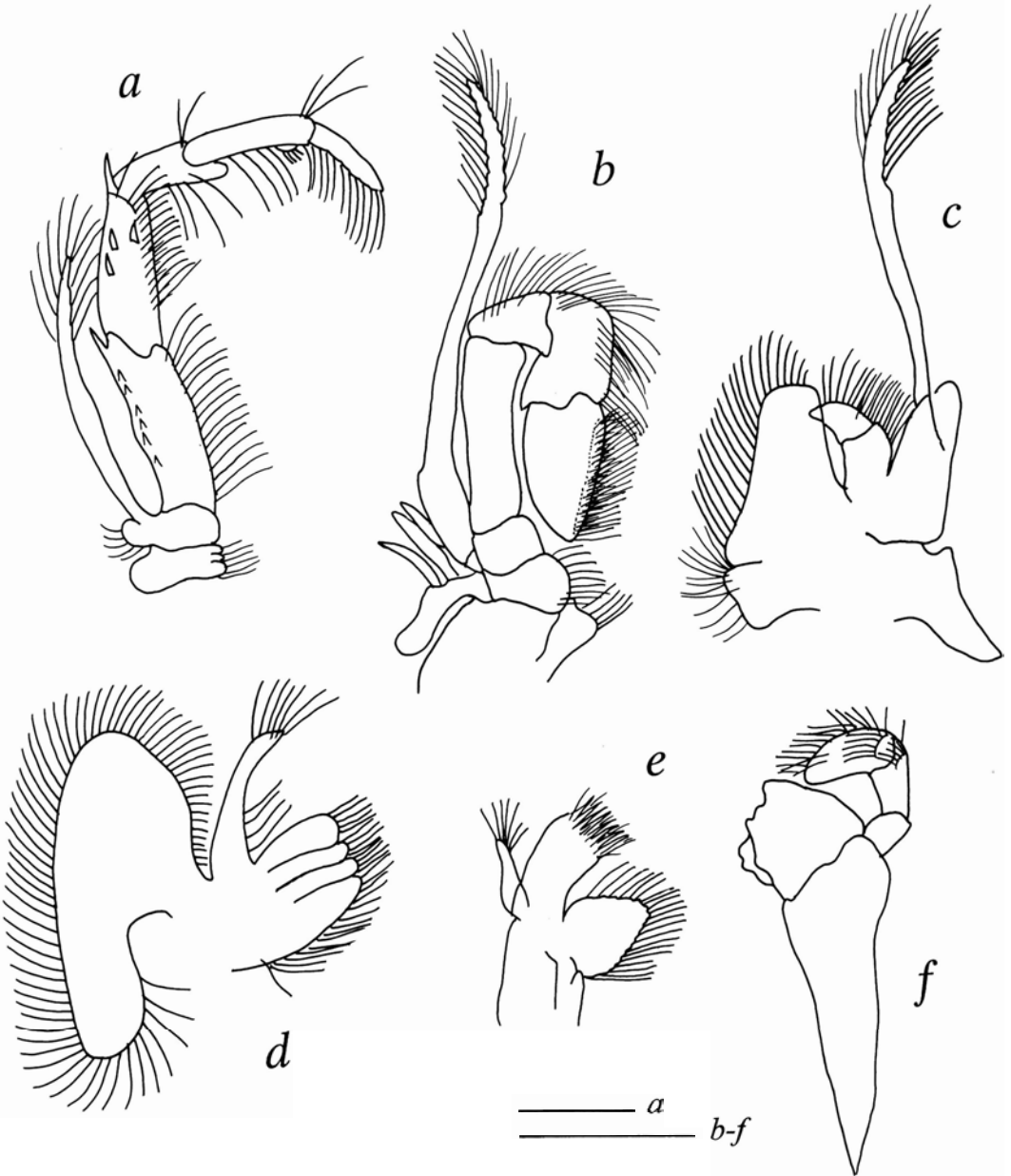


Fig. 3. *Microprosthemella granatense*, new species. Mouth parts. a, right third maxilliped, dorsal view; b, right second maxilliped, dorsal view; c, right first maxilliped, ventral view; d, right maxilla, dorsal view; e, right maxillule, dorsal view; f, right mandible, ventral view. Scale bars = 1.0 mm.

