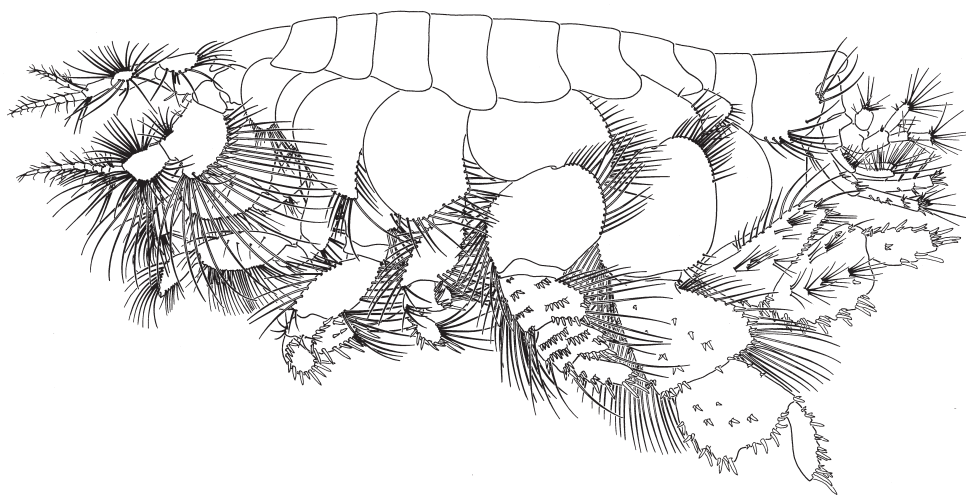


AN ILLUSTRATED IDENTIFICATION GUIDE TO THE NEARSHORE MARINE AND ESTUARINE GAMMARIDEAN AMPHIPODA OF FLORIDA

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VOLUME 2
FAMILIES AMPELISCIDAE, AMPHILOCHIDAE, AMPITHOIDAE,
AORIDAE, ARGISSIDAE AND HAUSTORIIDAE

Cover illustration: *Haustorius jayneae* Foster and LeCroy, 1991 by Sara E. LeCroy.

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Gammaridean Amphipoda of Florida

Volume 2
Families Ampeliscidae, Amphilochidae, Ampithoidae,
Aoridae, Argissidae and Haustoriidae

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Family Ampeliscidae Costa, 1957

Regional diagnosis: Eyes small, 2 pairs, each eye composed of a single clear lens; gnathopod 2 simple; peraeopods 3-4, dactyl slender, elongate, subequal to or longer than propodus; peraeopod 7, basis subequal in length to remaining articles combined; urosome segments 2-3 fused.

Florida genera: *Ampelisca*, *Byblis*.

KEY TO FLORIDA GENERA OF AMPELISCIDAE

1. < Mandible, palp article 3 at least two thirds length of article 2; peraeopods 3-4, carpus less than or equal to one half length of propodus; peraeopod 7, basis, posterodistal lobe, anterior margin without setae, dactyl expanded proximally, not spine-like; uropod 3 long, extending well beyond tips of rami of uropods 1-2; telson deeply cleft, elongate, length greater than width *Ampelisca*

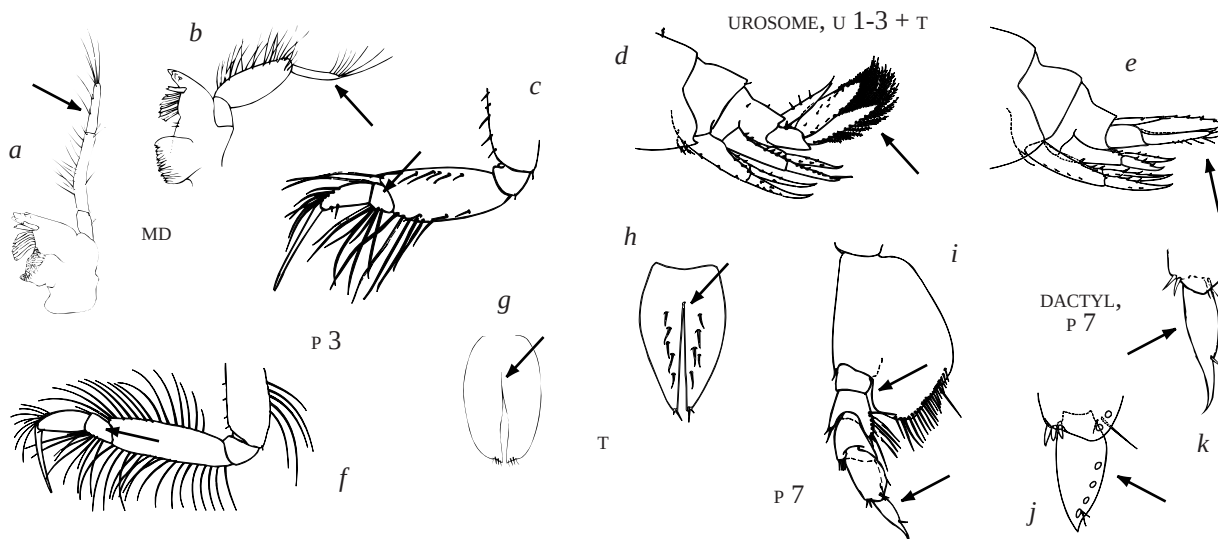


Figure 209.

- < Mandible, palp article 3 no more than one half length of article 2; peraeopods 3-4, carpus greater than one half length of propodus; peraeopod 7, basis, posterodistal lobe, anterior margin lined with setae, dactyl very slender, spine-like; uropod 3 short, at most extending slightly beyond tips of rami of uropods 1-2; telson shallowly cleft or notched apically, short, length subequal to width *Byblis*

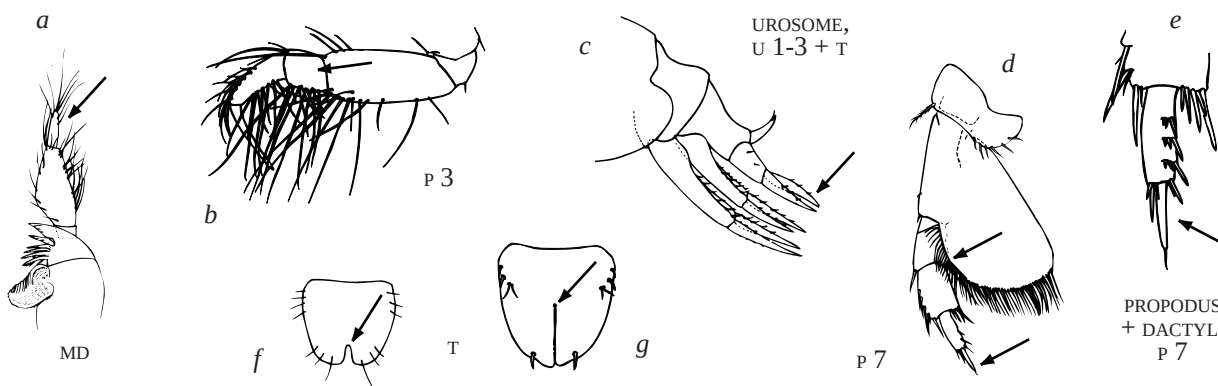


Figure 210.

Genus *Ampelisca* Krøyer, 1842

Regional diagnosis: Mandible, palp article 3 at least two thirds length of article 2; pereopods 3-4, carpus less than or equal to one half length of propodus; pereopod 7, basis, posterodistal lobe, anterior margin without setae, dactyl expanded proximally, not spine-like; uropod 3 long, extending well beyond tips of rami of uropods 1-2; telson deeply cleft, elongate, length greater than width.

Florida species: *A. abdita*, *A. agassizi*, *A. bicarinata*, *A. burkei*, *A. cristata*, *A. holmesi*, *A. schellenbergi*, *A. vadorum*, *A. verrilli*, *Ampelisca* sp. A, *Ampelisca* sp. C, *Ampelisca* sp. D

KEY TO FLORIDA SPECIES OF *AMPELISCA*

1. < Head broad, ventral margin strongly diverging from dorsal margin anteriorly; coxa 1, posteroventral margin evenly rounded, without notch; pereopod 7, dactyl, tip not strongly attenuate; uropod 1, peduncle, dorsolateral margin not expanded proximally; uropod 2, outer ramus without subapical seta; uropod 3 of female, outer ramus, medial margin without long plumose setae 2

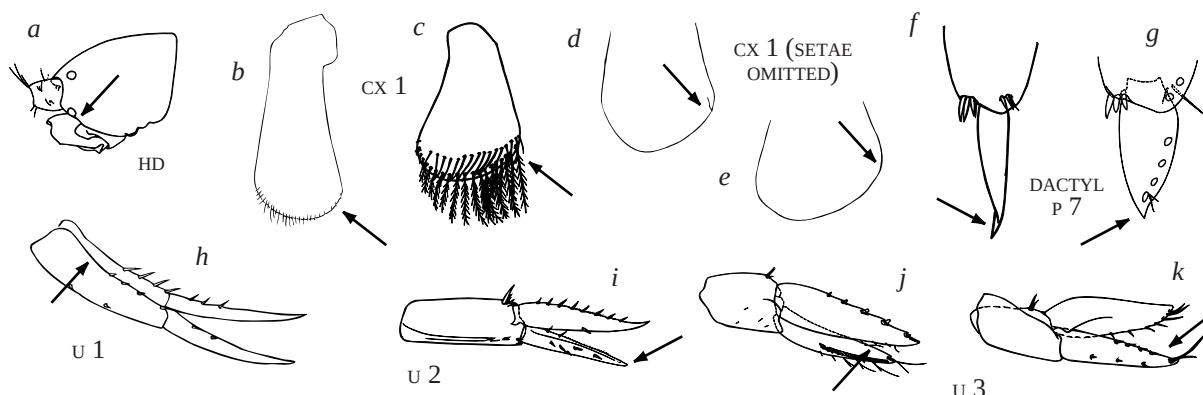


Figure 211.

- < Head narrow, ventral margin nearly parallel to dorsal margin anteriorly; coxa 1, posteroventral margin with notch; pereopod 7, dactyl, tip strongly attenuate; uropod 1, peduncle, dorsolateral margin expanded proximally (expansion may be relatively weak); uropod 2, outer ramus with subapical seta; uropod 3 of female, outer ramus, medial margin lined with long plumose setae 7

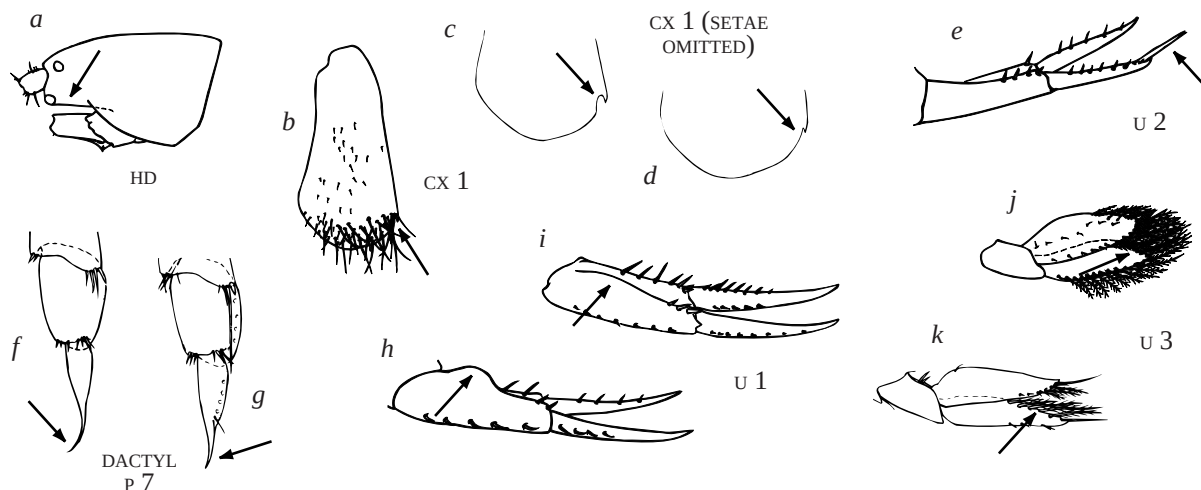


Figure 212.

2. < Mandible, palp geniculate between articles 2 and 3, article 2 stout; maxilla 1, inner plate with 0-1 apical setae; maxilliped, outer plate, medial margin lined with elongate, slender to moderately stout acuminate or chisel-shaped spines; coxa 4, posterior process broad; peraeopods 5-6, carpus, posterolateral surface with all spine groups containing only 1 spine; peraeopod 7, ischium longer than merus; uropod 3 of male, inner ramus, medial margin without setae 3

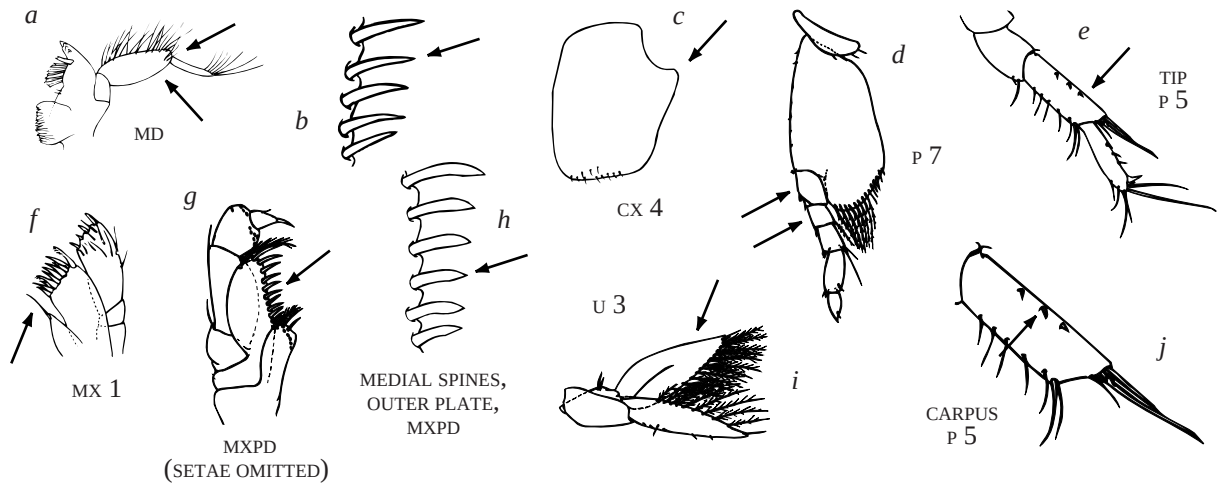


Figure 213.

- < Mandible, palp not geniculate between articles 2 and 3, article 2 slender or broadened proximally; maxilla 1, inner plate with 2 apical setae; maxilliped, outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 4, posterior process narrow; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than 1 spine (occasionally only 1 spine per group in males); peraeopod 7, ischium shorter than or subequal to merus; uropod 3 of male, inner ramus, medial margin lined with plumose setae 5

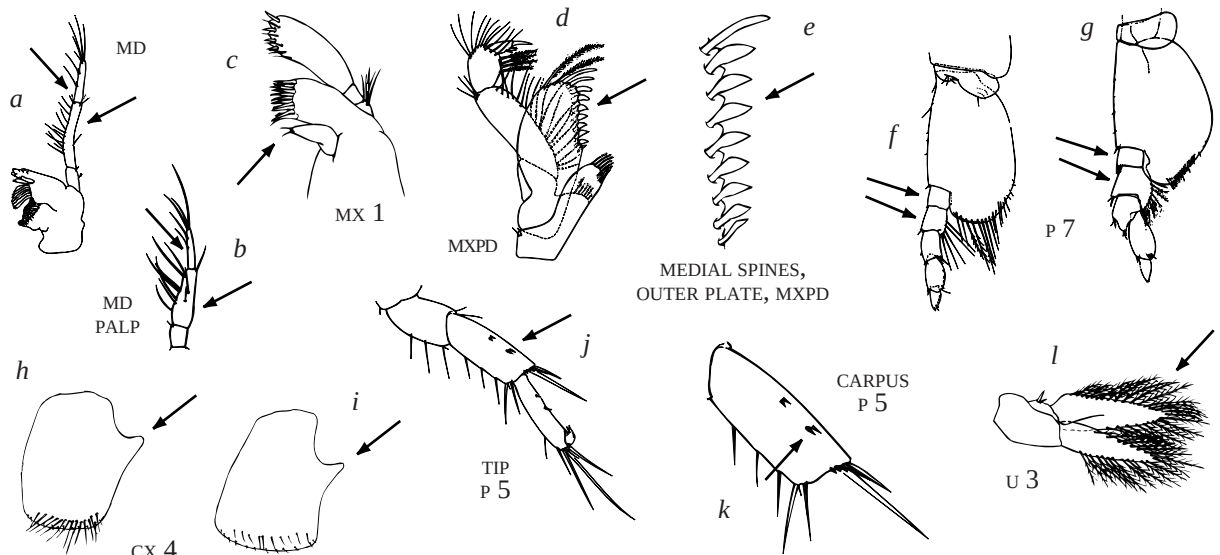


Figure 214.

3. < Maxilliped, inner plate with minute, peg-like, terminal spinule; urosome segment 2+3, posterodorsal margin slightly concave, upturned distally; adult size 6-11 mm
 *Ampelisca vadorum*



Figure 215.

- < Maxilliped, inner plate without minute, peg-like, terminal spinule; urosome segment 2+3, posterodorsal margin straight, not upturned distally; adult size 3-8 mm 4



Figure 216.

4. < Maxilliped, outer plate, inner margin lined with slender, acuminate spines; coxa 1 of female, ventral margin lined with long setae; coxa 7, posterior lobe broadly rounded posteriorly; epimeron 3, posteroventral angle unproduced, subquadrate; uropod 3, of male, inner ramus, lateral margin not pectinate, lined with dense plumose setae, outer ramus, medial margin not pectinate, lined with dense plumose setae; uropod 3 of female, outer ramus, medial margin with 3-6 spines *Ampelisca abdita*

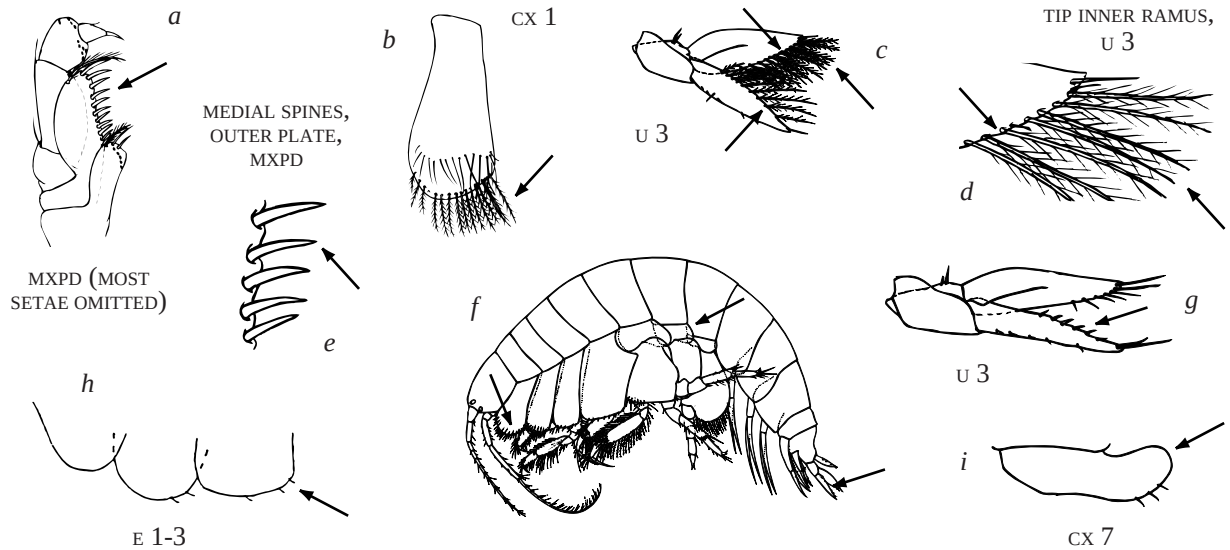


Figure 217.

- < Maxilliped, outer plate, inner margin lined with moderately stout, acuminate or chisel-shaped, spines; coxa 1 of female, ventral margin lined with short to medium setae; coxa 7, posterior lobe narrowly rounded posteriorly; epimeron 3, posteroventral angle produced, acute; uropod 3 of male, inner ramus, lateral margin pectinate, lined with sparse plumose setae, outer ramus, medial margin pectinate, lined with sparse plumose setae; uropod 3 of female, outer ramus, medial margin with 1-2 spines *Ampelisca* sp. A

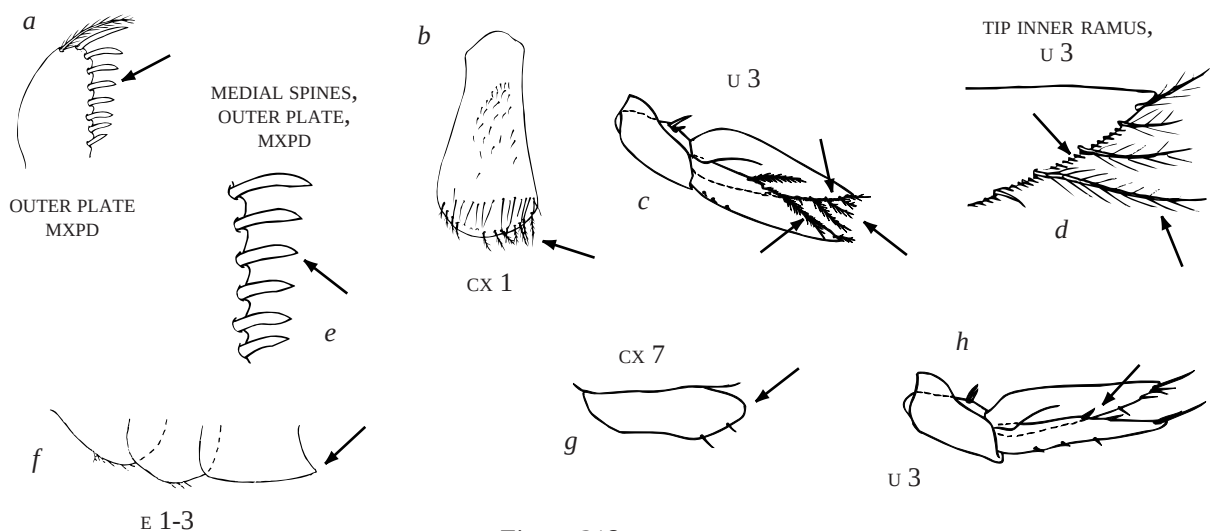


Figure 218.

5. < Coxa 1 of female broadly expanded anterodistally, ventral margin with long setae, slightly shorter anteriorly; coxa 7 of female, posterior lobe narrowly rounded posteriorly; peraeopod 4, propodus slender, approximately 3 times as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopod 7, basis, posterodistal lobe very broad, distal and posterodistal margins nearly straight, propodus, anterolateral surface with row of 2-3 spines, dactyl slender; uropod 1, rami longer than peduncle, not extending to end of rami of uropod 2 in female; uropod 2, inner ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines (setae present in male) *Ampelisca agassizi*

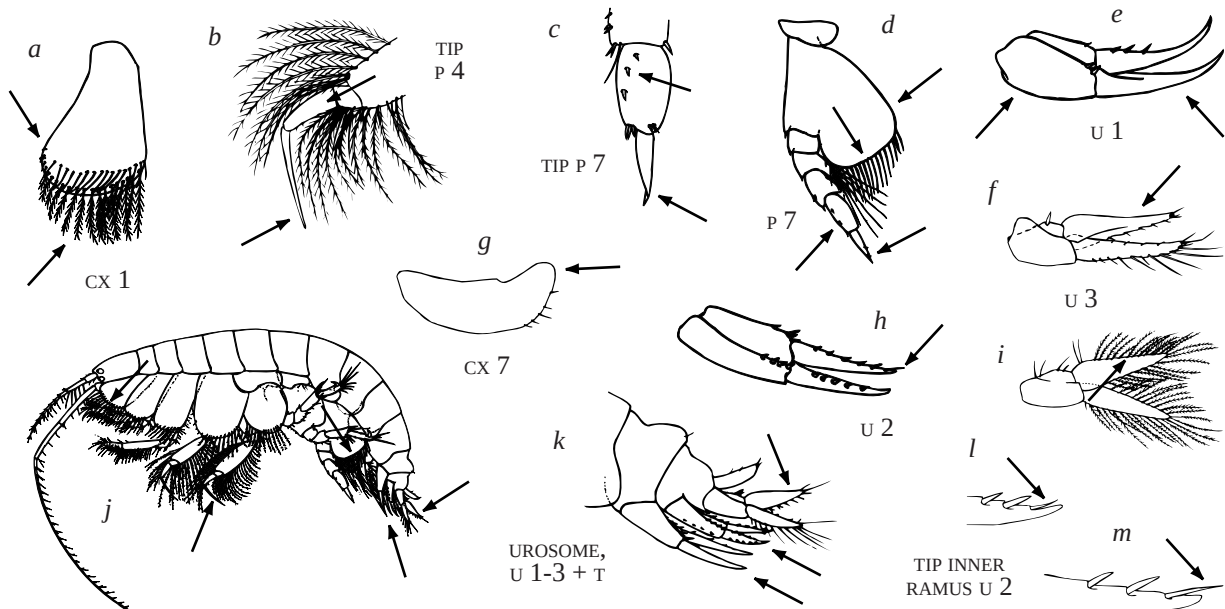


Figure 219.

- < Coxa 1 of female slightly expanded anterodistally, ventral margin with short to medium setae, all short or much shorter anteriorly; coxa 7 of female, posterior lobe broadly rounded posteriorly; peraeopod 4, propodus stout, approximately twice as long as wide, dactyl subequal to combined lengths of carpus and propodus; peraeopod 7, basis, posterodistal lobe narrow to moderately broad, distal margin convex, posterodistal margin oblique, propodus, anterolateral surface without spines, dactyl stout; uropod 1, rami slightly shorter than peduncle, extending to end of rami of uropod 2 in female; uropod 2, inner ramus without subapical seta; uropod 3, inner ramus, medial margin with serrations or spines (setae also present in male) 6

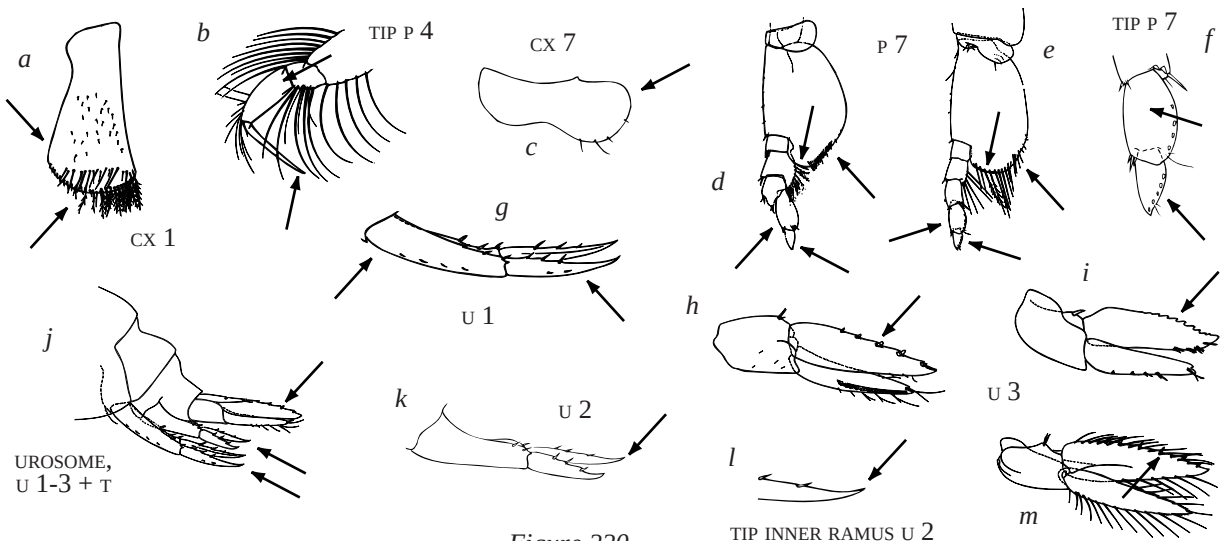


Figure 220.

6. < Eyes with brown pigment behind corneal lenses; coxa 1, posteroventral angle without closely appressed tooth; gnathopods 1-2 of male, propodus with stout palmar spines; peraeopod 7, basis, posterodistal lobe moderately broad, posterodistal margin slightly oblique, ischium, merus and carpus slender, carpus, anterior margin without notch; uropod 3, inner ramus, medial margin lined with stubby spines *Ampelisca burkei*

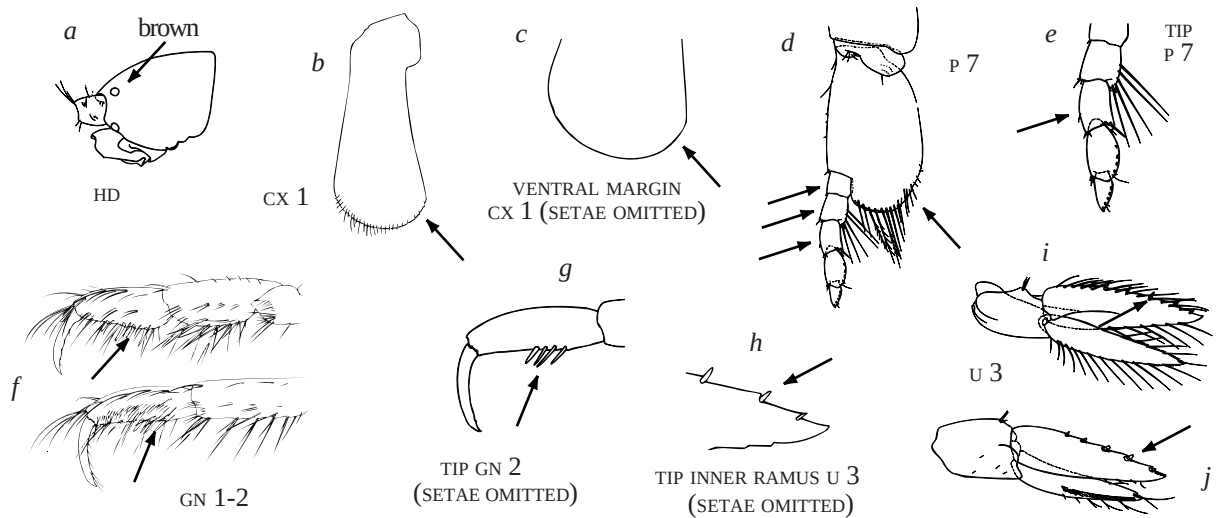


Figure 221.

