

LUcAYARINA CATAcUMBA, NEW GENUS, NEW
SPECIES, A BAHAMIAN SEA-CAVE AMPHIPOD
(CRUSTACEA: AMPHIPODA: LYSIANASSIDAE)

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Abstract.—A new genus of lysianassid amphipod, analogue of the Indo-Pacific *Glycerina*, is described from 2 sea-caves (blue holes) in the Bahamas Islands. *Lucayarina* differs from *Glycerina* in having article 2 of pereopods 5-7 indentured (in contrast to pereopod 5 only in *Glycerina*), the short article 3 and absence of dactylar shroud on gnathopod 1.

Legend

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: A, peduncle; B, body; C, coxa; D, dactyl; E, male duct; G, gnathopod; H, head; I, inner plate or ramus; J, prebuccal; K, male pores sternite 7; L, labium; M, mandible; N, pereon; O, outer plate or ramus; P, pereopod; R, uropod; S, maxilliped; T, telson; V, palp; W, pleon; X, maxilla; Y, gill; Z, pleopod; a, aberrant; f, flat; l, left; o, opposite; r, right; s, setae removed.

Family Lysianassidae

Lucayarina, new genus

Type-species.—*Lucayarina catacumba*, new species.

Diagnosis.—Head deeper than long, rostrum short, ocular lobe produced and gently rounded, lower antennal sinus weak. Eyes bilateral.

Antenna 1 slender, rather long; first article of peduncle slightly inflated, lacking tooth, longer than 2 and 3 combined; first flagellar article elongate, in female half, in male as long as article 1 of peduncle, with dense cover of aesthetascs in transverse rows on lateral surface; calceoli absent in material at hand. Accessory flagellum well developed, with 5 or 6 articles, article 1 as long as 2 and 3 combined. Antenna 2 with article 4 slightly longer than 5, flagellum shorter than peduncle.

Epistome slightly concave, distinctly separated from evenly rounded upper lip.

Mandible with rakers but no lacinia mobilis on either side, incisor with only one weak inner hump, remaining edge straight and smooth; molar prominent, slightly rounded, triturative, lacking major seta; palp moderately strong, attached very slightly proximal to base of molar, article 1 short, article 2 setose distally, article 3 shorter than 2, weakly falciform, with D and E setae.

Lower lip with simple, broadly rounded outer lobes, inner lobes absent.

Maxilla 1 with well developed inner plate bearing 1-2 major apical setae; outer plate with oblique apical margin bearing 11 denticulated spines weakly divided into 3 sets of 5, 5, plus 1 weakly discontinuous medial subapical spine; palp 2-articulate, almost reaching apex of outer plate, article 2 with 4 spine-teeth and several midapical serrations. Maxilla 2 with inner plate slightly shorter, more

pointed and much narrower than outer plate, apical armaments stout, inner plate with setae on apicomedial margin.

Maxillipeds with inner plate subrectangular, bearing 3 short apical spines and plumose setae apically, with plumose setae medially; outer plate squamiform, with 2 rows of spines ventrally, inner marginal row being shorter and truncated (with ragged, possibly worn ends); palp 4-articulate, article 2 reaching to apex of outer plate, dactyl long, unguiform, with outer long and inner short setules, short apical nail barely distinct.

Coxae 2–4 of same length, coxa 1 shorter and weakly bent forward; coxa 4 with ordinary posterior excavation and strong ventral lobe. Oostegites and gills on legs 2–6; brood plates of female slender, with setae apically (generally setae rudimentary). Gills saclike, not pleated, with much smaller auxiliary lobe attached proximally.

Gnathopods ordinary; gnathopod 1 simple, subequal in length to gnathopod 2, article 3 short, article 5 slightly shorter than 6, hand spinose, dactyl ordinary, not shrouded in setae; gnathopod 2 minutely chelate (or parachelate). Pereopods 3–4 article 6 with short spines posteriorly, locking spines large. Article 2 of pereopods 5–7 deeply serrate posteriorly; no pereopods prehensile.

Pleopods normal, peduncles poorly setose, with rami of subequal length; peduncle with 2 mediiodistal denticulate coupling-hooks. Epimeron 3 dominant, only epimeron 2 ventroapical corner somewhat sharply produced.

Uropods 1 and 2 well developed, styliiform, no ramus with special notch; uropod 3 biramous, peduncle box-like, both rami broadly lanceolate and shorter than peduncle, outer ramus 2-articulate, inner ramus shorter than outer. Telson slightly longer than broad, deeply cleft.

Description.—Antennal article 3 with lateral-distal row of spines. All coxae moderately setose. Only gill 6 subordinate (crenulation distally).