developed, proximal segment without setae; middle segment with series of ventromedial setae; distal segment broad, fringed with plumose setae. Maxillule (Fig. 3e) with slender undivided endopodite bearing 2 sublateral and 4 distal plumose setae; proximal endite moderately broad, with several spinose setae; distal endite oval distally, bearing numerous simple setae. Maxilla (Fig. 3d) with long

broad scaphognathite; endopodite long, slender, exceeding anterior margin of scaphognathite; inner margin with 4 setae, distal margin with 7 setae; fused coxal and basal endites each bilobed with distal setae.

First maxilliped (Fig. 3c) with 2-segmented endopodite surrounded by setae laterally; basipodite large, rounded anteriorly; coxopodite rounded distally with setae of mod-

erate size; exopodite very long with plumose setae on distal quarter.

Second maxilliped (Fig. 3b) with 5-segmented endopodite, dactylus suboval, twice as long as broad, with dense fringe of setae along distodorsal margin, propodus robust with dense fringe setae on upper part; carpus shorter than propodus with 10 simple setae at distodorsal angle; merus about 3 times as long as broad, without setae; ischium and basis very short; coxa lobate with fringe setae; exopodite long, slender with distal third bearing plumose setae.

Third maxilliped (Fig. 3a) with 5-segmented, well-developed endopodite; dactylus slender with dense fringe setae; propodus about 1.5 times as long as dactylus with setiferous organ distally on inner margin, 3 setae on outer margin; carpus slightly shorter than dactylus with few setae; merus robust about twice as long as carpus with sharp tooth on outer margin and 3 dorsomesial spines; ischium robust, about same size as merus with sharp tooth on outer margin and row of 6 spines near outer margin and numerous simple setae on inner margin; basis short, rounded without setae on inner margin; coxa short, 3-segmented, fringe of simple setae; exopodite slender, reaching middle of merus, with distal long plumose setae.

First 3 pereopods chelate, elongate, increasing in size posteriorly, all reaching to or well beyond scaphocerite tip; each with epipod. First pereopod (Fig. 4a) small and thin, overreaching antennal scale by about length of fingers, unarmed but with setiferous organ on middle part of propodus and proximal part of carpus; finger slightly compressed, with hooked tips and cutting edge indistinct; dactylus 0.5 times length of propodus; few long setae dorsally and ventrally, carpus about same size as merus and ischium with few long setae; basis and coxa short with few setae.

Second pereopod (Fig. 4b) similar in shape to first, but longer and without setiferous organs; longest segment of carpus about 2 and one-third times as long as propodus; merus about 0.7 times length of carpus; ischium slightly shorter than merus without setae.

Third pereopods (Fig. 4c) robust, largest and strongest of pereopods, right and left equal in size and shape and varying in number of spines. Fingers slightly compressed with hooked crossing tips; dactylus covered partially with scalelike structures, with 10

dorsal spines and long setae on right hand and 11 on left; cutting edge of propodus with chitinous ridge bearing long proximal tooth with 4 small distal teeth; palm of chela longest segment with distinct dorsal crista bearing 23 spines on right palm and 16 on left, large rounded tubercle at distal margin, ventral margin with about 10 spines and few tubercles on left and 13 spines on right. Carpus about 0.6 times length of propodus, narrowing proximally; dorsal margin with 9 strong spines and few setae, dorsomesial row of 7 strong spines, of which proximal one largest, proximal medial region tapering in quadrate lamina, ventral margin with 5 spines. Merus about 0.7 times length of carpus; dorsal margin with 6 spines; ventral margin with 9 spines; ischium about 0.8 times length of merus, dorsal margin with 6 spines, distal one largest, ventral margin with about 10 tubercles; proximomedial portion covered with scalelike structures. Basis and coxa short and unarmed.

