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HIPPOLYTIDAE) FROM THE WESTERN ATLANTIC

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The shrimp described below has been represented in museum collections since at least as early as 1885, when seven specimens were taken by the U. S. Fish Commission steamer "Albatross" at five stations in the Gulf of Mexico. These specimens were identified as "*Hippolyismata*, n. sp." by Mary J. Rathbun in 1900. It seems appropriate, therefore, to name the species for that remarkable woman who contributed more to our knowledge of the decapod Crustacea than has any other American carcinologist.

Four of my Smithsonian colleagues have participated in this description: Waldo L. Schmitt provided information on the color of the species in life; Thomas E. Bowman identified the epicaridean isopod associated with the specimen from Venezuela; and Horton H. Hobbs, Jr., and Raymond B. Manning reviewed the manuscript.

Several additional species of the family Hippolytidae will be described for the first time in a report now in preparation on the Natantia of the Smithsonian-Bredin Caribbean Expeditions.

Lysmata rathbunae new species (figs. 1-4)

Material. — Castle Harbour, Bermudas; from a sponge; August 9, 1960; H. E. Winn and B. A. Hazlett no. 3-B-60; 1 female (variety). — Northeast of Cape Canaveral, Florida; 28°52'N 80°05'W; 119 meters; September 3, 1956; "Combat" station 90; 1 ovigerous female. — Off Boynton Beach, Florida; 26°31'N 80°01'W; 55-64 meters; March 25, 1956; "Pelican" station 15: 1 male (holotype, USNMNH 99446). — North end of Key Biscayne at Bear Cut, Miami, Florida; under a rock; March 12, 1961; R. B. Manning: 1 ovigerous female (variety). — Fort Jefferson, Dry Tortugas, Florida; July 1924; W. H. Longley: 1 ovigerous female. — Along east side of White Shoals, Dry Tortugas, Florida; 18-20 meters; August 9, 1930; W. L. Schmitt station 49-30: 1 male, 1 ovigerous female. — Near upper end, west side, of lower section of White Shoal, Dry Tortugas, Florida; 13 meters; July 24, 1931; W. L. Schmitt station 41-31: 1 male, 1 ovigerous female. — Northwest of Dry Tortugas, Florida; 25°04'30"N 82°59'15"W; 48 meters; March 19, 1885; "Albatross" station 2414: 1 ovigerous female (variety). — West of Marco, Florida; 25°50'15"N 82°41'45"W; 38 meters; April 2, 1901; "Fish Hawk" station 7124: 2 males. — Same; 26°00'00"N 82°57'30"W; 44 meters; March 19, 1885; "Albatross" station 2413: 1 female. — West of Charlotte Harbor, Florida; 26°33'N 83°11'W; 51 meters; April 2, 1901; "Fish Hawk" station 7123: 2 males. — West of Tarpon Springs, Florida; 28°09'N 83°50'W; 37 meters; July 16, 1957; "Silver Bay" station 54: 1 ovigerous female. — South of Apalachicola, Florida; 28°46'00"N 84°49'00"W; 48 meters; March 15, 1885; "Albatross" station 2406: 1 male. — Northeast of Cabo Catoche, Yucatan Peninsula; 22°08'30"N 86°53'30"W; 46 meters; January 30, 1885; "Albatross" station 2362: 1 male.

— North of Cabo Catoche, Yucatan Peninsula; $22^{\circ}07'30''\text{N}$ $87^{\circ}06'00''\text{W}$; 38 meters; January 30, 1885; "Albatross" station 2363: 3 males. — Bahía de Turiamo, Estado Aragua, Venezuela; associated with sponges in 9 meters; P. R. Morales: 1 male (variety, parasitized by *Bopyrella mortenseni* Nierstrasz & Brender à Brandis).

