

PERIOCULODES CERASINUS, N. SP., THE FIRST
RECORD OF THE GENUS FROM THE CARIBBEAN
SEA (AMPHIPODA: OEDICEROTIDAE)

James Darwin Thomas and J. L. Barnard

Abstract.—*Periocolodes cerasinus*, a probable cryptic fossorial amphipod with embedded white orbicular ommatidia in bright ruby eyes is described from Tobago, Belize, Florida Keys, and Biscayne Bay, Florida. The eyes are separated either into two lunes or combined side to side into one large irregular brow. This is the first western Atlantic record of a generic group heretofore confined to the warm eastern Atlantic and Indian Oceans. Close affinity appears to be with the type-species of the genus, *P. longimanus*, from the eastern Atlantic Ocean.

The paucity of exploration for amphipods in the west tropical Atlantic is no better emphasized than by the present species which has come to light in collections from as far spread as Tobago, Belize, and Biscayne Bay, Florida. These collections have been made in just the past two years. The species has been observed alive on several occasions.

The ring-like eye in life is quite noticeable because of the jewel-like appearance: diamonds glinting from a bed of rubies.

This new species has some affinities with the west African *Periocolopsis lophopus* Schellenberg, 1925, from the Gulf of Guinea but is also close to *Periocolodes longimanus* (Bate and Westwood) (see Sars 1895) distributed in the eastern Atlantic from Norway south to the Cape of Good Hope and into the warm Indian Ocean.

Unfortunately, there are numerous taxonomic difficulties in this group as described below.

Oedicerotidae
Periocolodes Sars

Periocolodes Sars 1895:312.—Lincoln 1979:338.

Diagnosis.—Eyes when present forming anterodorsal ring from side to side, ring sometimes divided into two pieces. Peduncular articles of antennae 1 stout in male. Incisors projecting and toothed, each mandible with toothed lacinia mobilis, raker row, and weak, non-tritulative molar bearing spines; mandibular palp feeble, in female articles 1 and 3 short, of equal length; in male article 3 elongate. Inner lobes of lower lip coalesced but fusion line occasionally marked as raphus. Inner plates of maxillae 1-2 poorly setose, outer plate of maxilla 1 with 7 spines, palp 2-articulate. Maxilla 2 feeble. Maxillipedal plates moderately to poorly armed, inner small, outer large, dactyl elongate and unguiform.

Gnathopods 1-2 alike in both sexes, of similar size, with short article 5 (wrist) bearing long posterior lobe guarding article 6 completely, article 6 (hand) long

and subrectangular, palm oblique, well defined. Coxa 6 not bevelled posteroventrally.

Epimera simple. Uropod 2 reaching near apex of uropod 3. Gills present on coxae 2–6, gill on coxa 4 largest and most adze-shaped, on coxa 6 smallest and most sausage-shaped. Normal oostegites present on coxae 3–5, thin, weakly setose, coxa 2 with vestigial oostegite bearing 1 seta.

Variables.—Peduncle of antenna 2 short in male, with article 3 short, but occasionally species with female antenna 1 bearing elongate articles, article 3 especially elongate. Coxae variable, in type-species coxae 1–4 forming one group, and coxae 5–7 forming second group but in other species no distinct grouping; in other species with coxae 1–3 forming a short group, coxae 5–7 forming long group. Gnathopods elongate or not. Dactyls of pereopods 3–4 long, medium or short. Pereopods 3–7 variable in dimensions and armaments. Urosomites 2–3 separate or fused. Telson emarginate or rounded apically.

Type-species.—*Monoculodes longimanus* Bate and Westwood (by monotypy).

Remarks.—The variability of known characters in the species of this genus and the lack of knowledge of many characters precludes any division into genera at this time. Whether or not *Periiculopsis* Schellenberg (1925) is distinctive must also be reviewed when it is more adequately illustrated.