Fourth and fifth pereopods (Fig. 4d, e) long, slender, dactyli biunguiculate, with tips long, slightly curved; propodi and carpi divided with long longitudinal grooves more pronounced in propodi; bases and coxae short, unarmed. Fourth pereopod (Fig. 4d) with propodus divided in 4 not very distinguishable segments, ventral margin with row of 26 or 27 movable spines; carpus longest segment, divided in 6 distinguishable segments, few long setae in dorsal and ventral margin; merus about 0.8 times carpal length, single seta on ventral margin; ischium short about 0.5 times merus length, unarmed with exception of few setae. Fifth pereopod (Fig. 4e) with propodus divided in 7 distinguishable segments, ventral margin with row of 17 movable spines; carpus longest segment, divided in 12 distinguishable segments with spine on ventral side of first 7 segments; merus about 0.7 times carpal length, dorsal margin with 9 spines, ventral margin with 3 spines. Ischium, about half of merus length, unarmed.

First pleopod uniramous (Fig. 4g), second to fifth biramous (Fig. 4h), all lacking appendices, margins with fringe of plumose setae. Abdominal sterna (Fig. 4f) armed with mesial spines; fifth to third somites with strong plates of which third one strongest, second and first without plates but with 1 pair of spines in each somite.

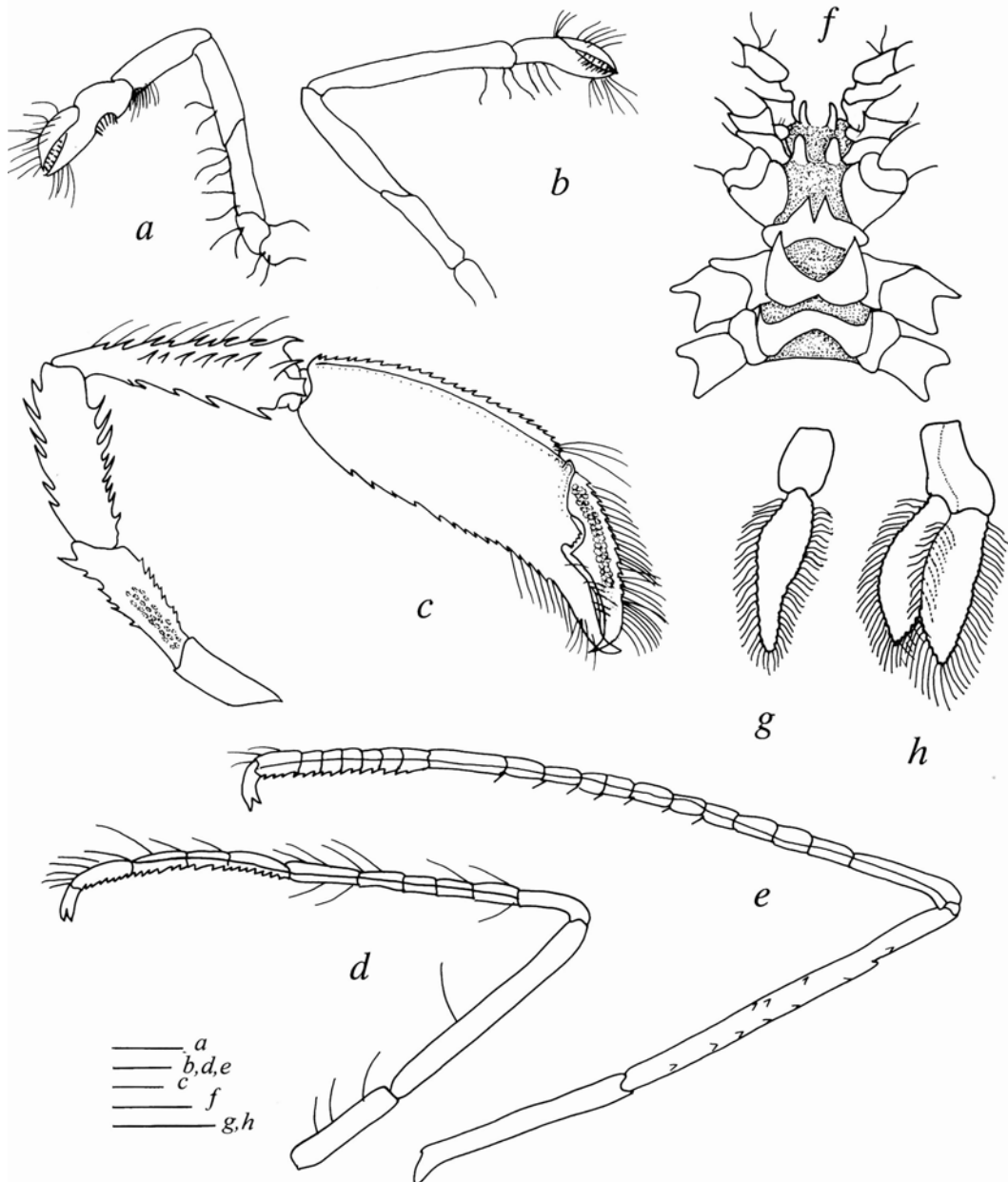


Fig. 4. *Microprosthemella granatense*, new species. a, first left pereiopod; b, second right pereiopod; c, third right pereiopod; d, left fourth pereiopod; e, left fifth pereiopod; f, thoracic sternum; g, first right pleopod; h, second right pleopods. Scale bars = 1.0 mm.

Branchial formula:

	Maxillipeds			Pereiopods				
	I	II	III	I	II	III	IV	V
Pleurobranchs	—	—	1	1	1	1	1	1
Arthrobranchs	1	1	2	2	2	2	2	2
Podobranchs	—	1	—	—	—	—	—	—
Epipods	1	1	1	1	1	1	1	—
Exopods	1	1	1	—	—	—	—	—