Description. — Rostrum (fig. 1a) straight or slightly concave dorsally, usually reaching as far as or beyond end of antennular peduncle, occasionally overreaching antennal scale; dorsal margin armed typically with 5 or 6 prominent teeth, post-

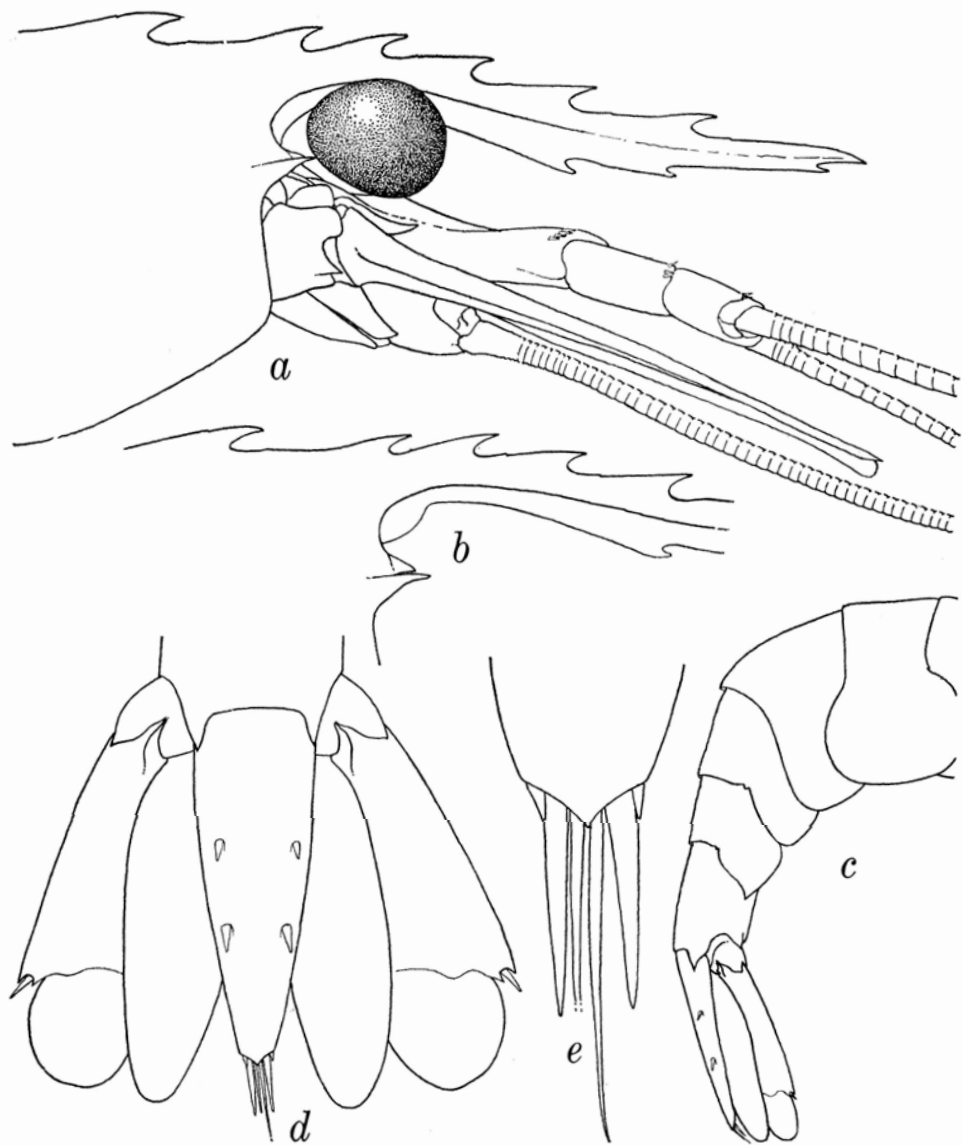


Fig. 1. *Lysmata rathbunae* new species, male holotype, carapace length 6.25 mm. a, anterior region; b, orbital region; c, abdomen; d, telson and uropods; e, tip of telson. Magnifications: c, $\times 4.9$; a, b, d, $\times 9.9$; e, $\times 41$.

ermost widely separated from second tooth, latter placed nearly in line with posterior margin of orbit; ventral margin armed typically with 3 to 5 teeth; lateral carina equidistant from each margin of rostrum, fusing with posterior margin of orbit, sharp in proximal half becoming blunt distally. Carapace not dorsally carinate posterior to base of first tooth of rostral series. Antennal tooth large and sharp, overlying and concealing from lateral view bluntly triangular ventral angle of orbit. Anteroventral margin of carapace rounded, usually unarmed.