Periiculodes cerasinus, new species

Figs. 1–3

Description of holotype male “h” 1.57 mm.—Head extremely broad, as long as first 3 pereonites combined, rostrum thick and of medium forward extension; eyes in life ruby red with diamond white ommatidia sparkling from ruby matrix, divided into 2 arcs separated by small space, because of head-width eyes very large for body size. Antennae 1–2 short, extending equally, peduncle of antenna 1 short, article 1 scarcely extending beyond apex of rostrum, articles 2 and 3 slightly shorter and therefore scarcely longer than wide; primary flagellum about as long as peduncle, with 5 articles, one aesthetasc each on articles 3–4; accessory flagellum marked by vestigial hump and setule. Gland cone of antenna 2 (see special figure) small; article 4 of peduncle as long as article 1 of antenna 1, article 5 slightly shorter, flagellum shorter than peduncle, with 4 articles.

Prebuccal complex bulbous anteriorly, ventral margin of upper lip weakly sinuate and with weak ventral midprotrusion. Left mandibular incisor with 3 main teeth formed in phoxocephalid fashion, long margin between main teeth serrate, lacinia mobilis either absent or represented by first raker, raker spines thus 4 in number, simple, molar obsolescent, marked by triad of spines; article 1 of palp elongate, article 2 thick, with 3 setae, article 3 shorter than 1, stubby, setae = 2E. Inner lobes of lower lip fused, dome-shaped, with middle raphus, outer lobes widely spread, inflated, each with weak cone and weak mandibular lobe. Inner plate of maxilla 1 broad, recumbant (tilting towards outer plate), in illustrations shown tilted and straightened with one apical spine, inner plate broad and short, with 7 apical spines, palp weakly 2-articulate, symmetrical on both sides, with 5 apical and subapical spines. Maxilla 2 feeble, composed of two broad plates sparsely armed, inner plate with 2 medial setae towards apex. Inner plate of maxilliped ordinary, with 3 apical setae, innermost attached ventrally; outer plate