- < Eyes with red pigment behind corneal lenses; coxa 1, posteroventral angle with closely appressed tooth; gnathopods 1-2 of male, propodus without palmar spines; peraeopod 7, basis, posterodistal lobe narrow, posterodistal margin strongly oblique, ischium, merus and carpus stout, carpus, anterior margin with notch; uropod 3, inner ramus, medial margin serrate, without spines *Ampelisca schellenbergi*

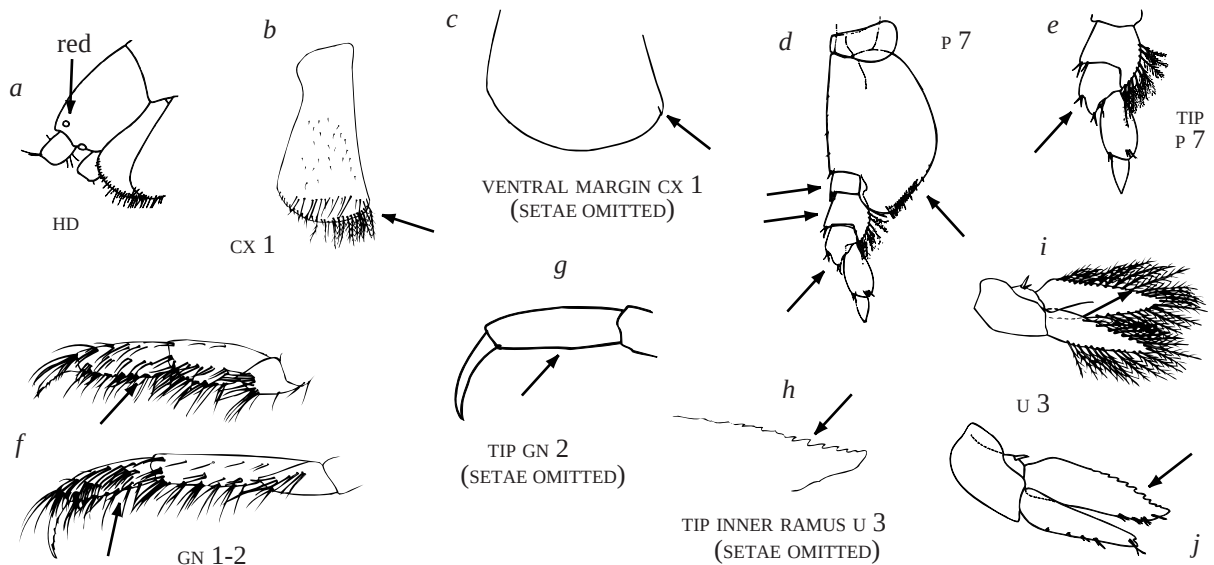


Figure 222.

7. < Coxa 1, posteroventral margin with small, shallow notch; peraeopod 7, basis, posterior margin without small spines (setae may be present); epimeron 3, posterior margin concave or weakly sinuous, posteroventral angle produced, acute or with small to moderate tooth 8

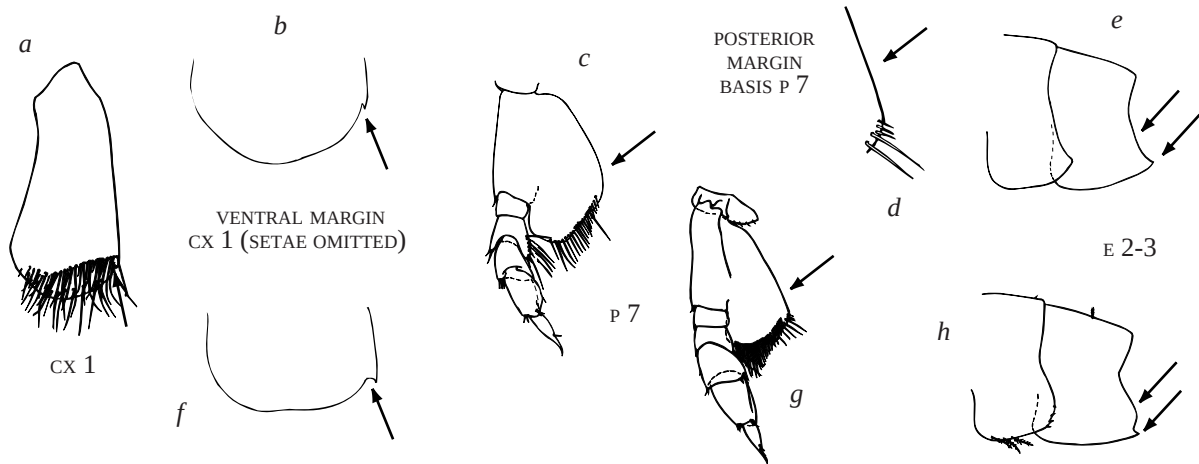


Figure 223.

- < Coxa 1, posteroventral margin with large, deep notch; peraeopod 7, basis, posterior margin with small spines; epimeron 3, posterior margin strongly sinuous, posteroventral angle with large tooth 11

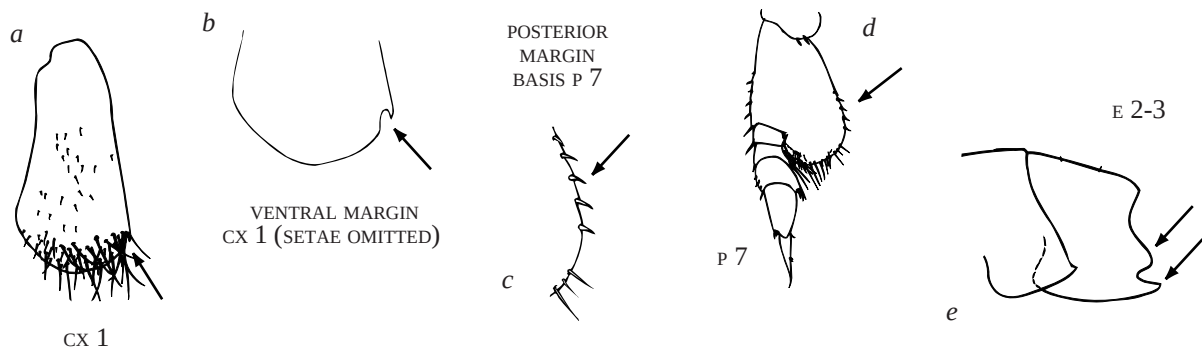


Figure 224.

8. < Coxa 7, posteroventral margin with at least 1 moderately stout spine, with 0-4 slender spines or setae; pleon segment 3 without dorsolateral carinae; uropod 1, rami extending one half to two thirds length of rami of uropod 2; uropod 3, inner ramus, medial margin of female lined with plumose setae distally, dorsal surface of both sexes with row of small setae, outer ramus, lateral margin lined with very stout, strongly curved spines; telson lobes each with 3-5 dorsal spines, tip subacute, with 1 apical spine 9

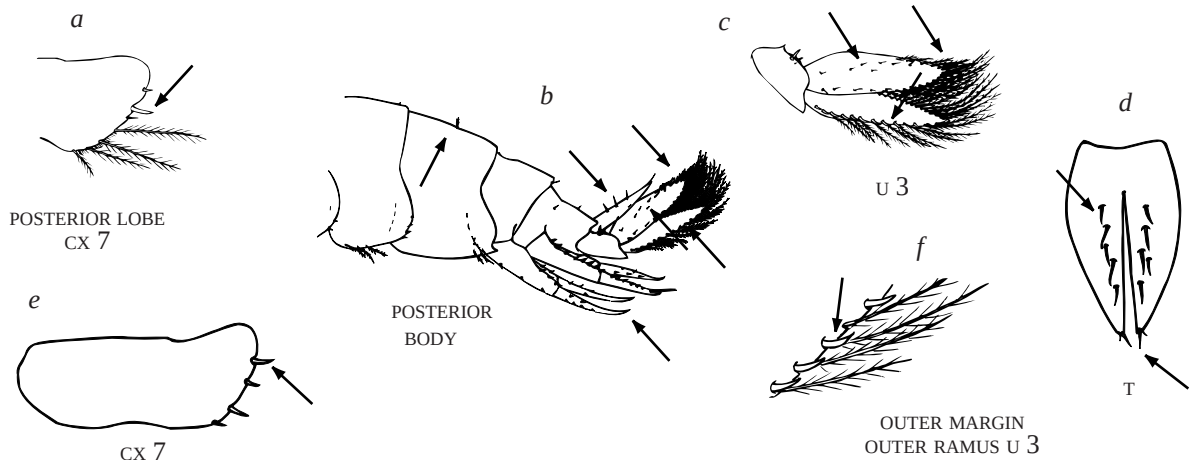


Figure 225.

- < Coxa 7, posteroventral margin without stout spines, with 5-10 slender setae; pleon segment 3 with dorsolateral carinae (may be weak); uropod 1, rami extending subequally with rami of uropod 2; uropod 3, inner ramus, medial margin of female without distal setae, dorsal surface of both sexes without row of small setae, outer ramus, lateral margin lined with slender to moderately stout straight or slightly curved spines; telson lobes each with 0-2 dorsal spines, tip with broad, shallow apical notch, with 2-4 apical spines 10

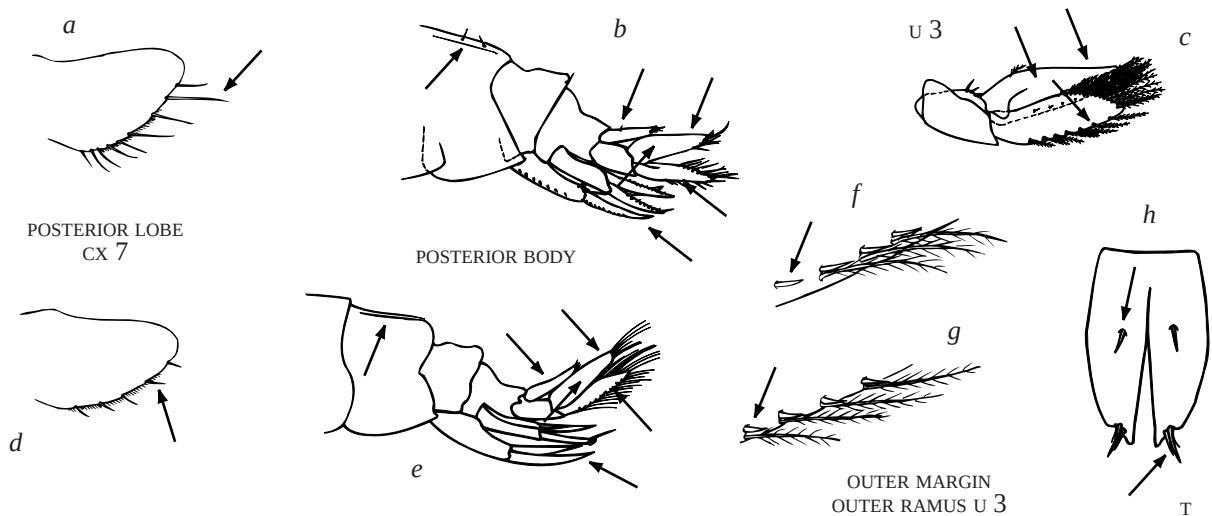


Figure 226.

9. < Coxa 7, posteroventral margin of female lined with 4-5 moderately stout spines, that of male with 1-2 stout spines and 2-3 slender spines or simple setae; epimeron 3, posteroventral angle with small tooth; urosome segment 1, dorsal carina low, not elevated posteriorly
 *Ampelisca holmesi*

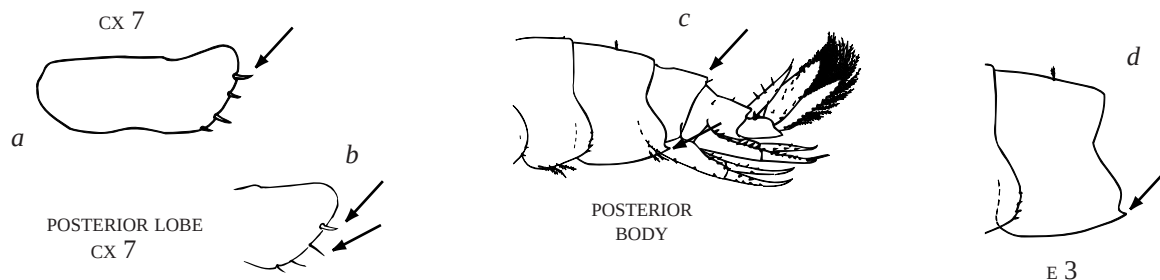


Figure 227.

- < Coxa 7, posteroventral margin of both sexes with 1 stout spine, 3-4 slender spines or plumose setae; epimeron 3, posteroventral angle with moderate tooth; urosome segment 1, dorsal carina high, elevated posteriorly
 *Ampelisca verrilli*

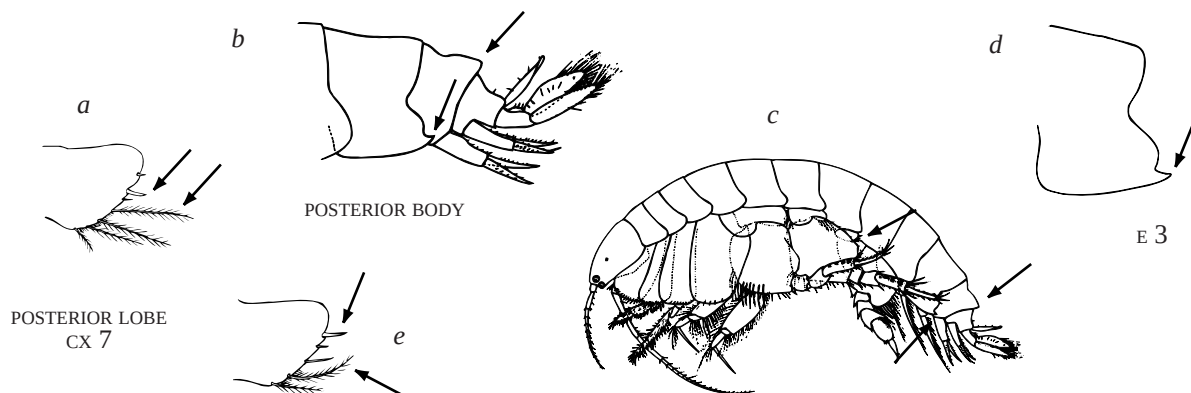


Figure 228.

10. < Peraeopod 5, propodus, flexor margin with 5-8 elongate spines; peraeopod 7, basis, posterodistal lobe broad, distal and posterodistal margins nearly straight, merus, posterodistal angle with slender spine (plumose setae also present); pleon segment 3 of female with pair of strong dorsolateral carinae; uropod 1, peduncle, dorsolateral margin strongly expanded to form "hump" *Ampelisca bicarinata*

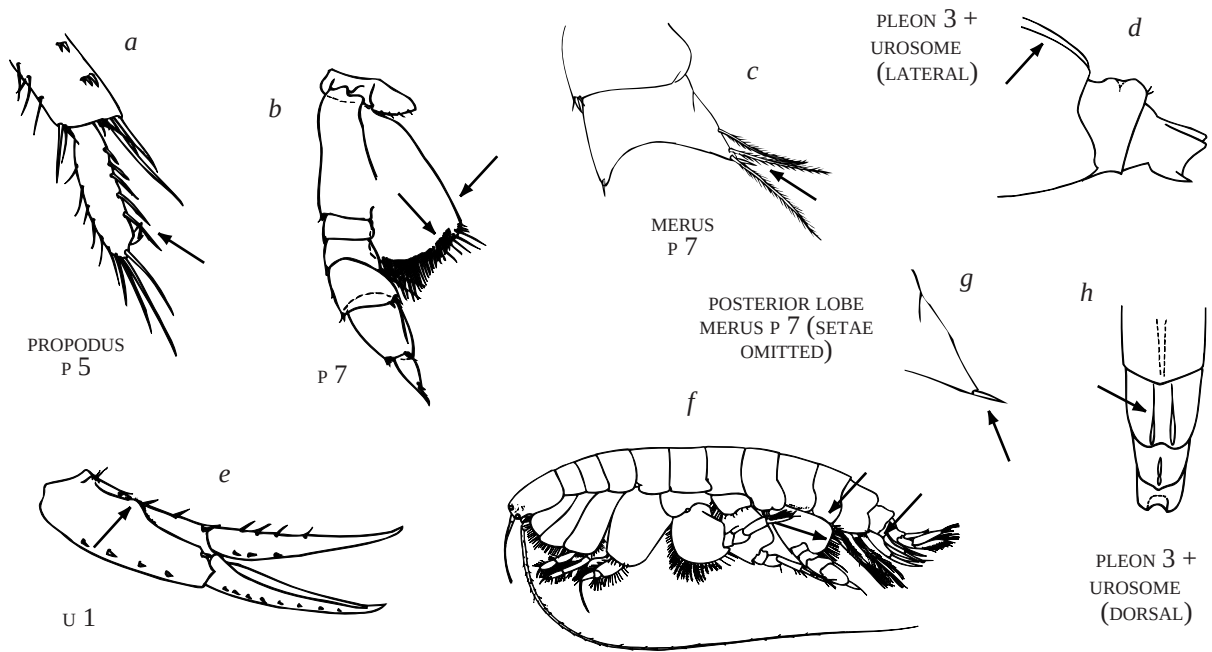


Figure 229.

- < Peraeopod 5, propodus, flexor margin with 1-3 stout spines; peraeopod 7, basis, posterodistal lobe narrow, distal margin convex, posterodistal margin oblique, merus, posterodistal angle with stout spine; pleon segment 3 of female with pair of weak dorsolateral carinae; uropod 1, peduncle, dorsolateral margin weakly expanded, no "hump" present *Ampelisca cristata* forma *microdentata*

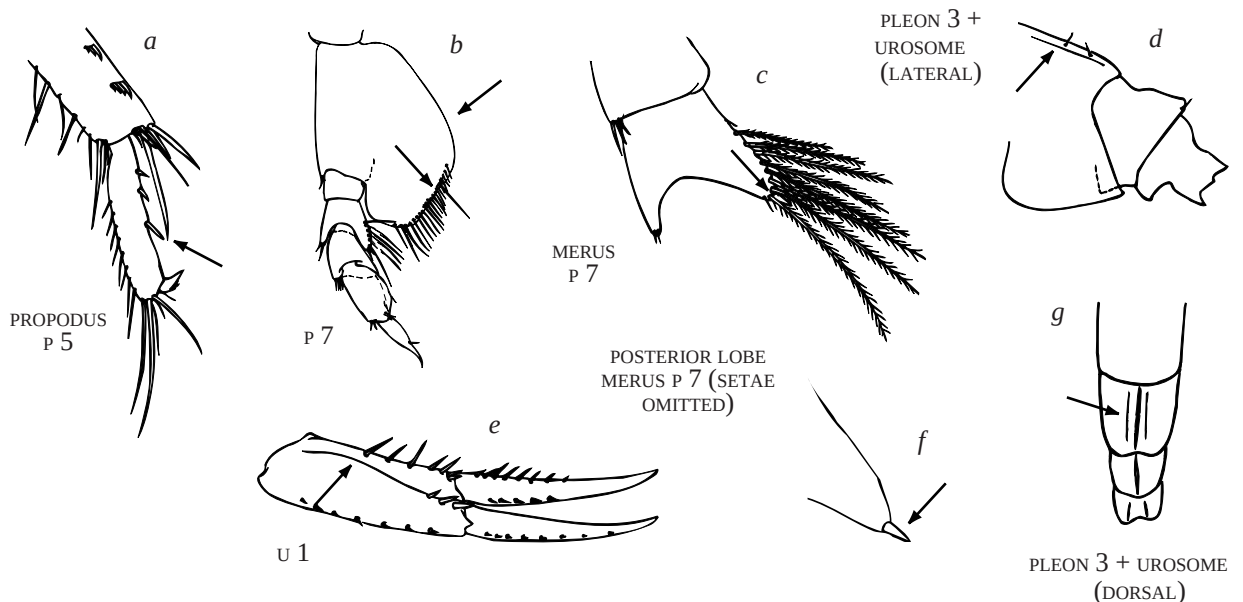


Figure 230.

11. < Coxa 7, posterior lobe narrowly rounded posteriorly; peraeopod 7 of male, basis, medial surface with large patch of plumose setae; epimeron 2, posteroventral angle rounded; urosome segment 1, posterodorsal angle of dorsal carina blunt, not upturned; uropod 1, peduncle, dorsolateral margin strongly expanded proximally to form “hump”; uropod 3, outer ramus, lateral margin lined with 9-11 stout, curved spines *Ampelisca* sp. C

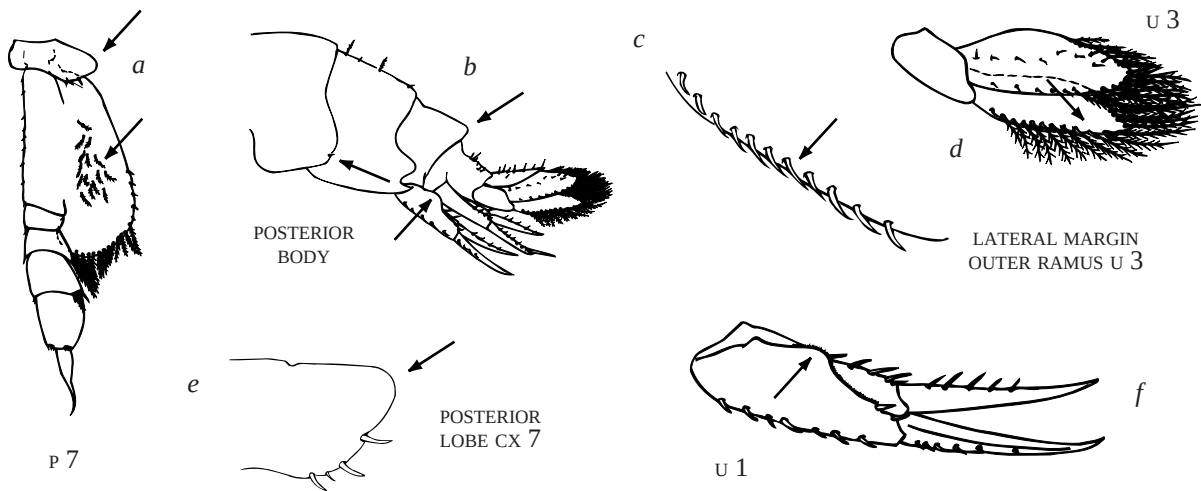


Figure 231.

- < Coxa 7, posterior lobe very narrowly rounded posteriorly; peraeopod 7 of male, basis, medial surface without plumose setae; epimeron 2, posteroventral angle acute; urosome segment 1, posterodorsal angle of dorsal carina acute, slightly upturned; uropod 1, peduncle, dorsolateral margin weakly expanded proximally, no “hump” present; uropod 3, outer ramus, lateral margin lined with 5-6 stout, curved spines *Ampelisca* sp. D

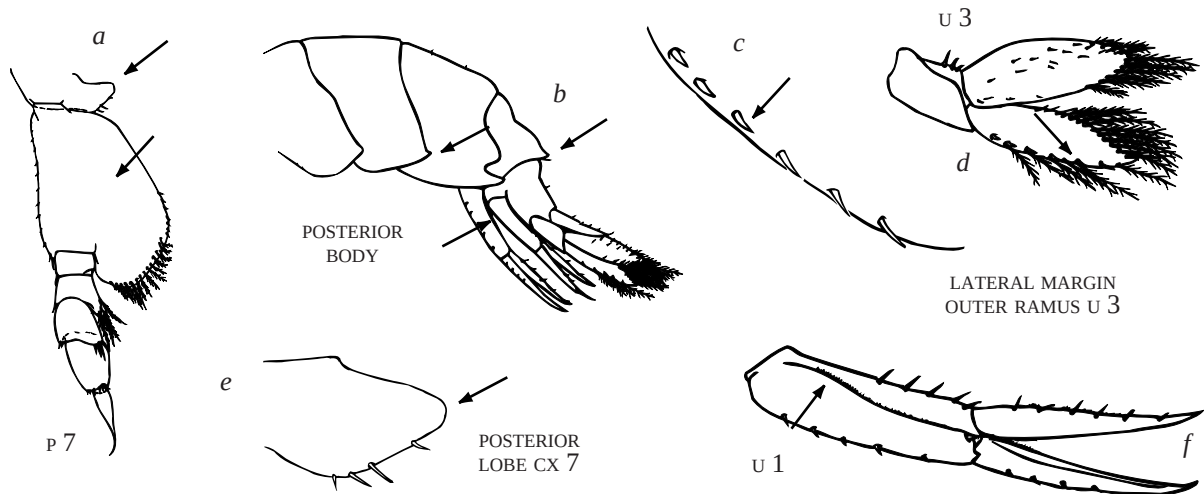


Figure 232.

***Ampelisca abdita* Mills, 1964
(Figure 217)**

Ampelisca abdita Mills, 1964a, pp. 559-564, figs. 1-2.

Regional diagnosis: Antenna 2 of female less than one half body length; head broad, ventral margin strongly diverging from dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp geniculate between articles 2 and 3, article 2 stout; maxilla 1, inner plate without apical setae; maxilliped, inner plate without terminal spinule, with 2 slender, non-plumose terminal setae, outer plate, medial margin lined with elongate, slender acuminate spines; coxa 1, posteroventral margin evenly rounded, without notch, posteroventral angle with closely appressed tooth, coxa of female moderately expanded anterodistally, ventral margin of female lined with long setae, shorter anteriorly; coxa 4, posterior process broad; coxa 7, posterior lobe broadly rounded posteriorly, posteroventral margin lined with 4-5 simple setae; gnathopod 1 of male, propodus with stout palmar spines; gnathopod 2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl subequal to combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with all spine groups containing only 1 spine; peraeopod 5, propodus, flexor margin with 2-3 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal margin convex, posterodistal margin slightly oblique, posterior margin without small spines (setae may be present), medial surface of male without large patch of plumose setae, ischium, merus and carpus slender, ischium longer than merus, merus, posterodistal angle with very slender spine (plumose seta also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip not strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin straight or slightly convex, posteroventral angle unproduced, subquadrate; urosome segment 1, dorsal carina of female very low, dorsal margin straight, not elevated posteriorly, posterodorsal angle blunt, slightly upturned, carina of male moderately high, dorsal margin straight, slightly elevated posteriorly, posterodorsal angle blunt, not upturned; urosome segment 2+3, dorsolateral carina of both sexes with posterodorsal margin straight, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin not expanded proximally, rami slightly shorter than peduncle, extending subequally with those of uropod 2; uropod 2, rami without subapical seta; uropod 3, inner ramus, medial margin entire, without serrations, spines, or setae, dorsal surface without row of small setae, lateral margin of male not pectinate, lined with dense plumose setae, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, medial margin of female without long plumose setae, with 3-6 spines, lateral margin with several very small setae; telson lobes each with 3-4 dorsal spines, tip slightly notched apically, with 1 apical spine.

Distribution: Along the east coast of the U. S. from central Maine to the Indian River Lagoon system of Florida (Bousfield, 1973; Nelson, 1995); Biscayne Bay; Florida Bay; Gulf of Mexico west to southern Laguna Madre, Texas (Bousfield, 1973; pers. obs.).

Ecology: *Ampelisca abdita* occurs in fine or silty sand in low to moderate salinities, usually in the somewhat protected waters of bays and estuaries (Bousfield, 1973; Goeke and Heard, unpublished data). It is found at depths ranging from 0 (intertidal) to 60 m (Bousfield, 1973).

Remarks: As mentioned by Mills (1964a), individuals from Gulf of Mexico populations of *A. abdita* often have a slightly more concave ventral head margin than do members of east coast populations, resulting in a somewhat narrower head; however the dorsal and ventral margins are still quite strongly divergent. In addition, although the overall size range for the species is 4 to 8 mm, Gulf of Mexico and South Florida specimens tend to be smaller than those from the Atlantic coast of the U.S.

Ampelisca abdita is very similar to two other species of *Ampelisca* found in Florida waters, *A. vadorum* and *Ampelisca* sp. A. Mills (1964,1967a) presents an excellent discussion of the morphological differences between *A. abdita* and *A. vadorum* and their relationship to size; however, the characters that he uses to distinguish the two species are based on populations from the mid-Atlantic coast of the U.S. and, unfortunately, many of them do not work well for specimens from South Florida and the Gulf of Mexico. Although it is difficult to quantify, size is a very useful character to use when attempting to distinguish these two species. As a rule, for specimens at the same stage of development that were collected during the same season (summer or winter), *A. vadorum* will be much larger than *A. abdita*. For example, an adult or ovigerous female *A. abdita*, with fully developed oostegites, is approximately the same size as a juvenile *A. vadorum*, without oostegites or with very small oostegite buds. Winter populations of both species are usually larger than summer populations (Mills, 1964a; 1967a), although this may not be the case in southern Florida, where there is less seasonal variation in water temperature. See the Remarks section for *Ampelisca* sp. A for a discussion of the differences between that species and *A. abdita*.

See Mills, 1964a, 1967a; Bousfield, 1973.

***Ampelisca agassizi* (Judd, 1896)
(Figure 219)**

Byblis agassizi Judd, 1896, pp. 599-603, figs. 9-11.

Ampelisca compressa Holmes, 1903, p. 273: 1905, pp. 480-481, fig.

Ampelisca agassizi: Holmes, 1903, p. 273: 1905, pp. 481-482, fig.

Ampelisca vera Barnard, 1954a, pp. 23-26, pls. 14-16.

Regional diagnosis: Antenna 2 of female approximately three fourths body length; head broad, ventral margin strongly diverging from dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 broadened proximally; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with stout, acuminate terminal spine, 2 slender, non-plumose terminal setae, outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin evenly rounded, without notch, posteroventral angle without closely appressed tooth, coxa of female broadly expanded anterodistally, ventral margin of female lined with long setae, slightly shorter anteriorly; coxa 4, posterior process narrow; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin lined with 3-5 simple setae; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus slender, approximately 3 times as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than 1 spine (occasionally only 1 spine per group in males); peraeopod 5, propodus, flexor margin with 2 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe very broad, distal and posterodistal margins nearly straight, posterior margin without small spines or setae, medial surface of male without large patch of plumose setae, ischium, merus and carpus moderately stout, ischium shorter than or subequal to merus, merus, posterodistal angle with slender spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface with row of 2-3 spines, dactyl slender, tip not strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin straight or slightly convex, posteroventral angle unproduced, subquadrate; urosome segment 1, dorsal carina of female moderately high, dorsal margin slightly concave, slightly elevated posteriorly, posterodorsal angle subacute or blunt, upturned, carina of male high, dorsal margin straight to slightly concave, elevated posteriorly, posterodorsal angle subacute or blunt, slightly upturned; urosome segment 2+3, dorsolateral carina with posterodorsal margin straight, beveled distally; uropod 1, peduncle, dorsolateral margin not expanded proximally, rami longer than peduncle, not extending to tips of rami of uropod 2; uropod 2, inner ramus with subapical seta (smaller in male), outer ramus without subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines, that of male lined with plumose setae, dorsal surface without row of small setae, lateral margin of male not pectinate, lined with dense plumose setae, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, medial margin of female without long plumose setae, with 3-4 small spines, lateral margin lined with setae, plumose in male, simple in female; telson lobes each with 1-2 dorsal spines, tip subtruncate, with 1 apical spine (smaller in male) and 1 apical setule.