Pleura of first four abdominal somites (fig. 1*c*) rounded, that of fifth sharply acute; sixth somite with buttressed posteroventral tooth. Sixth somite fully one and one-half times as long as fifth, nearly three-fifths as long as telson not including terminal spines; median posteroventral projection between bases of uropods broad and subtruncate with inconspicuous median point. Dorsal spines of telson prominent (fig. 1*d*), anterior pair inserted about as far from base as posterior pair from posterior margin, space between pairs considerably less, posterior margin (fig. 1*e*) acute mesially, armed with 2 pairs of spines separated by pair of basally thickened setae similar to those arising from lateral margins of posterior portion of telson, lateral pair of spines very small.

Eyes short and stout, cornea much longer and broader than stalk.

Antennular peduncle (fig. 2*a*) with stylocerite tapering to sharp tip, reaching about to end of proximal third of basal segment; each antennular segment armed with row of 2 to 4 spinules near dorsolateral portion of distal margin; basal segment with small tooth near midlength of mesial margin of ventral surface. Antennular flagella subequal, nearly five and one-half times as long as carapace; dorsolateral flagellum with 14 to 35 (increasing in number with growth) articles in thickened, setigerous basal portion, distal setigerous article (fig. 2*b*) produced to form vestige (sometimes barely discernible) of accessory flagellum.

Antennal scale (fig. 2*c*) long and narrow, about five times as long as wide; lateral margin faintly concave, distal tooth sharp, distinctly overreaching subtruncate distal margin of blade. Antennal peduncle short, not reaching end of proximal fourth of scale; basal segment with small lateral tooth near base of scale.

Mouth parts as figured (figs. 2*d-j*). Mandibles distinctly dissimilar, right more complex than left. Third maxilliped overreaching antennal scale by about one-fourth length of distal segment; exopod nearly reaching distal third of antepenultimate segment.

Four anterior pereopods with well-developed epipods. First pereopod (fig. 3*a*) reaching fully as far as end of antennal scale; fingers slightly more than half as long as palm; carpus slightly shorter than chela and slightly more than four-fifths as long as merus; ischium without lateral spine but with row of short stout spinules on posterior margin. Second pereopods (figs. 3*b, c*) subequal or with either right or left member of pair longer, overreaching antennal scale by length of chela and two-thirds of carpus; carpus nearly twice as long as merus, composed typically of 30 to 35 articles; merus longer than ischium, composed of 16 to 24 articles; ischium with 3 to 5 articulations in distal half. Third pereopod (fig. 3*d*) over-