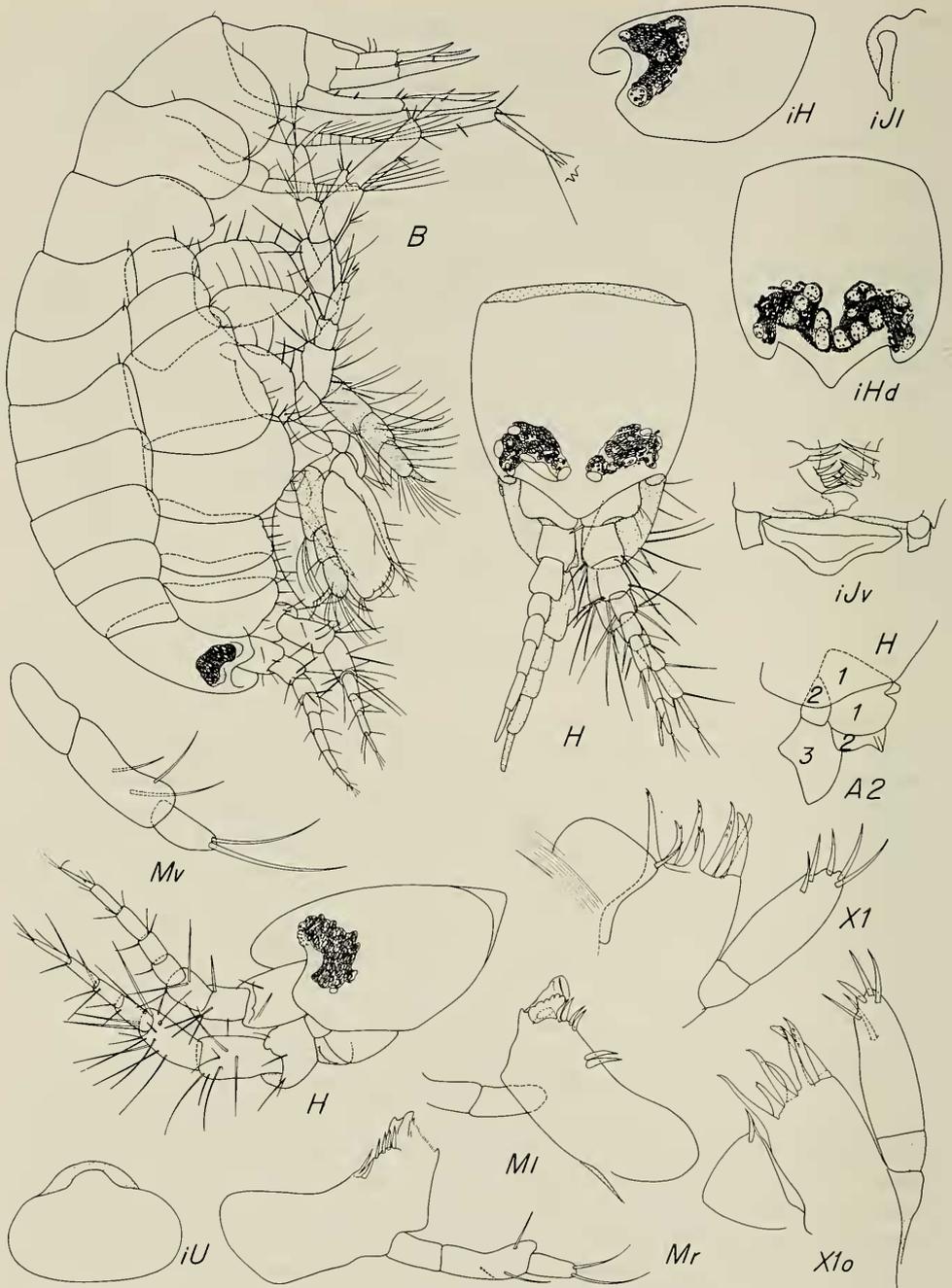


Fig. 1. Capital letters denote main parts in following list; lower case letters to left of capital letters or in body of figure indicate modifications as per following list; lower case letters to right of capital letters indicate specimens described in captions: B, body; C, coxa; E, epimeron; F, accessory flagellum; G, gnathopod; H, head; J, prebuccal; L, labium; M, mandible; P, pereopod; R, uropod; S, maxilliped; T, telson; U, labrum; V, palp; W, pleon; X, maxilla; Y, oostegite; Z, gill; d, dorsal; l, lateral; o, opposite; r, right; v, ventral. *Perioculodes cerasinus*, unattributed figures, holotype, male "h" 1.5 mm; i = female "i" 1.81 mm.

