1-1-1991

Two New Species of Netamelita from the Caribbean Sea (Crustacea: Amphipoda: Gammaridea)

James Darwin Thomas
Reef Foundation, thomasjd@nova.edu

J. L. Barnard
Smithsonian Institution

PROC. BIOL. SOC. WASH.
104(3), 1991, pp. 583–592

TWO NEW SPECIES OF *NETAMELITA* FROM THE CARIBBEAN SEA (CRUSTACEA: AMPHIPODA: GAMMARIDEA)

James Darwin Thomas and J. L. Barnard

Abstract.—The previously described species of *Netamelita* from California and the Gulf of Mexico are reviewed and two new species, *N. brocha* and *N. tabaci,* are described from the Florida Keys and Belize, respectively. A key to the species of *Netamelita* is provided. In the Caribbean Sea these species live on fine coralgal muds in forereef environments at depths of 30–40 m in a distinctive amphipod assemblage dominated by the genera *Garosyrrhoe* and *Metaceradocus.* The two new species of *Netamelita* were observed to plough through fine surficial flocculent materials, head downward, with urosomal appendages elevated above the sediment surface.

Our revision of *Netamelita* includes an emended diagnosis of the genus which formerly included only the type-species. Four species are now assigned to this genus; the revision below, with listing of species, references and biogeographic codes in brackets, reflects the format of Barnard and Barnard (1983).

New observations on the type-species, *N. cortada,* are given from our examination of the original material, courtesy of Dr. Joel L. Martin, Los Angeles County Museum.

Psammomelita uncinata Vonk (1988), an interstitial genus and species from coral sands of Curacao differs from *Netamelita* in the unique presence of hooks emerging from the sterna of pleonites 1–3 on the medial sides of the pleopods, a curved keel on the male maxillipeds, and a weaker lobe on the carpus of gnathopod 2. A fourth difference cited by Vonk, presence of heavy serrations on article 2 of pereopods 5–7, is now abandoned because that character is present in our new species of *Netamelita.*

Netamelita J. L. Barnard, 1962

Netamelita J. L. Barnard, 1962:110 (*Netamelita cortada* J. L. Barnard, 1962, original designation).

Diagnosis.—Body subvermiform. Rostrum absent. Lateral cephalic lobes rounded, sinus absent or very weak. Eyes moderately developed.

Antenna 1 elongate, longer than half of body length, ratio of peduncular articles = 20:15:4; primary flagellum slightly longer than peduncle; accessory flagellum 1-articulate. Antenna 2 short, about half as long as antenna 1, article 5 shorter than 4, flagellum shorter than peduncle, with about 7–8 articles.

Epistome unproduced, upper lip entire. Mandibular raker spines 4 or fewer, ratio of palp articles varying between 7:13:11 and 4:13:15, palp feeble, article 3 linear, setae = E 2–3. Inner lobes of labium fleshy, well developed. Maxillae inner plates naked medially; inner plate of maxilla 1 subrectangular, with 2 (rarely 3) large apical setae and 2 small apicolateral setules, outer plate with 9 spines, palps symmetrical. Inner plate of maxilla 2 without medial setae (often with sparse hair-like scales). Maxilliped lacking keel, inner plate bearing only apical setae, outer plate with medial spines, article 3 of palp lobed or unlobed, dactyl shorter than 3, unguiform, with nail.

Coxae short, scarcely touching or significantly overlapping, coxa 1 with subangular

anteroventral corner, in most species curved forward; coxa 4 unlobed, scarcely longer than coxa 5.

Gnathopods 1–2 feeble, mittenform, of similar size, carpi elongate, propodi shorter or scarcely shorter than carpi, rectangular, palms slightly oblique, short, carpus of gnathopod 1 unlobed, of gnathopod 2 well lobed.

Pereopods 5–7 progressively longer but together not greatly elongate. Article 2 of pereopods 5–6 alike, weakly to moderately expanded, of pereopod 7 expanded, lobate or not (type).

Outer rami of uropods 1–2 not significantly shortened or outer ramus of uropod 2 shortened, uropod 1 with basofacial spine; uropods 1–2 usually with 1 or more long displaced apical spine(s) on peduncle; uropod 3 greatly extended, parviramous, outer ramus elongate, primarily 1-articulate, with microscopic article 2. Telson of ordinary length, almost fully cleft, with weak or strong apical armaments, any penicillate setae apicad.

Coxal gills 2–6, thinly ovate, not stalked; oostegites very narrow, poorly setose (data from 3 species cited herein).

Relationship.—*Psammomelita* differs from *Netamelita* in the unique presence of hooks emerging from the sterna of pleonites 1–3 on the medial sides of the pleopods, and a curved keel on the male maxillipeds. Epimeron 1 has a giant anteroventral spine but this is present in one of our two species of *Netamelita.* Article 2 of pereopods 5–7 has large posterior serrations but both of our new species have that character. The carpus of gnathopod 2 is poorly produced but this is also true of our species. The latter three characters therefore are no longer diagnostic of *Psammomelita.*

A transformation of characters between the California type species of *Netamelita* and the Caribbean *Psammomelita* occurs in our new Caribbean species of *Netamelita* in the condition of epimeron 1, gnathopod 2, and pereopods 5–7. *Psammomelita* has 2 additional apomorphic characters, the pleonosternal hooks and keel on the maxillipeds. This does not necessarily mean that we consider the California *N. cortada* to have the plesiomorphic condition for all of the characters mentioned. It is very possible that *N. cortada* has lost what appear to be apomorphic characters in *Psammomelita* and Caribbean *Netamelita,* and thus has lost pleopodal hooks, anteroventral spine and protrusion of epimeron 1, and pereopodal serrations, while retaining what we consider to be the plesiomorphic (via *Eriopisella*) carpus of gnathopod 2.

Species.—*Netamelita barnardi* McKinney et alia, 1978, Texas [474]; *N. brocha* Thomas & Barnard, herein, Florida [478]; *N. cortada* J. L. Barnard, 1962, NE Pacific warm-temperate [370]; *N. tabaci* Thomas & Barnard, herein, Yucatan region [471].

Distribution.—Marine, California, Caribbean Sea, 15–76 m, 4 species.

Key to the Species of *Netamelita*

1. Article 2 of pereopods 5–7 with large serrations, main spine on telson at least ⅔ length of telson 2
– Article 2 of pereopods 5–7 with tiny or no serrations, main spine on telson less than ⅛ length of telson .. 4
3. Article 2 of pereopod 7 not lobate, epimeron 1 without thick anteroventral spine ..... *N. brocha*
– Article 2 of pereopod 7 lobate, epimeron 1 with thick anteroventral spine ..... *N. tabaci*
4. Article 2 of pereopod 7 with some long posterior setae 1.5 times length of article 3, anteroventral lobe of coxa 1 longer than width of coxa at base, epimeron 3 with ventral spines as long as any spine on uropods 1–3 ..... *N. barnardi*
– Article 2 of pereopod 7 with long posterior setae less than 0.5 times length of article 3, length of anteroventral lobe of coxa 1 less than half

width of coxa at base, epimeron 3 with ventral spines less than one third as long as any spine on uropods 1–3 ..... *N. cortada*

Netamelita cortada J. L. Barnard

Netamelita cortada J. L. Barnard, 1962:113, fig. 23.

Diagnosis.—Coxa 1 moderately curved forward. Article 2 of pereopods 6–7 weakly lobed posteroventrally, of 5–7 smooth to very minutely serrate. Epimeron 1 without posteroventral tooth, without thick anteroventral spine; epimera 2–3 each with small simple posteroventral tooth, epimeron 2 bearing dense ventral setae, epimeron 3 with 6 small ventral spines. Outer ramus of uropod 1 scarcely shortened, of uropod 2 strongly shortened, lacking marginal spine. Peduncle of uropod 2 without huge spine. Apical spines of telson very short, less than one-fifth as long as telson.