Relationship.—This genus closely resembles *Glycerina* Haswell, 1882, (= *Glycerina* Haswell, 1879) which has two known species, the type-species *G. tenuicornis* (Haswell, 1879), (? = *G. affinis* Chilton, 1885, said to be *Amaryllis macrophthalmus* by Stebbing, 1910), and *G. teretis* Andres, 1981. Another taxon, *Lysianassa woodmasoni* Giles, 1890, was made a synonym of *G. tenuicornis* by Pirlot (1936). If this composition is accepted, *G. tenuicornis* would have a distribution from southeastern Australia to India and Indonesia in 0–141 m; (*G. affinis* occurs southeastern Australia in shallow water), and *G. teretis* from the Red Sea in 1869 m. One must note that no modern record of *Glycerina* from India has been published and *Glycerina* from Australia has never been properly described, and therefore identifications in Indonesia and India are suspect. Despite this, the known characters of *Glycerina* are adequate to distinguish our new genus.

Lucayarina differs from *Glycerina* in the short article 3 and the absence of the inner dactylar setal shroud on gnathopod 1 and the deep tooth-like serrations of article 2 on pereopods 6–7; these teeth are present in *Glycerina* only on pereopod 5. If we can take Pirlot's (1936) and Andres' (1981) accounts as typically descriptive of *Glycerina* (note that the Australian specimens have not been described properly) then *Lucayarina* also differs from *Glycerina* in the unpleated gills, the lack of special notch on the inner ramus of uropod 2, the strongly setose article 2 of the mandibular palp, the thinner outer plate of the maxilliped, the contiguous and apical placement of the spines on the outer plate of maxilla 1, and the absence

of a tooth on article 1 of antenna 1. Dr. Andres believes the short article 3 of gnathopod 1 prevents any close affinity to be ascribed between *Glycerina* and *Lucayrina*. Dr. Lowry notes the different kind of spines present on the outer plate of maxilla 1 compared with *Glycerina*, differences in the mandibular molar, and strong differences in the setal shroud of gnathopod 1.

J. L. Barnard (1969) did not notice the weak similarity of *Glycerina* to the scopelocheirid genera typified by *Scopelocheirus* Bate, although he did note this for a similar genus *Ichnopus* Costa. Scopelocheirids are typified by a shroud of propodal and/or dactylar setae hiding the dactyl of gnathopod 1; in *Ichnopus* and *Glycerina* these setae are weakly developed on the posterior margin of the dactyl. In *Lucayarina* these setae are absent or very weakly represented (no more so than in non-scopelocheirid members of Lysianassidae). *Ichnopus* and *Glycerina* closely resemble each other in this character but *Lucayarina* lacks these setae. We leave the problem of the significance of this character and its higher taxonomic value to our colleagues now studying the internal divisions of Lysianassidae. *Lucayarina* otherwise differs from *Ichnopus* in the unpleated gills, the presence of deep teeth on article 2 of pereopods 5–7 (although the serrations of *Ichnopus pelagicus* Schellenberg, 1926, are said to be slightly enlarged), in the lack of a tooth on article 1 of antenna 1, the contiguous and apically placed spines on the outer plate of maxilla 1, the presence of rakers on both left and right mandibles (which needs study in *Ichnopus*), and the non-attenuate, non-hooked apex of the mandibular palp. Dr. Andres believes that the dense medial setation on the inner plate of maxilla 1 prevents any close relationship to be ascribed between *Lucayarina* and, for example, *Scopelocheirus*.

Lucayarina differs from *Aroui* Chevreux (1911) in the presence of pereopodal teeth, the poorly setose inner plate of maxilla 1, the non-paddle-shaped plates of maxilla 2, and the unpleated gills. Dr. Andres believes the slightly elongate article 3 on gnathopod 1 and the presence of a lacinia mobilis in *Aroui* prevent any affinity being ascribed between *Aroui* and *Lucayarina*.

Lucayarina differs from *Menigratopsis* Dahl (see Just 1976 for careful redescription) in the toothed pereopods, the absence of left lacinia mobilis, the well armed article 6 of pereopods 3–7, with locking spines, and the diverse extension of plates on maxilla 2; characters also noted by Drs. Andres and Lowry include the triturative molar, lack of calceoli, lack of accessory lobes on gills, and armament differences on palp of maxilla 1 and outer plate of maxilliped.

Etymology.—Word combination of Lucaya from the main tribe of Arawak Indians inhabiting the Bahamas before being exported and extirpated; and part of *Glycerina*; feminine.

Lucayarina catacumba, new species

Figs. 1–5

Description of female “a” 4.35 mm.—Head about 60% as long as wide, rostrum about 20% as long as remainder of head; ocular lobes mammilliform; eyes long, oval, capsule absent, pigment absent in alcohol.