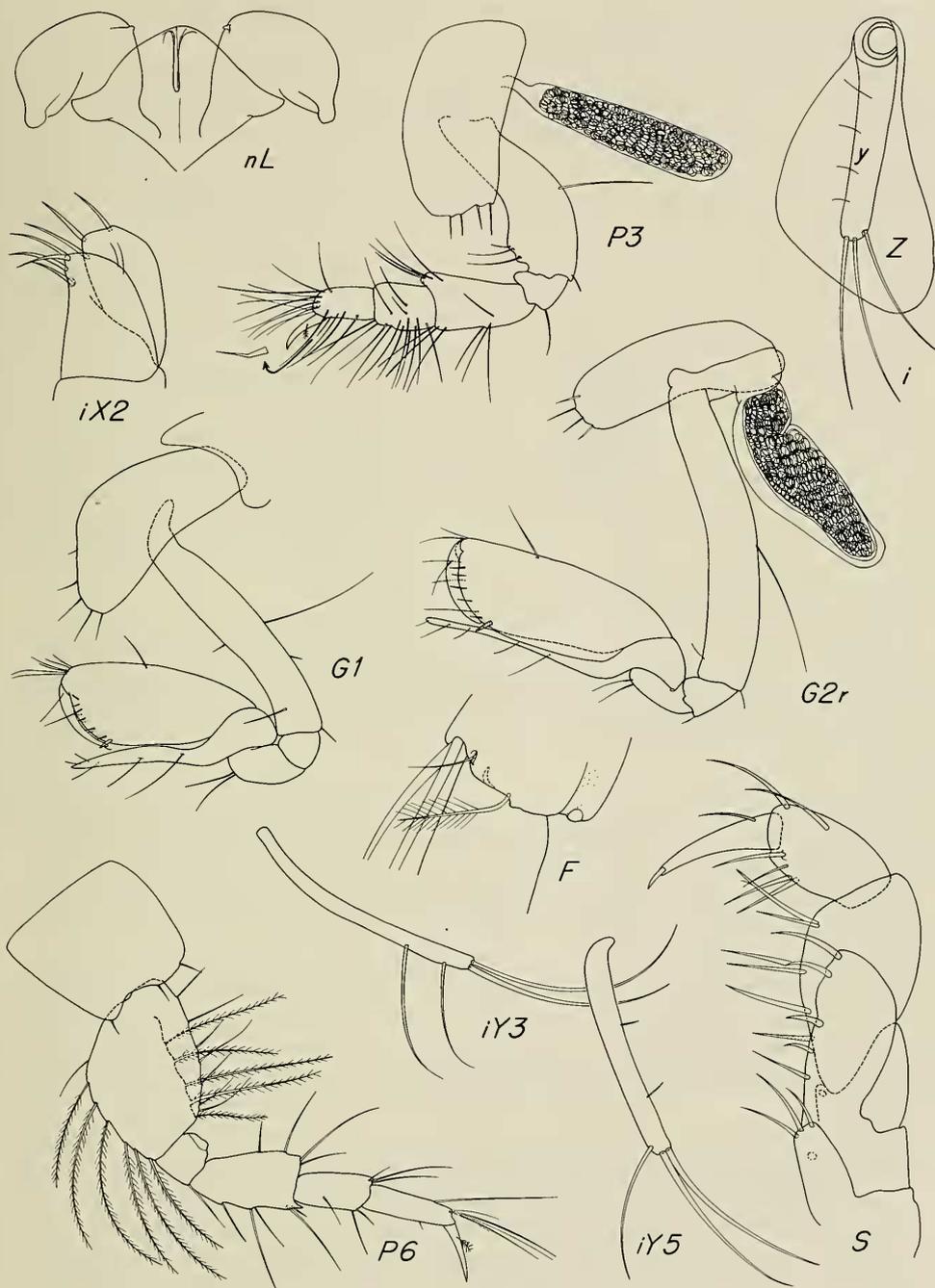


Fig. 2. *Periculodes cerasinus*, unattributed figures, holotype, male "h" 1.5 mm; i = female "i" 1.81 mm; n = male "n" 1.90 mm.

of ordinary size but sparsely armed, with only 5 medial spines, palp stout, dactyl elongate, unguiform, with short nail.

Coxae 1-3 forming short group together, coxae 4-7 forming longer group together, coxa 7 not distinguished from coxae 4-6, ventral setae sparse, coxa 1 bevelled anteroventrally, coxa 2 much narrower than coxae 1 and 3, coxa 5 scarcely bilobate. Hand of gnathopod 1 shorter than that of gnathopod 2, wrist lobe also slightly shorter, both lobes extending beyond proximal extent of palms. Pereopods 3-4 without major spines, all other armaments of setal form. Pereopod 5 especially small relative to body size, article 2 feeble, medial face of article 2 on pereopods 5-6 with vertical setal row; pereopod 7 not as elongate as in most oedicerotids, article 2 ovate, dactyl with 3 setae. Gills on coxae 2-6, that on 4 largest, mostly adze-shaped but becoming smaller and more sausage-shaped on coxae 5 and 6.

Epimera 1-3 plain, rounded posteroventrally, each segment bearing single ventrofacial spine. Peduncle of uropod 1 with 3 dorsolateral spines, long gap between spines 2 and 3. Urosomites 2-3 fused; peduncle of uropod 2 with one apicolateral spine; each peduncle with one apicomедial spine; each ramus of uropods 1-2 with one dorsal spine; outer ramus of uropod 2 shortened. Uropod 3 feeble, peduncle about half as long as peduncle of uropod 2, rami longer than peduncle, outer shorter than inner, both naked. Telson ovate, margins entire, apex with 2 separated setules and each apicolateral face with pair of setules.