Subsidiary observations.—Based on re-examination of holotype now in Los Angeles County Museum. Article 1 of mandibular palp slightly elongate, without seta, article 2 naked, article 3 with 2 apical setae. Right lacinia mobilis with 3 teeth, left with 4 teeth. Left mandible with 1 large and 2 small rakers, right with 2 large and 2 small rakers. Outer plate of maxilla 1 with 9 spines. Inner plate of maxilliped with 11 apical setae, 1 coupling spine, no medial or mediofacial setae; outer plate with 5 long apical comb-setae, 9 medial spines and pairs or triads of medioventral shorter simple spines totaling 13 spines; palp article 3 expanded and produced, pubescent. Coxa 7 lacking gill. Epimeron 1 lacking anteroventral spine. Sterna of pleosome lacking triangular projections or hooks. Peduncle of uropod 1 with basofacial spine, with apical displaced spines, lateral one of medium size, medial one of large size, lateral and medial apex also with small partner spine(s). Peduncle of uropod 2 with 2 dorsolateral spines in tandem, with small lateral and medial displaced spines, plus 2 sets of more proximal medial spines in tandem. Rami of uropod 1 with 3(?4) apical spines, inner with one marginal spine; of uropod 2 each ramus with 5 apical spines, outer with no marginal and inner with 2 and 3 opposite marginal spines. Apex of each telsonic lobe with one short spine, one or two apical penicillate setules and pair of lateral penicillate setules near apex.

Material examined.—The holotype in the Los Angeles County Museum (now owner of collections from Allan Hancock Foundation).

Distribution.—Southern California between Point Conception and Gaviota, 20 m.

Netamelita brocha, new species
Figs. 1–3 (part)

Etymology.—From Latin, *brochus,* toothed, referring to the teeth of the pereopods.

Diagnosis.—Coxa 1 strongly curved forward. Article 2 of pereopods 5–7 not lobed posteroventrally, of 5 weakly serrate, of 6 moderately serrate, of 7 strongly serrate. Epimera 1–3 each with sharp posteroventral tooth, tooth doubled on epimeron 1, epimeron 1 lacking thick anteroventral spine, epimeron 2 with several ventral and subfacial setae; epimeron 3 with row of ventral marginal spines (6 in holotype). Outer rami of uropods 1 and 2 not shortened, with marginal spine(s). Peduncle of uropod 2 with 1+ huge spine. One apical spine of telson at least three-quarters as long as telson.

Subsidiary observations.—Article 1 of mandibular palp short, with one seta, article 2 naked, article 3 with 3 apical setae. Left and right mandibles with 2 rakers. Maxilla 1 outer plate with 9 spines, palp article 2 with 9 apical elements. Maxilliped outer plate with 5–6 long apical comb-setae, and pairs or triads of medioventral shorter simple spines, palp article 3 expanded, lobate apicolaterally. Uropod 1 peduncle with apical displaced spines, lateral one of medium