Antenna 1 as long as antenna 2; second and third articles short, article 3 with 8 medium and 1 long aesthetascs, primary flagellum slender, longer than peduncle, with 11 articles, article 1 almost 1.4 times as long as article 3 of peduncle, formula

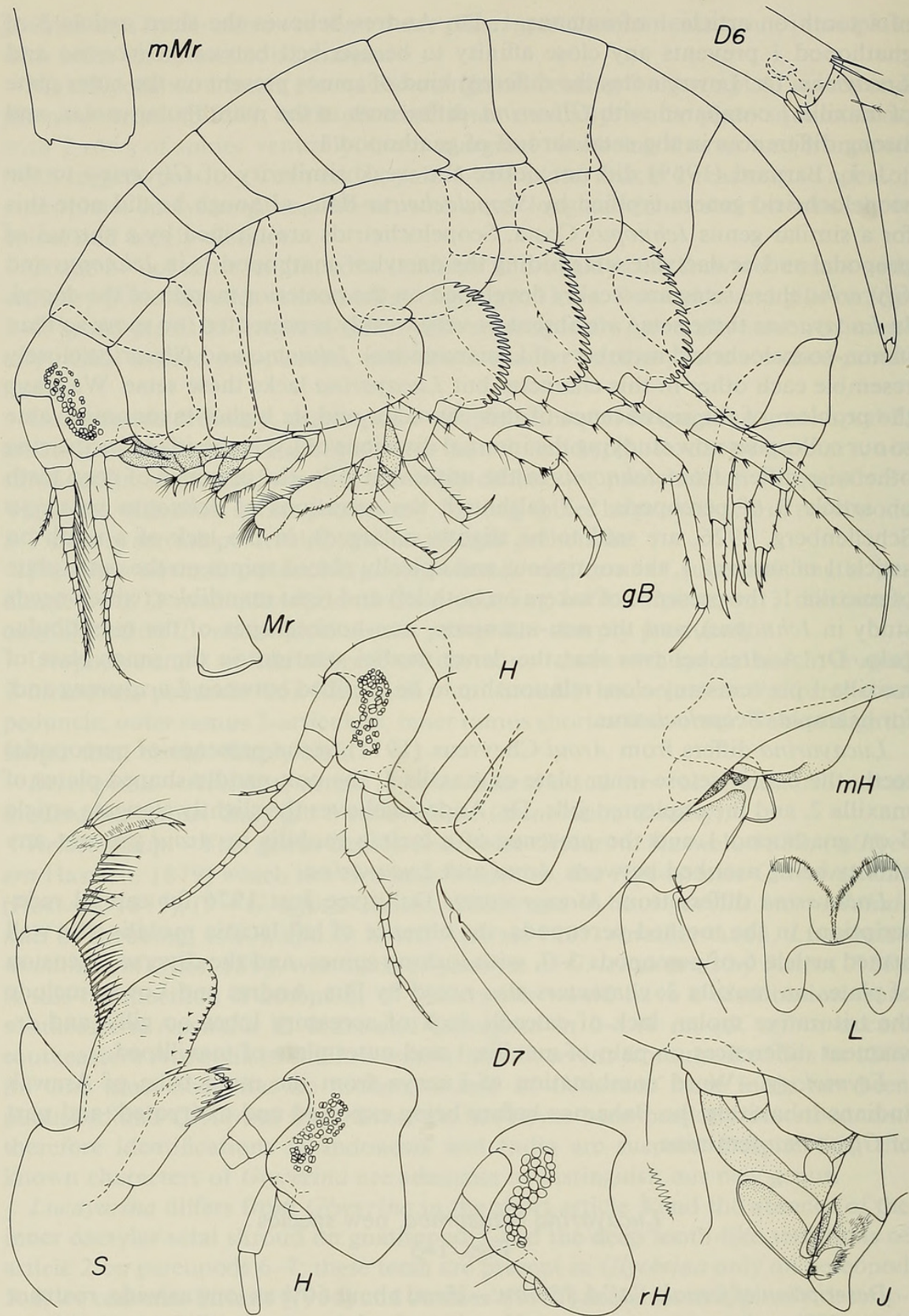


Fig. 1. *Lucayarina catacumba*, unattributed figures = female "a"; g = female "g"; m = male "m"; r = female "r."