Distribution: Western Atlantic from southwestern Nova Scotia to the Caribbean (Mills, 1965; Bousfield, 1973); Gulf of Mexico (Mills, 1965; Goeke and Heard, 1984); northeastern Pacific (Mills, 1965; Bousfield, 1973; Dickinson, 1982).

Ecology: This species is found in moderate to high salinity waters, in coarse sand or in fine to medium sand mixed with shell hash at depths of 2 to 450 m (Bousfield, 1973; pers. obs.).

Remarks: *Ampelisca agassizi* is a very variable species, particularly in the morphology of the dorsal carina of urosome segment 1 (see Goeke & Heard, 1984), but it is easily recognized by a combination of the very broad basis of peraeopod 7, subquadrate telson lobes and the subquadrate epimeron 3. In addition, the rami of uropod 3 are somewhat more slender than those of most other species of *Ampelisca* in the region. Adult sizes range from 5 to 7.5 mm in this species.

See Mills, 1965 (as *A. compressa*), 1967b; Bousfield, 1973; Dickinson, 1982; Goeke and Heard, 1984.

***Ampelisca bicarinata* Goeke and Heard, 1983
(Figure 229)**

Ampelisca cristoides: Barnard, 1954b, p. 4, pl. 1, figs. H-J (not *A. cristoides* of Barnard, 1954a).

Ampelisca bicarinata Goeke and Heard, 1983, pp. 217-222, figs. 1-3.

Regional diagnosis: Antenna 2 of female subequal to body in length; head narrow, ventral margin nearly parallel to dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 slightly broadened proximally; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with 2 stout acuminate or leaf-shaped terminal spines, 1 slender non-plumose terminal seta (may be pectinate), outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin with small, shallow notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with long setae, slightly shorter anteriorly; coxa 4, posterior process narrow; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin lined with 5-10 slender setae; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than one spine; peraeopod 5, propodus, flexor margin with 5-8 elongate, pectinate spines; peraeopod 7, basis, posterodistal lobe broad, distal and posterodistal margins nearly straight, posterodistal margin without small spines or setae, medial surface of male with large patch of plumose setae, ischium, merus and carpus stout, ischium shorter than merus, merus, posterodistal angle with slender spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip strongly attenuate; pleon segment 3 of female with pair of strong dorsolateral carinae; epimeron 2, posteroventral angle rounded; epimeron 3, posterior margin concave or weakly sinuous, posteroventral angle produced, acute or with small tooth; urosome segment 1, dorsal carina of female high, dorsal margin straight to slightly concave, slightly elevated or not elevated posteriorly, posterodorsal angle blunt, beveled, carina of male high, shorter than in female, dorsal margin straight to slightly concave, posterodorsal angle blunt, not upturned or beveled; urosome segment 2+3, dorsolateral carina of female with posterodorsal margin straight, not upturned distally, that of male straight to slightly convex, not upturned distally; uropod 1, peduncle, dorsolateral margin strongly expanded proximally to form "hump", rami slightly longer than peduncle, extending subequally with those of uropod 2; uropod 2, inner ramus without subapical seta, outer ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations, spines or setae, dorsal surface without row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, medial margin of female lined with long plumose setae distally, without spines, lateral margin lined with slender to moderately stout straight or slightly curved spines at base of long plumose setae; telson lobes each with 0-2 dorsal spines, tip with broad, shallow apical notch, with 2-4 apical spines.

Distribution: Northwestern Atlantic from Georgia south through Florida and the Caribbean; Colombia; Gulf of Mexico from southern Florida to Texas (Goeke and Heard, 1983).

Ecology: *Ampelisca bicarinata* occurs on sand bottoms in high salinity waters at depths of 5 to 59 m (Goeke and Heard, 1983; pers. obs.).

Remarks: Females of this relatively large species (9-16 mm) are readily distinguished by the presence of a pair of strong dorsolateral carinae on pleon segment 3. These are present and easily seen even in quite small juveniles. Males are somewhat more difficult to identify than females, but can usually be distinguished by the large size, broad posterior lobe of peraeopod 7, small posteroventral tooth on epimeron 3, and subequal rami of uropods 1-2. In *A. bicarinata*, as in many other species of *Ampelisca*, the morphology of the dorsal carinae on urosome segments 1 and 2+3 is somewhat variable.

See Barnard, 1954b (as *A. cristoides*); Mills, 1965 (as *A. cristoides*); Goeke and Heard, 1983.

***Ampelisca burkei* Barnard and Thomas, 1989
(Figure 221)**

?*Ampelisca lobata*: Barnard, 1954b, p. 2 (not *A. lobata* of Holmes, 1908).
Ampelisca burkei Barnard and Thomas, 1989, pp. 375-383, figs. 1-5.

Regional diagnosis: Antenna 2 of female subequal to body in length; head broad, ventral margin strongly diverging from dorsal margin anteriorly; eyes with brown pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 slender; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with 2 stout, acuminate terminal spines, outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin evenly rounded, without notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with long setae; coxa 4, posterior process narrow; coxa 7 of female, posterior lobe broadly rounded posteriorly, that of male narrowly rounded, posteroventral margin lined with 2-4 simple setae; gnathopods 1-2 of male, propodus with stout palmar spines (variously modified setae also present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl subequal to combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than one spine; peraeopod 5, propodus, flexor margin with 2 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal margin convex, posterodistal margin slightly oblique, without small spines (setae may be present), medial surface of male with large patch of plumose setae, ischium, merus and carpus slender, ischium shorter than merus, merus, posterodistal angle with slender spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl stout, tip not strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate or slightly rounded; epimeron 3, posterior margin straight or weakly concave, posteroventral angle subquadrate or very weakly produced, acute; urosome segment 1, dorsal carina of female very low, dorsal margin slightly convex, not elevated posteriorly, posterodorsal angle blunt, not upturned or beveled, carina of male moderately high, dorsal margin straight, slightly elevated posteriorly, posterodorsal angle blunt, not upturned or beveled; urosome segment 2+3, dorsolateral carina of female with posterodorsal margin straight, not upturned or beveled distally, that of male with posterodorsal margin straight or slightly convex, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin not expanded proximally, rami slightly shorter than peduncle, extending subequally with those of uropod 2; uropod 2, rami without subapical seta; uropod 3, inner ramus, medial margin lined with stubby spines, that of male also lined with long plumose setae, dorsal surface without row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male pectinate, lined with dense plumose setae, medial margin of female without long plumose setae, without spines, lateral margin of both sexes without spines, lined with setae, plumose and dense in male, simple and sparse in female; telson lobes each with 1-2 dorsal spines, tip with small apical notch, with 1 apical spine.

Distribution: Florida Keys: Looe Key Reef (Barnard and Thomas, 1989); Key Largo.

Ecology: This species occurs in fore reef algal turf communities at depths of 0 to 8 m (Barnard and Thomas, 1989).

Remarks: *Ampelisca burkei* is most easily recognized by a combination of the slender ischium, merus and carpus on peraeopod 7, having the ischium shorter than the merus, and having the inner ramus of uropod 3 lined with stubby spines in both males and females. In addition, it is the only Florida species to have brown pigment rather than red behind the corneal lenses; however, this feature that is difficult to see in preserved material. Adult sizes range from 4 to 6 mm.

See Barnard and Thomas, 1989; Thomas, 1993.

***Ampelisca cristata* forma *microdentata* Barnard, 1954**
(Figure 230)

Ampelisca cristata forma *microdentata* Barnard, 1954a, pp.28-29, pl. 17, figs. E-G, pl. 18, figs. B, E.

Regional diagnosis: Antenna 2 of female subequal to body in length; head narrow, ventral margin nearly parallel to dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 slender; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with 2 stout, leaf-shaped terminal spines, 2 slender, non-plumose terminal setae (may be pectinate), outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin with small, shallow notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with long setae, shorter anteriorly; coxa 4, posterior process narrow; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin lined with 6-10 slender setae; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than one spine; peraeopod 5, propodus, flexor margin with 1-3 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe narrow, distal margin convex, posterodistal margin oblique, posterior margin without small spines, with setae, medial surface of male with large patch of plumose setae, ischium, merus and carpus stout, ischium shorter than merus, merus, posterodistal angle with stout spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines (setae may be present), dactyl moderately stout, tip strongly attenuate; pleon segment 3 of female with pair of weak dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin concave, posteroventral angle weakly produced, acute; urosome segment 1, dorsal carina of female moderately high, dorsal margin slightly concave, slightly elevated posteriorly, posterodorsal angle subacute, upturned, carina of male moderately high, dorsal margin straight, slightly elevated posteriorly, posterodorsal angle blunt, not upturned or beveled; urosome segment 2+3 of female, dorsolateral carina with posterodorsal margin straight to slightly convex, not upturned distally, that of male with posterodorsal margin convex, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin weakly expanded proximally, without "hump", rami subequal to peduncle in length, extending subequally with rami of uropod 2; uropod 2, inner ramus without subapical seta, outer ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines, that of male with 2-3 distal setae, that of female without distal setae, dorsal surface without row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, that of female lined with long plumose setae distally, without spines, lateral margin lined with slender, straight or slightly curved spines at base of long (male) or short (female) plumose setae; telson lobes each with 0-2 dorsal spines, tip with broad, shallow apical notch, with 2-4 apical spines.

Distribution: Florida Bay, Florida; Southeastern Gulf of Mexico; Caribbean Sea (Barnard, 1954b); Brazil (Serejo et al., 2000); eastern Pacific Ocean from southern California and the Channel Islands south to La Plata Island, Ecuador.(Barnard, 1954a)

Ecology: *Ampelisca cristata* forma *microdentata* occurs on soft bottoms and has been reported from depths of 3 to 60 m from the Caribbean and Brazil (Barnard, 1954b; Serejo et al., 2000) and from 2 to 137 m in the eastern Pacific (Barnard, 1954a).

Remarks: Florida material appears to be *A. cristata* forma *microdentata*, which is known from both the eastern Pacific and the Caribbean Sea (Barnard, 1954a, b). This form is distinguished from the typical form of Holmes (1908) by the smaller tooth at the posteroventral angle of epimeron 3. The dorsolateral carinae on pleon segment 3 are often very weak and difficult to see in this species, but there is usually evidence of a shallow depression on each side of the dorsal midline that lies between the midline and the dorsolateral carina. *Ampelisca cristata* forma *microdentata* is relatively large, with adults ranging from 9 to 14 mm in length.

See Holmes, 1908; Barnard, 1954a, b.

***Ampelisca holmes* Pearse, 1908**
(Figure 227)

Ampelisca holmes Pearse, 1908, pp. 27-28, fig. 1.

Regional diagnosis: Antenna 2 of female approximately one half length of body; head narrow, ventral margin nearly parallel to dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 moderately stout, slightly broadened proximally; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with 2 stout, leaf-shaped terminal spines, 2 slender, non-plumose terminal setae (may be pectinate), outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin with small, shallow notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with long setae, slightly shorter anteriorly; coxa 4, posterior process narrow; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin of female with 4-5 moderately stout spines, that of male with 1-2 stout spines and 2-3 slender spines or setae; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than 1 spine; peraeopod 5, propodus, flexor margin with 4-5 elongate, minutely pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal and posterodistal margins convex, posterior margin without small spines (setae may be present), medial surface of male with large patch of plumose setae, ischium, merus and carpus stout, ischium shorter than merus, merus, posterodistal angle with slender spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin weakly sinuous, posteroventral angle with small tooth; urosome segment 1, dorsal carina of both sexes low, dorsal margin straight, not or very slightly elevated posteriorly, posterodorsal angle blunt, not upturned; urosome segment 2+3, dorsolateral carina of female with posterodorsal margin straight, not upturned distally, that of male with posterodorsal margin slightly convex, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin expanded proximally to form low “hump”, rami slightly shorter than peduncle, extending approximately halfway along rami of uropod 2 in female, slightly longer in male; uropod 2, inner ramus without subapical seta, outer ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines, lined with plumose setae distally, dorsal surface with row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, that of female lined with long plumose setae distally, without spines, lateral margin lined with very stout, strongly curved spines at base of long plumose setae; telson lobes each with 4-5 dorsal spines, tip subacute, with one apical spine, 1 apical setule.

Distribution: Eastern Gulf of Mexico from Mississippi south to Estero Bay, Florida (Farrell, 1970; Goeke and Gathof, 1983); Florida Bay; Florida Keys (Shoemaker, 1933b); Cuba (Ortiz, 1978).

Ecology: This species is common in or near grassbeds in relatively shallow water (1-7 m) and also occurs in fine to medium sand containing some silt or detritus (Goeke and Gathof, 1983).

Remarks: This relatively large species (7-13 mm) is most easily recognized by its stout ischium, merus and carpus of peraeopod 7; short uropod 1, with rami extending only halfway along the rami of uropod 2; and by the small posteroventral tooth on epimeron 3. *Ampelisca holmes* has frequently been confused with *A. verrilli* Mills, 1967, a very similar species from the northeastern coast of the U.S. Mills (1967b) lists a number of morphological differences between representatives of the two species from Franklin County, Florida (*A. holmes*) and Buzzards Bay, Massachusetts (*A. verrilli*); however, many of these differences do not hold up when material from other parts of their ranges is examined. The two species may be distinguished by the shape of epimeron 3 (the posteroventral tooth is larger and the posterior margin is more strongly sinuous in *A. verrilli*) and by the shape of

the dorsal carina on urosome 1 (somewhat larger and angled slightly upwards in *A. verrilli*). Also, the rami of uropod 1 tend to be somewhat longer in *A. verrilli* than in *A. holmesi*, as does the mandibular palp, especially article 3.

As mentioned by Goeke and Gathof (1983), *A. holmesi* is generally found associated with grassbeds, thus it seems unlikely that Pearse's (1912) record of this species from a depth of 50-54 m in the Mississippi Delta is correct.

See Pearse, 1908; Barnard, 1960; Mills, 1967b; Goeke and Gathof, 1983.

***Ampelisca schellenbergi* Shoemaker, 1933**
(Figure 222)

Ampelisca schellenbergi Shoemaker, 1933b, pp. 3-5, fig. 2.

Regional diagnosis: Antenna 2 of female subequal to body in length; head broad, ventral margin strongly diverging from dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible not geniculate between articles 2 and 3, article 2 slender; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with 1 stout, acuminate terminal spine, 1 slender, non-plumose terminal seta, outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin evenly rounded, without notch, posteroventral angle with closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with short to medium setae, setae much shorter anteriorly; coxa 4, posterior process narrow; coxa 7 of female, posterior lobe broadly rounded posteriorly, that of male narrowly rounded, posteroventral margin with 3-4 slender setae; gnathopods 1-2 of male, propodus without palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl subequal to combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than one spine (occasionally only 1 spine per group in males); peraeopod 5, propodus, flexor margin with 2 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe narrow, distal margin convex, posterodistal margin strongly oblique, posterior margin without small spines, ischium, merus and carpus stout, ischium shorter than merus, merus, posterodistal angle without spines (setae present), carpus, anterior margin with notch, propodus, anterolateral surface without spines, dactyl stout, tip not strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin weakly convex, posteroventral angle subquadrate; urosome segment 1, dorsal carina of female very low, dorsal margin convex, not elevated posteriorly, posterodorsal angle very weak or absent, not upturned, carina of male slightly higher, dorsal margin more strongly convex, posterodorsal angle very weak or absent, not upturned; urosome segment 2+3, dorsolateral carina of female with posterodorsal margin straight, not upturned distally, that of male straight to slightly convex, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin not expanded proximally, rami slightly shorter than peduncle, extending to end of rami of uropod 2; uropod 2, rami without subapical seta; uropod 3, inner ramus, medial margin serrate, without spines, that of male lined with plumose setae, dorsal surface without row of small setae, lateral margin of male not pectinate, lined with plumose setae, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, that of female without long plumose setae, without spines, lateral margin without spines, that of male with long plumose setae; telson lobes each with 2-3 stout dorsal spines, tip with narrow apical notch, with 1 stout apical spine.

Distribution: West coast of Florida from Apalachicola to Charlotte Harbor (Shoemaker, 1933b); Florida Bay; Biscayne Bay; Florida Keys and the Dry Tortugas (Shoemaker, 1933b); Yucatan, Mexico (Shoemaker, 1933b); Caledonia Bay, Panama (Barnard, 1954b); eastern Pacific from Costa Rica to Peru (Barnard, 1954a; Dickinson, 1982).

Ecology: This species occurs in silty mud or sand, often in or near grassbeds, intertidally to depths of 46 m.

Remarks: This is the only nearshore species of *Ampelisca* found in Florida waters that has a strong notch on the anterior margin of the carpus of peraeopod 7; the serration of the medial margin of the inner ramus of uropod 3 is also a very distinctive character. The specimen illustrated by Shoemaker (1933b) appears to be a female rather than a male based on the lack of aesthetascs or setal tufts on the antennae and the lack of plumose setae on the margins of the rami of uropod 3. Adult sizes in *A. schellenbergi* range from 5 to 11 mm.

See Shoemaker, 1933b; Barnard, 1954a, 1954b.

***Ampelisca vadorum* Mills, 1963
(Figure 215)**

Ampelisca typica: Whiteaves, 1901, p. 222 (not *Tetromatus typicus* [= *A. typica*] of Bate 1856).

Ampelisca spinipes: Holmes, 1903, p. 267; 1905, p. 480, fig.; Shoemaker, 1933b, p. 3 (not *A. spinipes* of Boeck, 1861).

Ampelisca sp. A: Sanders, 1956, pp. 375-379.

Ampelisca vadorum Mills, 1963, pp. 972-978, figs. 1-3.

Regional diagnosis: Antenna 2 of female one half to three fourths body length; head broad, ventral margin strongly diverging from dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp geniculate between articles 2 and 3, article 2 stout; maxilla 1, inner plate with 0-1 apical seta; maxilliped, inner plate with 1 minute, peg-like terminal spinule, 1 slender non-plumose terminal seta, outer plate, medial margin lined with elongate, slender, acuminate spines; coxa 1, posteroventral margin evenly rounded, without notch, posteroventral angle with closely appressed tooth, coxa of female moderately expanded distally, ventral margin of female lined with long setae, shorter anteriorly; coxa 4, posterior process broad; coxa 7, posterior lobe broadly rounded posteriorly, posteroventral margin lined with 6-7 simple setae; gnathopod 1 of male, propodus with stout palmar spines; gnathopod 2 of male, propodus without palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl subequal to combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with all spine groups containing only 1 spine; peraeopod 5, propodus, flexor margin with 1-2 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, posterodistal margin slightly oblique, posterior margin without small spines (setae may be present), medial surface of male without large patch of plumose setae, ischium, merus and carpus slender, ischium longer than merus, merus, posterodistal angle with very slender spine (plumose seta also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl stout, tip not strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin straight or slightly convex, posteroventral angle unproduced, subquadrate; urosome segment 1, dorsal carina of female low, dorsal margin straight, slightly elevated posteriorly, posterodorsal angle blunt, not upturned, carina of male moderately high, dorsal margin straight, slightly elevated posteriorly, posterodorsal angle blunt, not upturned; urosome segment 2+3, dorsolateral carina of female with posterodorsal margin slightly concave, upturned distally, that of male with posterodorsal margin straight, beveled distally; uropod 1, peduncle, dorsolateral margin not expanded proximally, rami slightly shorter than peduncle, extending subequally with those of uropod 2; uropod 2, rami without subapical seta; uropod 3, inner ramus, medial margin entire, without serrations, spines or setae, dorsal surface without row of small setae, lateral margin of male pectinate, lined with plumose setae, outer ramus, medial margin of male pectinate, lined with plumose setae, medial margin of female without long plumose setae, with 3-4 (occasionally 5) spines, lateral margin with several very small spines or setae; telson lobes each with 1-3 dorsal spines, tip slightly notched apically, with 1 apical spine.

Distribution: Along the east coast of North America from the southwestern Gulf of Saint Lawrence to Florida (Mills, 1967b; Bousfield, 1973; Nelson, 1995); tropical western Atlantic and Gulf of Mexico (Mills, 1963, 1965; Ledoyer, 1986).

Ecology: *Ampelisca vadorum* occurs on sand bottoms, often mixed with shell, and in medium to high salinity grassbeds (Bousfield, 1973; Fox and Bynum, 1975) from intertidal depths to 70 m (Bousfield, 1973).

Remarks: See the Remarks section for *A. abdita* for a discussion of similarities between that species and *A. vadorum*. Adult size ranges from 6 to 15 mm; however, individuals from populations in the southern parts of the range are rarely larger than 11 mm.

See Mills, 1963, 1967a; Bousfield, 1973.

***Ampelisca verrilli* Mills, 1967
(Figure 228)**

Ampelisca verrilli Mills, 1967b, pp. 636-639, fig. 1.

Regional diagnosis: Antenna 2 of female approximately one half length of body; head narrow, ventral margin nearly parallel to dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 moderately stout, slightly broadened proximally; maxilla 1, inner plate with 2 apical setae; maxilliped, inner plate with 2 stout acuminate or leaf-shaped terminal spines, 1 slender, non-plumose terminal seta (may be pectinate), outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin with small, shallow notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with long setae, slightly shorter anteriorly; coxa 4, posterior process narrow; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin with 1 stout spine, 3-4 slender spines or plumose setae; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than 1 spine; peraeopod 5, propodus, flexor margin with 4-7 elongate, minutely pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal and posterodistal margins convex, posterior margin without small spines (setae may be present), medial surface of male with large patch of plumose setae, ischium, merus and carpus stout, merus, posterodistal angle with slender spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin weakly sinuous, posteroventral angle with moderate tooth; urosome segment 1, dorsal carina of both sexes high, dorsal margin straight, elevated posteriorly, posterodorsal angle blunt or subacute, not upturned; urosome 2+3, dorsolateral carina of both sexes with posterodorsal margin straight, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin expanded proximally to form low "hump", rami slightly shorter than peduncle, extending one half to two thirds length of rami of uropod 2; uropod 2, inner ramus without subapical seta, outer ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines, lined with plumose setae distally, dorsal surface with row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, that of female lined with long plumose setae distally, without spines, lateral margin lined with very stout, strongly curved spines at base of long plumose setae; telson lobes each with 4-5 dorsal spines, tip acute, with 1 apical spine, 1 apical setule.

Distribution: East coast of the U. S. from the south side of Cape Cod, Massachusetts, to Florida (Mills, 1967b; Bousfield, 1973; Nelson, 1995).

Ecology: This species occurs on coarse sand (Mills, 1967b; Bousfield, 1973) or sand/mud (Nelson, 1995) bottoms, intertidally to depths of 50 m.

Remarks: Although *A. verrilli* has been reported from Florida waters, many records, especially those from the Gulf of Mexico, may actually refer to *A. holmesi* and the material in such cases needs to be reexamined. See the Remarks section for *A. holmesi* for a discussion of the differences between these two species.

The posteroventral tooth on epimeron 3 is slightly sexually dimorphic in *A. verrilli*, with that of the male tending to be smaller than that of the female.

See Mills, 1967b; Bousfield, 1973.

***Ampelisca* sp. A**
(Figure 218)

Regional diagnosis: Antenna 2 of female approximately one half length of body; head broad, ventral margin strongly diverging from dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp geniculate between articles 2 and 3, article 2 stout; maxilla 1, inner plate without apical setae; maxilliped, inner plate without minute, peg-like terminal spinule, with 2 slender, non-plumose terminal setae, outer plate, medial margin lined with moderately stout, acuminate or chisel-shaped spines; coxa 1, posteroventral margin evenly rounded, without notch, posteroventral angle with closely appressed tooth, coxa of female moderately expanded anterodistally, ventral margin of female lined with short to medium setae, shorter anteriorly; coxa 4, posterior process broad; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin without stout spines, with 2-3 simple setae; gnathopod 1 of male, propodus with stout palmar spines; gnathopod 2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl subequal to combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with all spine groups containing only 1 spine; peraeopod 5, propodus, flexor margin with 0-2 stout, non-pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal margin convex, posterodistal margin slightly oblique, posterior margin without small spines (setae may be present), medial surface of male without large patch of plumose setae, ischium, merus and carpus slender, ischium longer than merus, merus, posterodistal angle with very slender spine (plumose seta also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip not strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle subquadrate; epimeron 3, posterior margin concave, posteroventral angle produced, acute; urosome segment 1, dorsal carina of female very low, dorsal margin straight, not elevated posteriorly, posterodorsal angle blunt, not upturned, carina of male moderately high, dorsal margin convex, slightly elevated posteriorly, posterodorsal angle blunt, not upturned; urosome segment 2+3, dorsolateral carina of both sexes with posterodorsal margin straight, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin not expanded proximally, rami slightly shorter than peduncle, extending subequally with those of uropod 2; uropod 2 rami without subapical seta; uropod 3, inner ramus, medial margin entire, without serrations, spines or setae, dorsal surface without row of small setae, lateral margin of male pectinate, lined with plumose setae distally, outer ramus, medial margin of male pectinate, lined with plumose setae, that of female without long plumose setae, with 0-2 spines, lateral margin with several very small setae; telson lobes each with 2-3 dorsal spines, tips slightly notched apically, with 1 apical spine.

Distribution: Biscayne Bay, Florida Bay, Tampa Bay, Suwannee Sound and Perdido Key, Florida; Horn Island, Mississippi; offshore Padre Island, Texas.

Ecology: This species usually occurs on fine to medium sand, silty sand, or sand and shell hash bottoms in moderate to high salinity waters at depths ranging from 2 to 21 m. It has also been found on mud bottoms.

Remarks: This species is very similar to *A. abdita*, but tends to be slightly smaller (adult size: 2-4 mm) and, in general, has fewer spines and setae. The most readily observable character that can be used to separate the two species is the shape of epimeron 3, which is produced and usually acuminate posteroventrally in *Ampelisca* sp. A and subquadrate posteroventrally in *A. abdita*. There is, however, some variation in the actual shape of the posteroventral angle in *Ampelisca* sp. A and, although it is always at least weakly produced, it may sometimes be subacute or somewhat blunt distally rather than acuminate. In addition, the spines on the medial margin of the outer plate of the maxilliped in *Ampelisca* sp. A are usually stouter than those of *A. abdita* or *A. vadorum* and are often chisel-shaped, but there is some variability here as well. Also, the third uropod of the male is usually much less densely setose in *Ampelisca* sp. A than in *A. abdita*, but the setae are often missing if the material has been roughly handled and it may be necessary to look for the sockets where the setae were inserted to determine how dense they were. Finally, in females, the outer ramus of the third uropod almost always has fewer than 3 spines on the medial margin in *Ampelisca* sp. A, while *A. abdita* has 3-6 spines. However, very large individuals of *Ampelisca* sp. A may rarely have 3 spines on the medial margin of the outer ramus.

***Ampelisca* sp. C**
(Figure 231)

Regional diagnosis: Antenna 2 of female less than one half length of body; head narrow, ventral margin nearly parallel to dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 slender; maxilla 1, inner plate with 2 apical setae; maxilliped with 2 stout, blunt or distally expanded terminal spines, 2 slender, non-plumose terminal setae (may be pectinate), outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin with large, deep notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with medium to long setae; coxa 4, posterior process narrow; coxa 7, posterior lobe narrowly rounded posteriorly, posteroventral margin with 3-4 elongate, moderately stout spines; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than 1 spine; peraeopod 5, propodus, flexor margin with 4 elongate, minutely pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal and posterodistal margins convex, posterior margin with small spines, medial surface of male with large patch of plumose setae, ischium, merus and carpus stout, merus, posterodistal angle with small, slender spine (plumose seta also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle rounded; epimeron 3, posterior margin strongly sinuous, posteroventral angle with large tooth; urosome segment 1, dorsal carina of female moderately high, dorsal margin straight, slightly elevated posteriorly, posterodorsal angle blunt, not upturned, carina of male similar, but dorsal margin occasionally slightly convex; urosome 2+3, dorsolateral carina of both sexes with posterodorsal margin straight, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin strongly expanded proximally to form “hump”, rami slightly shorter than peduncle, extending almost to tips of rami of uropod 2; uropod 2, inner ramus without subapical seta, outer ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines, lined with plumose setae distally, dorsal surface with row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, that of female lined with long plumose setae distally, without spines, lateral margin lined with 9-11 stout, curved spines at base of long plumose setae; telson lobes each with 8-9 dorsal spines, tip subacute, with weak apical notch, with 1 apical spine, 1 apical setule.

Distribution: East coast of the U.S. from North Carolina to southern Florida; Gulf of Mexico from Florida Bay west to Texas (Goeke and Heard, unpublished data).

Ecology: *Ampelisca* sp. C is found in a wide variety of sediment types, ranging from silt and clay to coarse, high carbonate sand in moderate to high salinity waters. It occurs at depths of 2 to 177 m (Goeke and Heard, unpublished data).

Remarks: This relatively common species is easily separated from all other species of *Ampelisca* found in Florida coastal waters, with the exception of *Ampelisca* sp. D, by the presence of small spines lining the posterior margin of the basis of peraeopod 7. These spines are present even in very small juveniles, although they are fewer in number in smaller individuals. *Ampelisca* sp. C differs from *Ampelisca* sp. D in the rounded posteroventral angle of epimeron 2 and the blunt dorsal carina of urosome segment 1. It is also slightly larger than *Ampelisca* sp. D, with adult sizes ranging from 6 to 9 mm.

***Ampelisca* sp. D**
(Figure 232)

Regional diagnosis: Antenna 2 of female subequal to body in length; head narrow, ventral margin nearly parallel to dorsal margin anteriorly; eyes with red pigment behind corneal lenses; mandible, palp not geniculate between articles 2 and 3, article 2 slender; maxilla 1 with 2 apical setae; maxilliped with 2 stout, leaf-shaped or distally expanded terminal spines, 2 slender, non-plumose terminal setae (may be pectinate), outer plate, medial margin lined with short, stout, leaf-shaped spines; coxa 1, posteroventral margin with large, deep notch, posteroventral angle without closely appressed tooth, coxa of female slightly expanded anterodistally, ventral margin of female lined with medium to long setae; coxa 4, posterior process narrow; coxa 7, posterior lobe very narrowly rounded posteriorly, posteroventral margin with 2-4 short to medium length slender spines; gnathopods 1-2 of male, propodus without stout palmar spines (variously modified setae present); peraeopod 4, propodus stout, approximately twice as long as wide, dactyl longer than combined lengths of carpus and propodus; peraeopods 5-6, carpus, posterolateral surface with at least some spine groups containing more than 1 spine; peraeopod 5, propodus, flexor margin with 1-3 elongate, minutely pectinate spines; peraeopod 7, basis, posterodistal lobe moderately broad, distal and posterodistal margins convex, posterior margin with small spines, medial surface of male without plumose setae, ischium, merus and carpus stout, merus, posterodistal angle with small, slender spine (plumose setae also present), carpus, anterior margin without notch, propodus, anterolateral surface without spines, dactyl moderately stout, tip strongly attenuate; pleon segment 3 of female without dorsolateral carinae; epimeron 2, posteroventral angle acute; epimeron 3, posterior margin strongly sinuous, posteroventral angle with large tooth; urosome segment 1, dorsal carina of female moderately high, dorsal margin concave, slightly elevated posteriorly, posterodorsal angle acute, slightly upturned, carina of male similar, but slightly higher; urosome 2+3, dorsolateral carina of both sexes with posterodorsal margin straight, not upturned or beveled distally; uropod 1, peduncle, dorsolateral margin weakly expanded proximally, without “hump”, rami subequal to peduncle in length, extending subequally with those of uropod 2; uropod 2, inner ramus without subapical seta, outer ramus with subapical seta; uropod 3, inner ramus, medial margin entire, without serrations or spines, lined with plumose setae distally, dorsal surface with row of small setae, lateral margin of male not pectinate, lined with plumose setae distally, outer ramus, medial margin of male not pectinate, lined with dense plumose setae, that of female lined with long plumose setae distally, without spines, lateral margin lined with 5-6 stout, curved spines at base of long plumose setae; telson lobes each with 5-8 dorsal spines, tip subacute, with weak apical notch, with 1 apical spine, 1 apical setule.