Etymology.—The name *granatense* is taken from the geographical location, Granate Bay, where the species was found.

Remarks.—The new species *Microprosthemella granatense* closely follows the definition of *Microprosthemella* Stimpson, 1860, given by Holthuis (1946). It is most closely related to another recently described western Atlantic

species, *M. inornatum*, but differs in the presence of transverse ridges on the first, second, and third abdominal somites; the spination of the third maxillipeds; and the degree of segmentation and number of movable spines on the propodi and carpi of the fourth and fifth pereopods. *Microprosthema granatense* and *M. inornatum* differ from previously described species of *Microprosthema* by having a smoother carapace integument, larger cornea, segmentation and ornamentation of the fourth and fifth pereopods, and different spination of the third maxilliped and third pereopod.

Microprosthema granatense resembles the Indo-Pacific species *M. validum* Stimpson, 1860 (see Holthuis, 1946), especially with regard to the shape and spination of the rostrum, antennal scale, third maxilliped and third pereopod, telson, and uropods. However, *M. granatense* differs from *M. validum* mainly in the number and disposition of spines on the carapace; the absence of blunt teeth on the first to third abdominal pleura; the fourth and fifth abdominal segments, which are not dorsally glabrous; and the segmentation and number of movable spines on the fourth and fifth pereopods.

The scale of the basal antennular peduncle mentioned by Manning and Chace (1990) is clearly distinguishable in *M. granatense* and paratypes of *M. manningi*, *M. inornatum*, and *M. emmiltum* Goy. However, the third segment also bears another subquadrate process projecting distomesially, as do paratypes of *M. manningi*, *M. inornatum*, and *M. emmiltum*. In previous descriptions these scales have been figured but no author has mentioned them.