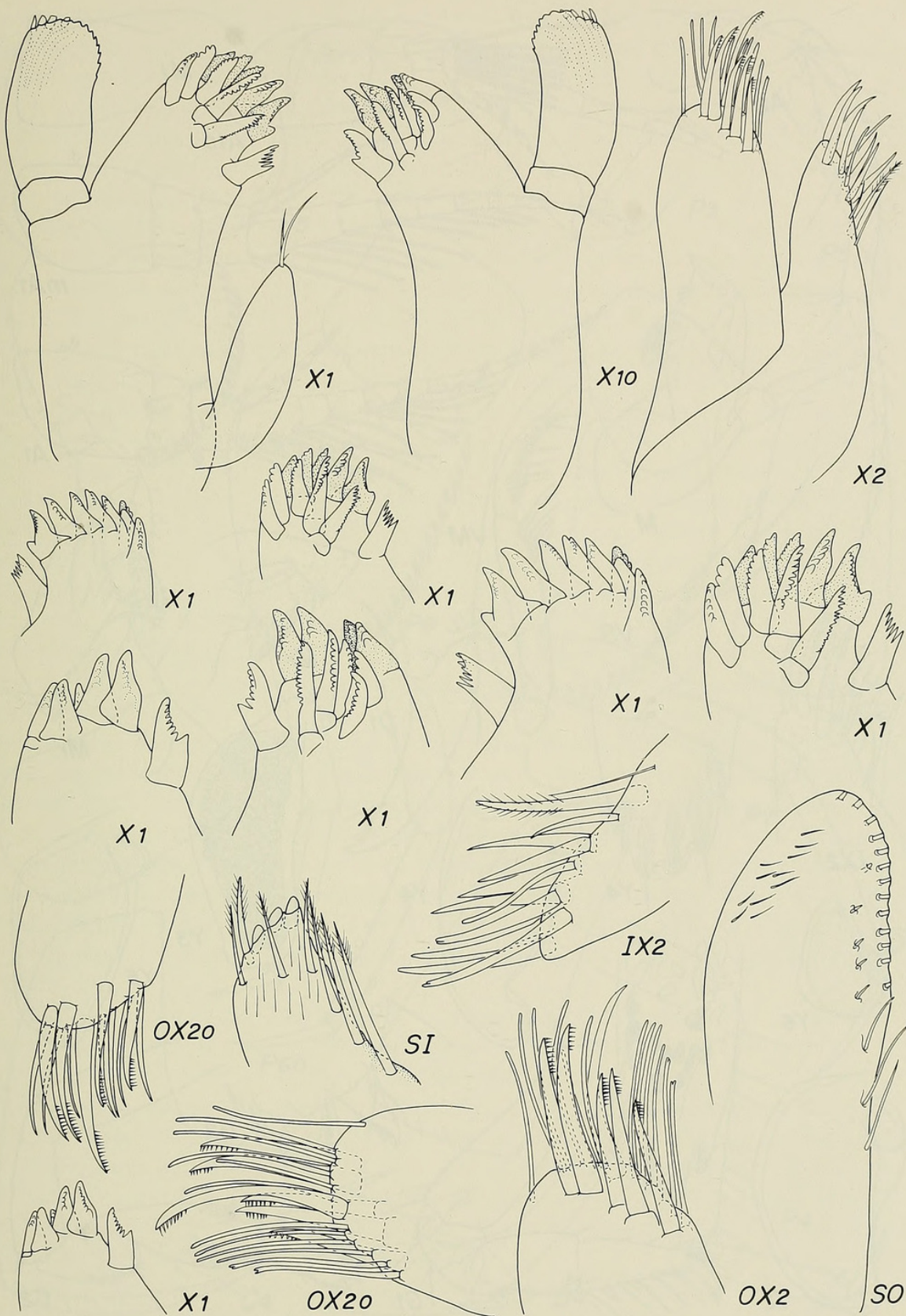


Fig. 2. *Lucayarina catacumba*, all figures = female "a." Views of outer plate of maxilla 1 based on both sides of appendage from various aspects.