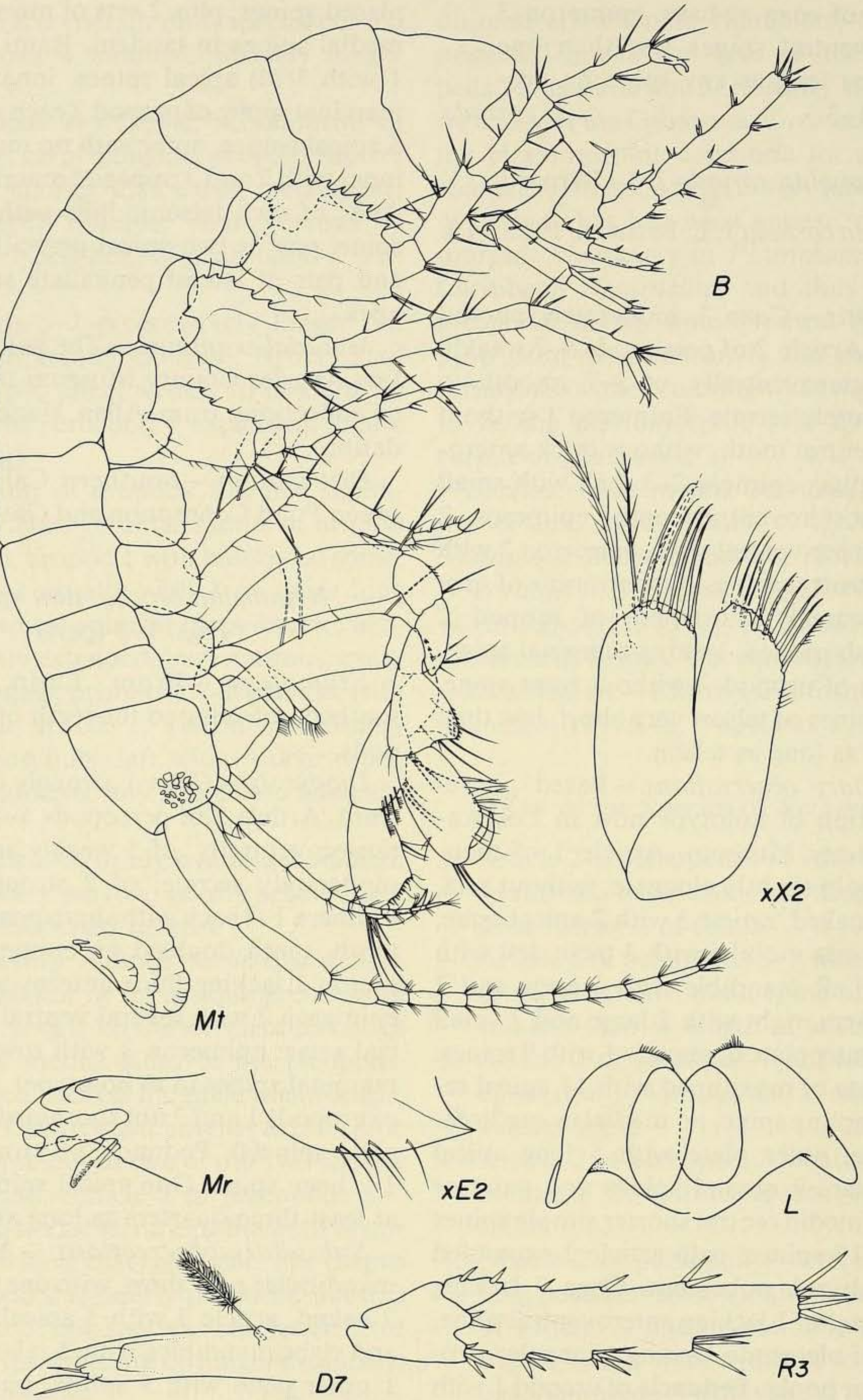
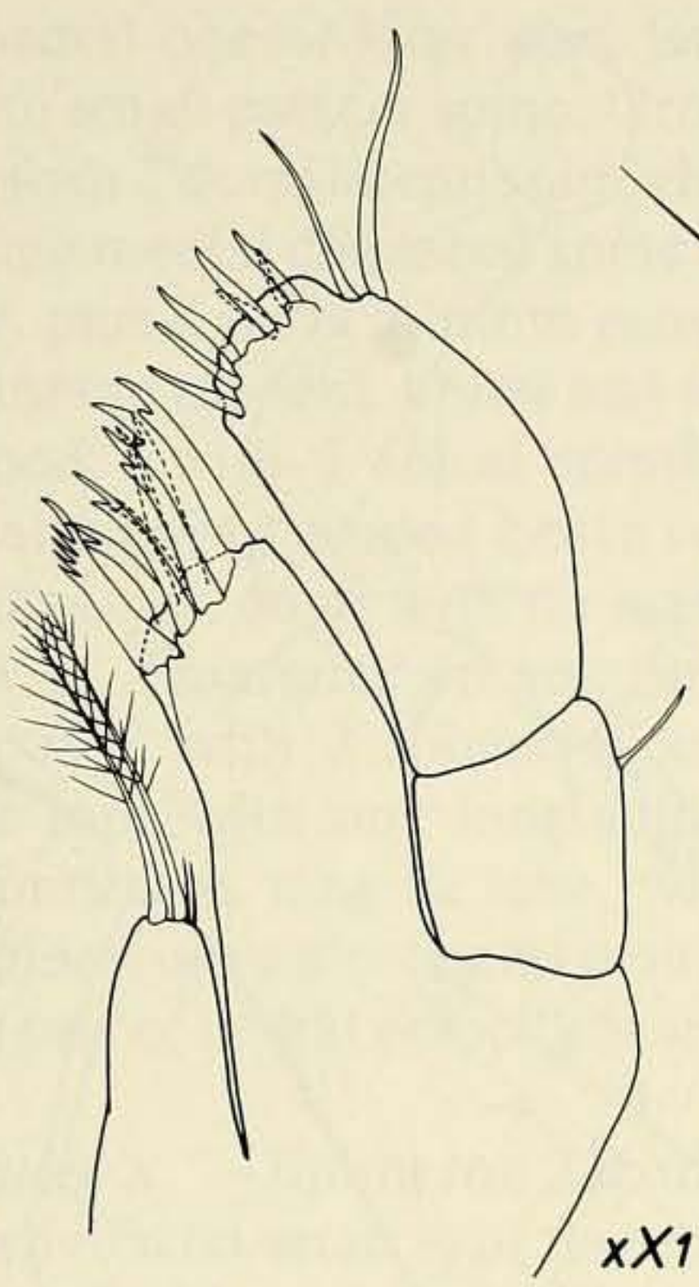
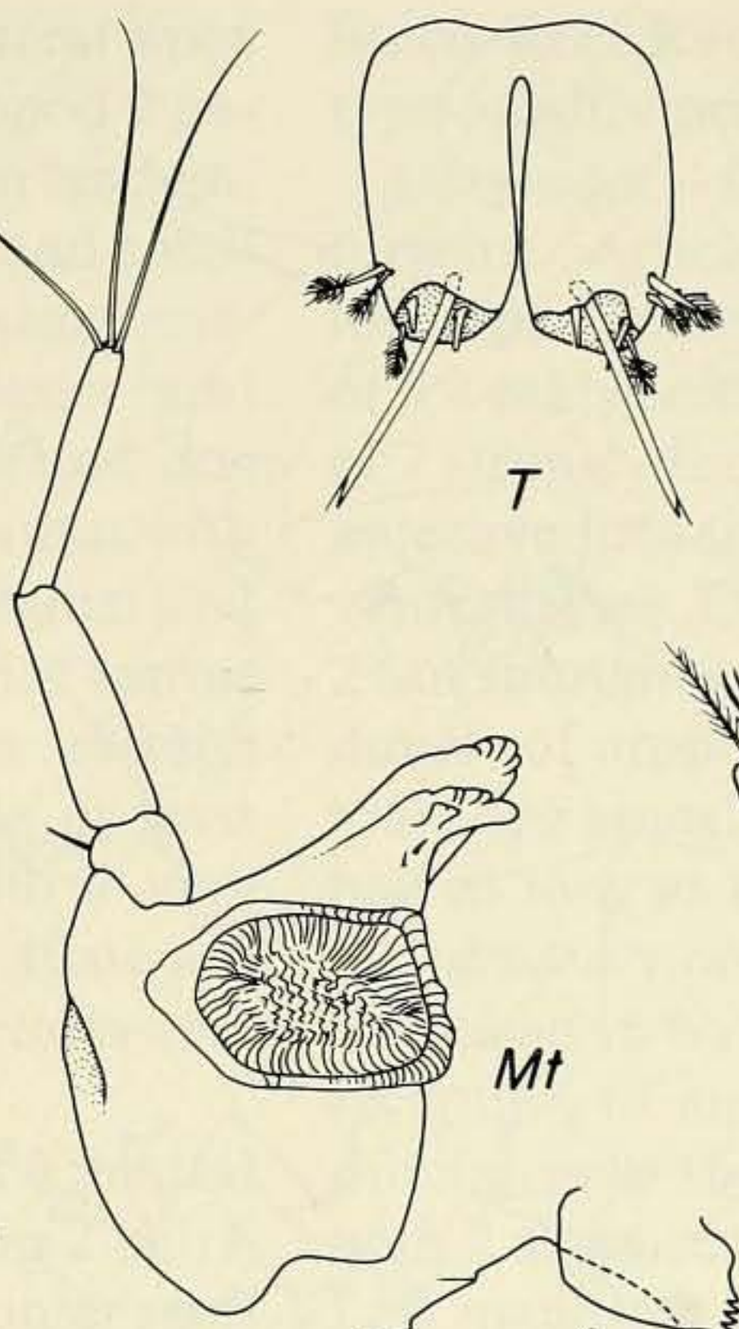
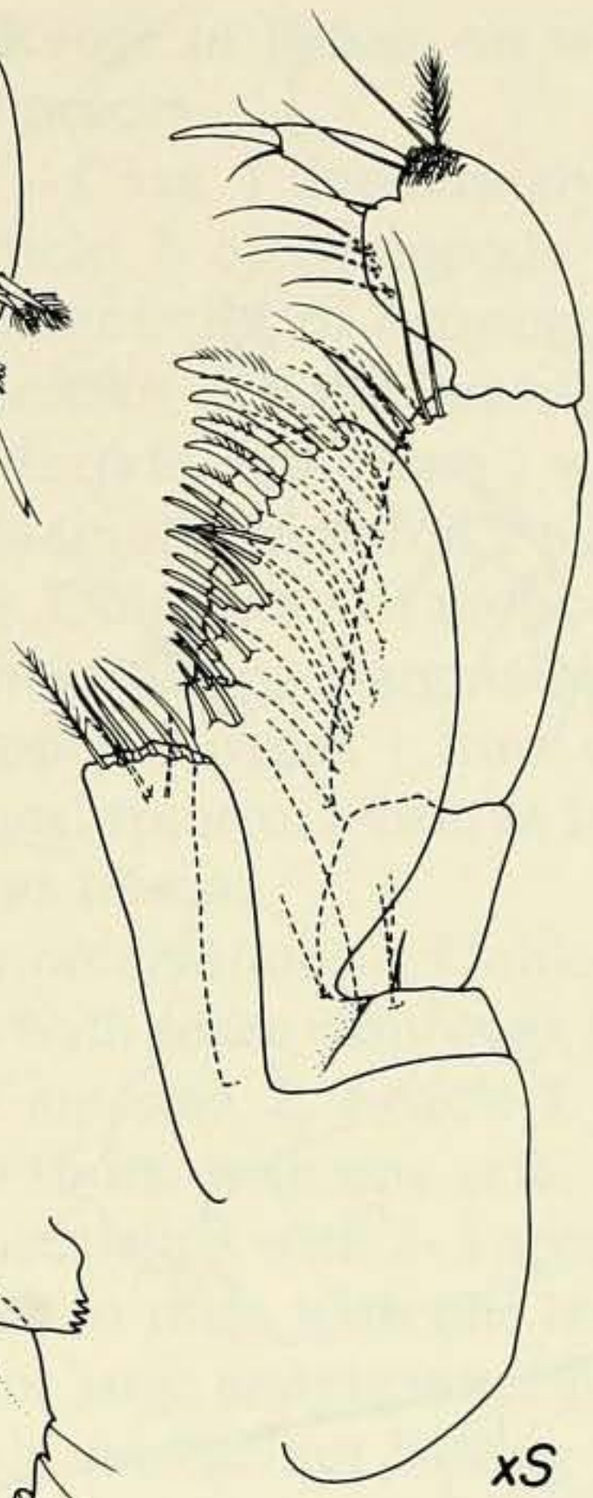
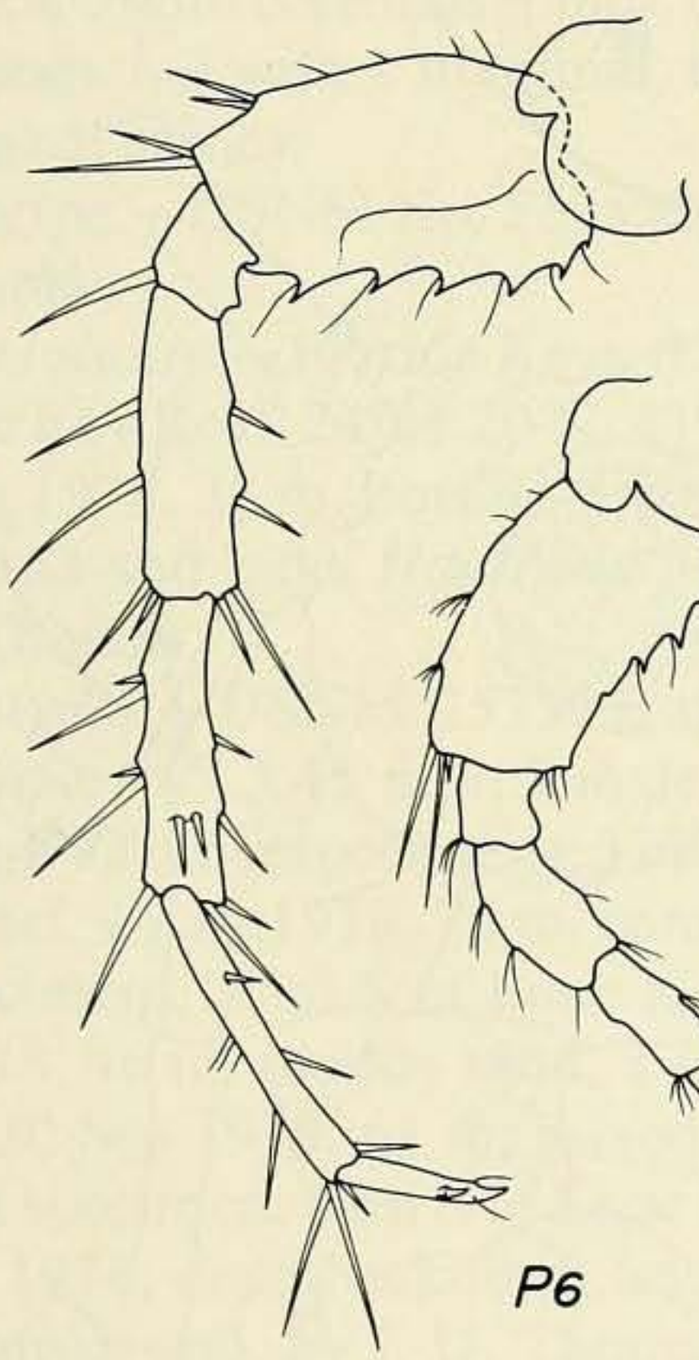