KEY TO WESTERN ATLANTIC SPECIES OF
MICROPROSTHEMA

1. Carapace usually densely covered with numerous spines or blunt spinules, cornea considerably smaller and narrower than eyestalk, propodus and carpus of fourth and fifth pereopods unsegmented 2
 - Carapace covered with few spines or blunt spinules, cornea slightly smaller than eyestalks, propodus and carpus of fourth and fifth pereopods segmented and with longitudinal grooves 4
2. Carapace with distinct cervical groove cincture surrounded by 8 spines along each lateral margin, rostrum dorsally with 2 teeth, ventrally without teeth; abdomen with transverse ridges on second and third somite and blunt spinules on somites 2-5, scaphocerite with 4 teeth on outer margin, propodus of third pereopod with dorsal crista, body coloration tan-white, appendages white *M. loense*

- Carapace with or without distinct cervical groove cincture, but without cincture of spines, rostrum dorsally with 4-11 teeth, ventrally with 1 3
- 3. Transverse ridges on first and second abdominal somites, uropodal endopodite bearing 3 or 4 spines on outer margin and 1 or 2 medial spinules on dorsal longitudinal ridge, carpus and propodus of third maxilliped lacking spines, merus of first pereopod without spines dorsally or ventrally, body coloration red *M. semilaeve*
- Anterior transverse ridges on abdominal somites 1-3, uropodal endopodite bearing 4-6 spines on outer margin and unarmed on dorsal longitudinal ridge, carpus and propodus of third maxilliped with spines on outer margin, merus of first pereopod with spines dorsally and ventrally, body coloration tan-white, appendages white *M. manningi*
- 4. Abdominal somites without transverse ridges; propodus of fourth pereopod 3-segmented, bearing 16 movable spines on ventral surface, fifth pereopod with propodus 3-segmented and carpus 6-segmented, merus and ischium of third maxilliped without spines *M. inornatum*
- Transverse ridges on abdominal somites 1-3; propodus of fourth pereopod 4-segmented, bearing 26 or 27 movable spines on ventral surface, fifth pereopod with propodus 7-segmented and carpus 12-segmented, merus and ischium of third maxilliped with spines dorsally *M. granatense*, new species

Stenopodidae Huxley, 1878

Odontozona Holthuis, 1946

Odontozona libertae Gore, 1981

Material Examined.—Colombia: 3 ovigerous ♀♀, total length 11.0, 11.8, and 12.5 mm and carapace length 4.4, 4.5, and 5.0 mm, respectively; collected in Granate Bay, Caribbean coast of Colombia, by placing the poison rotenone around the talus pile of the burrow of a tilefish, *Malacanthus plumieri*, at a depth of 23 m; material deposited in the collections of the Marine Research Institute (INVEMAR) at Santa Marta as CRU-561. U.S.A.: 1 ♀ allotype (USNM 181243) and 1 ♂ paratype (USNM 181244), collected in the Florida Keys.

Remarks.—The three ovigerous females of *O. libertae* follow closely the description of the species given by Gore (1981). Small differences in spination of the rostrum, the uropodal exopod, and the postcervical groove were found. The rostrum of one Colombian specimen was armed ventrally with three spines instead of four or five as in the specimens studied by Gore. Another female possessed 7 teeth on the lateral margin of the uropodal exopodite instead of four to six and the number of spines on the postcervical groove was 15 or 16.

The genus *Odontozona* was known only from West Africa and the Indo-Pacific (Holthuis, 1946) until 1981, when Goy discovered *O. striata* Goy, 1981, in Cuban waters and Gore (1981) found *O. libertae* in the

Florida Keys. Later, Manning and Chace (1990) described *O. anaphore* from Ascension Island, south Atlantic, constituting the third species of *Odontozona* for the western Atlantic. The present report constitutes the first of a species of *Odontozona* for the southern Caribbean and the first of *O. libertae* for a locality different from that originally described in the Florida Keys.

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