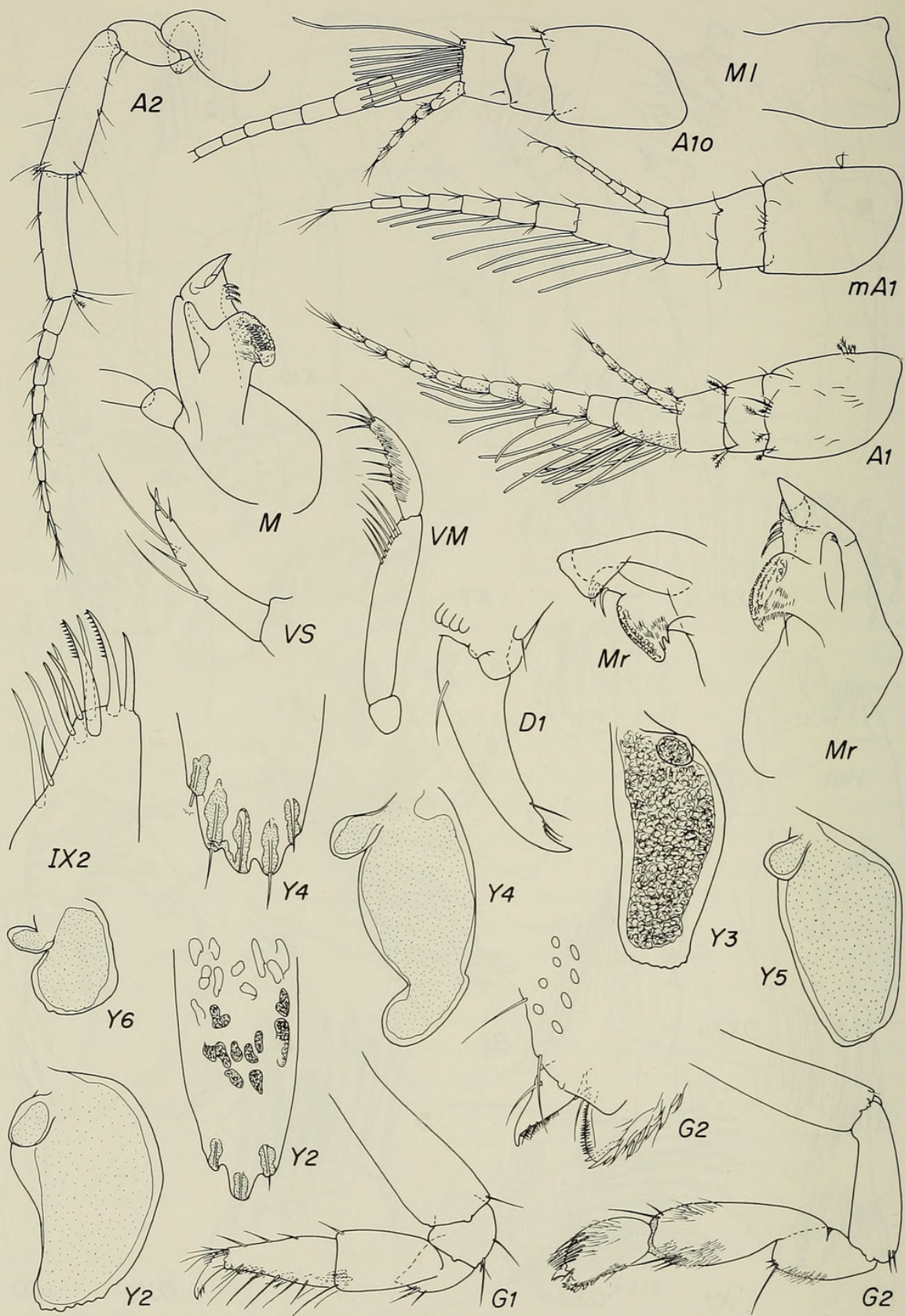


Fig. 3. *Lucayarina catacumba*, unattributed figures = female "a"; m = male "m."