Distribution: South of Mobile Bay, Alabama to Florida Bay, Florida (Goeke and Heard, unpublished data; pers. obs.).

Ecology: This species occurs in silty, very fine sand to coarse sand, usually with a very high carbonate content, at depths of 10 to 82 m (Goeke and Heard, unpublished data).

Remarks: *Ampelisca* sp. D is distinguished from all other known regional species of *Ampelisca*, except for *Ampelisca* sp. C, by the presence of small spines lining the posterior margin of the basis of peraeopod 7. However, these spines are occasionally absent in small juveniles. See the Remarks section for *Ampelisca* sp. C for a discussion of the characters useful in separating that species from *Ampelisca* sp. D. Adult sizes in this species range from 5 to 7 mm.

**Genus *Byblis* Boeck, 1871
(Figure 210)**

Regional diagnosis: Mandible, palp article 3 no more than one half length of article 2; peraeopods 3-4, carpus greater than one half length of propodus; peraeopod 7, basis, posterodistal lobe, anterior margin lined with setae, dactyl very slender, spine-like; uropod 3 short, at most extending slightly beyond tips of rami of uropods 1-2; telson shallowly cleft or notched apically, short, length subequal to width.

Florida species: *Byblis* sp. A

***Byblis* sp. A**

Byblis sp. 1: Thomas, 1993, p. 22-23, fig. 23.

Regional diagnosis: That of the genus.

Distribution: Florida Keys (Thomas, 1993).

Ecology: According to Thomas (1993), this species was only found at night, either in plankton traps or shoaling above the forereef at depths of 4-6m.

Remarks: *Byblis* sp. A appears to be related to *B. rhinoceros* Pirlot 1936, an Indo-Pacific species (Thomas, 1993). It differs from *B. serrata* Smith, 1873, the common species found along the north-east coast of the United States, in the presence of corneal lenses and the subquadrate, shallowly notched telson (more ovate and cleft halfway to the base in *B. serrata*). However, it resembles the circumpolar *B. gaimardi* Krøyer, 1846 in both of these characters and material of *Byblis* sp. A will have to be compared with specimens of both *B. rhinoceros* and *B. gaimardi* before it can be determined whether or not it represents a new species.

See Bousfield, 1973 (*B. serrata*); Linclon, 1979 (*B. gaimardi*); Thomas, 1993.

Family Amphilochidae Boeck, 1871

Regional diagnosis: Antenna 1 slender, flagellum longer than peduncle article 3; eyes present, well-developed, round; mandible, palp 3-articulate, molar present; maxilliped, inner plates present, not reduced, outer plates, inner lobes well-developed; peraeon segments 1-3 not forming subtriangular lateral expansion above coxal plates; coxa 1 subovate (occasionally subquadrate), reduced, distinctly shorter than and mostly hidden by following coxae; coxa 4 not shield-like, deeply excavate posterodorsally; gnathopod 1 subchelate, with 7 articles, dactyl normal, not reduced; gnathopod 2 subchelate, not extremely slender, article 3 not elongate, less than twice as long as wide; peraeopod 5, basis expanded; urosome segments 1-3 separate, segment 1 not elongate, less than twice length of segments 2 and 3 combined, without dorsal crest; uropod 2 much shorter than uropod 3; uropod 3 biramous, both rami 1-articulate.

Florida genera: *Apolochus*, *Gitana*, *Hourstonius*

Remarks: Hoover and Bousfield (2001) have recently revised the family Amphilochidae, erecting the genera *Apolochus* and *Hourstonius* to contain many species formerly placed in the genera *Amphilochus* and *Gitanopsis*, respectively. The Florida members of this family now fall into these two new genera. *Apolochus* may be distinguished from *Amphilochus sensu stricto* by the subacute or rounded ocular lobe (acute in *Amphilochus*), the propodus of gnathopod 2 having spines at the palmar angle (*Amphilochus* lacks spines), and the linguiform telson with a rounded or subacute tip (subtriangular with an acute, minutely tridentate tip in *Amphilochus*). *Hourstonius* differs from *Gitanopsis sensu stricto* by having a vestigial accessory flagellum (often very difficult to see, even under a compound microscope) (no accessory flagellum in *Gitanopsis*), slender spines around the rim of the mandibular molar (no spines in *Gitanopsis*), more strongly subchelate gnathopods with a shorter carpus than in *Gitanopsis*, and a linguiform telson with a rounded or subacute tip (subtriangular with an acute tip in *Gitanopsis*) (Hoover and Bousfield, 2001).

KEY TO FLORIDA GENERA OF AMPHILOCHIDAE

1. < Maxilla 1, palp 1-articulate; gnathopods 1-2 slender, weakly subchelate, propodus poorly inflated; coxae 2-3 serrate ventrally or posteroventrally; peraeopods 5-7 slender, propodus length 9-10 times width; uropod 3, rami without marginal spines; telson triangular, tip acute *Gitana*

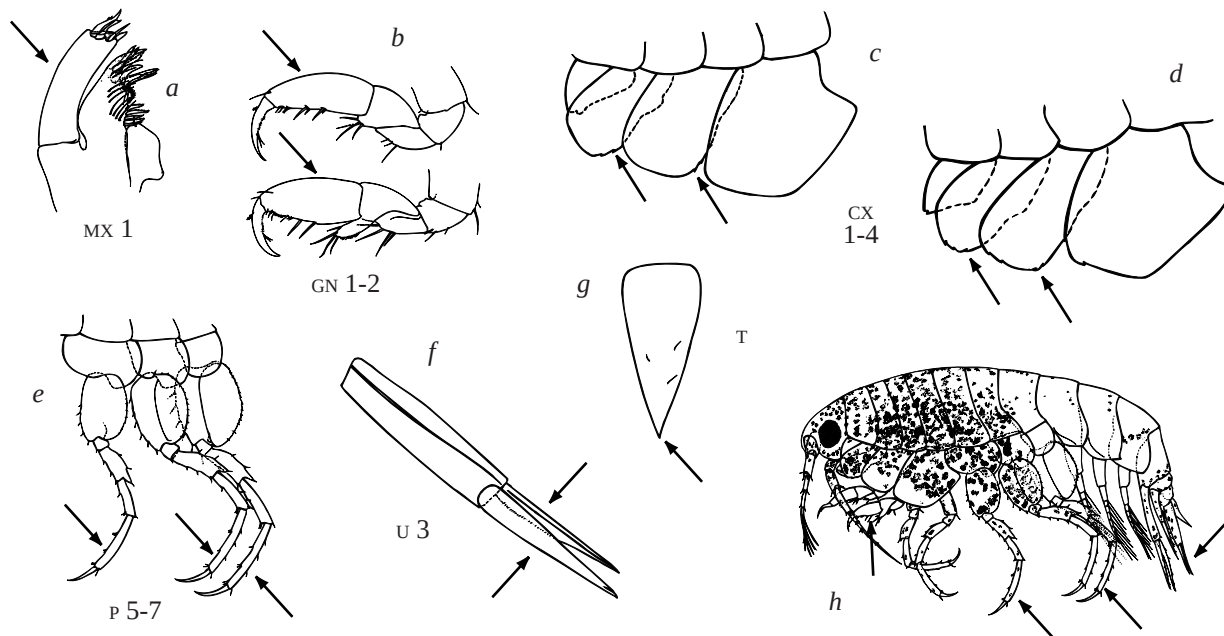


Figure 233.

- < Maxilla 1, palp 2-articulate; gnathopods 1-2 stout, strongly subchelate, propodus strongly inflated; coxae 2-3 entire ventrally and posteroventrally; peraeopods 5-7 moderately stout, propodus length 4-7 times width; uropod 3, rami with marginal spines; telson subtriangular or linguiform, tip subacute or rounded 2

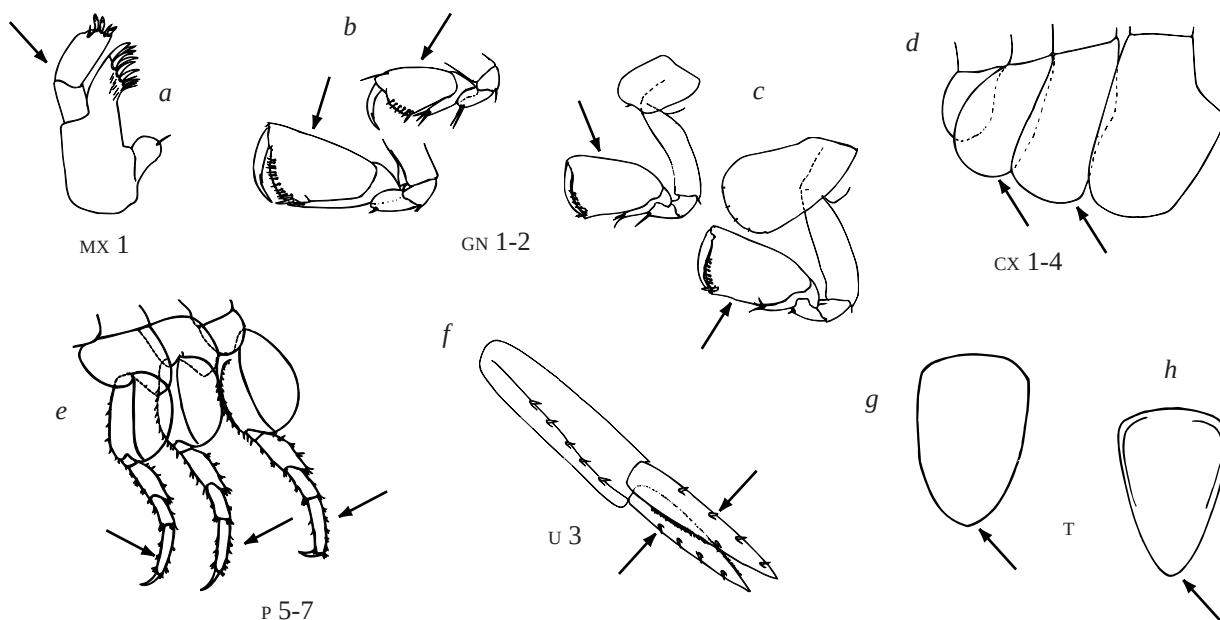


Figure 234.

2. < Antenna 1 long, much longer than peduncle of antenna 2; mandible, molar large, strongly tritulative, margin lined with slender spines; uropod 1, peduncle, medial margin with 0-2 spines *Hourstonius*

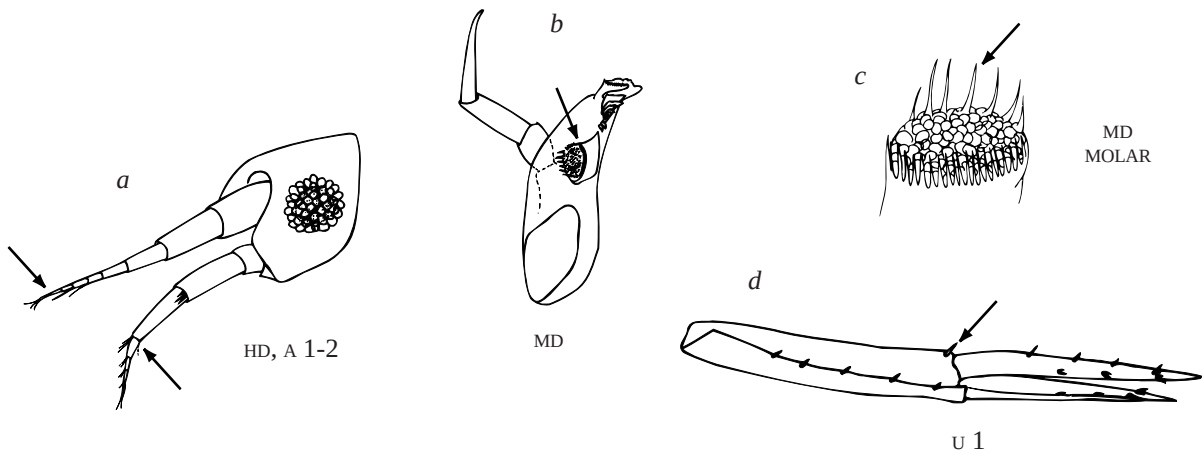


Figure 235.

- < Antenna 1 short, subequal to or slightly longer than peduncle of antenna 2; mandible, molar reduced, weakly or not tritulative, margin not lined with slender spines; uropod 1, peduncle, medial margin with 3 or more spines *Apolochus*

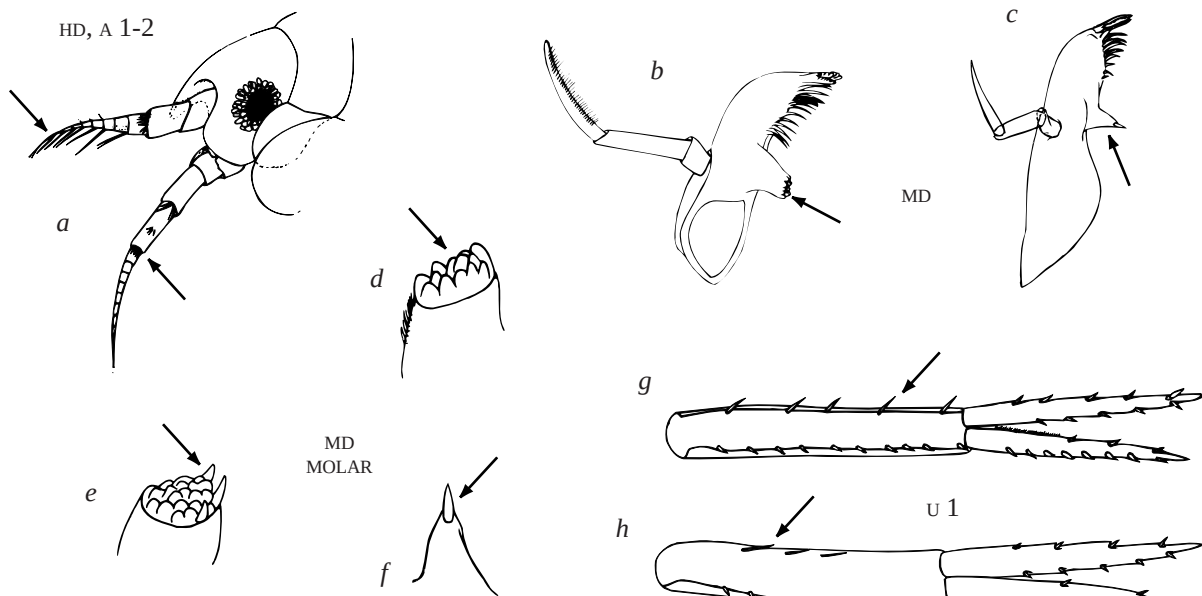


Figure 236.

Genus *Apolochus* Hoover and Bousfield, 2001

Regional diagnosis: Antenna 1 short, subequal to or slightly longer than peduncle of antenna 2; mandible, molar reduced, weakly or not triturative, margin not lined with slender spines; maxilla 1, palp 2-articulate; gnathopods 1-2 stout, strongly subchelate, propodus strongly inflated; coxae 2-3 entire ventrally and posteroventrally; peraeopods 5-7 moderately stout, propodus length 4-7 times width; uropod 1, peduncle, medial margin with 3 or more spines; uropod 3, rami with marginal spines; telson subtriangular or linguiform, tip subacute or rounded.

Florida species: *A. casahoya*, *A. delacaya*, *A. pillaii*, *Apolochus* sp. A

Remarks: The listing of *Amphilocus* [sic] *pollex* by Nelson (1995) from algae-covered rocks at Sebastian Inlet, Florida, may actually refer to *Ampithoe pollex* Kunkel, 1910, an amphithoid amphipod species which occurs in that area. There is no species of *Amphilochus* described under the name *A. pollex*.

KEY TO FLORIDA SPECIES OF *APOLOCHUS*

1. < Mandible, molar with single large apical spine; gnathopod 2, propodus without submarginal spines on anterolateral surface *Apolochus* sp. A

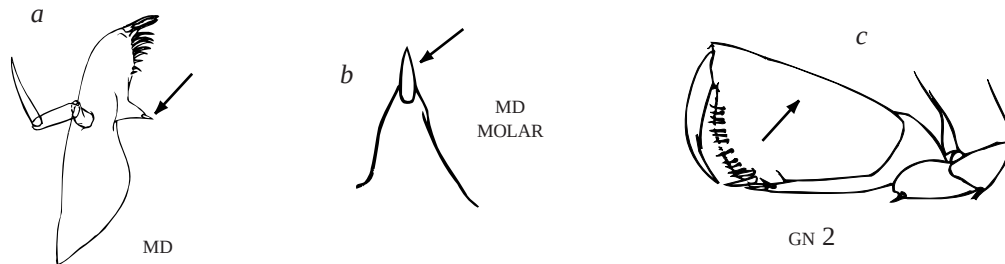


Figure 237.

- < Mandible, molar without spines or with 1-3 marginal spines; gnathopod 2, propodus with submarginal spines on anterolateral surface 2

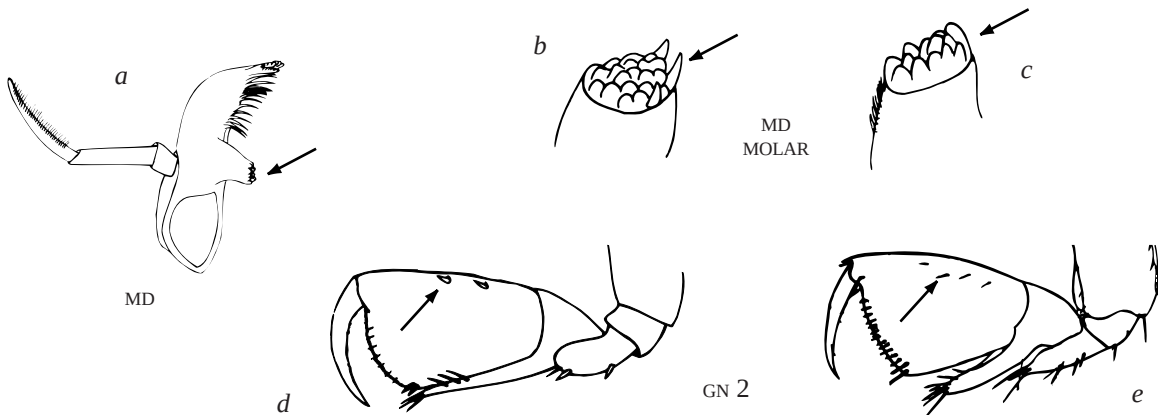


Figure 238.

2. < Gnathopod 2, carpal lobe falling well short of palmar angle, propodus with slender submarginal spines on anterolateral surface; uropod 1, outer ramus without spines on medial margin; uropod 2, rami extending slightly beyond distal end of peduncle of uropod 1; uropod 3, peduncle, medial margin with spines, rami extending slightly beyond tips of rami of uropod 1 *Apolochus pillaii*

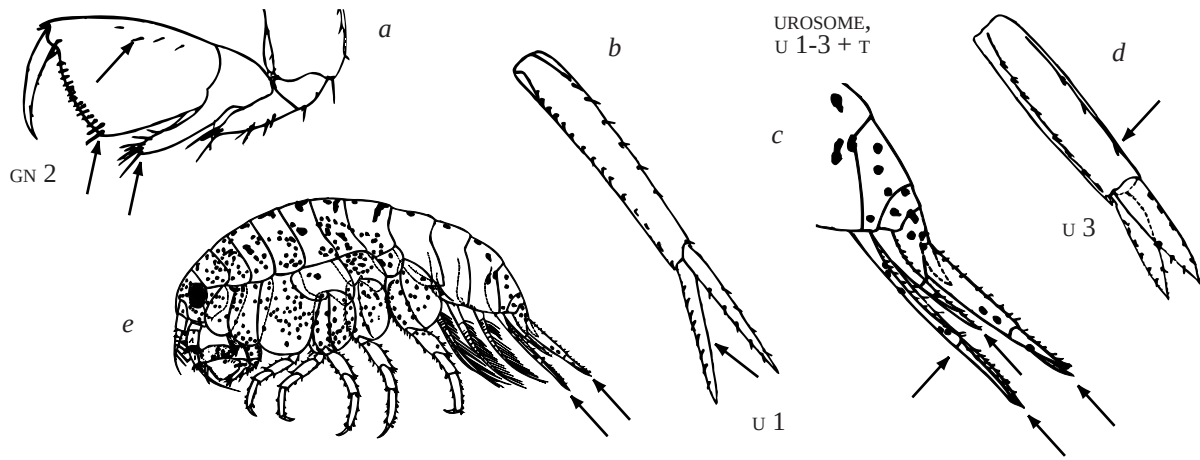


Figure 239.

- < Gnathopod 2, carpal lobe nearly reaching palmar angle, propodus with stout submarginal spines on anterolateral surface; uropod 1, outer ramus with spines on medial margin; uropod 2, rami extending well beyond distal end of peduncle of uropod 1; uropod 3, peduncle, medial margin without spines, rami extending well beyond tips of rami of uropod 1 3

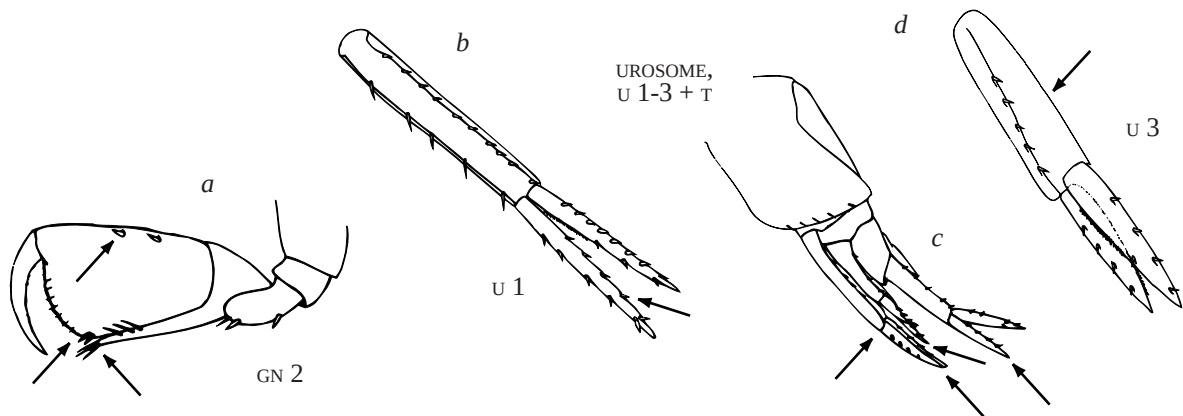


Figure 240.

3. < Gnathopod 2, propodus with 1-2 submarginal spines on anterolateral surface; uropod 2, outer ramus, lateral margin with 2 stout spines larger than remaining spine *Apolochus casahoya*

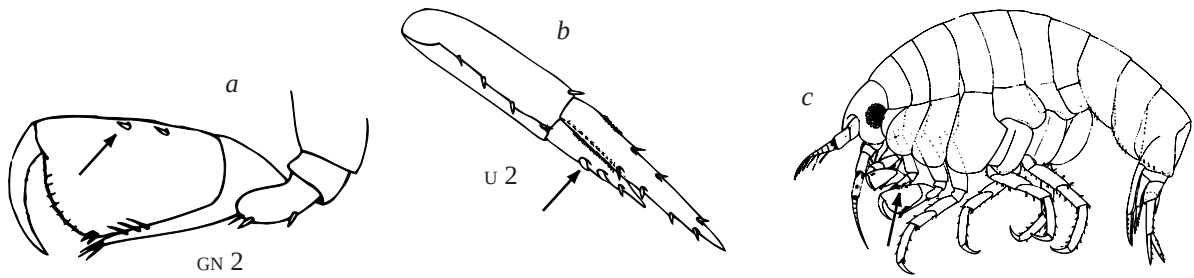


Figure 241.

- < Gnathopod 2 with 4 submarginal spines on anterolateral surface; uropod 2, outer ramus, lateral margin without stout spines, all spines similar in size *Apolochus delacaya*

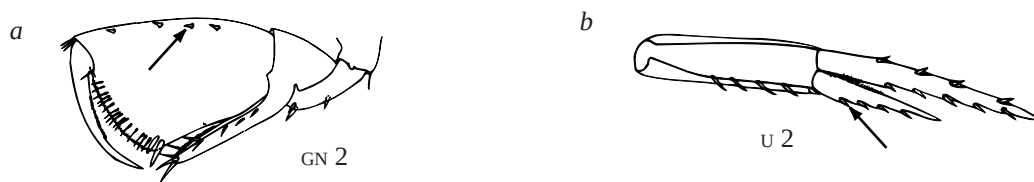


Figure 242.

***Apolochus casahoya* (McKinney, 1978)
(Figure 241)**

Amphilochus casahoya McKinney, 1978, pp. 137-140, figs. 1-2.

Apolochus casahoya: Hoover and Bousfield, 2001, p. 15.

Regional diagnosis: Mandible, molar without spines or with 3 stout marginal spines (left and right molars differ); gnathopod 2, carpal lobe nearly reaching palmar angle, propodus with 1-2 stout submarginal spines on anterolateral surface; uropod 1, outer ramus with spines on medial margin; uropod 2, outer ramus, lateral margin with 2 stout spines larger than remaining spine, rami extending well beyond distal end of peduncle of uropod 1; uropod 3, peduncle, medial margin without spines, rami extending well beyond tips of rami of uropod 1.

Distribution: Florida Keys (Barnard and Thomas, 1983); southeastern Gulf of Mexico between Cape Romano and the lower Florida Keys (pers. obs.); 7.5 fathom Reef and Port Isabel, Texas (McKinney, 1978).

Ecology: This species occurs on reefs and other hard substrates from the intertidal zone of jetties to depths of 14 m (McKinney, 1978; Barnard and Thomas, 1983).

Remarks: *Apolochus casahoya* is most similar to *A. delacaya*, from which it can be distinguished by the smaller number of submarginal spines on the anterolateral surface of the propodus of gnathopod 2 (2 in *A. casahoya*; 4 in *A. delacaya*) and the presence of 2 relatively large stout spines on the lateral margin of the outer ramus of uropod 2 (small spines in *A. delacaya*). Like other amphilochids, it is a small species, ranging in length from 2 to 3.5 mm.

See McKinney, 1978 (as *Amphilochus casahoya*); Hoover and Bousfield, 2001.

***Apolochus delacaya* (McKinney, 1978)
(Figure 242)**

Amphilochus delacaya McKinney, 1978, p. 140, fig. 2.
Apolochus delacaya: Hoover and Bousfield, 2001, p. 15.

Regional diagnosis: Mandible, molar without spines or with 3 stout marginal spines (left and right molars differ); gnathopod 2, carpal lobe nearly reaching palmar angle, propodus with 4 stout submarginal spines on anterolateral surface; uropod 1, outer ramus with spines on medial margin; uropod 2, outer ramus, lateral margin without stout spines, all spines similar in size, rami extending well beyond distal end of peduncle of uropod 1; uropod 3, peduncle, medial margin without spines, rami extending well beyond tips of rami of uropod 1.

Distribution: Florida Keys (Barnard and Thomas, 1983); Isla de Lobos Reef, Vera Cruz, Mexico (McKinney, 1978).

Ecology: This species is found in the groove and buttress zone of coral reefs in shallow waters (5 m) (McKinney, 1978).

Remarks: *Apolochus delacaya* is a small species (2.5 mm) and is most similar to *A. casahoya* in morphology (see **Remarks** section for that species).

See McKinney, 1978 (as *Amphilochus delacaya*); Hoover and Bousfield, 2001.

***Apolochus pillaii* (Barnard and Thomas, 1983)
(Figure 239)**

Amphilochus pillaii Barnard and Thomas, 1983, pp. 179-187, figs. 1-3.
Apolochus pillaii: Hoover and Bousfield, 2001, p.15.

Regional diagnosis: Mandible, molar without spines (may have cusps or setae); gnathopod 2, carpal lobe falling well short of palmar angle, propodus with 4 slender submarginal spines on anterolateral surface; uropod 1, outer ramus without spines on medial margin; uropod 2, rami extending slightly beyond distal end of peduncle of uropod 1; uropod 2, outer ramus, lateral margin without stout spines, all spines similar in size; uropod 3, peduncle, medial margin with spines, rami extending slightly beyond tips of rami of uropod 1.

Distribution: Big Pine Key, Florida Keys (Barnard and Thomas, 1983).

Ecology: *Apolochus pillaii* is a commensal on the purple gorgonian *Pterogorgia anceps*, living in the recessed grooves between the margins of the whips (Barnard and Thomas, 1983).

Remarks: This species is readily separated from the other species of *Apolochus* in the region by the relatively short carpal lobe of gnathopod 2, which falls well short of the palmar angle (nearly reaching the palmar angle in the other three species) and by the relative lengths of the uropods (uropod 2 is shorter relative to uropod 1 than in the other three species and uropod 3 is shorter than in *A. casahoya* and *A. delacaya*). The color in life is also distinctive and is comprised of a spotted pattern of brownish purple chromatophores, mimicing the color of the host, with a frosting of white pigment and a white, reflective eye (Barnard and Thomas, 1983).

See Barnard and Thomas, 1983 (as *Amphilochus pillaii*).

***Apolochus* sp. A**
(Figure 237)

?*Amphilochus neapolitanus*: McKinney, 1978, p. 137.

?*Amphilochus neapolitanus*: Thomas, 1993, p. 24, fig. 25.

Regional diagnosis: Mandible, molar with a single large apical spine; gnathopod 2, carpal lobe nearly reaching palmar angle, propodus without submarginal spines on anterolateral surface; uropod 1, outer ramus with single spine on medial margin; uropod 2, outer ramus, lateral margin without stout spines, all spines similar in size, rami extending slightly beyond distal end of peduncle of uropod 1; uropod 3, peduncle, medial margin without spines, rami extending slightly beyond tips of rami of uropod 1.

Distribution: Florida Keys; Florida Bay; southeastern Gulf of Mexico between Cape Romano and Cape Sable, Florida; ?offshore from Galveston, Texas (McKinney, 1978); ?Ascension Bay and Cozumel Island, Mexico (McKinney, 1978).

Ecology: This species occurs on reefs and sandy shell hash bottoms in shallow (1-15m) waters.