Female "i" 1.81 mm.—Like male but with oostegites, no other conspicuous secondary sexual characters but this specimen larger and better developed than holotype: eyes larger and pair abutting medially (see illustration); epimeron 1 with 2 ventral spines; peduncle of uropod 1 with 5 lateral spines, gap still present, of uropod 2 with 2 dorsolateral spines; outer rami of uropods 1-2 with 2 spines each.

Oostegites thin, that of coxa 2 rudimentary, with 1 apical seta, others long and thin, setal formulae of all as follows: anterior setae = 0-2-2-1, distal setae = 1-2-2-2, posterior setae = 0-0-0-0, anterior setules = 0, posterior setules = 0-0-1-2.

Male "g" 1.70 mm.—Better developed than holotype: epimeron 1 with 2 ventral spines; outer rami of uropods 1-2 with 2 dorsal spines; each ramus of uropod 3 with one dorsal spine.

Male "n" 1.90 mm.—Left epimeron 1 with midfacial spine-seta, 1 ventral seta, right side with 3 facials and 2 ventrals (illustrated); spine on epimeron 3 very posteriad; peduncle of uropod 1 with 5 dorsolateral spines, no gap, uropod 2 with 2; outer rami of uropods 1-2 with 2 spines each; each ramus of uropod 3 with 1 spine.

Juvenile "j" 1.30 mm.—Spines on epimera 1, 2, 3 = 1-1-0. Peduncle of uropod 3 with 3 dorsolateral spines, one gap, uropod 2 with 2 spines, rami of uropods 1-2 each with 1 spine, rami of uropod 3 naked.

Male "p" 2.04 mm and male "q" 1.77 mm.—Eyes faded totally in preservative, thus apparent only as foam and bubbles inside head. Uropods like male "n."

Male "p" 2.04 mm and male "q" 1.77 mm.—Eyes faded totally in preservative, thus apparent only as foam and bubbles inside head. Uropods like male "n."

Notes.—Largest specimen from Bacha Shoal, Florida, specimen "i" 2.75 mm, with following spine counts: uropod 1 peduncle = 6, outer ramus 2-3, inner ramus 1; uropod 2 peduncle 2, outer ramus 2, inner ramus 1; uropod 3 outer ramus 1,