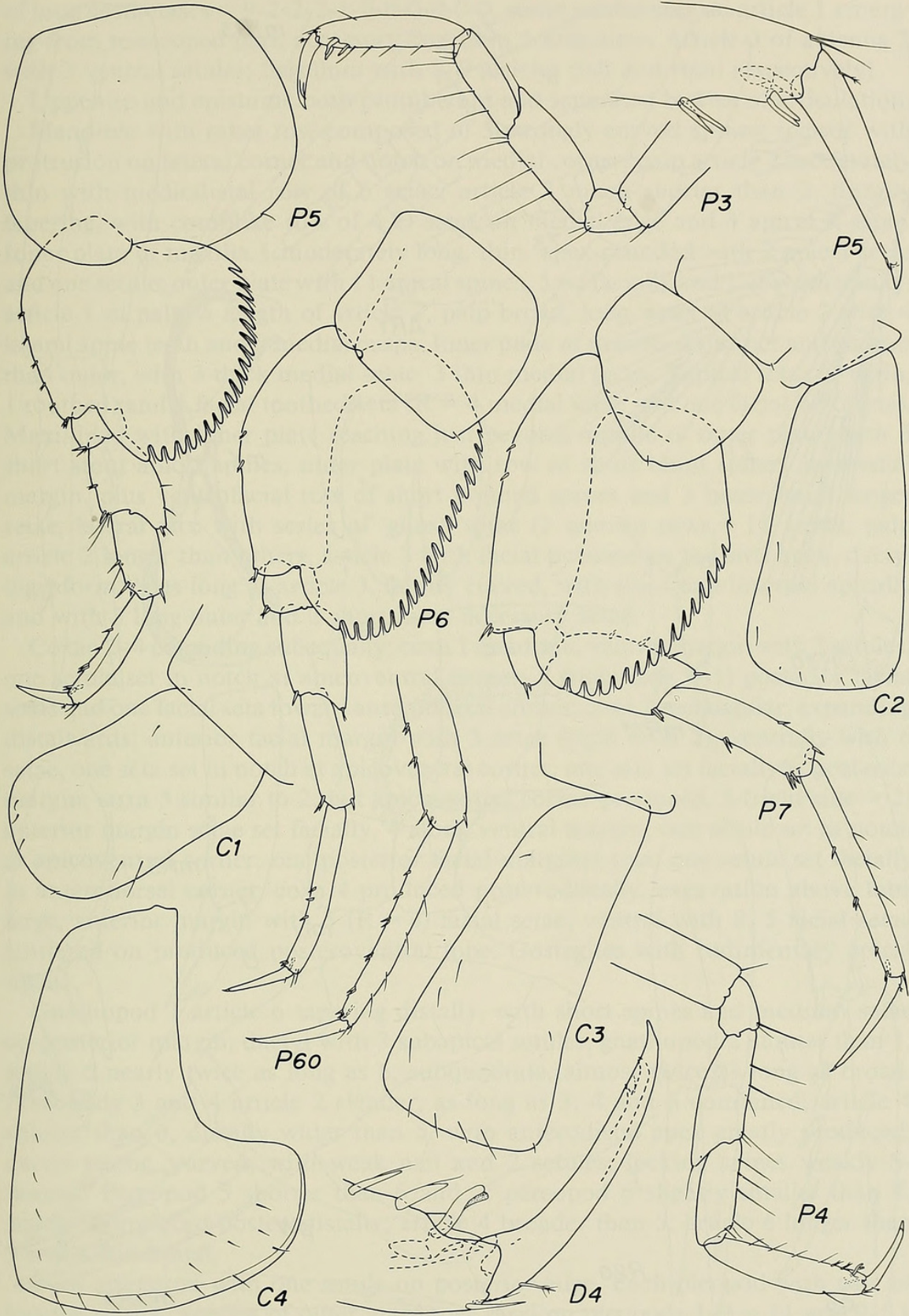


Fig. 4. *Lucayarina catacumba*, all figures = female "a."