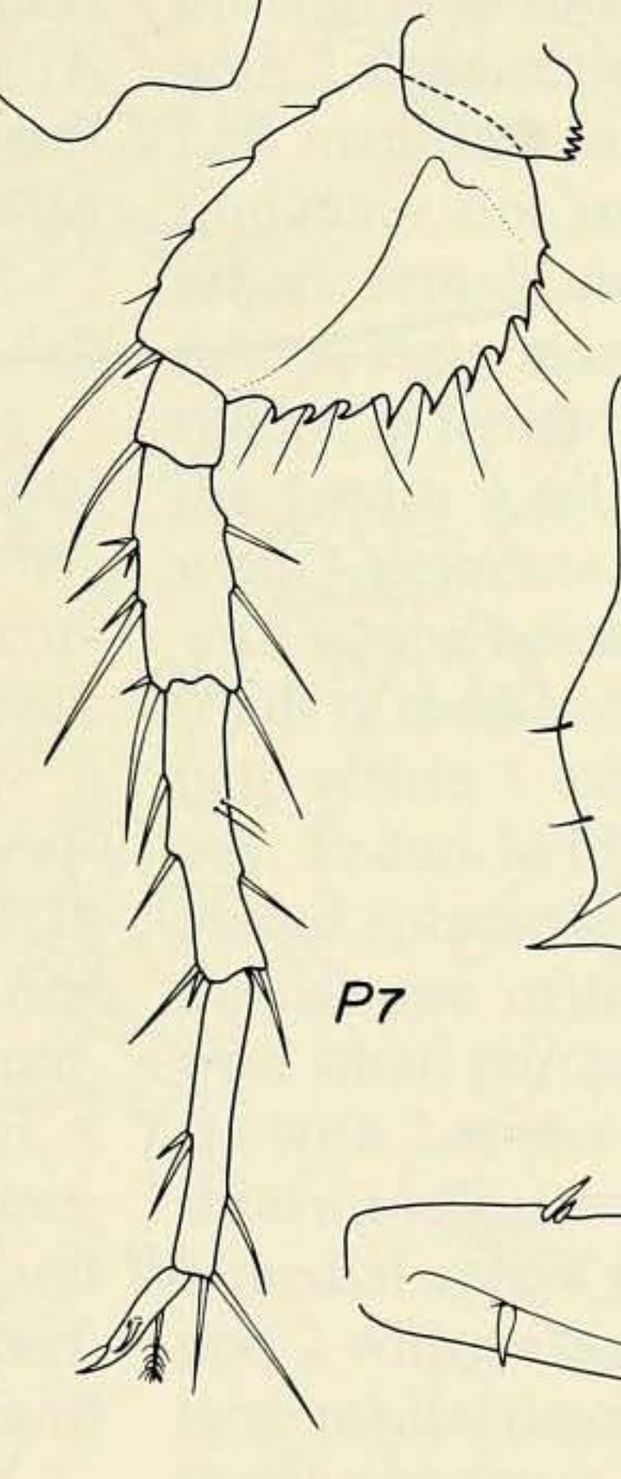
Fig. 1. *Netamelita brocha,* n. sp., figures without lower case letter to left of each caption = holotype male "z," 3.46 mm; x to left of each caption = female "x" 3.45 mm. xE2 is left sided. capital letters in figures refer to parts; lower case letters to left of capital letters refer to specimens and to the right refer to adjectives as described: B, body; C, coxa; D, dactyl; E, epimeron(a); G, gnathopod; H, head; I, inner plate or ramus; L, labium; M, mandible; P, pereopod; R, uropod; S, maxilliped; T, telson; U, upper lip; V, palp; W, pleon; X, maxilla; a, apex; r, right; t, left.

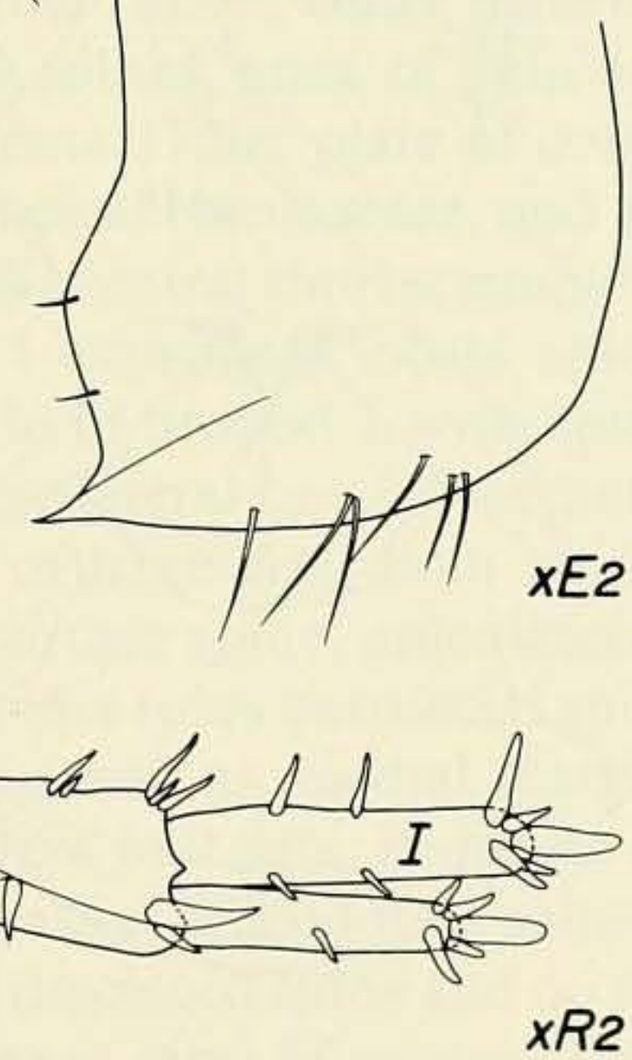


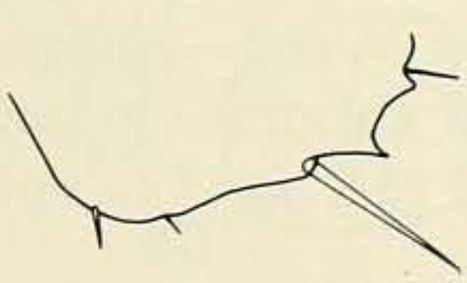












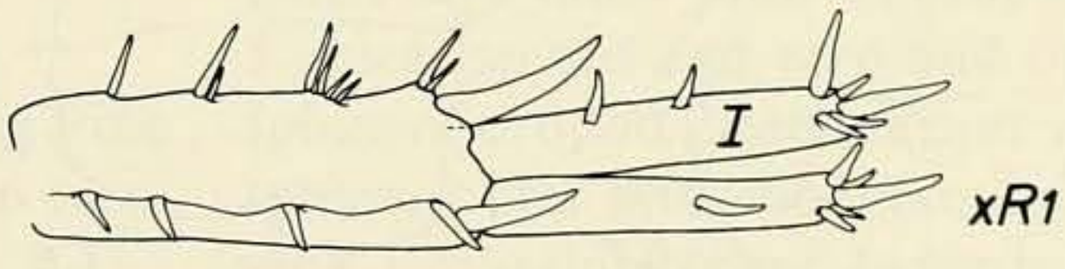


Fig. 2. *Netamelita brocha,* n. sp., figures without lower case letter to left of each caption = holotype male "z," 3.46 mm; x to left of captions = female "x" 3.45 mm. xE2 is right sided.