Remarks: *Apolochus* sp. A is closely related to *A. neapolitanus* (Della Valle, 1893) and is probably the species that has been identified as *A. neapolitanus* in this region in the past (e.g. McKinney, 1978; Thomas, 1993). Material of this reportedly cosmopolitan species has been illustrated from many parts of the world and these illustrations do not always appear to represent the same species. For example, Mediterranean specimens illustrated by Krapp-Schickel (1982a) do not have the reduced molar with a single apical spine that has been reported for “*A. neapolitanus*” in other areas (e.g. Chevreux and Fage, 1925 [France]; McKinney, 1978 [Texas and Mexico]). Della Valle (1893) did not mention or illustrate the mandible in the original description of a specimen from Naples, Italy; however, if the Mediterranean material illustrated by Krapp-Schickel (1982a) from Malta represents *A. neapolitanus*, then material with the reduced, spine-tipped molar does not belong to that species. Other differences between Gulf of Mexico specimens and *A. neapolitanus* of Krapp-Schickel (1982a) include a shorter antenna 1 (antennae subequal in *A. neapolitanus*), a ventrally smooth coxa 2 (weakly serrate in *A. neapolitanus*), the presence of spines on the tip of the carpal lobe of gnathopod 2 (spines lacking in *A. neapolitanus*) and differences in the spination of the uropods. The differences in the relative lengths of antennae 1-2 and the serration of coxa 2 are used by Hoover and Bousfield (2001) to separate a northeastern Atlantic *A. neapolitanus* complex from Mediterranean material of *A. neapolitanus*. They also use the number of spines in the mandibular spine row (approximately 14 in members of the northeastern Atlantic *A. neapolitanus* complex and 8-10 in Mediterranean *A. neapolitanus*) to distinguish the two. Gulf of Mexico specimens of *Apolochus* sp. A have only 8-10 spines, resembling the Mediterranean material in that regard. It should also be noted here that the illustration of *A. neapolitanus* in Thomas (1993) actually represents California material referred to as that species by Barnard (1962), which may differ from Florida Keys material. Adults of *Apolochus* sp. A range from 2 to 3 mm in length.

See McKinney, 1978 (*A. neapolitanus*); Krapp-Schickel, 1982a (*A. neapolitanus*); Thomas, 1993 (*A. neapolitanus*).

Genus *Gitana* Boeck, 1871

Regional diagnosis: Antenna 1 short, slightly longer than peduncle of antenna 2; mandible, molar large, tritulative, margin with a few slender spines; maxilla 1, palp 1-articulate; gnathopods 1-2 slender, weakly subchelate, propodus poorly inflated; coxae 2-3 serrate ventrally or posteroventrally; peraeopods 5-7 slender, propodus length 9-10 times width; uropod 1, peduncle, medial margin without spines; uropod 3, rami without marginal spines; telson triangular, tip acute.

Florida species: *G. cf dominica*

Gitana cf dominica Thomas and Barnard, 1990 (Figure 233)

Gitana dominica Thomas and Barnard, 1990, pp. 618-622, figs.1-3.

Regional diagnosis: That of genus.

Distribution: Biscayne Bay, Florida Bay, southeastern Gulf of Mexico between Cape Romano and Cape Sable, Florida (pers. obs.); Dominica (Thomas and Barnard, 1990).

Ecology: *Gitana dominica* occurs among reef outcroppings in sand covered with large numbers of unicellular algal strands (Thomas and Barnard, 1990) or in sandy shell hash (*Gitana cf dominica*, pers. obs.) at depths of 4 to 6 m.

Remarks: *Gitana cf dominica* has the general amphiloichid body shape, but is readily distinguished from members of the other two genera in the region by the weakly subchelate, poorly inflated gnathopods. Material from Florida differs from the description of *Gitana dominica* from Dominica in the more serrate ventral margins of coxae 2-4. In life, this species is spotted with greenish brown chromatophores and has dark orange eyes (Thomas and Barnard, 1990). Adult size ranges from 2-3 mm in length.

See Thomas and Barnard, 1990.

Genus *Hourstonius* Hoover and Bousfield, 2001

Regional diagnosis: Antenna 1 long, much longer than peduncle of antenna 2; mandible, molar large, strongly tritulative, margin lined with slender spines; maxilla 1, palp 2-articulate; gnathopods 1-2 stout, strongly subchelate, propodus strongly inflated; coxae 2-3 entire ventrally and posteroventrally; peraeopods 5-7 moderately stout, propodus length 4-7 times width; uropod 1, peduncle, medial margin with 0-2 spines; uropod 3, rami with marginal spines; telson subtriangular or linguiform, tip subacute or rounded.

Florida species: *H. laguna*, *H. tortugae*, *Hourstonius* sp. B

KEY TO FLORIDA SPECIES OF *HOURSTONIUS*

1. < Coxa 1 subquadrate, not tapering distally; gnathopod 2 slightly larger than gnathopod 1, carpal lobe very short, reaching less than halfway to palmar angle, propodus with anterior and posterior margins subparallel, not diverging distally *Hourstonius* sp. B

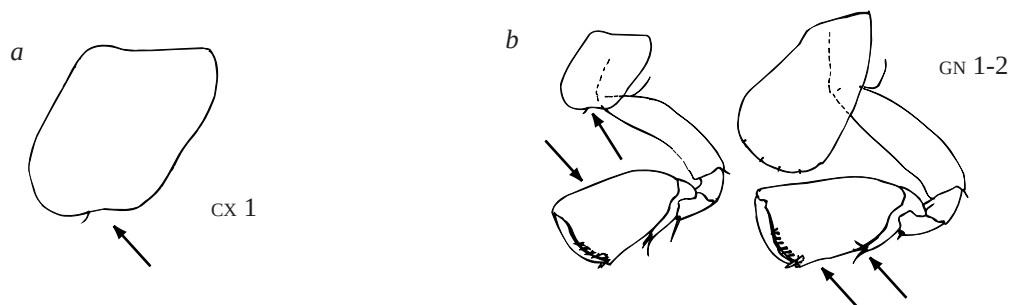


Figure 243.

- < Coxa 1 subovate, tapering distally; gnathopod 2 distinctly larger than gnathopod 1, carpal lobe moderately long to long, reaching at least three fourths of the distance to the palmar angle, propodus with anterior and posterior margins not subparallel, diverging distally 2

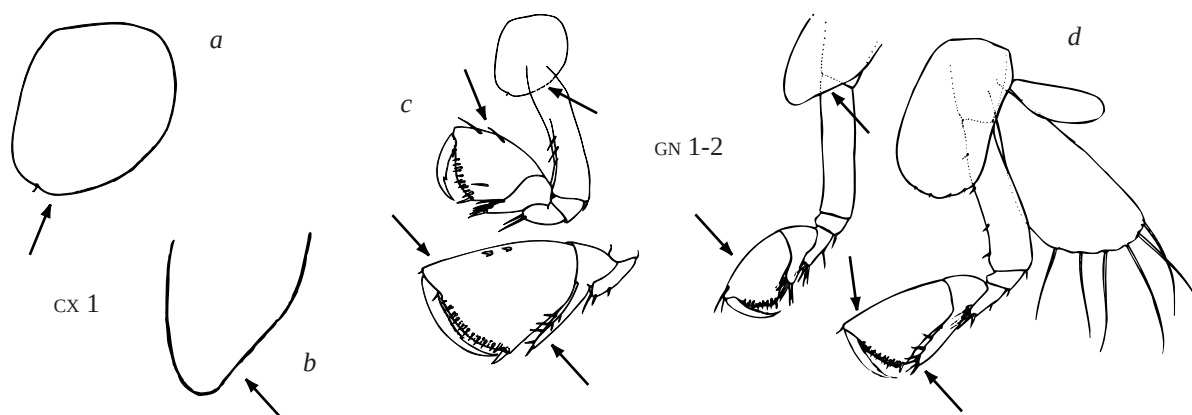


Figure 244.

2. < Antenna 1, peduncle articles 1-3 slender, article 3, length approximately twice width; eye large, diameter greater than width of antenna 1, peduncle article 1; gnathopod 2, carpal lobe moderately long, reaching three fourths of the distance to the palmar angle, propodus with submarginal spines on anterolateral surface *Hourstonius laguna*

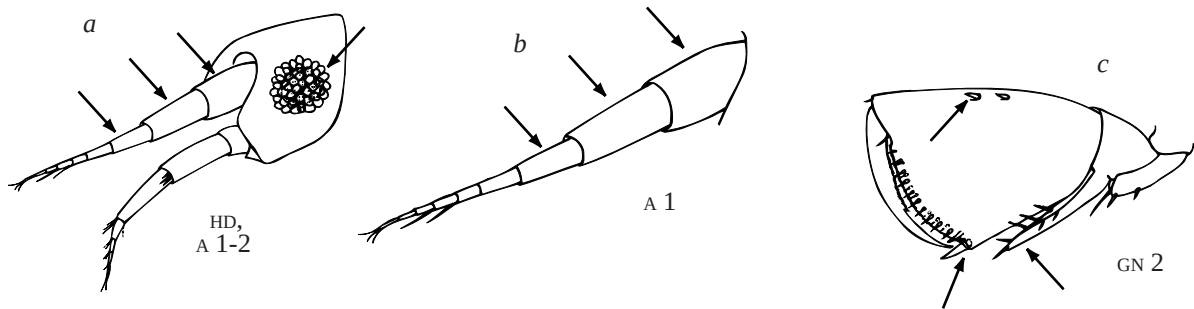


Figure 245.

- < Antenna 1, peduncle articles 1-3 stout, article 3, length subequal to width; eye small, diameter less than width of antenna 1, peduncle article 1; gnathopod 2, carpal lobe long, nearly reaching palmar angle, propodus without submarginal spines on anterolateral surface *Hourstonius tortugae*

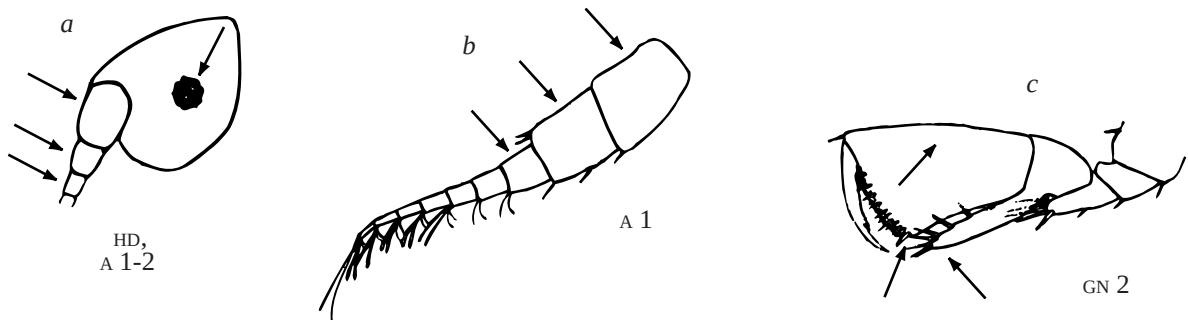


Figure 246.

***Hourstonius laguna* (McKinney, 1978)
(Figure 245)**

Gitanopsis laguna McKinney, 1978, pp. 140-143, figs. 3-4.
Hourstonius laguna: Hoover and Bousfield, 2001, p. 11, fig. 1.

Regional diagnosis: Antenna 1, peduncle articles 1-3 slender, article 3, length approximately twice width; coxa 1 subovate, tapering distally; gnathopod 2 distinctly larger than gnathopod 1, carpal lobe moderately long, reaching three fourths of the distance to the palmar angle, propodus, anterior and posterior margins not subparallel, diverging distally, anterolateral surface with submarginal spines.

Distribution: East coast of Florida from the St. Johns River to Biscayne Bay, including the Indian River Lagoon system (Nelson, 1995; pers. obs.); Gulf of Mexico from Florida Bay to Laguna de Términos, Mexico (McKinney, 1978; Ledoyer, 1986; pers. obs.).

Ecology: *Hourstonius laguna* occurs in medium to high salinity bays and lagoons, usually among algae (McKinney, 1978) or in grassbeds, but it may also be found in fouling growth on buoys, docks or oyster reefs (pers. obs). It is found in relatively shallow water, at depths ranging from 0.5 to 4 m.

Remarks: This is the most frequently encountered species of amphiloichid in Florida waters, probably because of its preference for nearshore, somewhat protected habitats. It can be distinguished from the other species of *Hourstonius* in the region by the presence of submarginal spines on the anterolateral surface of the propodus of gnathopod 2 and from sympatric *Apolochus* species by its subequal antennae (antenna 1 is shorter than antenna 2 in Florida species of *Apolochus*). *Hourstonius laguna* ranges from 2 to 3 mm in length.

See McKinney, 1978 (as *Gitanopsis laguna*); Ledoyer, 1986 (as *Gitanopsis laguna*).

***Hourstonius tortugae* (Shoemaker, 1933)
(Figure 246)**

Gitanopsis tortugae Shoemaker, 1933a, p. 248, fig. 2.
Hourstonius tortugae: Hoover and Bousfield, 2001, p. 11.

Regional diagnosis: Antenna 1, peduncle articles 1-3 stout, article 3, length subequal to width; coxa 1 subovate, tapering distally; gnathopod 2 distinctly larger than gnathopod 1, carpal lobe long, nearly reaching palmar angle, propodus, anterior and posterior margins not subparallel, diverging distally, anterolateral surface without submarginal spines.

Distribution: Indian River Lagoon system (Nelson, 1995); Dry Tortugas (Shoemaker, 1933a), ?Apalachicola Bay (Sheridan, 1980), Florida.

Ecology: Shoemaker (1933a) does not mention the habitat in which his specimens were collected; however, Nelson (1995) found *H. tortugae* in grassbeds, among algae, on sand/mud bottoms and in *Aplysia* egg masses.

Remarks: *Hourstonius tortugae* may be separated from *H. laguna* by the lack of submarginal spines on the anterolateral surface of the propodus of gnathopod 2 (spines present in *H. laguna*) and from *Hourstonius* sp. B by the long carpal lobe on gnathopod 2, which nearly reaches the palmar angle (reaches less than halfway to the palmar angle in *H. sp. B*). It is similar in size to other amphiloichids, ranging from 2 to 3 mm in length.

See Shoemaker, 1933a (as *Gitanopsis tortugae*).

***Hourstonius* sp. B**
(Figure 243)

Gitanopsis sp. B: Rakocinski et al., 1993, p. 102; 1996, p. 350.

Regional diagnosis: Antenna 1, peduncle articles 1-3 stout, article 3, length subequal to width; coxa 1 subquadrate, not tapering distally; gnathopod 2 slightly larger than gnathopod 1, carpal lobe very short, reaching less than halfway to palmar angle, propodus, anterior and posterior margins subparallel, not diverging distally, anterolateral surface without submarginal spines.

Distribution: East Ship Island, Mississippi to Tampa Bay, Florida (Rakocinski et al., 1993; 1996; pers. obs.); Biscayne Bay and Hutchinson Island, Florida.(pers. obs.).

Ecology: This species is found at medium to high salinities on subtidal sand or sand and shell hash bottoms, at depths of 2-9 m (Rakocinski et al., 1993; pers. obs.).

Remarks: *Hourstonius* sp. B can be easily distinguished from all other amphiloichid species in the region by the very short carpal lobe on gnathopod 2, which reaches less than halfway to the palmar angle. It is very similar to *H. pusilloides* (Shoemaker, 1942) from Baja California in gnathopod morphology and keys out to that species using the key in Karaman (1980a); however, antenna 1 is longer in *Hourstonius* sp. B than in *H. pusilloides*, nearly reaching the tip of antenna 2 (subequal to the peduncle of antenna 2 in length in *H. pusilloides*). Adult size in this species ranges from 2-3 mm.

Family Ampithoidae Stebbing, 1899

Regional diagnosis: Antenna 1 well-developed, not exceptionally short, reaching well beyond peduncle article 4 of antenna 2, flagellum much longer than peduncle; antenna 2 slightly shorter than or subequal to antenna 1; head normal, not globular, rostrum small and straight; ocular lobe broadly rounded or subquadrate anteriorly, inferior antennal sinus not deeply recessed for insertion of antenna 2, buccal mass not exceptionally large relative to size of head; eyes well-developed, lateral, not closely approximated or fused dorsally, without 4 paired peripheral facets; mandible, molar present, well-developed, palp usually present (rarely absent); lower lip, outer lobe notched apicomediaally; maxilliped, palp article 4 normally developed, not vestigial; coxae 1-2 not reduced, not hidden by following coxae; coxae 1-3 not becoming shorter posteriorly, subequal to or longer than following coxae; coxae 1-4 deep, extending well beyond proximal end of basis; coxa 4, posterior margin not excavate proximally; coxa 5, anterior lobe as deep as coxa 4, much deeper than coxae 6-7; gnathopod 1 smaller than or subequal to gnathopod 2, well-developed, normally subchelate or parachelate, with 7 articles, carpal lobe unproduced; gnathopod 2, article 3 not elongate, less than twice as long as wide; pereopod 7 not much longer or more slender than pereopod 6, not attenuate distally; urosome segments 1-3 separate, segment 1 not elongate, at most slightly longer than deep; uropod 3 biramous, rami stout, subequal or outer ramus slightly shorter than inner, outer ramus with 2 short, hook-like distal spines or processes; telson entire.

Florida genera: *Ampithoe*, *Cymadusa*, *Peramphithoe*, *Sunamphitoe*

Remarks: A fifth genus of ampithoid amphipod, *Pseudoamphithoides* Ortiz, 1976, occurs in the shallow grassbeds of Cuba (Ortiz, 1976, *P. bacescui*) and the Caribbean Sea (Just, 1977, *P. incurvaria* [as *Amphyllodomus incurvaria*]; Lewis and Kensley, 1982, *P. incurvaria*) and, although it has not been reported from Florida waters to date, it may also occur in similar habitats in the Florida Keys. Members of this genus can be distinguished from those of other Florida genera of ampithoids by the eye located at the anterior margin of a poorly developed ocular lobe; relatively weak gnathopods; relatively short coxae; reduced, strongly recurved dactyls on pereopods 5-7; and the morphology of uropod 3, with its slender inner ramus and outer ramus with only 1 terminal hook. It differs slightly from the above diagnosis, which was based on genera currently known from Florida, in several of these characters. In addition, *Pseudoamphithoides* can often be recognized by its presence inside an algal domicile or “house”, which it constructs from two equally-sized cut-out pieces of a brown alga (Just, 1977; Lewis and Kensley, 1982).

KEY TO FLORIDA GENERA OF AMPITHOIDAE

1. < Coxa 1 not expanded distally, anteroventral angle subquadrate, not produced; gnathopod 1 of female, palm transverse; peraeopods 3-4, basis strongly inflated; peraeopod 5, carpus subquadrate, propodus stout, approximately twice as long as wide; uropod 3, outer ramus, dorsal margin minutely spinose 2

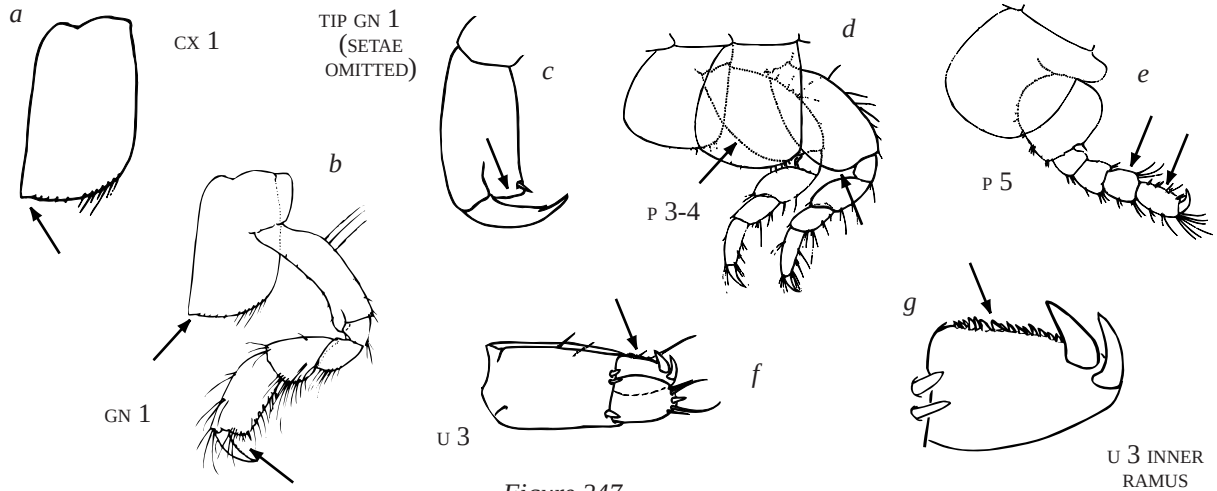


Figure 247.

- < Coxa 1 expanded distally, anteroventral angle produced; gnathopod 1 of female, palm oblique; peraeopods 3-4, basis slender to moderately inflated; peraeopod 5, carpus subrectangular, propodus slender, 3-5 times as long as wide; uropod 3, outer ramus, dorsal margin not minutely spinose 3

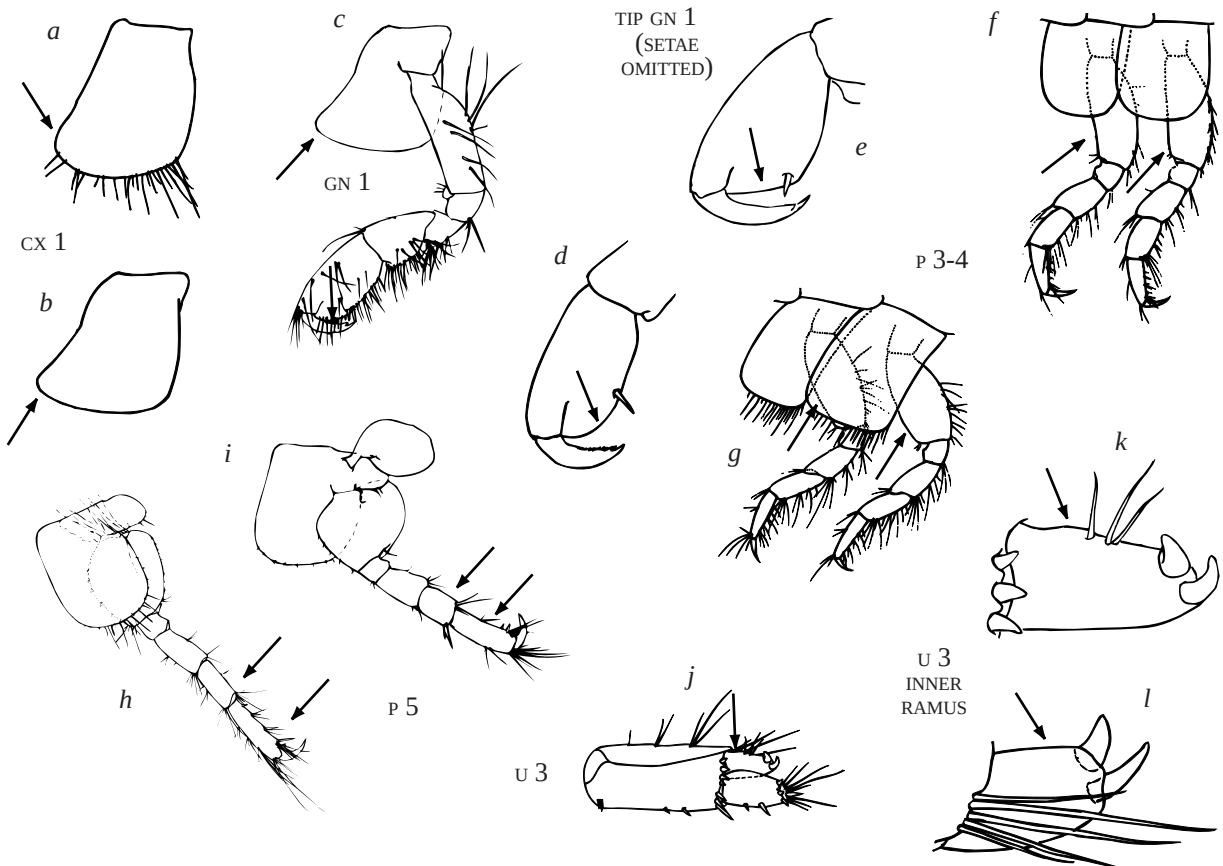


Figure 248.

2. < Mandible, palp present, weak *Peramphithoe*

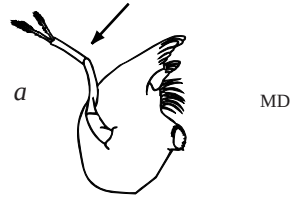


Figure 249.

- < Mandible, palp absent *Sunamphithoe*

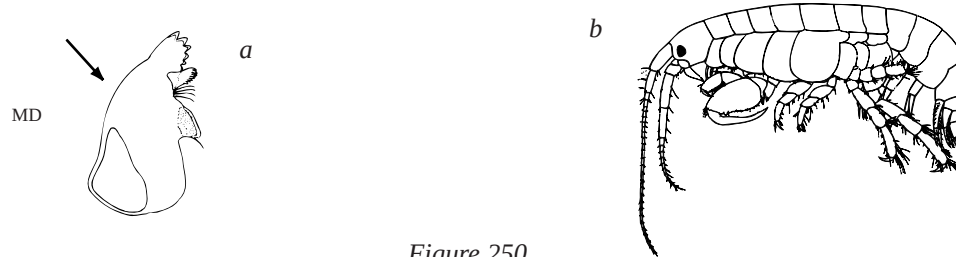


Figure 250.

3. < Antenna 1, accessory flagellum vestigial or absent; maxilla 1, palp article 2 slender; coxae 1-4, ventral margin without setae (tiny setules may be present) or with small tuft of short setae posteriorly; uropod 1, peduncle, distoventral spur weak or absent; uropod 3, peduncle without spines on dorsomedial margin *Ampithoe*

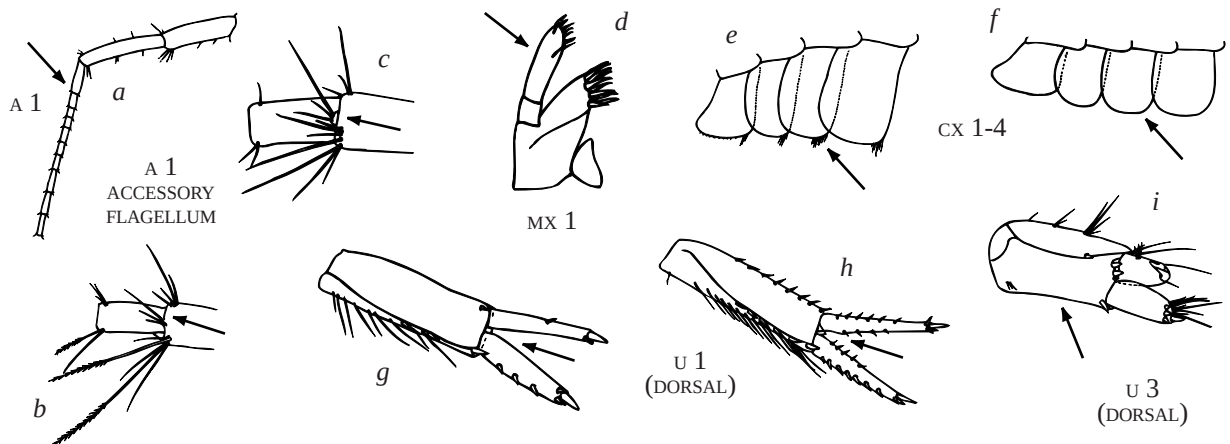


Figure 251.

- < Antenna 1, accessory flagellum present, 2-articulate; maxilla 1, palp article 2 broad; coxae 1-4, ventral margin lined with long setae; uropod 1, peduncle, distoventral spur present, strong; uropod 3, peduncle with spines on dorsomedial margin *Cymadusa*

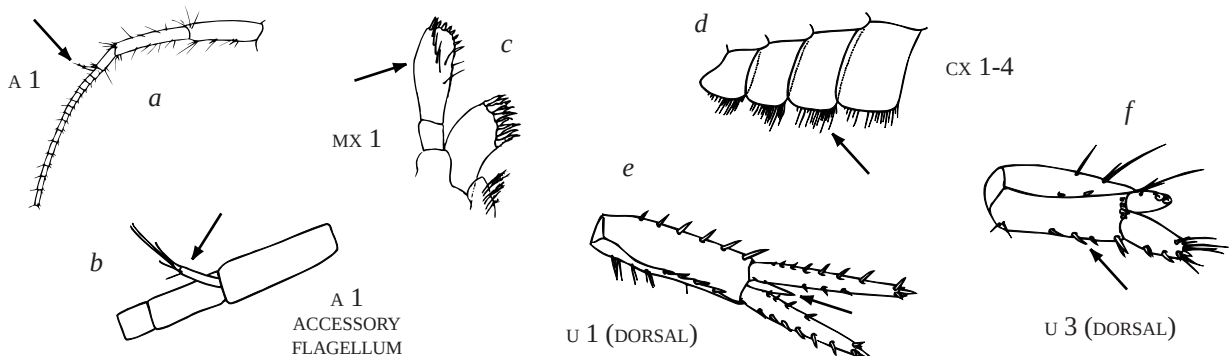


Figure 252.

Genus *Ampithoe* Leach, 1814

Regional diagnosis: Antenna 1, accessory flagellum vestigial or absent; mandible, palp present, moderately to well-developed; maxilla 1, palp article 2 slender; coxae 1-4, ventral margin without setae (tiny setules may be present) or with small tuft of short setae posteriorly; coxa 1 expanded distally, anteroventral angle produced; gnathopod 1 of female, palm oblique; peraeopods 3-4, basis slender to moderately inflated; peraeopod 5, carpus subrectangular, propodus slender, 3-5 times as long as wide; uropod 1, peduncle, distoventral spur weak or absent; uropod 3, peduncle without spines on dorsomedial margin, outer ramus, dorsal margin not minutely spinose.

Florida species: *A. longimana*, *A. cf. marcuzzii*, *A. pollex*, *A. ramondi*, *A. valida*, *Ampithoe* sp. A

Remarks: Although a vestigial accessory flagellum is present on antenna 1 in one Florida species of *Ampithoe* (*A. valida*), it is reduced to a very small scale-like flap with 3-4 terminal or subterminal setae and is only visible under a compound microscope. The remaining five species, which do not have an accessory flagellum, still retain 2-3 setae in its place at the distomedial end of peduncle article 3. There are a number of developmental changes that occur in the shape and spination of appendages in species of *Ampithoe*, particularly in the males, and, in many cases, the most dependable way to identify juveniles and small subadults is by their association with adults.

KEY TO FLORIDA SPECIES OF *AMPITHOE*

1. < Gnathopod 2 of male, propodus, palm very deeply excavate, "thumb" at palmar angle long, slender, extending beyond dactylar articulation; uropod 1, peduncle, medial margin without spines; uropod 3, peduncle very stout, width approximately three fourths length, outer ramus longer than inner *Ampithoe pollex*

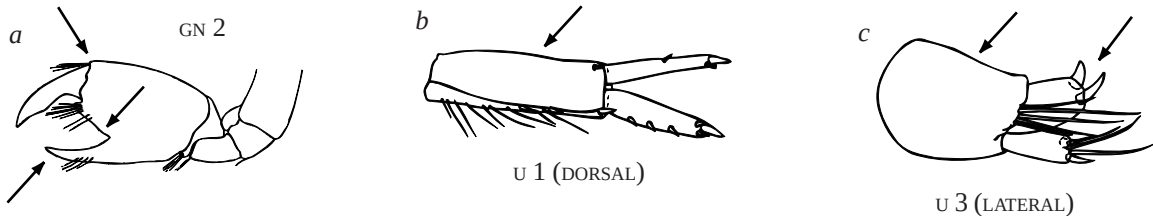


Figure 253.