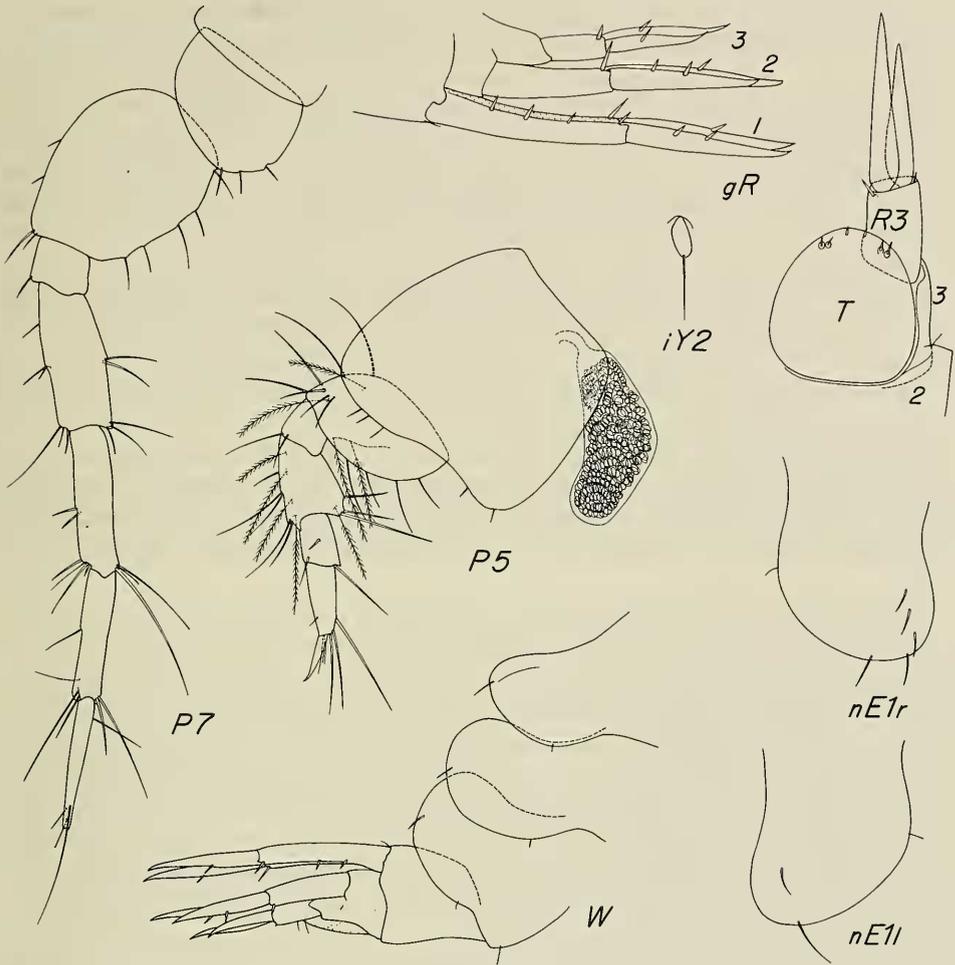


Fig. 3. *Perioculodes cerasinus*, unattributed figures, holotype, male "h" 1.5 mm; g = male "g" 1.7 mm; i = female "i" 1.81 mm; n = male "n" 1.9 mm.

inner ramus 1. The numerous peduncular spines of uropod 1 show no extravagant gaps. Article 2 of pereopod 7 with 8 posterior setae.

Largest specimen from Belize, specimen "z" 2.85 mm, with following spine counts: uropod 1 peduncle 6 (no extravagant gaps), outer ramus 2, inner ramus 1; uropod 2 peduncle 2, outer ramus 2, inner ramus 1.

Illustrations.—Main view of upper lip shown obliquely from below.

Etymology.—From "cerasinus," cherry colored.

Holotype.—USNM No. 195131, male "h" 1.57 mm, illustrated.

Type-locality.—Tobago, Kilwyn Bay, 2 Oct 1983, 1 m, in algae on sand reef, coll. J. L. Barnard.

Material.—The type-locality, female "i" 1.81 mm (illustrated), juvenile "j" 1.30 mm and 4 other specimens, "k, l, m, n." Florida Keys, Looe Key, Sta LKR

4H, 9 Oct 1983, 1 m, west end of rubble zone in backreef area, coll. J. D. Thomas, male "g" 1.70 mm (illustrated) and one other specimen.—Biscayne Bay, Florida, sta 35-4, 152 m east of Intracoastal Waterway Marker 65, 1.3 m, dense *Thalassia* and *Halodule*, 5 Mar 1983, coll. Biosystems Research Inc., Miami; specimen "p" 2.04 mm, specimen "q" 1.77 mm.—Bacha Shoal, Florida, 13 Oct 1982, nighttime suction dredge, coll. Dr. Iver Brook, 3 specimens, largest "i" = 2.75 mm.—Belize, region of Carrie Bow Cay, in South Water Cay Channel, 15 Jun 1980, 8.2 m, in patch reef and coral rubble with small attached coral heads, coll. J. D. Thomas (2 specimens).

Ecology.—Cryptic, usually collected in formalin washes of coral, coral rubble, or other hard substrates. Probably occupying isolated sediment-filled areas or cavities.

Color.—In life, pale white to ivory body, eyes deep cherry red. Red eye color persists in formaldehyde, fades in alcohol.