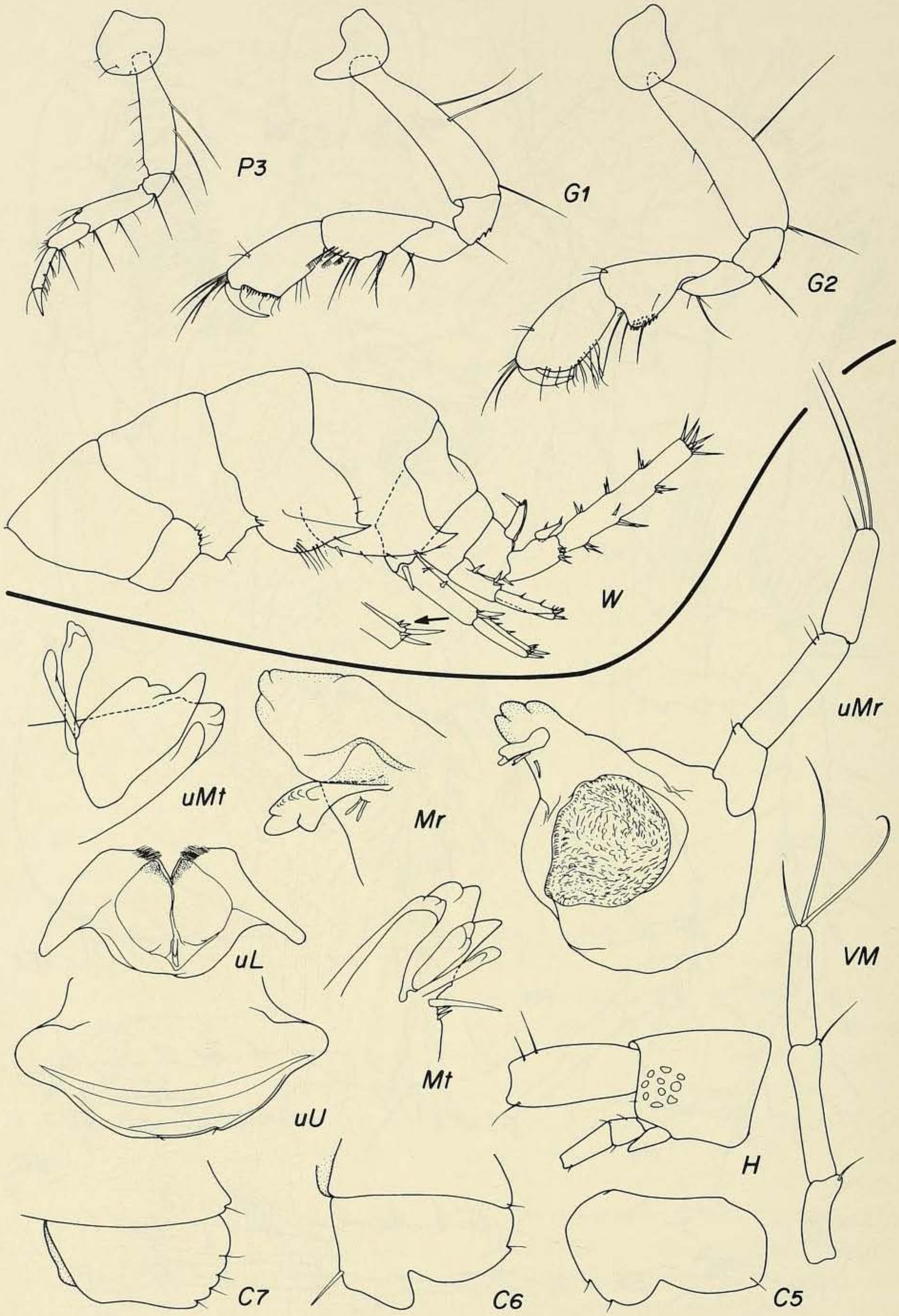


Fig. 3. Upper, *Netamelita brocha,* n. sp., figures without lower case letter to left of each caption = holotype male "z," 3.46 mm; x to left of caption = female "x" 3.45 mm. Lower, *Netamelita tabaci,* n. sp., figures without lower case letter to left of each caption = holotype male "t" 2.58 mm; u to left of caption = female "u" 2.55 mm.

size, medial one of large size, lateral apex also with small partner spine. Uropod 2 peduncle with 2 dorsolateral spines in tandem, with large medial displaced spine and small partner, plus 2 pairs of more proximal medial spines in tandem. Outer and inner rami of uropod 1 with 4 apical spines and one marginal spine; of uropod 2 each ramus with 5 apical spines, outer with no marginal and inner with 2 marginal spines; inner ramus of uropod 3 with 2 spines. Apex of each telsonic lobe with one long spine at least three-fourths as long as lobe, with 2 very short spines, one apicolateral penicillate setule and pair of lateral penicillate setules near apex.

Female "x."—Epimeron 2 with 6 ventral and partly facial setae, 4 of these in 2 pairs; epimeron 3 with 6 ventral spines; outer rami of uropods 1–2 with 1 marginal, inner with 2 marginal spines.

Holotype.—USNM No. 253532, male "z" 3.46 mm.

Type locality.—Florida Keys, 0.25 mi SW of Looe Key Reef, 24°31.20′N, 81°25.93′W, 14 Aug 1978, 35 m, bottom dredge on coralgal mud and large *Halimeda* flakes, coll. J. D. Thomas.

Paratypes.—USNM 253533, type locality, female "x" 3.45 mm; female "y" 3.39 mm; and 12 other specimens; 3 mi S of Looe Key Reef, 9 Aug 1978, 76 m, coralgal mud, 35 specimens; 2 mi S of Looe Key Reef, 4 Jul 1978, 46 m, muddy sand, 3 specimens; same, 30 Sep 1978, 61 m, mixed mud and sand, 1 specimen; 1 mi S of Looe Key Reef, 17 Jul 1978, depth unknown, muddy sand (all samples coll. by J. D. Thomas).

Relationship.—See *N. tabaci.*

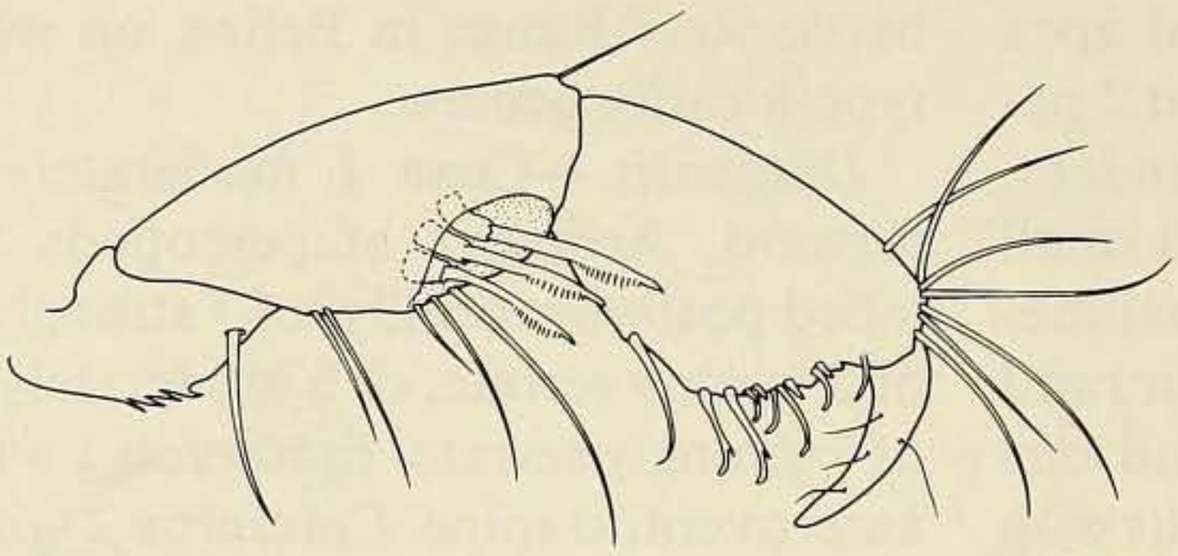
Distribution.—Florida Keys, off Big Pine Key, region of Looe Key Reef, 35–76 m.