- < Gnathopod 2 of male, propodus, palm shallowly or not excavate, "thumb" at palmar angle, if present, not reaching dactylar articulation; uropod 1, peduncle, medial margin with spines; uropod 3, peduncle slender to moderately stout, width one half to two thirds length, outer ramus subequal to or shorter than inner 2

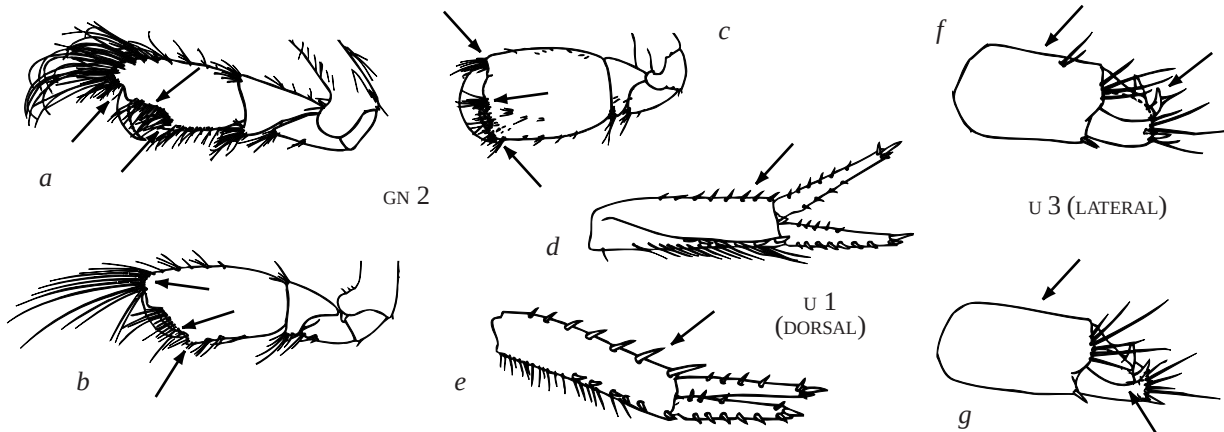


Figure 254.

2. < Antenna 1, accessory flagellum vestigial, scale-like; mandible, palp article 2 without marginal spines or setae (may have distal setae); lower lip, outer lobe short, broad; maxilla 1, inner plate without marginal setae; peraeon segment 7 of male without ventral keel; coxae 1-4, posteroventral margin with tuft of short setae; gnathopod 1 of female, propodus stout, width two thirds length; gnathopod 2 of male, propodus, palm transverse; uropod 3, peduncle, dorsolateral margin with small, stout spine, ventral margin with cluster of long setae, inner ramus, dorsal margin with small, stout spine, outer ramus, dorsal margin with cluster of short setae *Ampithoe valida*

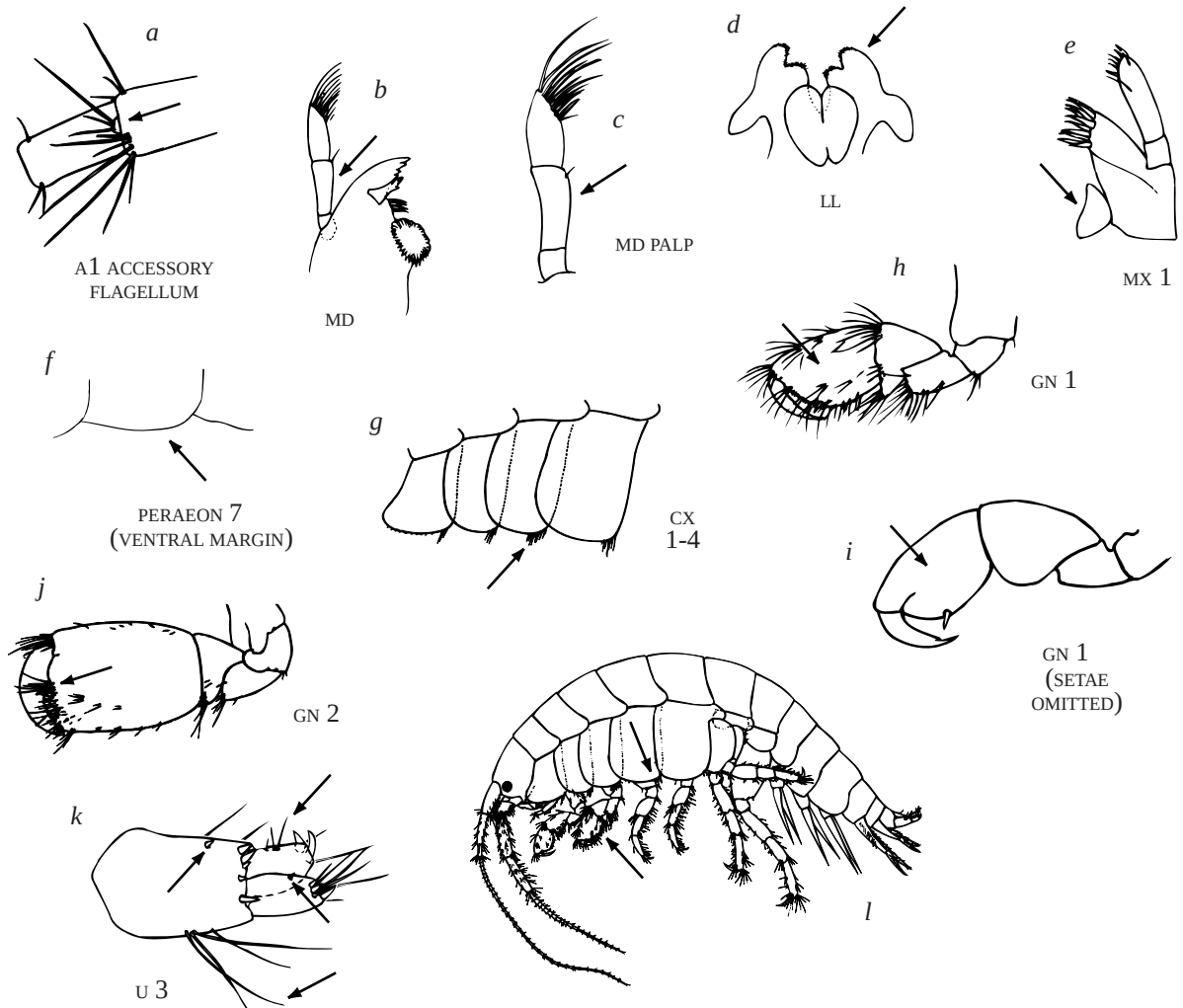


Figure 255.

< Antenna 1, accessory flagellum absent; mandible, palp article 2 with marginal spines or setae; lower lip, outer lobe elongate, slender; maxilla 1, inner plate with marginal setae; peraeon segment 7 of male with ventral keel; coxae 1-4, posteroventral margin without tuft of short setae; gnathopod 1 of female, propodus slender, width one half length; gnathopod 2 of male, palm oblique; uropod 3, peduncle, dorsolateral margin without spine, ventral margin without setae, inner ramus, dorsal margin without spine, outer ramus, dorsal margin without setae ... 3

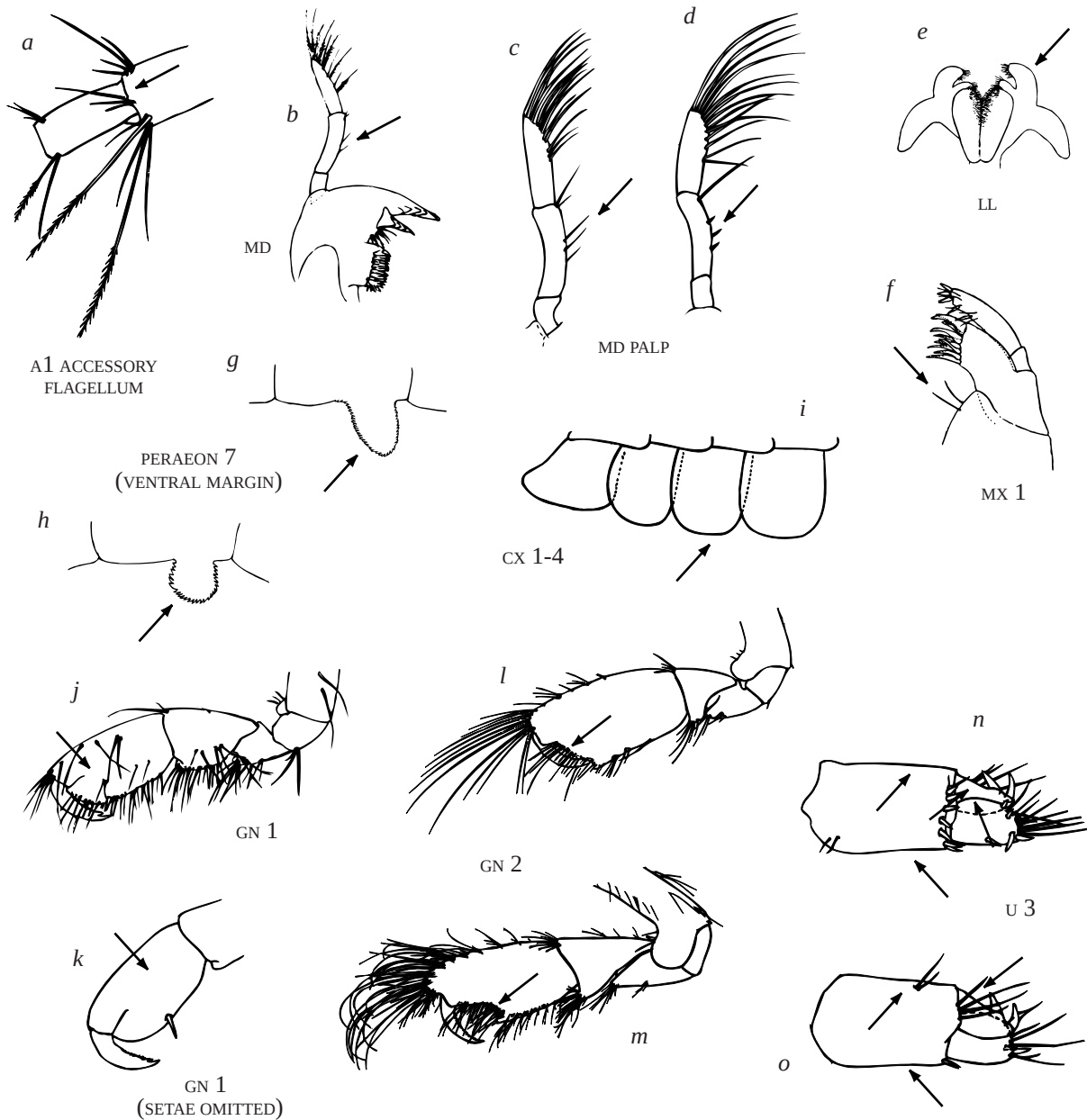


Figure 256.

3. < Gnathopod 2 of male, propodus, anterodistal margin produced to form lobe overhanging dactylar articulation, palm shallowly excavate or cleft, palmar angle produced to form “thumb”; uropod 1, peduncle, medial margin with small spines, spines not increasing in length distally; uropod 3, peduncle, dorsolateral margin with 1-2 short setae *Ampithoe ramondi*

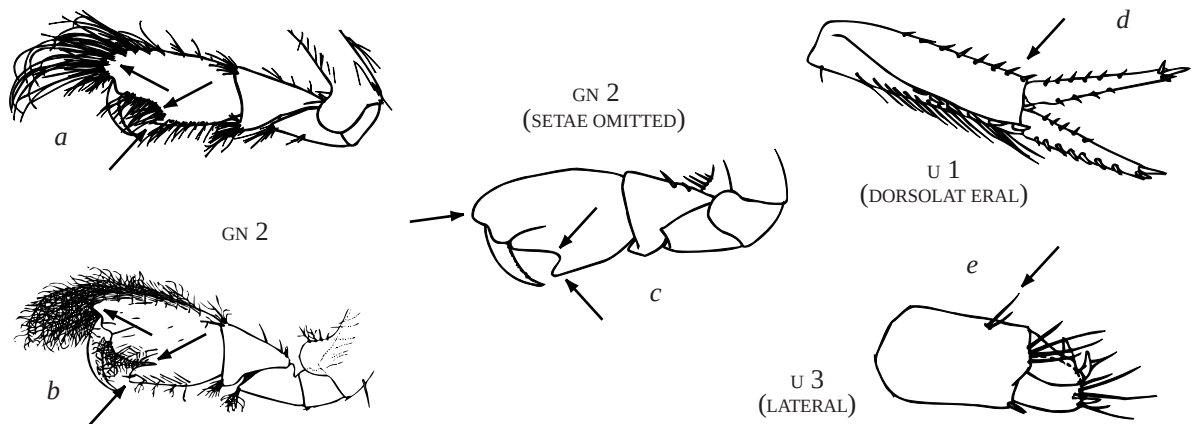


Figure 257.

- < Gnathopod 2 of male, propodus, anterodistal margin not produced to form lobe overhanging dactylar articulation, palm not excavate or cleft, palmar angle not produced to form “thumb” (may be slightly produced); uropod 1, peduncle, medial margin with large spines, spines increasing in length distally; uropod 3, peduncle, dorsolateral margin without setae 4

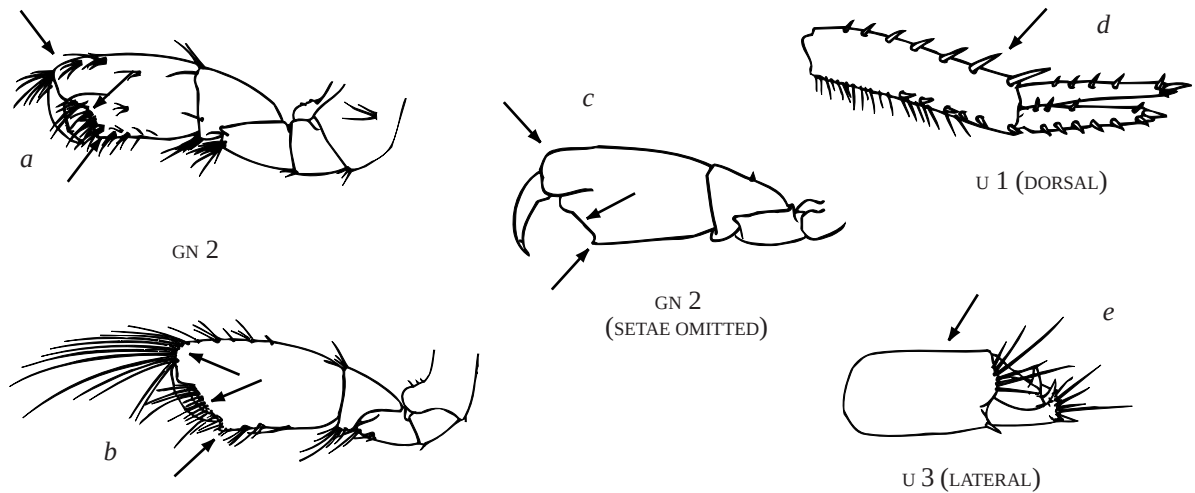


Figure 258.

4. < Antenna 2 of male, peduncle article 4 inflated, much broader than article 5; gnathopods 1-2 of male, propodus, palms similar in shape; gnathopod 2 of female, basis, expanded anterodistal lobe without marginal setae; peraeopod 5, basis, anterior margin without stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines very unequal in size, largest spine distinctly larger than preceding marginal spine *Ampithoe* sp. A

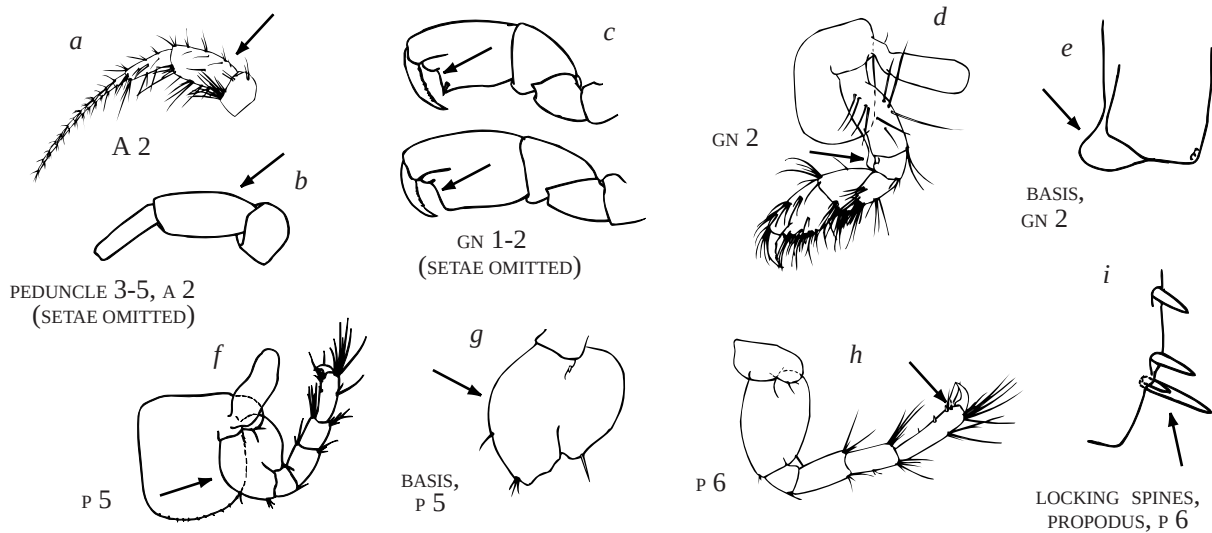


Figure 259.

- < Antenna 2 of male, peduncle article 4 not inflated, slightly broader than article 5; gnathopods 1-2 of male, propodus, palms dissimilar in shape; gnathopod 2 of female, basis, expanded anterodistal lobe with marginal setae; peraeopod 5, basis, anterior margin with 1-3 stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines subequal or slightly unequal in size, largest spine subequal to preceding marginal spine 5

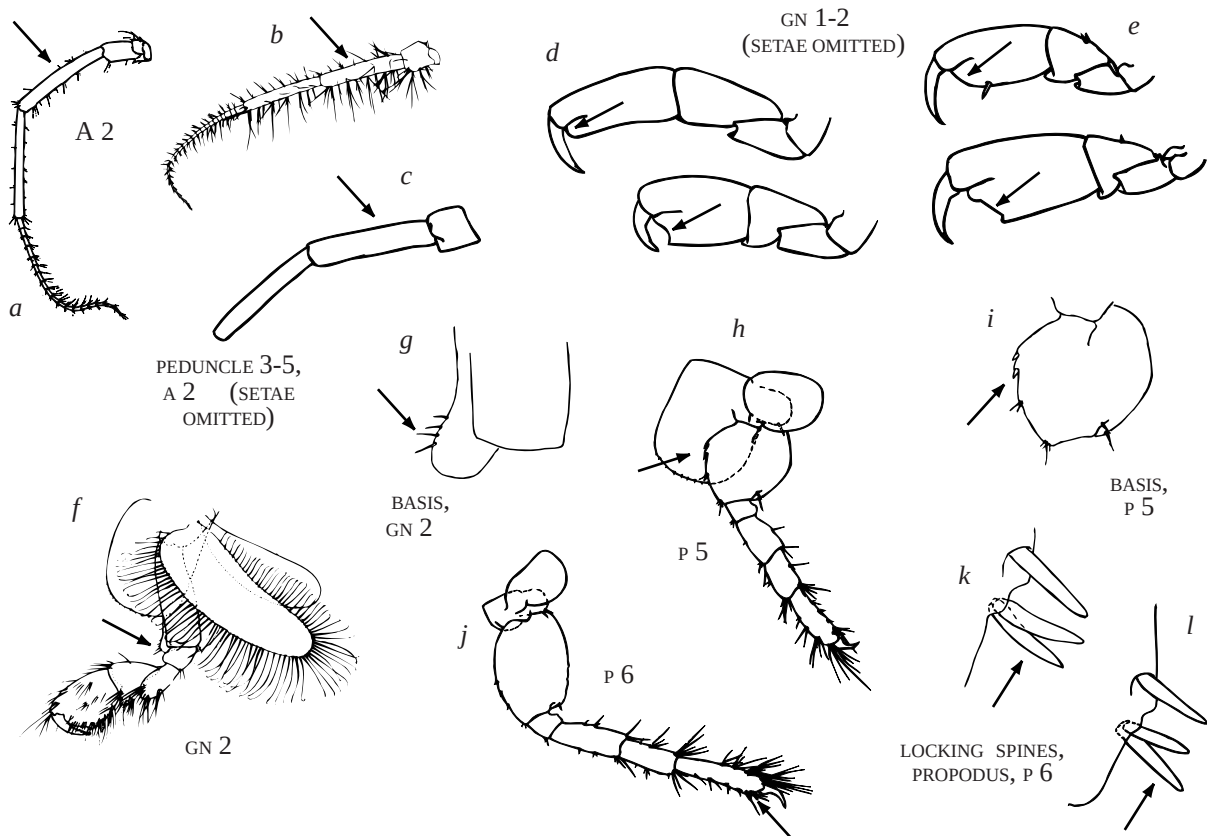


Figure 260.

5. < Antennae 1-2 of male, peduncle articles very elongate, with few short setae; mandible, palp article 2 with marginal setae; peraeon segments 5-6 of male without ventral keel, segment 7, ventral keel broad, rounded; gnathopods 1-2, carpus, anterior margin without spines (setae may be present); gnathopod 1 of male, carpus subequal to propodus in length, propodus, posterior margin densely setose, dactyl, tip extending well beyond posterior margin of propodus; gnathopod 2 of female, propodus, palmar margin weakly sinuous*A. longimana*

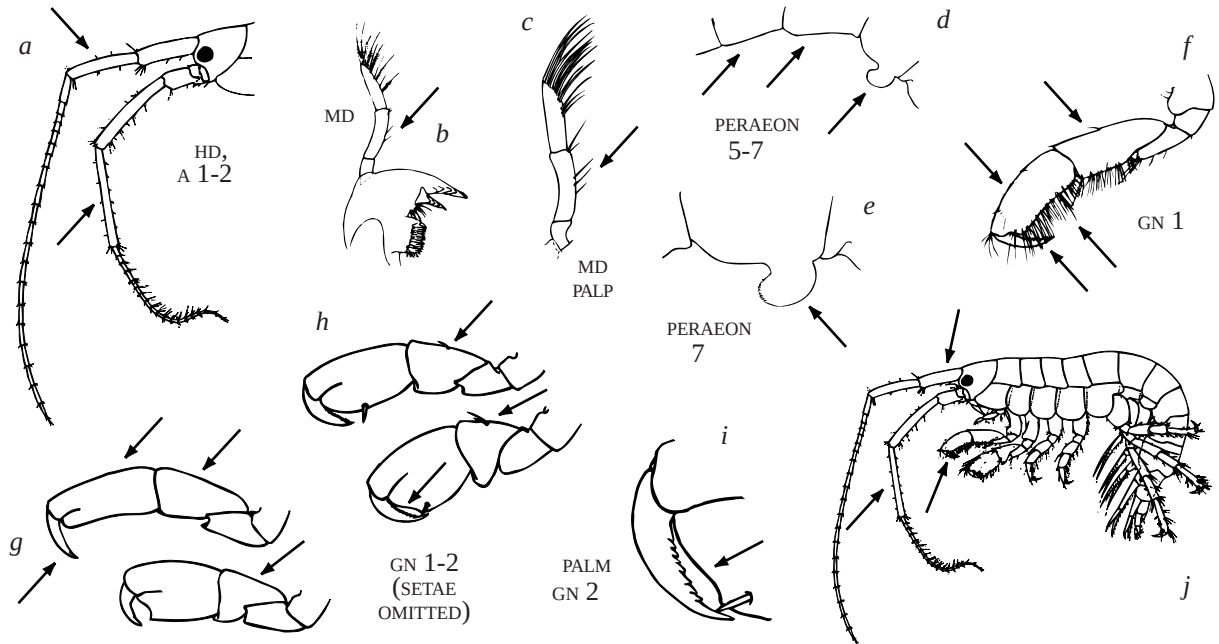


Figure 261.

- < Antennae 1-2 of male, peduncle articles not exceptionally elongate, with many long setae; mandible, palp article 2 with marginal spines; peraeon segment 6 (often 5 as well) of male with ventral keel, segment 7, ventral keel elongate, slender; gnathopods 1-2, carpus, anterior margin with spines; gnathopod 1 of male, carpus slightly less than half length of propodus, propodus, posterior margin not densely setose, dactyl, tip extending slightly beyond posterior margin of propodus; gnathopod 2 of female, propodus, palmar margin moderately sinuous
.....*A. cf marcuzzii*

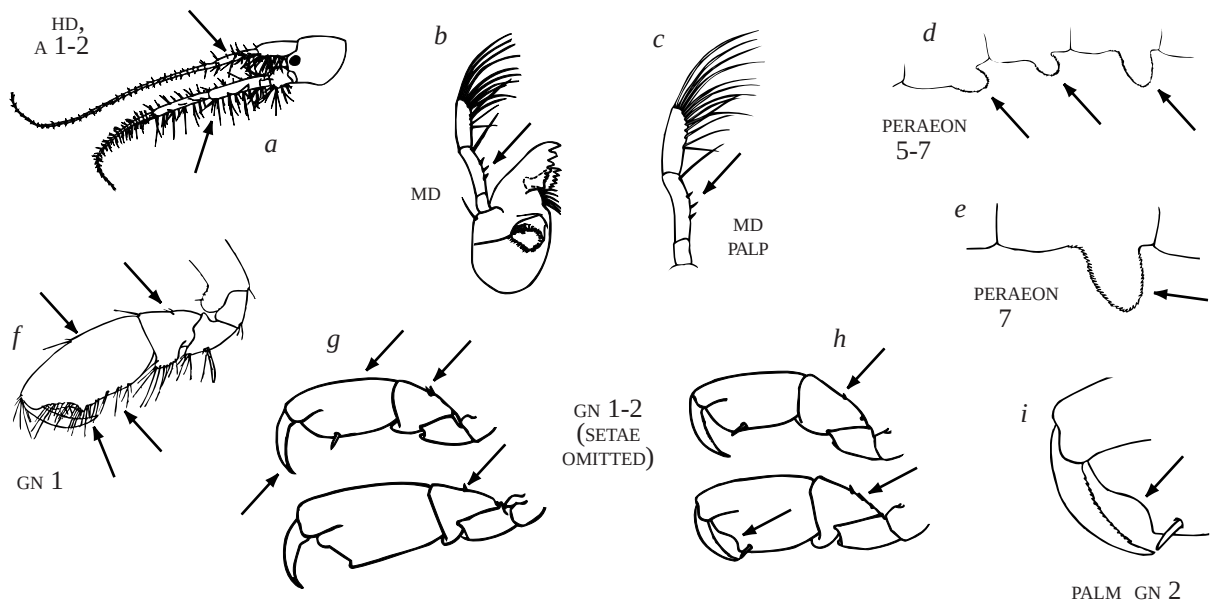


Figure 262.

***Ampithoe longimana* Smith, 1873
(Figure 261)**

Amphithoë longimana Smith, 1873, p. 563-564.

Ampithoe longimana: Stebbing, 1906, p. 634.

Ampithoe longimana: Kunkel, 1910, pp. 87-90, fig. 34.

Ampithoë longimana: Pearse, 1912, p. 376.

Regional diagnosis: Antennae 1-2 of male, peduncle articles very elongate, with few short setae; antenna 1, accessory flagellum absent; antenna 2 of male, peduncle article 4 not inflated, slightly broader than article 5; mandible, palp article 2 with marginal setae; lower lip, outer lobes elongate, slender; maxilla 1, inner plate with marginal setae; peraeon segments 5-6 of male without ventral keel, segment 7 of male with ventral keel, keel broad, rounded; coxae 1-4, posteroventral margin without tuft of short setae; gnathopods 1-2, carpus, anterior margin without spines (setae may be present); gnathopods 1-2 of male, propodus, palms dissimilar in shape; gnathopod 1 of male, carpus subequal to propodus in length, propodus, posterior margin densely setose, dactyl, tip extending well beyond posterior margin of propodus; gnathopod 1 of female, propodus slender, width one half length; gnathopod 2 of male, propodus, anterodistal margin not produced to form lobe overhanging dactylar articulation, palm oblique, not excavate or cleft, without “thumb” at palmar angle; gnathopod 2 of female, basis, expanded anterodistal lobe with marginal setae, propodus, palmar margin weakly sinuous; peraeopod 5, basis, anterior margin with 1-3 stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines subequal in size, both subequal to preceding marginal spine; uropod 1, peduncle, medial margin with large spines, spines increasing in length distally; uropod 3, peduncle slender, width one half length, dorsolateral and ventral margins without spines or setae, inner ramus, dorsal margin without spine, outer ramus subequal to inner in length, dorsal margin without setae.

Distribution: Northwestern Atlantic from the Gulf of St. Lawrence and southern Maine south to Florida (Bousfield, 1973); Indian River Lagoon system, Biscayne Bay, Florida Bay (Pearse, 1912), Middle Florida Keys, Florida; Gulf of Mexico from Tampa Bay, Florida, to South Padre Island, Texas; Bermuda (Kunkel, 1910).

Ecology: *Ampithoe longimana* occurs in grassbeds (e.g. *Zostera*, *Thalassia*, *Halodule*) or algae in medium to high salinity waters at depths ranging from the lower intertidal to 10 m (Bousfield, 1973; pers. obs.). It is a domicolous species, constructing nests from algae held together with secretions produced by spinning glands in peraeopods 3-4, and its diet consists mainly of diatoms (Bousfield, 1973).

Remarks: Adult male *Ampithoe longimana* are readily distinguished from other Florida members of the genus by the extremely elongate antennal peduncles, by the long, slender carpus and propodus of gnathopod 1, each with a dense fringe of setae on the posterior margin, and by the dactyl of gnathopod 1 extending well beyond the posterior margin of the propodus. In subadult males, the antennal peduncles are not as elongate, but unless the individuals are very small, the first gnathopod is usually recognizable. Females are a little more difficult to identify and can be recognized by the following combination of characters: coxae 1-4 without tufts of short setae on the posteroventral margin (*A. valida* has tufts of setae); the peduncle of uropod 1 with large spines on the medial margin, increasing in length posteriorly (no spines in *A. pollex*; small subequal spines in *A. ramondi*); gnathopod 2 with a weakly sinuous palmar margin on the propodus and the anterior margin of the carpus without spines (moderately sinuous palmar margin and spines on the anterior margin of the carpus in *A. cf. marcuzzii*); the stout spines on the anterior margin of the basis of peraeopod 5 and the subequal locking spines on the propodus of peraeopods 6-7 (no stout spines on the basis of peraeopod 5 and greatly unequal locking spines on the propodus of peraeopods 6-7 in *Ampithoe* sp. A). Adult *A. longimana* range from 6 to 10 mm in length.