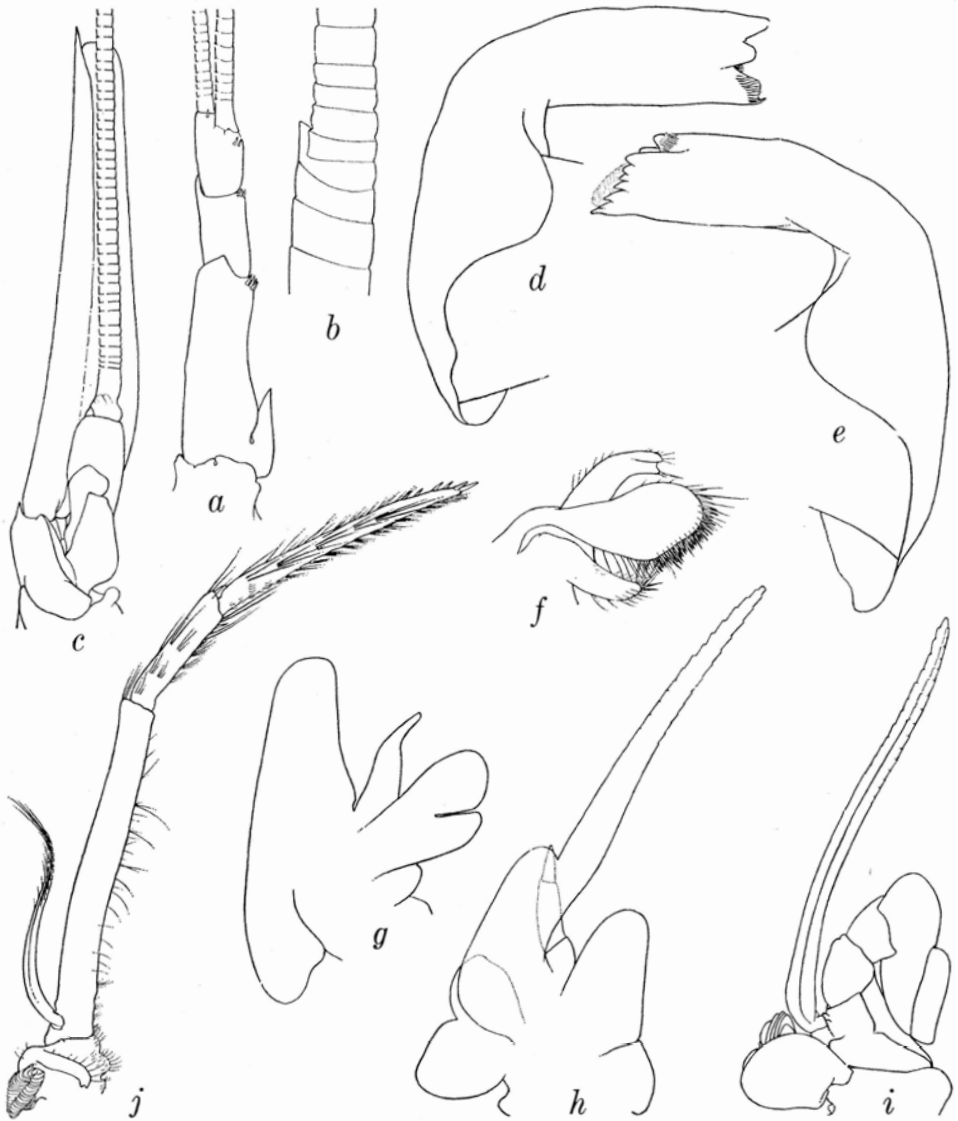


Fig. 2. *Lysmata ratbbunae* new species, male holotype. *a*, right antennule; *b*, junction of setiferous and nonsetiferous portions of dorsolateral flagellum of right antennule; *c*, right antenna; *d*, left mandible; *e*, right mandible; *f*, right first maxilla; *g*, right second maxilla; *h*, right first maxilliped; *i*, right second maxilliped; *j*, right third maxilliped. Magnifications: *a*, *c*, *j*, $\times 7.9$; *f-i*, $\times 16.5$; *b*, *d*, *e*, $\times 33$.

reaching antennal scale by length of dactyl and propodus; dactyl (fig. 3e) terminating in long spinelike tooth continuous with extensor margin and stouter tooth on flexor side, with 3 or 4 movable spinules on flexor margin; propodus four and one-half times as long as dactyl, armed with 6 slender spinules on flexor margin; carpus more than four-fifths as long as propodus; merus slightly less than twice as