Netamelita tabaci, new species
Figs. 3–5 (part)

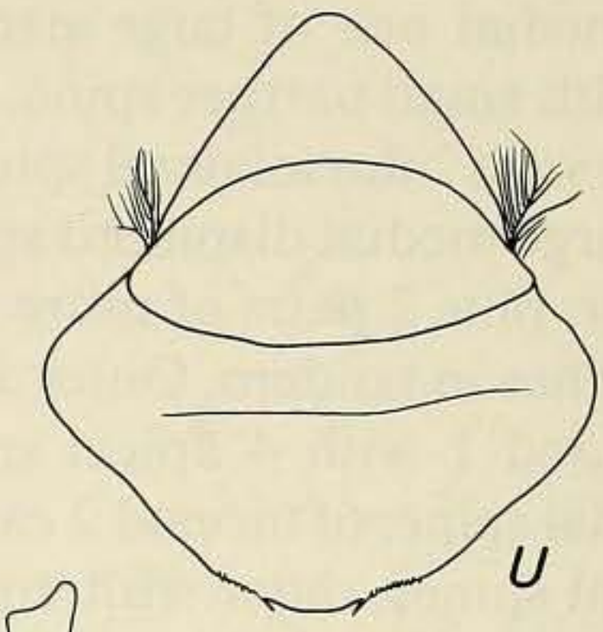
Etymology.—From new Latin *tabacum,* Aboriginal American, referring to the Tobacco Reef Range in Belize, on which the type-locality occurs.

Diagnosis.—Coxa 1 moderately curved forward. Article 2 of pereopods 5–6 not lobed posteroventrally, of 7 strongly lobate, of 5 weakly serrate, of 6 moderately serrate, of 7 strongly serrate. Epimeron 1 with thick anteroventral spine. Epimeron 2 with dense ventral setae. Outer rami of uropods 1 and 2 not shortened, lacking marginal spine. Peduncle of uropod 2 with 1+ huge spine. In male one apical spine of telson at least one-half as long as telson.

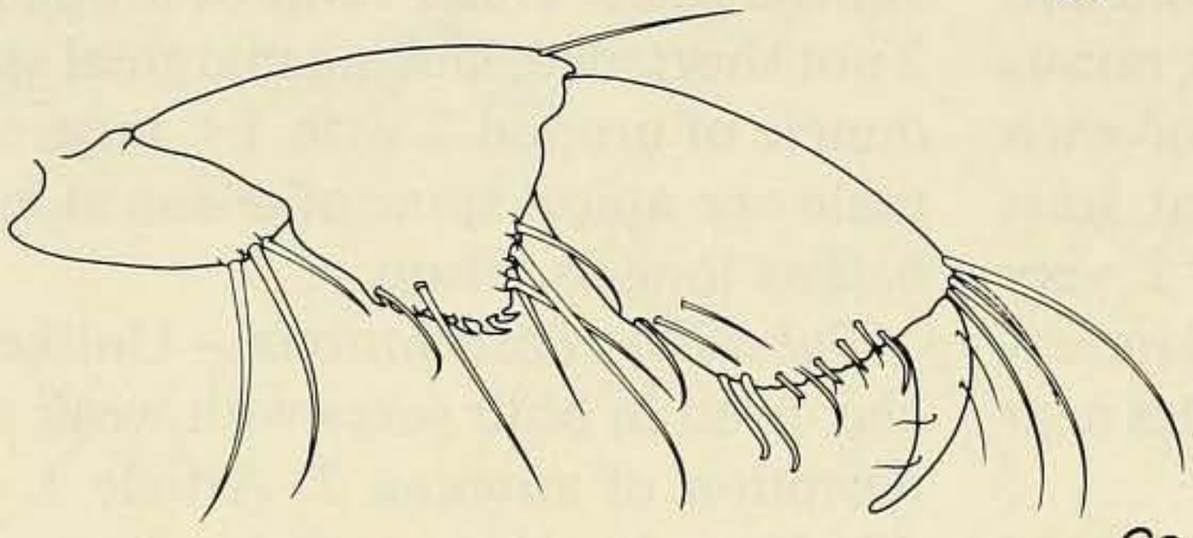
Subsidiary observations.—Unlike *N. brocha,* head in both sexes with weak sinus for reception of antenna 2. Article 1 of mandibular palp short, with one seta, article 2 with 2 setae, article 3 with 2–3 apical setae. Left mandible in male with one large multifid raker, one large simple raker and 2 tiny rakers, female similar but lacking two tiny rakers, right mandible in male with 2 tiny rakers, in female none. Outer plate of maxilla 1 with 9 spines, apex of palp article 2 with 7 elements. Outer plate of maxilliped with 6 long apical comb-setae, and pairs or triads of medioventral shorter simple spines, palp article 3 expanded, lobate apicolaterally. Peduncle of uropod 1 with apical displaced spines, lateral one of medium size, medial one of large size, both apices also with small partner spine, apicolateral margin with 2 spines (plus basofacial spine also shown in illustration), medial margin with 3 medial spines in 2 sets. Peduncle of uropod 2 with pair of apicodorsal spines, with large medial displaced spine and no partner. Outer and inner rami of uropod 1 with 4–5 apical spines and zero and one marginal spine; of uropod 2 each ramus with 4 apical spines, outer with no marginal and inner with 1 marginal spine. Inner ramus of uropod 3 with 1 spine. Apex of each telsonic lobe in male with one long spine at least half as long as lobe, with 2 very short spines, one apicolateral penicillate setule and pair of lateral penicillate setules near apex; in