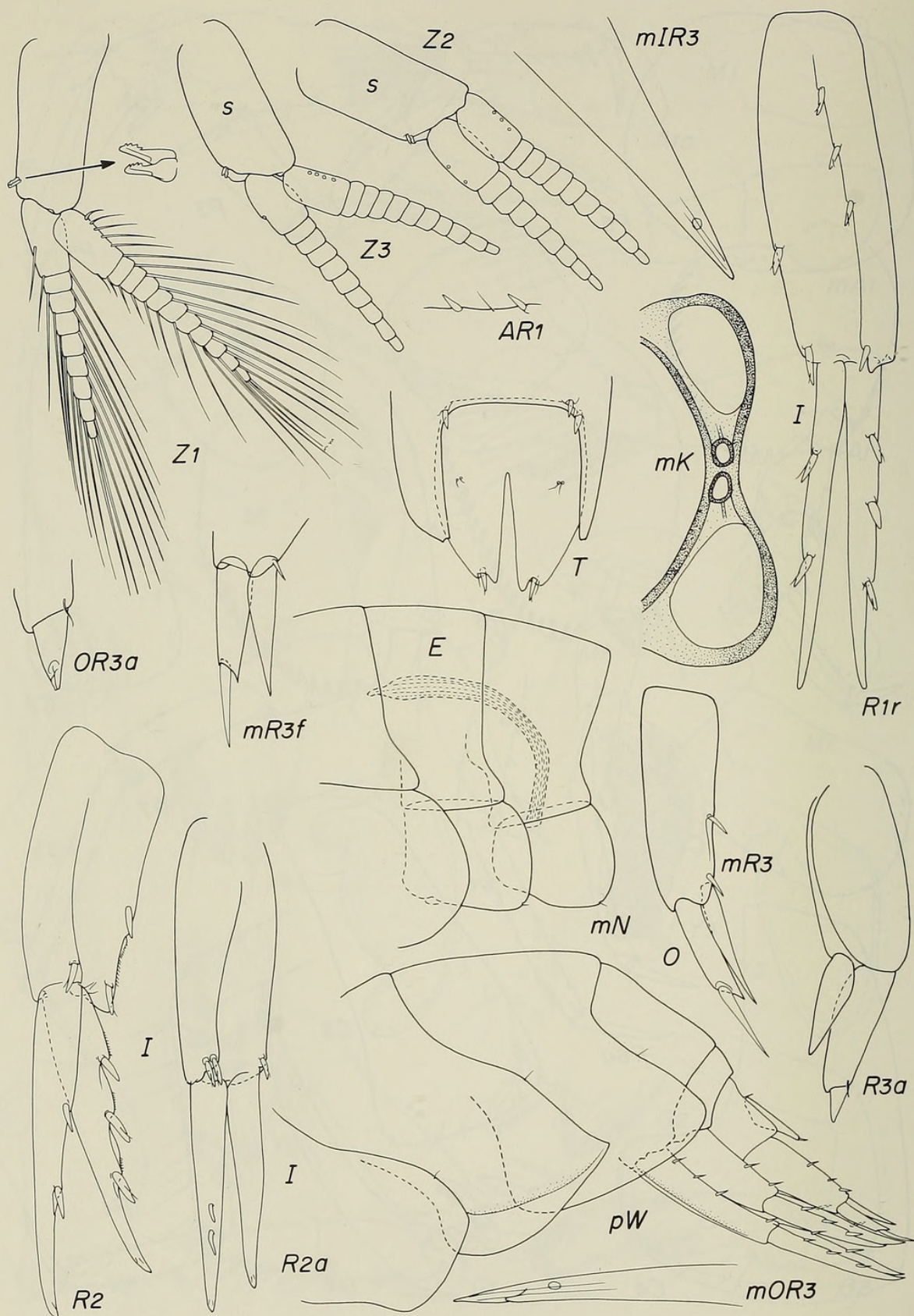


Fig. 5. *Lucayarina catacumba*, unattributed figures = female "a"; m = male "m"; p = female "p."

of long aesthetascs = 9-2-2-2-1-0-0-0-0-0-0, some aesthetascs on article 1 emerging from telescoped part, accessory flagellum 5-articulate. Article 3 of antenna 2 with 3 ventral setules; flagellum with 8-9 articles (left and right respectively).

Upper lip and epistome both protuberant and separated by line of articulation.

Mandible with raker row composed of 3 strongly curved spines; incisor with protrusion on lateral corner and notch on medial corner; palp article 2 moderately thin with mediobasal row of 6 setae; article 3 much shorter than 2, distally tapering, with comblike row of 4 D setae on medial edge and 4 apical E setae. Inner plate of maxilla 1 moderately long, thin, apex rounded with 2 apical setae and one setule; outer plate with 11 apical spines, 5 set facially and 1 offset medially; article 1 of palp $\frac{1}{4}$ length of article 2, palp broad, long, apex of article 2 with 4 lateral spine teeth and 8 medial cusps. Inner plate of maxilla 2 thinner and shorter than outer, with 3 thick medial setae, 3 thin medial setae, 3 apical setae (2 plain, 1 toothed) and 1 facial toothed seta (R = 4 medial setae and one facial bifid seta). Maxilliped with inner plate reaching just beyond middle of outer plate, with 3 short stout apical spines; outer plate with row of short blunt spines on medial margin, plus ventrofacial row of short pointed spines and 3 basomedial longer setae; lateral face with series of 'ghost' setae (2 uneven rows = 11 setae), palp article 2 longer than others, article 3 with facial pubescence towards apex, dactyl digitiform, $\frac{3}{4}$ as long as article 3, faintly curved, with stout nail inserted apically and with 3 long outer and 2 short inner accessory setae.

Coxae 2-4 extending subequally; coxa 1 quadrate, ventral margin with 3 setules, one setule set in notch at apicoventral corner, 2 (right side = 1) posterior facial setae and one facial seta toward anterodorsal corner; coxa 2 rectangular, expanding distalwards, anterior facial margin with 3 setae (right with 2), ventrally with 6 setae, one seta set in notch at apicoventral corner, one seta set facially at posterior margin; coxa 3 similar to 2, but apicoventral corner produced, 3 (right side = 2) anterior margin setae set facially, 4 along ventral margin, one setule set in notch at apicoventral corner, one posterior facial marginal seta, one setule set facially in anterodorsal corner; coxa 4 produced posterodistally, excavation above lobe large, anterior margin with 5 (R = 4) facial setae, ventral with 8, 5 facial setae scattered on produced posteroventral lobe. Oostegites with rudimentary apical setae.

Gnathopod 1 article 6 tapering distally, with short spines and medium setae on posterior margin; dactyl with 3 subapical setules; gnathopod 2 stouter than 1, article 5 nearly twice as long as 6, subquadrate, almost twice as long as broad. Pereopods 3 and 4 article 2 slender, as long as 3, 4 and 5 combined; article 4 shorter than 6, distally wider than 5, with anterodistal apex greatly produced; dactyl strong, curved, with weak nail and 2 setules; locking spines weakly S-shaped. Pereopod 5 shorter than 6 and 7; pereopod 6 slightly smaller than 7; article 2 produced posterodistally; article 4 broader than 5; article 6 longer than 3 and 4 combined.

Each epimeron with one setule on posterior edge. Each pleopod with pair of locking spines, articles of outer and inner rami on pleopods 1-3 = 11 and 9, 11 and 9, 11 and 10, basal setal formulas on rami (running from lateral to medial on each ramus) = 6-2-1-2, 4-1-1-3, 5-1-1-2.