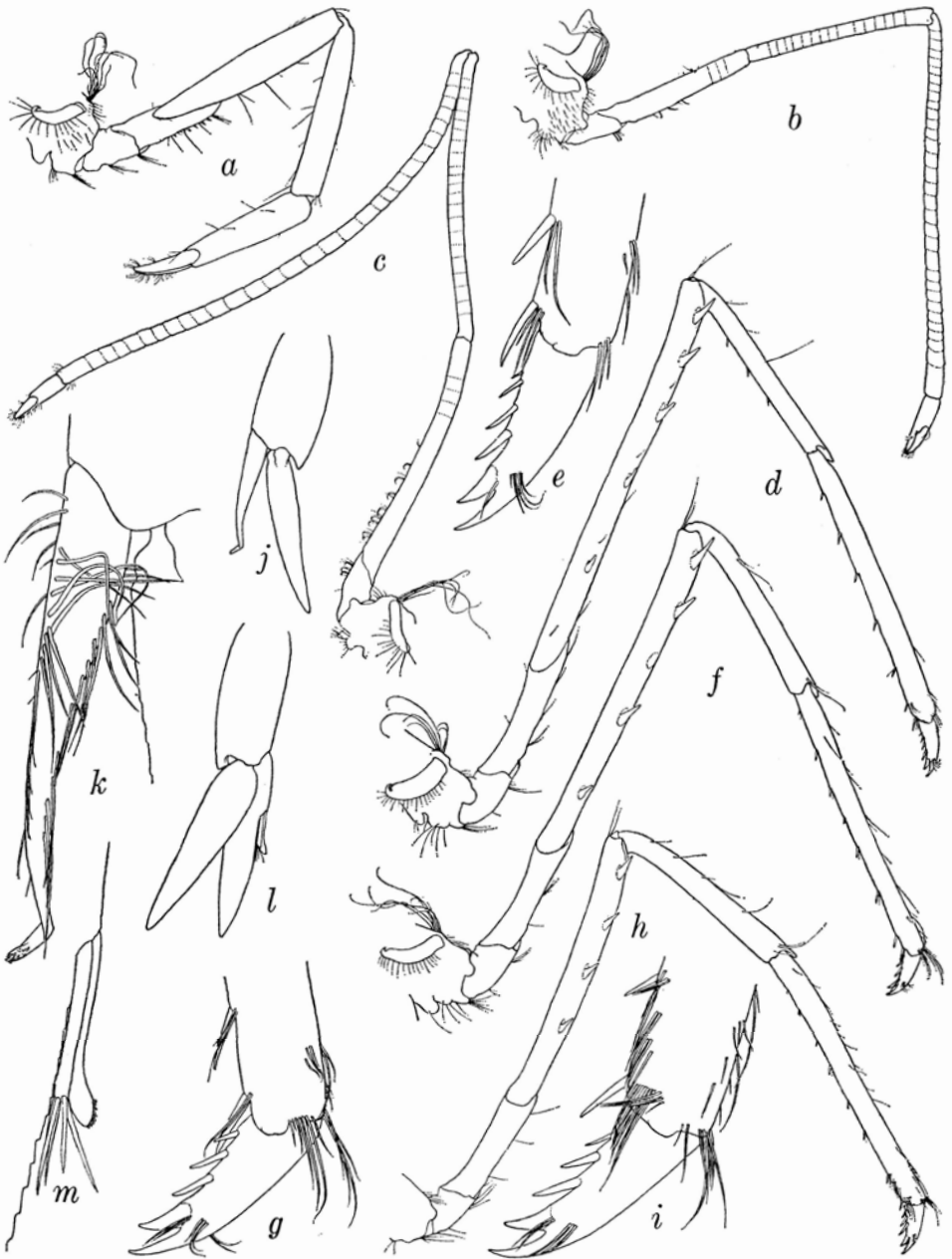


Fig. 3. *Lysmata rathbunae* new species, male holotype. *a*, right first pereiopod; *b*, right second pereiopod; *c*, left second pereiopod; *d*, right third pereiopod; *e*, dactyl of same; *f*, right fourth pereiopod; *g*, dactyl of same; *h*, right fifth pereiopod; *i*, dactyl of same; *j*, right first pleopod; *k*, endopod of same; *l*, right second pleopod; *m*, appendix masculina. Magnifications: *a-d*, *f*, *b*, *j*, *l*, $\times 7.9$; *e*, *g*, *i*, *k*, *m*, $\times 33$.