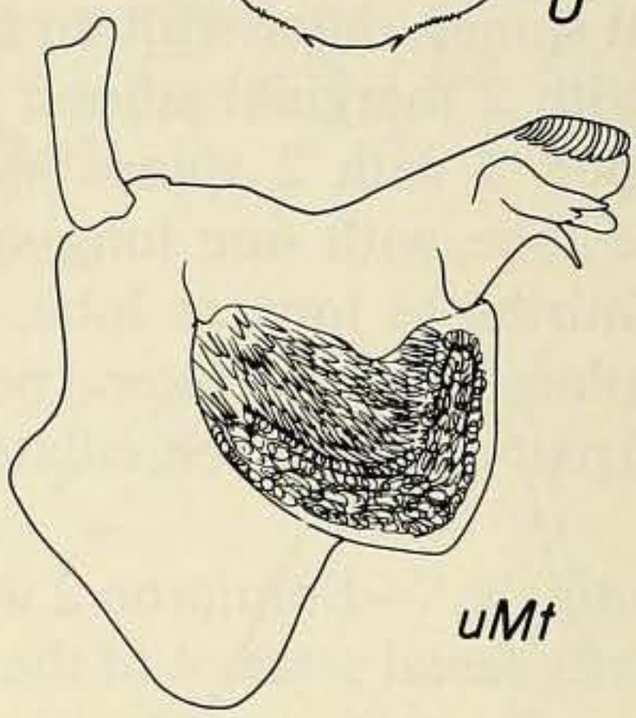
G1



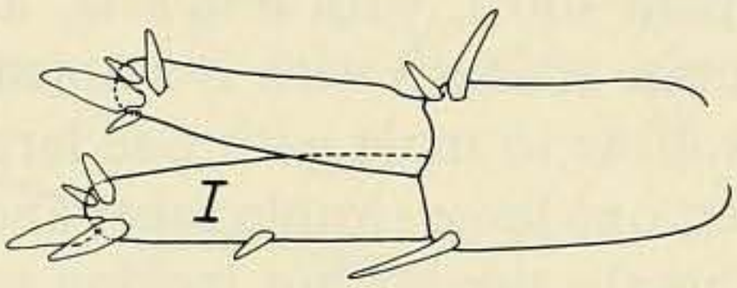
U



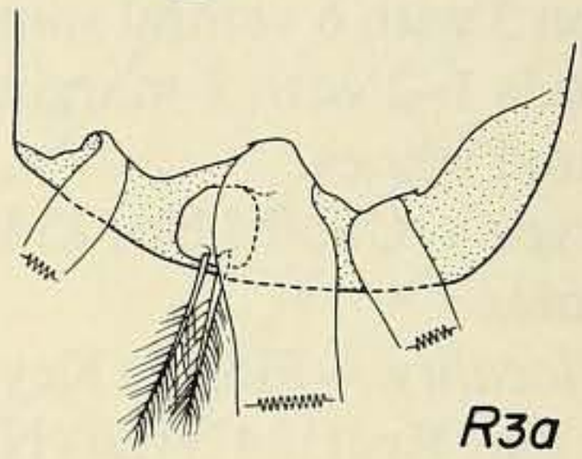
G2



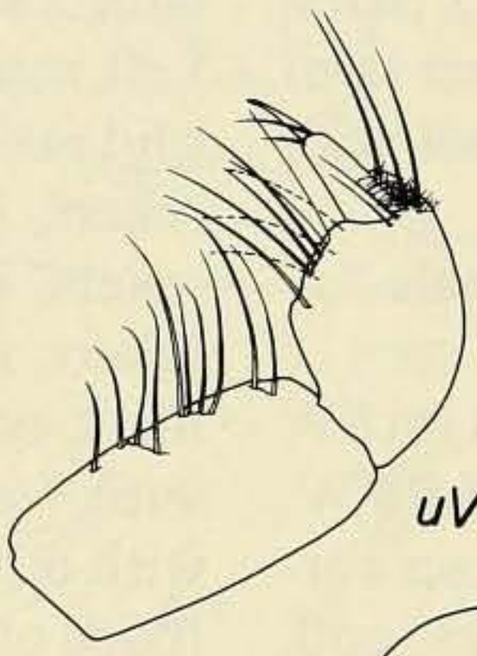
uMt



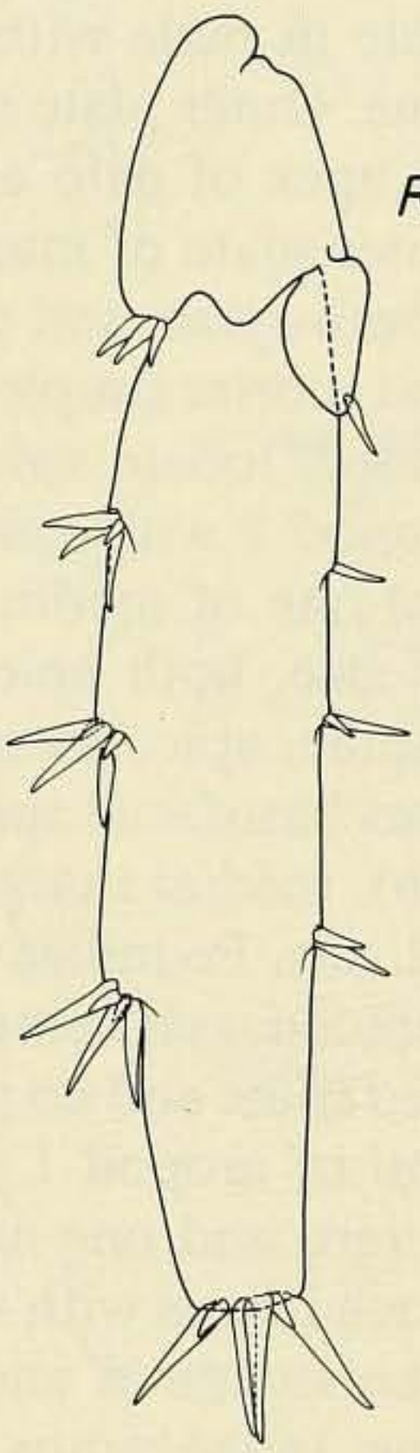
R2



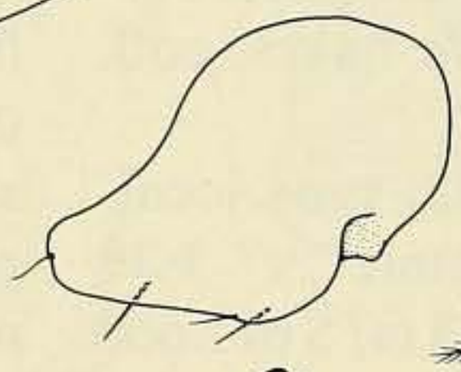
R3a



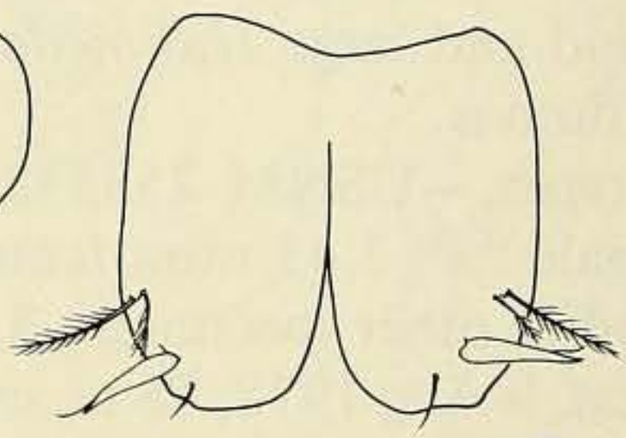
uVS



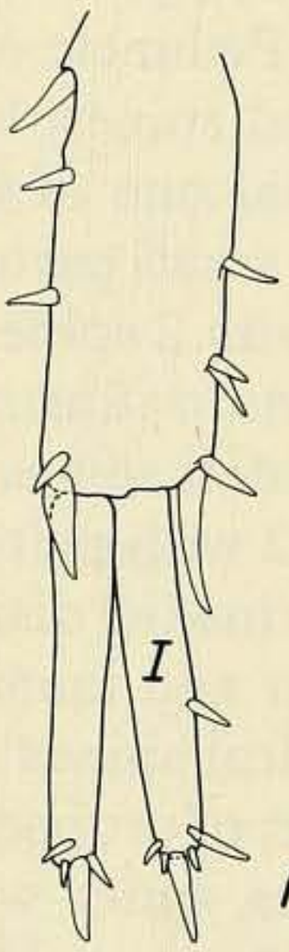
R3



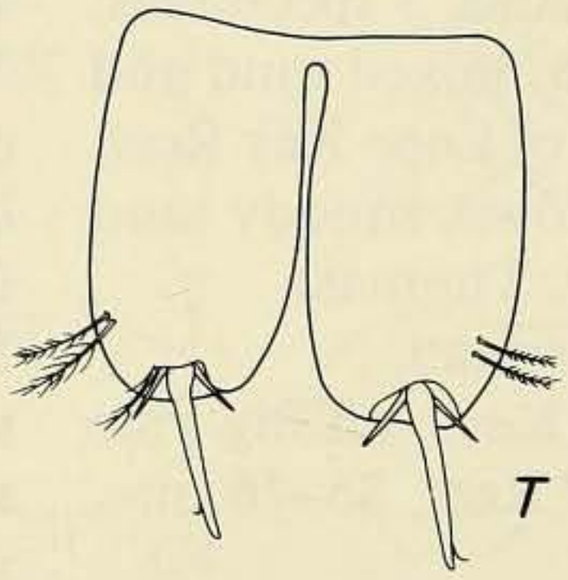
C1



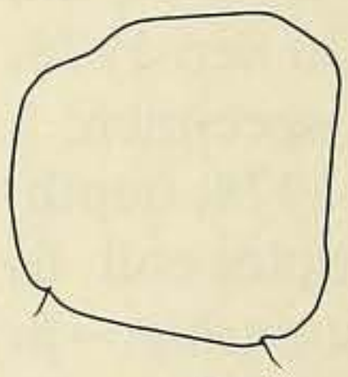
uT



R1



T



C4

Fig. 4. *Netamelita tabaci,* n. sp., figures without lower case letter to left of captions = holotype male "t" 2.58 mm; u to left of caption = female "u" 2.55 mm.