See Kunkel, 1910; Mills, 1964b; Bousfield, 1973.

***Ampithoe cf marcuzzii* Ruffo, 1954
(Figure 262)**

Amphithoe marcuzzii Ruffo, 1954, pp. 120-124, figs. I-II.

?*Amphithoe rubricata*: Kunkel, 1910, pp. 90-92, fig. 85.

Ampithoe marcuzzii: Barnard, 1958, p. 25.

Regional diagnosis: Antennae 1-2 of male, peduncle articles not exceptionally elongate, with many long setae; antenna 1, accessory flagellum absent; antenna 2 of male, peduncle article 4 not inflated, slightly broader than article 5; mandible, palp article 2 with marginal spines; lower lip, outer lobes elongate, slender; maxilla 1, inner plate with marginal setae; peraeon segments 6-7 (often 5 as well) of male with ventral keel, keel on segment 7 elongate, slender; coxae 1-4, posteroventral margin without tuft of short setae; gnathopods 1-2, carpus, anterior margin with spines; gnathopods 1-2 of male, propodus, palms dissimilar in shape; gnathopod 1 of male, carpus slightly less than half length of propodus, propodus, posterior margin not densely setose, dactyl, tip extending slightly beyond posterior margin of propodus; gnathopod 1 of female, propodus slender, width one half length; gnathopod 2 of male, propodus, anterodistal margin not produced to form lobe overhanging dactylar articulation, palm oblique, not excavate or cleft, without “thumb” at palmar angle; gnathopod 2 of female, basis, expanded anterodistal lobe with marginal setae, propodus, palmar margin moderately sinuous; peraeopod 5, basis, anterior margin with 1-3 stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines slightly unequal in size, largest spine subequal to preceding marginal spine; uropod 1, peduncle, medial margin with large spines, spines increasing in length distally; uropod 3, peduncle slender, width one half length, dorsolateral and ventral margins without spines or setae, inner ramus, dorsal margin without spine, outer ramus slightly shorter than inner, dorsal margin without setae.

Distribution: East coast of Florida (Hutchinson Island, Riviera Beach); Florida Keys (Pigeon Key); ?Bermuda (Kunkel, 1910 as *A. rubricata*); Cuba (Ortiz, 1978); Puerto Viejo, Costa Rica; Los Roques, Venezuela (Ruffo, 1954); Tobago.

Ecology: *Ampithoe marcuzzii* occurs in high salinity grassbeds and among algae on hard substrates (e.g. *Phragmatopoma* reefs, coral rubble, pilings) intertidally to depths of 6 m (pers. obs.; Kunkel, 1910 as *A. rubricata*).

Remarks: Specimens of *A. cf marcuzzii* from Florida are very similar to Caribbean material, but coxa 1 appears to be somewhat less broadly rounded anteroventrally, especially in males, and the palmar angle of gnathopod 1 of the male is somewhat more rounded. This may be a developmental difference; subadult males from Tobago also have a more rounded palmar angle than the adults. In addition, the spine on the ventral margin of the inner ramus of uropod 3 illustrated by Ruffo (1954) for *A. marcuzzii* from Venezuela is not present in either Florida material or material from Tobago, although it is present in specimens from the Caribbean coast of Costa Rica. Adult male *A. cf marcuzzii* can be recognized by the distinctive morphology of gnathopods 1-2. Also, adults of both sexes, as well as subadults and larger juveniles, differ from most other Florida species of *Ampithoe* in the large spines, gradually increasing in length distally, on the medial margin of the peduncle of uropod 1. *Ampithoe longimana* and *Ampithoe* sp. A also have these spines, but the male gnathopod 1 of the former species is slender, with an elongate, posteriorly densely setose carpus and propodus (gnathopod 1 stouter and carpus and propodus weakly setose posteriorly in *A. cf marcuzzii*), the palm of gnathopod 2 in the female is weakly sinuous (moderately sinuous in *A. cf marcuzzii*), and the carpus of gnathopods 1-2 in both sexes lacks spines on the anterior margin (spines present in *A. cf marcuzzii*). *Ampithoe* sp. A is a much smaller species than *A. cf marcuzzii* and differs in having similar palmar margins of gnathopods 1-2 in the male (dissimilar in *A. cf marcuzzii*), in the very unequal locking spines on the propodus of peraeopods 6-7 (subequal in *A. cf marcuzzii*), in the lack of spines on the anterior margin of the carpus of gnathopods 1-2 (spines present in *A. cf marcuzzii*), and in the flat to very weakly sinuous palmar margin of gnathopod 2 in the female (moderately sinuous in *A. cf marcuzzii*). *Ampithoe marcuzzii* is a relatively large species, ranging from 7 to 11 mm in length.

See Ruffo, 1954.

***Ampithoe pollex* Kunkel, 1910
(Figure 253)**

Ampithoe pollex Kunkel, 1910, pp.92-94, fig. 36.
Grubia indentata Stout, 1913, pp. 656-657.

Regional diagnosis: Antennae 1-2 of male, peduncle articles not exceptionally elongate (?), setation unknown; antenna 1, accessory flagellum absent; antenna 2 of male, peduncle article 4 not inflated, slightly broader than article 5; mandible, palp article 2 without marginal spines or setae; lower lip, outer lobes short, broad; maxilla 1, inner plate without marginal setae; peraeon segments 5-7 of male without ventral keel; coxae 1-4, posteroventral margin without tuft of short setae; gnathopods 1-2, carpus, anterior margin without spines, with 0-2 setae; gnathopods 1-2 of male, propodus, palms dissimilar in shape; gnathopod 1 of male, carpus slightly less than half length of propodus, propodus, posterior margin not densely setose, dactyl extending slightly beyond posterior margin of propodus; gnathopod 1 of female, propodus slender, width one half length; gnathopod 2 of male, propodus, anterodistal margin not produced to form lobe overhanging dactylar articulation, palm oblique, very deeply excavate, “thumb” at palmar angle long, slender, extending beyond dactylar articulation; gnathopod 2 of female, basis, expanded anterodistal lobe with tiny marginal setules, propodus, palmar margin flat to very weakly sinuous; peraeopod 5, basis, anterior margin without stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines unequal in size, largest spine subequal to preceding marginal spine; uropod 1, peduncle, medial margin without spines; uropod 3, peduncle very stout, width three fourths length, dorsolateral and ventral margins without spines or setae, inner ramus, dorsal margin without spine, outer ramus longer than inner, dorsal margin without setae.

Distribution: Bermuda (Kunkel, 1910); Hutchinson Island, Florida; Punta del Gada, Mexico (McKinney, 1977).

Ecology: This species is found among algae on hard substrates in relatively high salinity waters. It occurs intertidally on “worm rock” reefs at Hutchinson Island, Florida (pers. obs.), but no habitat information or depth range was reported by Kunkel (1910) for his Bermuda material or by McKinney (1977) for the specimens from Mexico.

Remarks: The mouthparts of this species are very similar to those of *A. valida* and differ from those of other Florida *Ampithoe* species in several respects. In both of these species, palp article 2 of the mandible lacks marginal spines or setae, although 1-2 distal setae may be present. In addition, the outer lobe of the lower lip is short and broad and the inner plate of maxilla 1 is without marginal setae. In other species of *Ampithoe*, the mandibular palp article 2 has marginal spines or setae, the outer lobe of the lower lip is elongate and slender, and the inner plate of maxilla 1 has marginal setae. *Ampithoe pollex* is also the only Florida species of the genus other than *A. valida* to lack a ventral or penial keel on peraeon segment 7 of the male. It may be distinguished from *A. valida* by its much smaller size, the lack of a tuft of short setae on the posteroventral margin of coxae 1-4, and by the very different morphology of the male second gnathopod.

Although *A. pollex* has been reported from the eastern Pacific (Barnard, 1954c; 1965; 1979), there appear to be some differences between illustrations of that material and specimens from the western Atlantic. Material from Oregon referred to *A. pollex* by Barnard (1954c) has been placed in *A. sectimanus* by Conlan and Bousfield (1982). Barnard's *A. pollex* specimens from California (1965) and the Galapagos Islands (1979) have a broader propodus on gnathopod 1 of the male, a longer carpus on gnathopod 1 of the female, and more setose peraeopods 3-4 than do specimens of *A. pollex* from Florida and Bermuda. In addition, the medial margin of the peduncle of uropod 1 bears spines and the outer ramus of uropod 3 has a cluster of setae on the dorsal margin, both of which are lacking in Florida specimens. Thus it seems likely that Barnard's material is not the same as *A. pollex* of Kunkel (1910).

See Kunkel, 1910.

***Ampithoe ramondi* Audouin, 1826
(Figure 257)**

Amphithoë ramondi Audouin, 1826, p. 93, pl. 11, fig. 6.
Amphithoe Vaillanti Chevreux, 1901, p. 418.
Amphithoë intermedia Walker, 1904, pp. 290-291, pl. 7, fig. 46.
Amphithoë lobata Walker, 1909, p. 342, pl. 43, fig. 9.
Ampithoe ramondi: Schellenberg, 1928, pp. 665-666.
Ampithoe divisura Shoemaker, 1933a, pp. 255-256, fig. 9.

Regional diagnosis: Antennae 1-2 of male, peduncle articles not exceptionally elongate, with many long setae; antenna 1, accessory flagellum absent; antenna 2 of male, peduncle article 4 not inflated, slightly broader than article 5; mandible, palp article 2 with marginal setae; lower lip, outer lobe elongate, slender; maxilla 1, inner plate with marginal setae; peraeon segments 5-6 of male without ventral keel, segment 7 of male with ventral keel, keel broad, rounded; coxae 1-4, posteroventral margin without tuft of short setae; gnathopods 1-2, carpus, anterior margin with spines; gnathopods 1-2 of male, propodus, palms dissimilar in shape; gnathopod 1 of male, carpus slightly shorter than propodus, propodus, posterior margin not densely setose, dactyl extending well beyond posterior margin of propodus; gnathopod 1 of female, propodus slender, width one half length; gnathopod 2 of male, propodus, anterodistal margin produced to form lobe overhanging dactylar articulation, palm oblique, shallowly excavate or cleft, “thumb” at palmar angle short, not reaching dactylar articulation; gnathopod 2 of female, basis, expanded anterodistal lobe with marginal setae, propodus, palmar margin weakly sinuous; peraeopod 5, basis, anterior margin without stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines subequal in size, slightly shorter than preceding marginal spine; uropod 1, peduncle, medial margin with small spines, spines not increasing in length distally; uropod 3, peduncle moderately stout, width two thirds length, dorsolateral margin without spine, with 1-2 short setae, ventral margin without setae, inner ramus, dorsal margin without spine, outer ramus subequal to inner in length, dorsal margin without setae.

Distribution: *Ampithoe ramondi* is cosmopolitan in tropical and warm temperate waters (but see **Remarks** below). In Florida, it occurs in the Florida Keys (Thomas, 1993) and the Dry Tortugas (Shoemaker, 1933a as *A. divisura*).

Ecology: This species is found among algae and in fouling growth at depths of 1 to 2 m (Thomas, 1993). It has also been taken in night plankton tows over *Thalassia* grassbeds (pers. obs.).

Remarks: Although *Ampithoe ramondi* is considered to be cosmopolitan in tropical and subtropical waters (Barnard, 1955), it may actually be composed of a complex of closely related species (Krapp-Schickel, 1982b; Serejo, 1998). A number of previously described species have been synonymized under this name (Barnard, 1955) and some of them, at least, may prove to be valid species upon closer examination. *Ampithoe divisura*, described by Shoemaker (1933a) from the Dry Tortugas, is one of these. Material fitting Shoemaker’s description has generally been assumed to be a developmental stage of the male of *A. ramondi*; however there are some striking differences between the two. These include the cleft palm, blunt distal peduncular process on uropod 1 and short, stout flagellum of antenna 2 in male “*A. divisura*” compared to the excavate palm, absent peduncular process on uropod 1 and longer, more slender flagellum of antenna 2 in male *A. ramondi*. However, the female of “*A. divisura*” was not described by Shoemaker (1933a) and none have been found in the available material from Florida that could be distinguished from females of *A. ramondi*. Therefore, pending the examination of a larger series of specimens, material matching Shoemaker’s (1933a) description is still referred to as *A. ramondi*.

The small, subequal spines on the medial margin of the peduncle of uropod 1 in both sexes serve to separate this species from all other known species of *Ampithoe* occurring in Florida waters. In addition, the color in life is distinctive, with a dorsal white band on peraeon segment 1 against a background color of reddish-purple or brown (Thomas, 1993). *Ampithoe ramondi* is a fairly small species, ranging in length from 3 to 7 mm in Florida and Caribbean material.

See Shoemaker, 1933a (as *A. divisura*); Thomas, 1993; Serejo, 1998.

***Ampithoe valida* Smith, 1873
(Figure 255)**

Amphithoe valida Smith, 1873, p. 563.

Ampithoe valida: Stebbing, 1906, p. 635.

Ampithoe shimizuensis Stephensen, 1944, pp. 77-80, figs. 27-28.

Regional diagnosis: Antennae 1-2 of male, peduncle articles not exceptionally elongate, with few short-medium setae; antenna 1, accessory flagellum present, vestigial, scale-like; antenna 2 of male, peduncle article 4 not inflated, slightly broader than article 5; mandible, palp article 2 without marginal spines or setae (may have distal setae); lower lip, outer lobe short, broad; maxilla 1, inner plate without marginal setae; peraeon segments 5-7 of male without ventral keel; coxae 1-4, posteroventral margin with tuft of short setae; gnathopods 1-2, carpus, anterior margin without spines, with setae; gnathopods 1-2 of male, propodus, palms dissimilar in shape; gnathopod 1 of male, carpus subequal to propodus in length, propodus, posterior margin not densely setose, dactyl not extending beyond posterior margin of propodus; gnathopod 1 of female, propodus stout, width two thirds length; gnathopod 2 of male, propodus, anterodistal margin not expanded to form lobe overhanging dactylar articulation, palm transverse, not excavate or cleft, without “thumb” at palmar angle; gnathopod 2 of female, basis, expanded anterodistal lobe with tiny marginal setules, propodus, palmar margin flat to very weakly sinuous; peraeopod 5, basis, anterior margin with stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines unequal in size, longest spine slightly shorter than preceding marginal spine; uropod 1, peduncle, medial margin with moderately long spines, spines not increasing in length distally; uropod 3, peduncle moderately stout, width two thirds length, dorsolateral margin with small, stout spine, ventral margin with cluster of long setae, inner ramus, dorsal margin with small, stout spine, outer ramus subequal to inner in length, dorsal margin with cluster of short setae.

Distribution: Northwestern Atlantic from New Hampshire to south of Cape Canaveral, Florida (Bousfield, 1973; Fox and Bynum, 1975); northern Gulf of Mexico from Apalachee Bay, Florida to Galveston Bay, Texas (pers. obs.); northeastern Pacific from British Columbia and Vancouver Island south to Newport Bay, California (Conlan and Bousfield, 1982).

Ecology: *Ampithoe valida* is found in grassbeds, saltmarshes and nestled in algae. It is also common in the fouling growth on hard substrates such as pilings, logs and jetties, usually in low to middle salinity waters. It occurs from the lower intertidal zone out to a depth of 30 m (Bousfield, 1973; Conlan and Bousfield, 1982).

Remarks: The diagnostic tuft of short setae on the posteroventral margin of coxae 1-4 serves to distinguish members of this species from those of the other known species of *Ampithoe* in the region; even small juveniles will usually have 1-2 setae in this location. Live *A. valida* are olive green or brown and are heavily speckled with chromatophores (Conlan and Bousfield, 1982). This is a large species, with adults ranging from 5-12.5 mm in length (Conlan and Bousfield, 1982).

See Mills, 1964b; Bousfield, 1973; Conlan and Bousfield, 1982.

***Ampithoe* sp. A**
(Figure 259)

Regional diagnosis: Antennae 1-2 of male, peduncle articles not exceptionally elongate, with few long setae; antenna 1, accessory flagellum absent; antenna 2 of male, peduncle article 4 inflated, much broader than article 5; mandible, palp article 2 with marginal setae; lower lip, outer lobe elongate, slender; maxilla 1, inner plate with marginal setae; peraeon segments 5-6 of male without ventral keel, segment 7 of male with ventral keel, keel broad, rounded; coxae 1-4, posteroventral margin without tuft of short setae; gnathopods 1-2, carpus, anterior margin without spines or setae (distal setae present); gnathopods 1-2 of male, propodus, palms similar in shape; gnathopod 1 of male, carpus two thirds length of propodus, propodus, posterior margin not densely setose, dactyl extending beyond posterior margin of propodus; gnathopod 1 of female, propodus slender, width one half length; gnathopod 2 of male, propodus, anterodistal margin not expanded to form lobe overhanging dactylar articulation, palm oblique, not excavate or cleft, without “thumb” at palmar angle; gnathopod 2 of female, basis, expanded anterodistal lobe without marginal setae (tiny setule may be present), propodus, palmar margin flat to very weakly sinuous; peraeopod 5, basis, anterior margin without stout proximal spines; peraeopods 6-7, propodus, paired distal locking spines very unequal in size, largest spine distinctly larger than preceding marginal spine; uropod 1, peduncle, medial margin with large spines, spines increasing in length distally; uropod 3, peduncle moderately stout, width two thirds length, dorsolateral and ventral margins without spines or setae, inner ramus, dorsal margin without spine, outer ramus subequal to or slightly shorter than inner, dorsal margin without setae.

Distribution: Biscayne Bay; Florida Bay; southeastern Gulf of Mexico off Cape Sable, Florida.

Ecology: *Ampithoe* sp. A is found in high salinity waters on silty or muddy sand bottoms with seagrass or soft corals. It occurs at depths of 2-4 m.

Remarks: Adult males of this species are easily recognized by the inflated article 4 of antenna 2 and by the similarly sized and shaped gnathopods 1-2 with their quadrate palmar angles. Gnathopods 1-2 of male *A. marcuzzii* are also similar in size, but the shape of the palmar margin of gnathopod 1 is different from that of gnathopod 2. Females may be distinguished from all other Florida species of *Ampithoe* except for *A. pollex* and *A. valida* by the flat to very weakly sinuous palmar margin of gnathopod 2 (weakly to moderately sinuous in other species). They can be separated from the former species by the presence of spines on the medial margin of the peduncle of uropod 1 (absent in *A. pollex*) and from the latter by the lack of a tuft of short setae on the posteroventral margins of coxae 1-4 (present in *A. valida*). Members of both sexes of *Ampithoe* sp. A can also be recognized by the very unequally sized paired locking spines on peraeopods 6-7, with the largest spine of the pair being distinctly larger than the preceding marginal spine. *Ampithoe pollex* and *A. valida* also have unequally sized paired locking spines on peraeopods 6-7; however in these species, the longest spine of the pair is subequal to or shorter than the preceding marginal spine. *Ampithoe* sp. A is a small species, ranging from 3 to 5 mm in length.

Genus *Cymadusa* Savigny, 1816

Regional diagnosis: Antenna 1, accessory flagellum present, 2-articulate; mandible, palp present, well-developed; maxilla 1, palp article 2 broad; coxae 1-4, ventral margin lined with long setae; coxa 1 expanded distally, anteroventral angle produced; gnathopod 1 of female, palm oblique; peraeopods 3-4, basis slender; peraeopod 5, carpus subrectangular, propodus slender, 4-5 times as long as wide; uropod 1, peduncle, distoventral spur present, strong; uropod 3, peduncle with spines on dorsomedial margin, outer ramus, dorsal margin not minutely spinose.

Florida species: *C. compta*, *C. filosa*

Remarks: The accessory flagellum on antenna 1 of Florida species of *Cymadusa* is quite short; however, unlike that of *Ampithoe valida*, it is visible under a dissecting microscope.

KEY TO FLORIDA SPECIES OF *CYMADUSA*

1. < Antenna 2 of male, peduncle articles 4-5 lined with plumose setae; gnathopod 1 of male, basis, anterolateral and posterior margins without dense fringe of plumose setae; gnathopod 2 of male, basis, posterior margin with few long simple setae, carpus shorter than propodus, propodus, palm with median truncate tooth; gnathopod 1 of female, propodus broadest medially, palm strongly oblique, convex; gnathopod 2 of female, propodus, palm weakly sinuous, palmar angle subacute; uropod 3, peduncle, dorsolateral margin without spines *Cymadusa filosa*

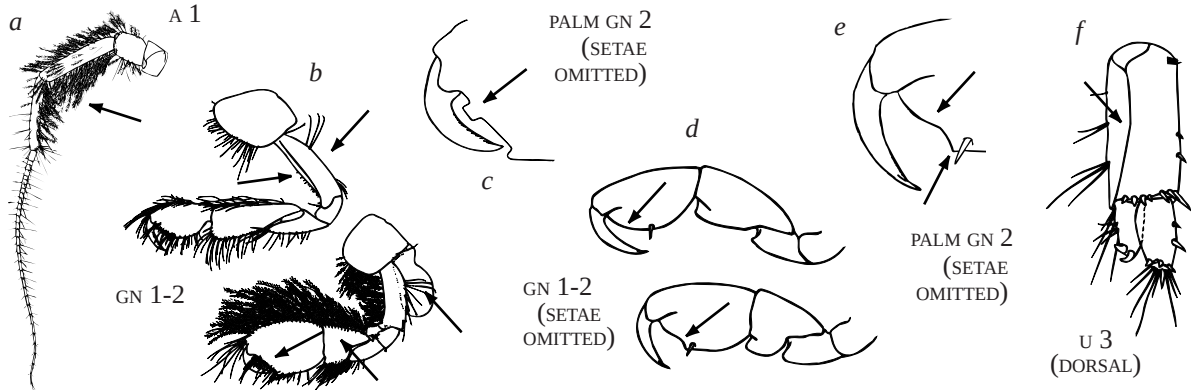


Figure 263.

- < Antenna 2 of male, peduncle articles 4-5 lined with simple setae; gnathopod 1 of male, basis, anterolateral and posterior margins with dense fringe of plumose setae; gnathopod 2 of male, basis, posterior margin lined with dense plumose setae, carpus subequal to or slightly longer than propodus, propodus, palm without median truncate tooth; gnathopod 1 of female, propodus broadest distally, palm slightly oblique, flat; gnathopod 2 of female and subadult male, propodus, palm flat, palmar angle subquadrate; uropod 3, peduncle, dorsolateral margin with stubby spines *Cymadusa compta*

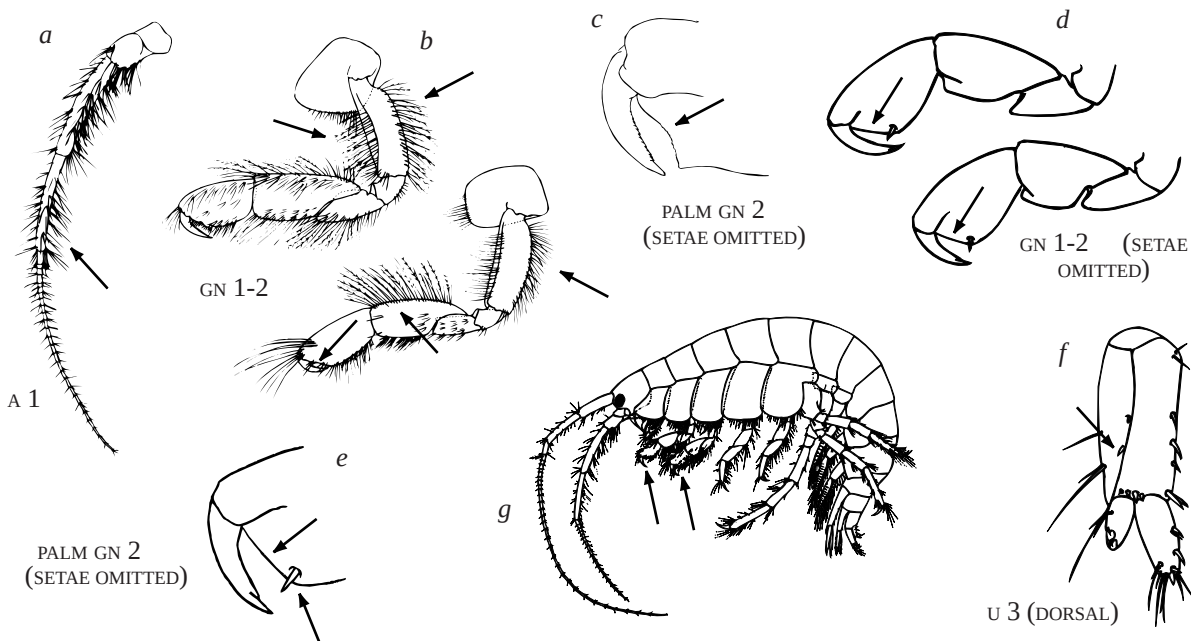


Figure 264.

***Cymadusa compta* (Smith, 1873)**
(Figure 264)

Amphithoë compta Smith, 1873, p. 564.

Grubia compta: Holmes, 1905, pp. 510-511, fig.

Amphithoides comptus: Stebbing, 1906, p. 645.

Cymadusa compta: Mills, 1964b, p. 21, figs. 5-6.

Regional diagnosis: Antenna 2 of male, peduncle articles 4-5 lined with simple setae; gnathopod 1 of male, basis, anterolateral and posterior margins with dense fringe of plumose setae; gnathopod 2 of male, basis, posterior margin lined with dense plumose setae, carpus subequal to or slightly longer than propodus, propodus, palm without median truncate tooth; gnathopod 1 of female, propodus, palm slightly oblique, flat, broadest distally; gnathopod 2 of female and subadult male, propodus, palm flat, palmar angle subquadrate; uropod 3, peduncle, dorsolateral margin with stubby spines.

Distribution: Northwestern Atlantic from central Maine to northern Florida (Bousfield, 1973); Indian River Lagoon system (Nelson, 1995); Riviera Beach; Biscayne Bay; Florida Keys (Thomas, 1993); Gulf coast from Florida Bay to Laguna de Términos, Mexico (Bousfield, 1973; McKinney, 1977; Sheridan, 1980; Ledoyer, 1986; pers. obs.).

Ecology: This species is found in grassbeds and among algae on hard substrates across a wide range of salinities (5-33 ppt) (Bousfield, 1973; Sheridan, 1980). It occurs from the lower intertidal zone out to a depth of 10 m (Bousfield, 1973).

Remarks: *Cymadusa compta* is a warm temperate to subtropical species, whereas its congener, *C. filosa*, has a more tropical distribution; however, their ranges do overlap in southern Florida and their habitat preferences are similar. Although adult males of the two species are quite distinctive, females and, in particular, subadults can be difficult to separate. Subadult males of *C. compta* lack the plumose setae on the basis of gnathopod 1, the anterior margin of the propodus of gnathopod 2 is somewhat more setose than in large adults, and the gnathopods in general are more similar in shape to those of the female. However, they can still be distinguished from subadult males of *C. filosa* by the shape of the propodus of gnathopods 1-2. In *C. compta*, the propodus of gnathopod 1 has a slightly oblique palmar margin and is broadest distally, while that of *C. filosa* has a strongly oblique palm and is broadest medially. The propodus of gnathopod 2 is similar to that of the female, with a flat palmar margin and subquadrate palmar angle; in *C. filosa* the palm is weakly sinuous and the palmar angle is subacute. The spines on the dorsolateral margin of the peduncle of uropod 3 are usually present in subadults, but they are often absent in juveniles. Small juveniles of the two species are virtually impossible to distinguish and must be identified by their association with adults. Adult *C. compta* range from 7 to 15 mm in length and females are usually larger than males within a given population.

See Mills, 1964b; Bousfield, 1973; Ledoyer, 1986; Thomas, 1993.

***Cymadusa filosa* Savigny, 1816
(Figure 263)**

Cymadusa filosa Savigny, 1816, p. 109, pl.4, fig. 1.

Grubia coei Kunkel, 1910, pp. 97-100, fig. 38.

Grubia compta: Pearse, 1912, p. 376, fig. 6. [not *Cymadusa compta* (Smith, 1873)].

Grubia filosa: Schellenberg, 1928, pp. 666-668, fig. 206.

Regional diagnosis: Antenna 2 of male, peduncle articles 4-5 lined with plumose setae; gnathopod 1 of male, basis, anterolateral and posterior margins without dense fringe of plumose setae; gnathopod 2 of male, basis, posterior margin with few long simple setae, carpus shorter than propodus, propodus, palm with median truncate tooth; gnathopod 1 of female, propodus, palm strongly oblique, convex, broadest medially; gnathopod 2 of female, propodus, palm weakly sinuous, palmar angle subacute; uropod 3, peduncle, dorsolateral margin without spines.

Distribution: Circumtropical (Shoemaker, 1935; Barnard, 1955; McKinney, 1977). Florida distribution includes: Melbourne Beach (Charvat et al., 1990); Biscayne Bay; Florida Keys (Pearse, 1912 [as *Grubia compta*]; Thomas, 1993); Dry Tortugas (Shoemaker, 1935); Florida Bay (Pearse, 1912 [as *Grubia compta*]); Anna Maria Island.

Ecology: *Cymadusa filosa* occurs in grassbeds and among algae growing on hard substrates from the lower intertidal zone to a depth of 4 m (Pearse, 1912 [as *Grubia compta*]; pers. obs.).

Remarks: Subadult males of *C. filosa* lack the plumose setae of the adults on antenna 2 and the palm of gnathopod 2 lacks the median truncate tooth. However, the carpus of gnathopod 2 is noticeably shorter relative to the length of the propodus than in similarly sized *C. compta*. Also, gnathopods 1-2 of female *C. filosa* tend to be slightly larger relative to overall body size than the gnathopods of *C. compta*, although this can be difficult to determine if both species are not at hand for comparison. See the **Remarks** section under *C. compta* for additional differences between subadults of the two species. *Cymadusa filosa* is a slightly larger species than *C. compta*, with adults ranging from 8 to 18 mm in length. In general, females attain a larger size than males.

See Shoemaker, 1935; Mills, 1964b; Bousfield, 1973; Thomas, 1993.

Genus *Peramphithoe* Conlan and Bousfield, 1982

Regional diagnosis: Antenna 1, accessory flagellum absent; mandible, palp present, weak; maxilla 1, palp article 2 slender; coxae 1-4, ventral margin with small tuft of short to medium setae posteriorly; coxa 1 not expanded distally, anteroventral angle subquadrate, not produced; gnathopod 1 of female, palm transverse; peraeopods 3-4, basis strongly inflated; peraeopod 5, carpus subquadrate, propodus stout, approximately twice as long as wide; uropod 1, peduncle, distoventral spur present, strong; uropod 3, peduncle without spines on dorsomedial margin, outer ramus, dorsal margin minutely spinose.

Florida species: *Peramphithoe* sp. A

Remarks: The mandibular palp that separates members of this genus from those of *Sunamphithoe* is small, but is readily visible without dissection between the bases of the second antennae.

Peramphithoe sp. A (Figure 249)

Regional diagnosis: That of the genus.

Distribution: Northern Gulf of Mexico from Horn Island, Mississippi to Mustang Island, Texas.