long as carpus, armed with 5 to 8 strong spines becoming closer together distally; ischium less than one-third as long as merus. Fourth pereopod (fig. 3f) overreaching antennal scale by length of dactyl and one-half of propodus, similar to third pereopod but with merus shorter and armed with 4 to 7 spines. Fifth pereopod (fig. 3b) overreaching antennal scale by slightly more than length of dactyl, similar to third and fourth pereopods, but merus still shorter and armed with 3 to 5 spines, and propodus with distal fringe of setae on flexor margin.

Endopod of first pleopod of male (figs. 3j, k) about three-fourths as long as exopod, tapering to slender end piece bearing cluster of coupling pads. Appendix masculina on endopod of second pleopod (figs. 3l, m) shorter than appendix interna, armed with 4 or 5 long distal spines. Lateral branch of uropod (fig. 1d) armed at distal end of lateral margin with 2 fixed teeth flanking longer movable spine.

Color. — The ovigerous female taken in the Dry Tortugas at station 49-30 displayed the following color pattern. Body beautifully multihued. Carapace marked with bright carmine stripes outlining subtrapezoidal area on anterior two-thirds of dorsal surface; stripes forming irregular transverse bands posteriorly and longitudinal or diagonal rows on branchial region; red splotch behind each orbit. Abdominal somites similarly striped with bright carmine, most prominently in dorsal midline; lateral stripes finer, except on three anterior somites, where third lateral stripe strong, converging along posterior margin of third somite to form median point in midline; telson with broad median stripe. Eyes with cornea black; eyestalk with deep red dorsal stripe seeming to join red splotch on orbital margin. Antennular peduncle and flagellum solid red. Antennal peduncle with longitudinal red stripe; flagellum solid red. Striking opaque china white Y seen in ventral view embracing antennular peduncles and terminating posteriorly in white spot anterior to mouth. Pereiopods bright red; dactyls of three posterior pairs white in distal half. Lateral branch of uropod with wide red stripe near mesial margin and narrow stripe near lateral margin; mesial branch of uropod with wide red stripe near lateral margin; wide stripes on two branches resembling scissors when uropods open and close.

Size. — Males with carapace lengths of 3.8 to 6.7 mm (holotype, 6.25 mm); females, 6.3 to 9.6 mm (largest and smallest ovigerous).

Distribution. — The typical form is known from the east coast of Florida to Yucatan, in 13 to 119 meters. The variety with more numerous rostral teeth was taken at the Bermudas; Miami, Florida; and Venezuela, in 9 meters and less.

Remarks. — This species has a distinctive appearance, even though a few of the available specimens display disconcerting anomalies. The ovigerous female with a carapace length of 6.3 mm from "Albatross" station 2414 has a minute tooth at the anteroventral angle of the carapace and only 29 articles in the carpus of the second pereopod. The three specimens taken in shallower water in the Bermudas, at Miami, Florida, and in Venezuela seem to differ from the typical form in having more numerous rostral teeth, with the first 2 teeth of the dorsal series placed

distinctly posterior to the level of the orbital margin, and in having more articles (38 to 43) in the carpus of the second pereiopod. The female from the Bermudas has a carapace length of 7.5 mm; most of the rostrum is missing, but the first 2 teeth of the rostral series are situated posterior to the orbital margin; the carpus of the second pereiopod is composed of 38 articles. The ovigerous female from Miami is the largest specimen in the series, with a carapace length of 9.7 mm; the rostral formula is $2 + 7/7$, and some of the ventral teeth bear accessory denticles; the carpus of the second pereiopod contains 42 articles. The specimen from Venezuela is the largest male, with a carapace length of 8.8 mm; the rostral formula is $2 + 6/7$ (fig. 4); the carpus of the second pereiopod consists of 43 articles. These three specimens may represent a distinct West Indian species or subspecies, but this possibility can be confirmed or contradicted only by the study of additional specimens. The appendix masculina of the Venezuelan specimen seems to be comparatively shorter and to bear fewer terminal spines than do those of typical males, but there is some evidence that this character is not constant.