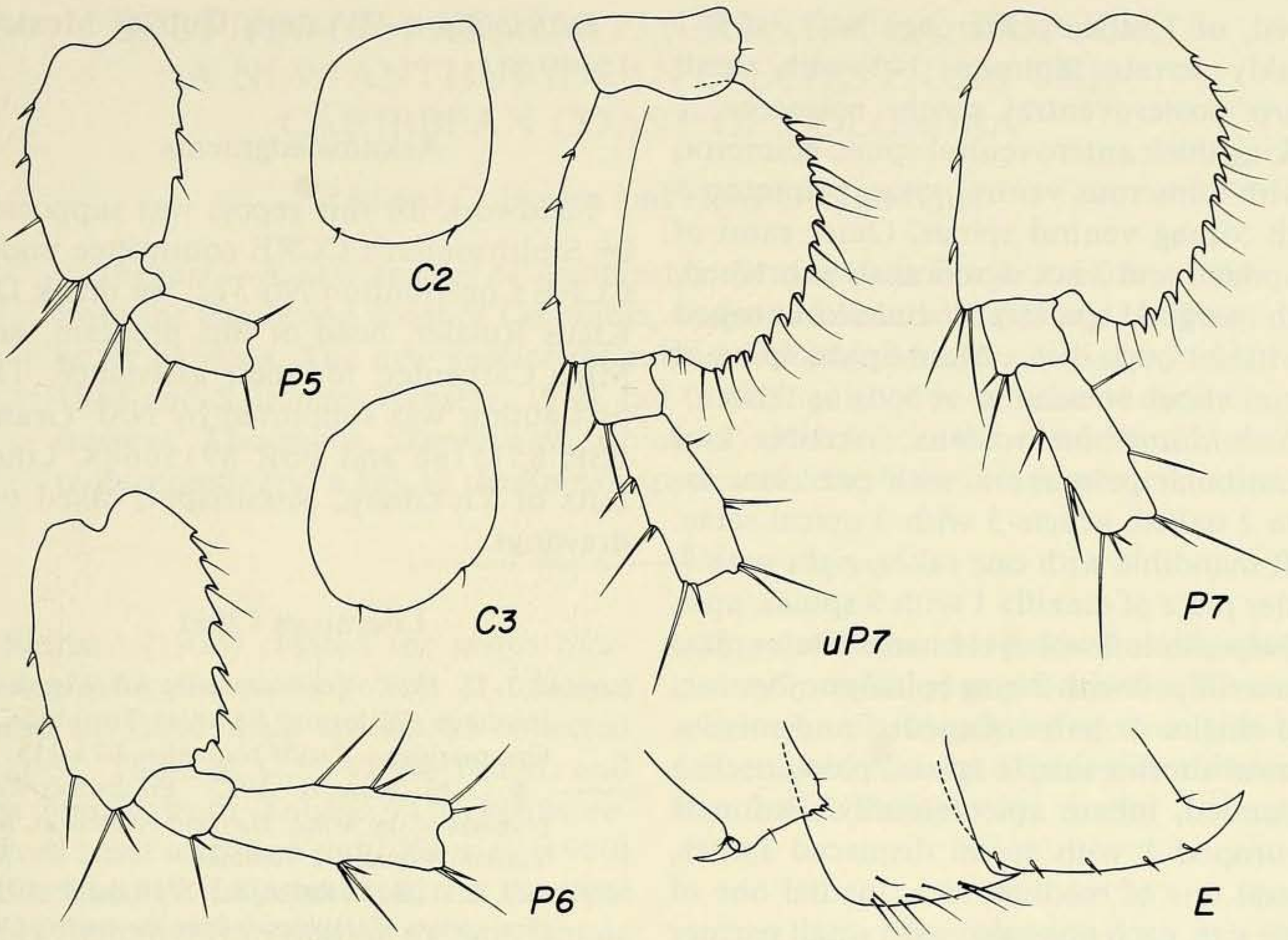


Fig. 5. *Netamelita tabaci,* n. sp., figures without lower case letter to left of caption = holotype male "t" 2.58 mm; figures with u to left of caption = female "u" 2.55 mm.

female main spine only one-fourth as long as telson, other elements fewer (see illustration).

Female "u."—Gills broadly comma-shaped, large on coxa 2, less than one-fourth size on coxa 6; oostegites very thin, sparsely setose. Epimeron 1 with 1 ventral and 1 posteroventral tooth, epimeron 2 with 2-2-1 setae (anterior to posterior), epimeron 3 with 3 ventral spines.

Holotype.—USNM No. 253534, male "t" 2.58 mm.

Type locality.—JDT-BEL-19, Belize, Carrie Bow Key, 16°48′N, 88°05′W, 16 Jun 1979, sand trough in forereef, 29 m, coral-algal mud and *Halimeda* flakes, coll. J. D. Thomas.

Paratypes.—Type locality, USNM No. 253535, female "u" 2.55 mm, and 7 other specimens.

Relationship.—Differing from *N. brocha* in the lobate article 2 of pereopod 7, the presence of only 1 spine on the inner ramus of uropod 3, the presence of only one (but giant) raker on the left mandible, the absence of raker on the right mandible, the shorter main spine on the telson, and the lack of marginal spines on the outer rami of uropods 1–2.

Distribution.—Belize, Carrie Bow Key, 29 m.

Netamelita barnardi McKinney, Kalke, & Holland, 1978

Netamelita barnardi McKinney, Kalke, & Holland, 1978:136, figs. 1–2.

The following composition is parallel to that of the other species described above but is taken solely from the original description; one undescribed character is marked with a ?.

Diagnosis.—Coxa 1 moderately curved forward. Article 2 of pereopods 5–6 not

lobed, of 7 lobed posteroventrally, of 5–7 weakly serrate. Epimera 1–3 with small sharp posteroventral tooth, epimeron 1 lacking thick anteroventral spine, epimeron 2 with numerous ventral setae, epimeron 3 with 5 long ventral spines. Outer rami of uropods 1 and 2 not significantly shortened, with marginal spine(s). Peduncle of uropod 2 without huge spine. Main apical spine of telson about one-fourth as long as telson.

Subsidiary observations.—Article 1 of mandibular palp short, with one seta, article 2 naked, article 3 with 3 apical setae. Left mandible with one raker, right with ?. Outer plate of maxilla 1 with 9 spines, apex of palp article 2 with 8 elements. Outer plate of maxilliped with 2 long apical comb-setae, and singles or pairs of medial and medioventral shorter simple spines, palp article 3 expanded, lobate apicolaterally. Peduncle of uropod 1 with apical displaced spines, lateral one of medium size, medial one of large size, each apex also with small partner spine. Peduncle of uropod 2 with pair of apico-dorsolateral spines, with quartet of apicomedial spines, plus 2 sets of more proximal medial spine(s) in tandem. Outer and inner rami of uropod 1 with 4 and 3 apical spines and one marginal spine; of uropod 2 each ramus with 5 apical spines and 2 marginal spines; inner ramus of uropod 3 with 2 spines. Apex of each telsonic lobe with one short spine, one apicolateral penicillate setule and pair of lateral penicillate setules near apex but more remotely than in other species described herein.

Distribution.—Western Gulf of Mexico, 15–40 m.

Acknowledgments

Fieldwork for this report was supported by Smithsonian's CCRE committee under CCRE Contribution No 312; we thank Dr. Klaus Rutzler, head of this program, and Mike Carpenter, for their assistance. The first author was supported by NSF Grants BSR 8515186 and BSR 89156688. Linda Lutz of Vicksburg, Mississippi, inked our drawings.

Literature Cited

Barnard, J. L. 1962. Benthic marine Amphipoda of southern California: Families Tironidae to Gammaridae.—Pacific Naturalist 3:73–115.

———, & C. M. Barnard. 1983. Freshwater Amphipoda of the world. Hayfield Associates, Mt. Vernon, Virginia, 2 volumes.

McKinney, L. D., R. D. Kalke, & J. S. Holland. 1978. New species of amphipods from the western Gulf of Mexico.—Contributions in Marine Science 21:133–159.

Vonk, R. 1988. *Psammomelita uncinata* n. g., n. sp. (Crustacea, Amphipoda, Melitidae) from infralittoral sand interstices on Curacao.—Stygologia 4:166–176.

(JDT) Reef Foundation, Box 569, Big Pine Key, Florida 33043; (JLB) Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.