Relationship.—The species of *Perioculodes* are very diverse but we cannot find any differences of generic value between the type-species, *P. longimanus*, and our species, as they are either integrated by attributes of other species or because the sexual dimorphism in antennae of some of the species has not yet been worked out.

Perioculodes cerasinus differs from *Perioculodes longimanus* (Bate and Westwood) (eastern Atlantic), the type-species of *Perioculodes* Sars (1895), in the (1) short peduncle of female antenna 1 with article 3 being especially short; (2) presence of a raphus on the inner plate of the lower lip; (3) shorter article 6 on gnathopods 1 and 2; (4) division of coxae 1–3 and coxae 4–7 into groups with coxa 7 not disjunctly shorter than others within its series; (5) short peduncle of uropod 3 which is about half as long as the peduncle of uropod 2 (but as long as the peduncle in *P. longimanus*). In *Perioculodes longimanus* there is a sexual diversity in antennae which we have as yet not found in *P. cerasinus*. The first article of the mandibular palp is shorter and article 2 much more setose in *Perioculodes longimanus*.

Perioculodes cerasinus differs from the Indian Ocean *Perioculodes megapleon* Giles, 1888 (see also Pillai 1957; Rabindranath 1972; and Ledoyer 1973, 1979) in the short uropod 3, less setose maxilla 2 and antenna 2 in both sexes, the non-excavate telson, the much less armed dactyl of pereopod 7 and the much more sparsely setose pereopods 5–7 in general. *Perioculodes megapleon* appears to have the same coxal arrangement and the short article 3 on antenna 1 of the female as in our species.

Perioculodes serra Walker, 1904 (and see Ledoyer 1979) from the Indian Ocean has the short article 3 of antenna 1 and apparent short uropod 3 of our species, but the outer ramus of uropod 1 of *P. serra* is very short and the inner ramus grossly serrate; coxae 4–5 of *P. serra* have bent posteroventral lobes, mandibular palp articles 2–3 are strongly setose, the dactyls of pereopods 3 (and 4) are tiny, article 2 of pereopod 5 has a large posteroventral lobe and the general pereopod proportions are distinctive.

Perioculodes acuticoxa Ledoyer, 1973, differs from *P. cerasinus* in the very elongate and thin gnathopods, the presence of an anteroventral cusp on coxa 3, the slightly more spinose uropods 1–2, the truncate telson, and the different proportions and setae patterns of pereopods 6 and 7.

Periocolodes aequimanus Kossman, 1880, (see Stebbing 1906) is poorly described but has the same elongate gnathopods of *P. acuticoxa* and may be a synonym of that species.

Periocolodes pallidus Griffiths, 1975, from South Africa in 39 meters, has nine possible generic characters of distinction from the type-species, *P. longimanus*, as follows: (1) lack of eyes; (2) long rostrum; (3) poor to undeveloped lacinia mobilis; (4) enlarged pereopod 6; (5) naked uropods; (6, 7, 8) short uropods 2–3 with unequal rami on uropod 3; (9) emarginate telson.

Our species differs from *Periocolopsis lophopus* Schellenberg from Ghana in the (1) absence of a distoventral tooth on article 1 of antenna 1; (2) the smallness of the gland cone on antenna 2; (3) the well-toothed mandibular incisors; (4) the unvelled posteroventral margin of coxa 6; (5) the equally extending rami of uropods 1–2 (in *Periocolopsis* the outer rami are shortened); and (6) the nonexcavate posterior margin of the telson.

The fusion of pleonites 5–6 in our species appears to be an apomorphic character quite remote from the same apomorphic expression in the Paracalliopiidae, an Indo-Pacific family with affinities to Oedicerotidae.

Distribution.—Biscayne Bay, Florida to Florida Keys to Tobago and Belize, 1–8 m.

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(JDT) Newfound Harbor Marine Institute, Rt. 3, Box 170, Big Pine Key, Florida 33043; (JLB) NHB-163, Department of Invertebrate Zoology, National Museum of Natural History Smithsonian Institution, Washington, D.C. 20560.