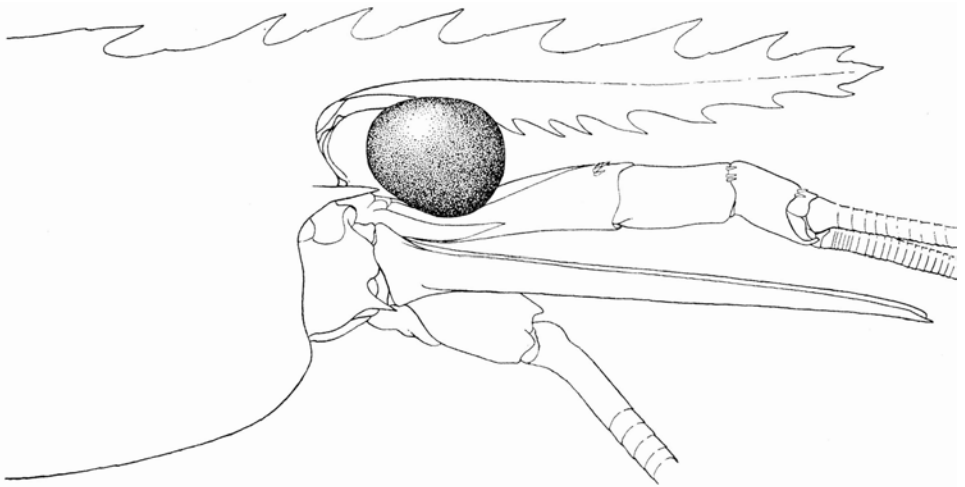


Fig. 4. *Lysmata rathbunae* new species, male, variety, carapace length 8.8 mm, from Venezuela, anterior region, $\times 8.4$.

Of the 13 specimens in which both second pereiopods are intact, they are subequal in 4, the right is longer than the left in 4, and the left is longer than the right in 10, but the number of carpal articles seems to be relatively constant even when the lengths are dissimilar. As suggested by Holthuis (1947: 68), asymmetry of the second pereiopods in some species of *Lysmata* may be the result of regeneration.

Lysmata rathbunae seems to be most closely related to *L. grabhami* (Gordon, 1935) and *L. wurdemanni* (Gibbes, 1850). It differs from the former in having the rostrum reaching as far as, or beyond, the end of the antennular peduncle, rather than not reaching the end of the penultimate segment; the antennal scale

considerably overreaching, rather than failing to reach, the end of the antennular peduncle; the carpus of the second pereopod composed of 29 to 42, rather than 17 to 23, articles; and, usually, the anteroventral angle of the carapace rounded and unarmed. The new species differs from *L. wurdemanni* in having the rostrum noticeably longer and more slender, reaching to or beyond the end of the antennular peduncle rather than only to the midlength of the distal segment, and in having both the antennular peduncle and the antennal scale distinctly longer and more slender. The Indo-Pacific species that show the greatest similarity seem to be *L. amboinensis* (De Man, 1888) and *L. vittata* (Stimpson, 1860). *Lysmata rathbunae* may be distinguished from *L. amboinensis* by the rounded, rather than acute, pleuron of the fourth abdominal somite; the differently disposed dorsal spines on the telson; the shorter antennular peduncle; more numerous articles in the carpus of the second pereopod; and, usually, by the unarmed anteroventral angle of the carapace. From *L. vittata*, it is separated by the longer rostrum; the longer and narrower antennal scale; and, typically, by the absence of a pterygostomial tooth on the carapace.

RÉSUMÉ

Description d'un crevette, *Lysmata rathbunae* n. sp., des eaux tropicales de l'Atlantique Nord occidentale.

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