Urosomite 3 with winglike plaque surrounding base of telson on each side, with 1 or 2 small spines at the corners of joint between telson and urosomite. Uropod

1 rami of equal length and as long as outer ramus of uropod 2; rami slightly shorter than peduncle, outer with 3, inner with 2 marginal spines. Uropod 2 rami of subequal length, both longer than peduncle, outer with 3, inner with 2 marginal spines; [left uropod 2 aberrant, see Fig. 5]. Uropod 3 (aberrant in female "a," see Fig. 5, following description from normal female) peduncle with 2–3 spines, rami lanceolate, outer ramus not as long as peduncle, article 2 spiniform, about 70% as long as article 1, medioapical corner of article 1 sharply produced; inner ramus slightly exceeding apex of article 1 of outer ramus; only armament of rami formed by one seta at medial base of inner ramus.

Telson with slightly convex lateral margins, tapering towards notched apices, each lobe bearing short terminal spine and setule set in notch, and pair of dorsal penicillate setules near midlateral margins.

Male "m"—3.87 mm. (Figs. 1, 3, 5): Antenna 1 flagellum with 8 articles, accessory flagellum with 6; formula of aesthetascs = (5 groups), 2,2,2,2,0,0,0. Uropod 3 peduncle with 2 dorsal spines (right with 3); pereonite 7 with 2 sternal pores and conspicuous duct running from base of coxa 7 through body to pereonite 5.

Female "r" 3.71 mm (Andros): Description based only on differences from holotype; parentheses show comparison to holotype when item is more, otherwise all statements concern "fewer": Unlike holotype, eyes with ommatidia (facets) mostly solid, not divided, inner ends not atrophied nor vermiform.

Antenna 1 article 3 with 7 medium and 1 long aesthetascs; primary flagellum with 9 articles; formula of long aesthetascs = 8-2-2-2-2-2-1-1-0-1-0 (more than holotype). Antenna 2 article 4 with 1 dorsal seta, article 5 with 1 ventral seta (more than holotype); flagellum on both right and left sides with 8 articles (similar to holotype).

Mandible palp article 2 with mediobasal row of 5 setae; article 3 with comblike row of 3 D setae on medial edge.

Maxilliped outer plate ventrofacial row with 4 short, pointed spines and 2 basomedial longer setae; lateral face with 14 "ghost" setae.

Coxa 2 lacking facial seta toward anterodorsal corner; coxa 3 with 3 setae along ventral margin and no facial setae on posterior margin or anterodorsal corner; coxa 4 with 3 facial setae on anterior margin and 2 facial setae on posteroventral lobe.

Gnathopod 1 article 6 with 2 anterior setae. Pereopod 3 articles 4 and 5 posterior margins each with 1 long seta; pereopod 4 articles 4 and 5 posterior margins each with 2 long setae; article 6 anterior margin naked, posterior margin with 3 medium setae and 1 short spine; pereopod 5 article 4 anterior margin naked; pereopod 6 article 6 posterior margin with 2 setae, anterior margin with 3 pairs of short spines and a single proximal spine.

Articles of outer and inner rami on pleopods 1–3 = 10 and 9, 9 and 8, 9 and 8.

Uropod 2 peduncle with 3 dorsomedial spines (more than holotype).

Holotype female "n" 3.90 mm.—Uropods 1–3 normal.

Female "p" 4.0 mm (Fig. 5). Epimera 2 and 3 with single setule on posterior edge.

Remarks.—The Andros material thus appears to differ only slightly from the Grand Bahama material in the eyes and variations in spines and setae.

Holotype.—USNM 195132, female "n" 3.90 mm.

Type-locality.—Grand Bahama Island, Cemetery Cave (a blue hole offshore 30+ m), 25 Oct 1982, 15 m depth, "red amphipods," on lobster carcass, coll. Thomas M. Iliffe and Dennis Williams.

Other material.—Type-locality, female "a" 4.35 mm (main illustrations), female "g" 5.37 mm (whole mount), male "m" 3.87 mm (illustrated), female "p" 4.0 mm (illustrated), female "q" 4.12 mm, male "s" 3.84 mm, female "t" 3.12 mm, and 250 other specimens, no apparent terminal males present; Andros Island, British Blue Holes Expedition, 1981–82, blue hole no. 31, from lobster carcass 100 m horizontal locus, depth of 15 m, Dr. George F. Warner, University of Reading, England, female "r" 3.71 mm (compared fully to holotype, head illustrated), and 30 other specimens.

Etymology.—Catacumba from the Latin for "underground burial gallery" or "ad catacumbas" "at the canyon" "at which one of the longest catacombs is situated"; feminine.

Distribution.—Sea caves in the Bahamas Islands.

Acknowledgments

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