Ecology: *Peramphithoe* sp. A occurs in floating rafts of *Sargassum*.

Remarks: Although few specimens of this species were collected, it seems likely, given its floating habitat, that it is more widespread than is indicated above and it is probably found in Florida waters as well. *Peramphithoe* sp. A appears to be very similar to *Sunamphithoe pelagica*, differing chiefly in the presence of a mandibular palp (absent in *S. pelagica*) and in the morphology of gnathopod 2 in the subadult male. Unfortunately, no adult males of *Peramphithoe* sp. A were seen; however, the gnathopod 2 morphology of similarly sized subadult males of *S. pelagica* from Mediterranean samples appears to be quite different (the palm is concave in *Peramphithoe* sp. A, convex in *S. pelagica*). It will be necessary to examine additional material of both species, especially adult specimens of *Peramphithoe* sp. A, to determine any further morphological differences between the two and clarify their respective distributions in the area. The largest specimen of *Peramphithoe* sp. A encountered was a subadult male 5 mm in length.

Genus *Sunamphitoe* Bate, 1857

Regional diagnosis: Antenna 1, accessory flagellum absent; mandible, palp absent; maxilla 1, palp article 2 slender; coxae 1-4, ventral margin with small tuft of short to medium setae posteriorly; coxa 1 not expanded distally, anteroventral angle subquadrate, not produced; gnathopod 1 of female, palm transverse; peraeopods 3-4, basis strongly inflated; peraeopod 5, carpus subquadrate, propodus stout, approximately twice as long as wide; uropod 1, peduncle, distoventral spur present, strong; uropod 3, peduncle without spines on dorsomedial margin, outer ramus, dorsal margin minutely spinose.

Florida species: *S. pelagica*

Sunamphitoe pelagica (Milne-Edwards, 1830) (Figure 250)

Amphithoe pelagica Milne-Edwards, 1830, p. 378.

Sunamphitoe conformatus Bate, 1856, p. 59.

Sunamphithoe Hamulus Bate, 1857; Bate, 1862, p. 250, pl. 43, fig. 5.

Sunamphitoe conformata: Bate, 1862, p. 251, pl. 43, fig. 6.

Sunamphitoe pelagica: Chevreux, 1900, p. 102, pl. 11, fig. 4.

Regional diagnosis: That of the genus.

Distribution: North Atlantic along the coasts of Europe and North America (Bousfield, 1973; Lincoln, 1979); Sargasso Sea (Lincoln, 1979); Dry Tortugas, Florida (Shoemaker, 1945a); Brazil (Shoemaker, 1945a; Wakabara and Serejo, 1998); Mediterranean Sea (Krapp-Schickel, 1982b).

Ecology: This species is common in floating rafts of *Sargassum* and also may occasionally be found in the intertidal or shallow subtidal zones among other species of algae (Lincoln, 1979; Krapp-Schickel, 1982b).

Remarks: No material of *S. pelagica* from Florida was encountered during the preparation of this guide, but it is included here because it has been reported from these waters (Shoemaker, 1945a) and also because of its close similarity to *Peramphithoe* sp. A. Shoemaker (1945a) reported finding specimens of *S. pelagica* with and without mandibular palps in material from North Carolina, the Dry Tortugas and Brazil. His conclusion was that the palp might prove to be present in some specimens of this species and lacking in others; however it is also possible that specimens of both *S. pelagica* and *Peramphithoe* sp. A were present. *Sunamphitoe pelagica* ranges from 5 to 10 mm in length.

See Bousfield, 1973; Lincoln, 1979; Krapp-Schickel, 1982b.

Family Aoridae Stebbing, 1899

Regional diagnosis: Antenna 1 well-developed, reaching well beyond peduncle article 4 of antenna 2; antenna 2 not very short, at least half length of antenna 1; head normal, not globular, rostrum small and straight or absent, inferior antennal sinus not deeply recessed for insertion of antenna 2 (may be slightly recessed), ocular lobe usually broadly rounded or subquadrate, rarely acute; eyes lateral, not closely approximated or fused dorsally, without 4 paired peripheral facets; buccal mass not exceptionally large relative to size of head; mandible with well-developed molar and palp, palp article 3 not clavate; maxilliped, palp article 4 normally developed, not vestigial; coxae 1-2 not reduced, subequal to or slightly shorter than following coxae; coxae 1-3 not becoming shorter posteriorly; coxae 1-4 usually shallow, extending only slightly beyond proximal end of basis, rarely extending halfway along basis; gnathopod 1 well-developed, usually larger than gnathopod 2, occasionally subequal, similar (especially in females), usually subchelate, occasionally carpocheate in males, with 7 articles; gnathopod 2, article 3 not elongate, less than twice as long as wide, carpal lobe unproduced or slightly produced, falling far short of palmar angle and tip of closed dactyl; peraeopod 7 subequal to or longer than peraeopod 6, not slender and attenuate distally; urosome segments 1-3 separate, segment 1 not elongate, at least as deep as long; uropod 3 bearing 1-2 rami (may be reduced); telson entire or emarginate.

Florida genera: *Bemlos*, *Globosolembos*, *Grandidierella*, *Lembos*, *Leptocheirus*, *Paramicrodeutopus*, *Pediorophium*, *Plesiolembos*, *Rudilemboides*, *Unciola*

Remarks: There is an additional aorid species from deeper water (39-73 m) in the eastern Gulf of Mexico which has no eyes and lacks rami on uropod 3 and thus does not quite fit into the above diagnosis, which is based on shallow-water taxa. This species, *Liocuna caeca* Myers, 1981, was described from the central West Florida Shelf (Myers, 1981) and has not been reported from shallower waters to date.

It should be noted here that the last couplet of the generic key below distinguishes between the genus *Globosolembos* and a *Bemlos*, *Plesiolembos* group. Members of this latter group are all included in a single key to species presented in the *Bemlos* section of the guide and the reasons for doing so are discussed in the **Remarks** sections for the genera *Bemlos* and *Plesiolembos*.

KEY TO FLORIDA GENERA OF AORIDAE

1. < Coxae 1-4 well-separated, not touching or overlapping; uropod 3 uniramous (ramus may be reduced) 2

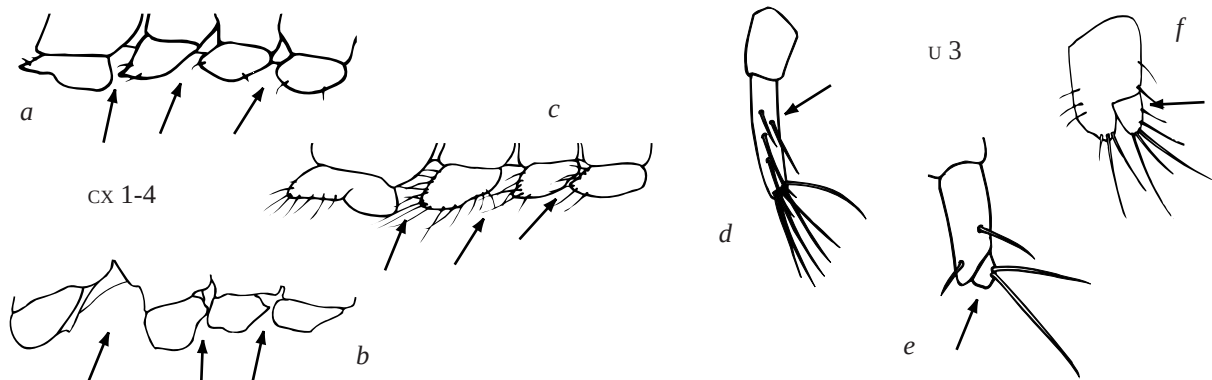


Figure 265.

- < Coxae 1-4 usually contiguous, touching or overlapping (occasionally slightly separated or with coxa 1 separated from coxae 2-4); uropod 3 biramous 4

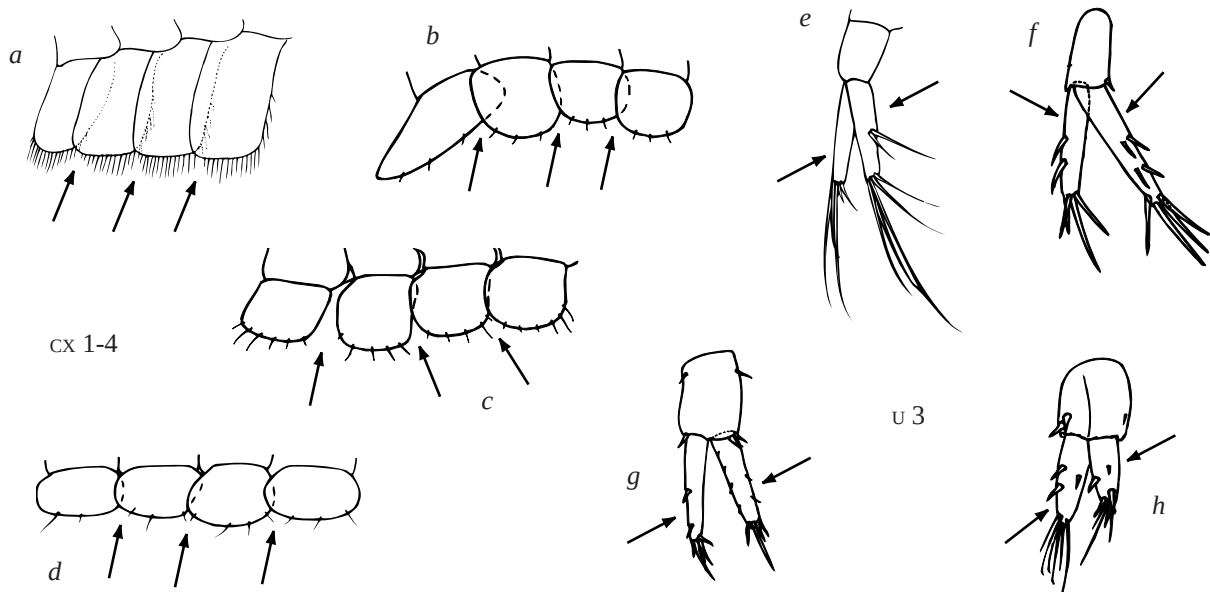


Figure 266.

2. < Antenna 2, peduncle articles 3-4 of both sexes slender, width similar to that of article 5; peraeon segment 1 of male with mid-ventral sternal process; coxa 1, anteroventral angle subquadrate; gnathopod 1 of male complexly subchelate, that of female with carpus subequal to or slightly longer than propodus, propodus unenlarged; epimeron 3 without posteroventral hook; uropods 1-2, outer ramus slender, length 5-6 times width *Grandidierella*

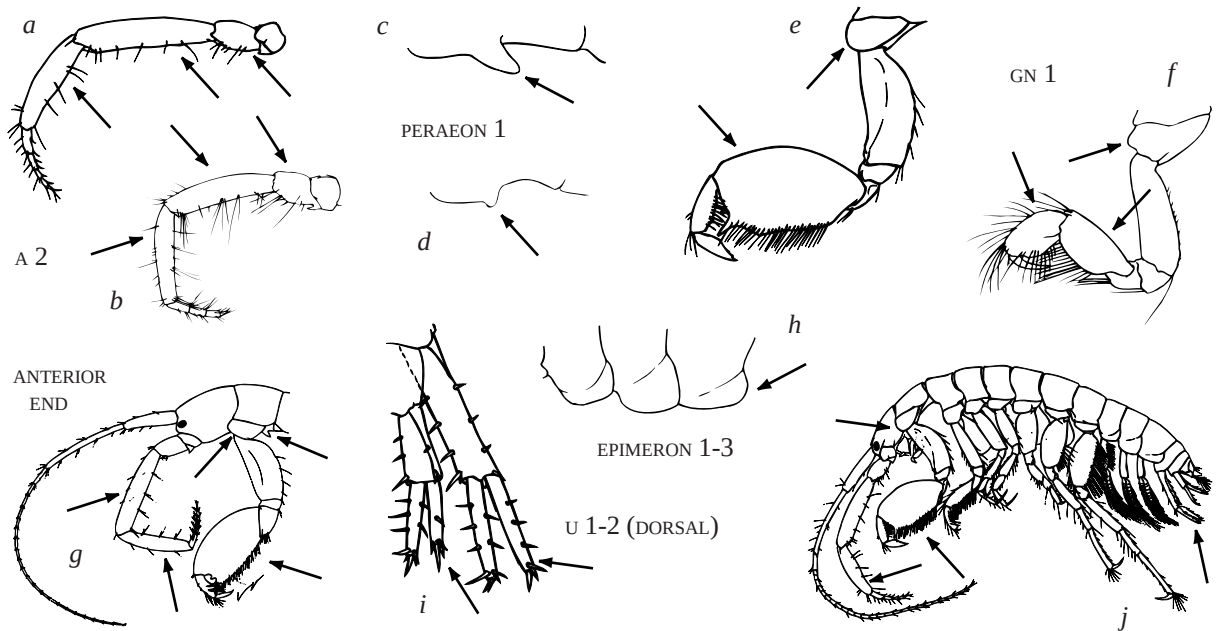


Figure 267.

- < Antenna 2, peduncle articles 3-4 very stout in male, moderately stout or very stout in female, width greater than that of article 5; peraeon segments of male without mid-ventral sternal processes; coxa 1, anteroventral angle acute or subacute; gnathopod 1 of male normally subchelate, that of female with carpus shorter than propodus, propodus enlarged; epimeron 3 with posteroventral hook; uropods 1-2, outer ramus stout, length 2-3 times width 3

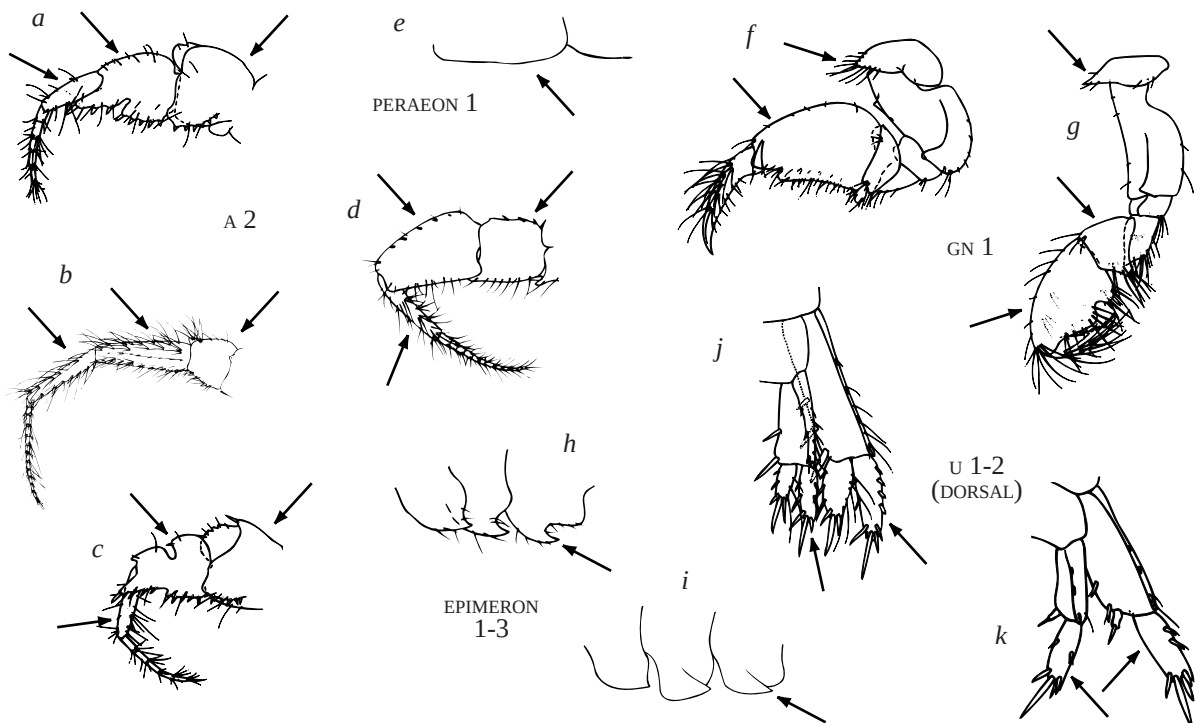


Figure 268.

3. < Antenna 1, accessory flagellum vestigial, 1-articulate; antenna 2, peduncle articles 3-4 of female very stout, article 4 with ventromedial (male) or dorsolateral (female) marginal notch; uropods 1-2, inner ramus greatly reduced, vestigial; uropod 3, peduncle without distomedial expansion *Pedicatorophium*

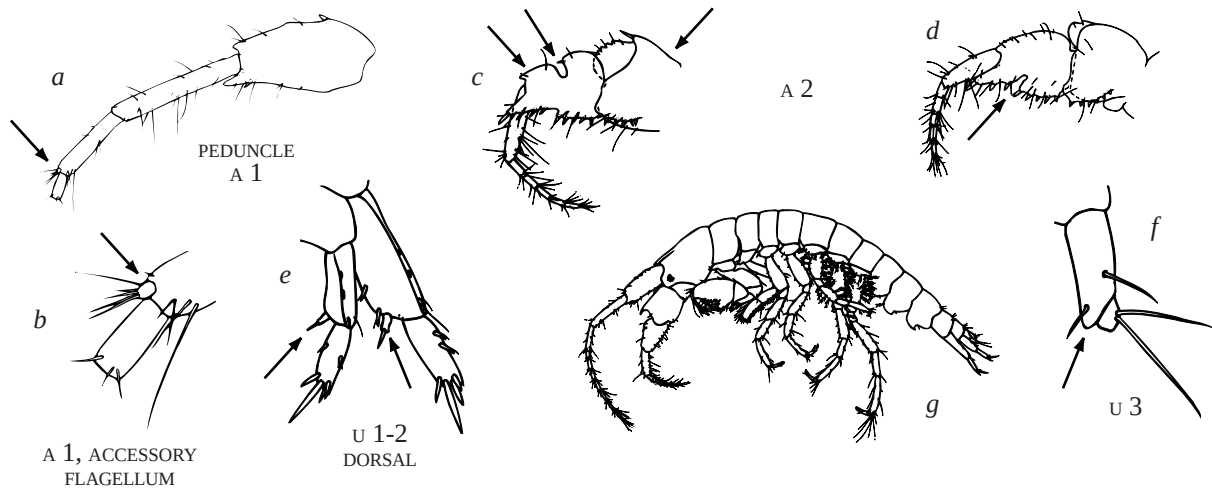


Figure 269.

- < Antenna 1, accessory flagellum well-developed, 3-5-articulate; antenna 2, peduncle articles 3-4 of female moderately stout, article 4 of both sexes without marginal notch; uropods 1-2, inner ramus not greatly reduced, slightly shorter than outer ramus; uropod 3, peduncle with distomedial expansion *Unciola*

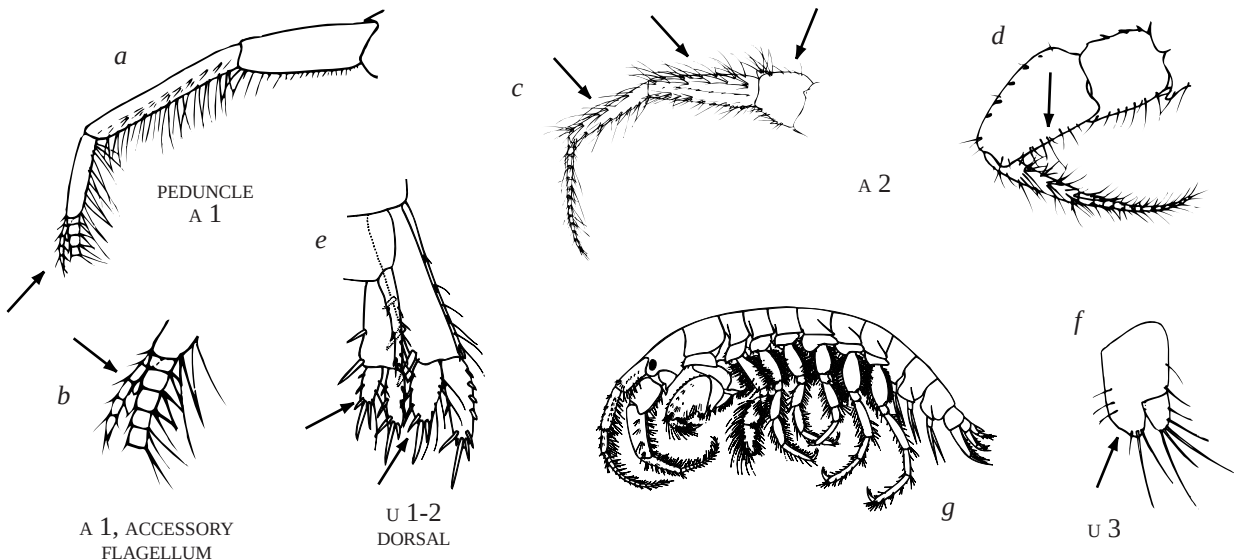


Figure 270.

4. < Coxae 1-4 deeper than wide, ventral margin densely setose; gnathopod 2, basis, anterior margin with dense fringe of very long setae, setae subequal to or longer than length of basis; peraeopods 5-7, basis stout, width at least three fourths length *Leptocheirus*

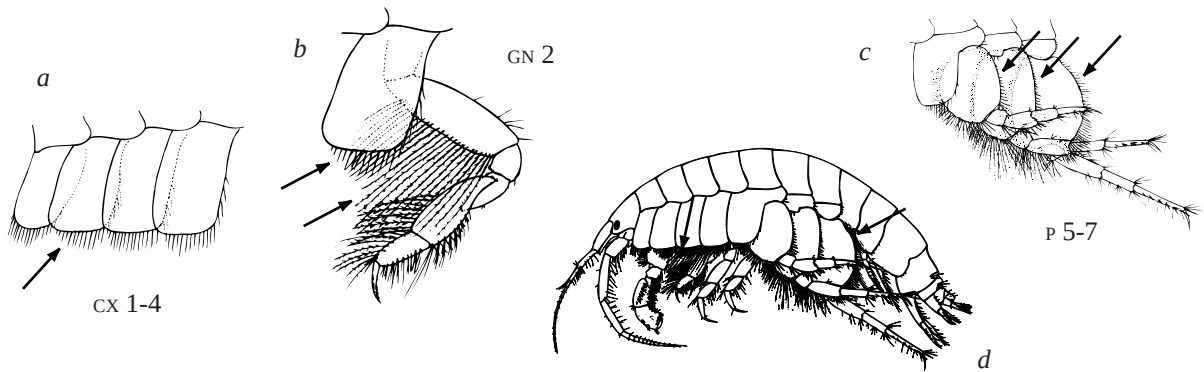


Figure 271.

- < Coxae 1-4 wider than deep or with width subequal to depth, ventral margin sparsely setose or lacking setae; gnathopod 2, basis, anterior margin without setae or with relatively sparse short to medium setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length 5

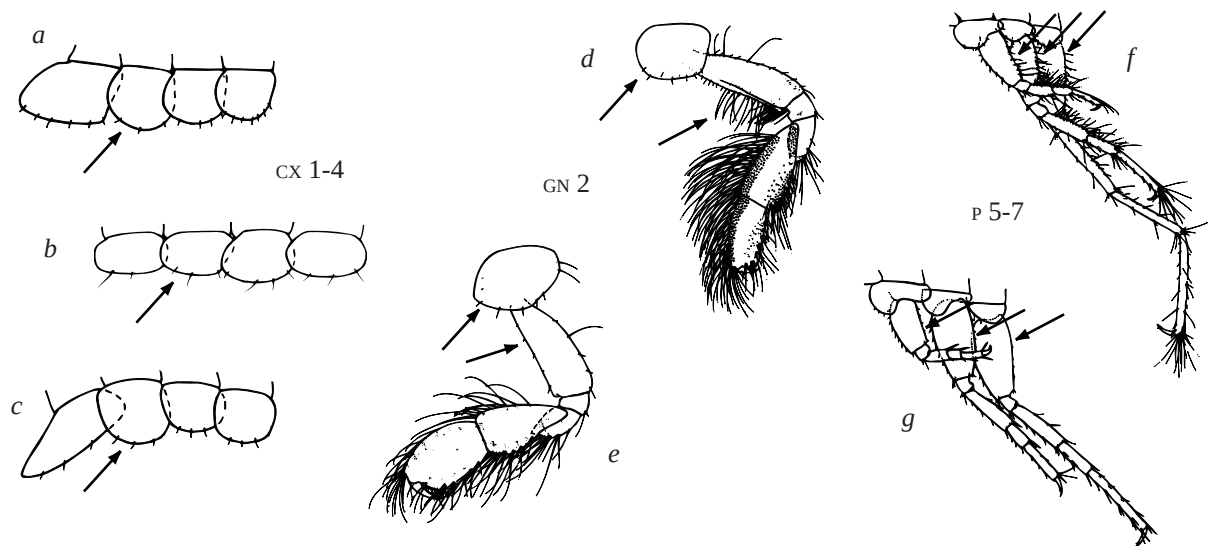


Figure 272.

5. < Antenna 2, peduncle articles very slender, poorly developed; head, ocular lobe acute anteriorly; peraeon segments of male, mid-ventral sternal processes with well-developed, articulated terminal spine; gnathopods 1-2 of female very slender *Rudilemboides*

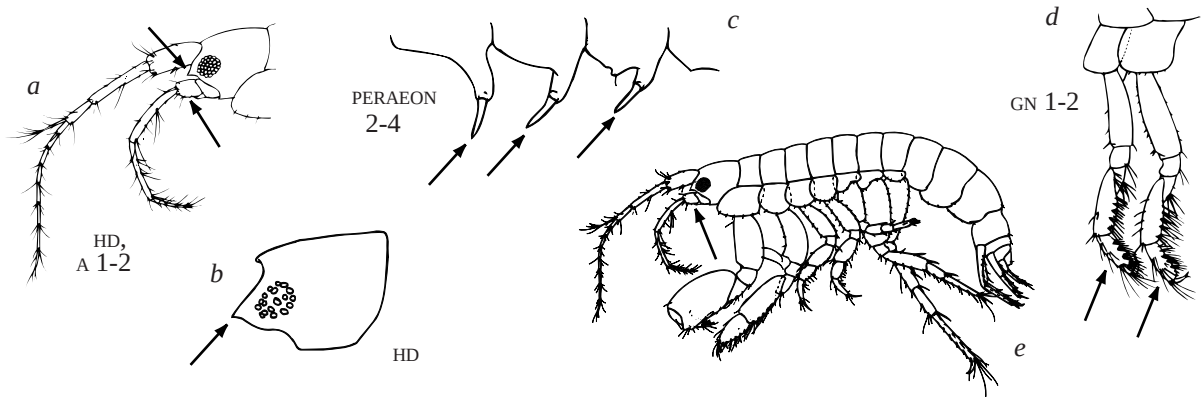


Figure 273.

- < Antenna 2, peduncle articles slender to moderately stout, well-developed; head, ocular lobe subquadrate or rounded anteriorly; peraeon segments of male, mid-ventral sternal processes absent (rarely) or without articulated terminal spine; gnathopods 1-2 of female usually not exceptionally slender, if very slender, then coxa 1 subacute anteriorly 6

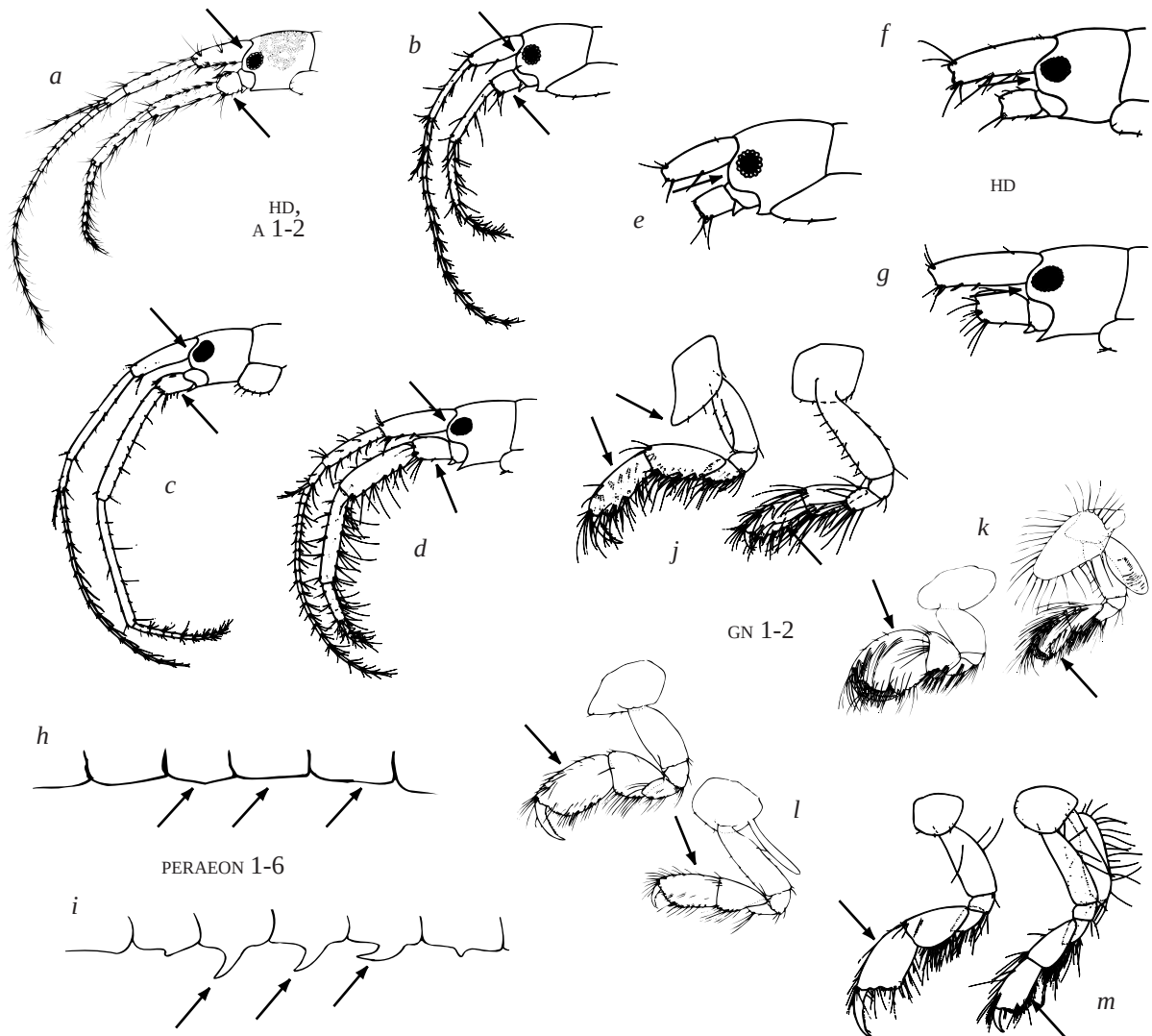


Figure 274.

6. < Coxa 1 moderately to strongly produced anteroventrally, anteroventral angle subacute; gnathopod 1 of male, carpus subequal to or much longer than propodus, propodus, palmar process located slightly or distinctly distal to palmar angle; uropod 3, rami without marginal setae (spines may be present) 7

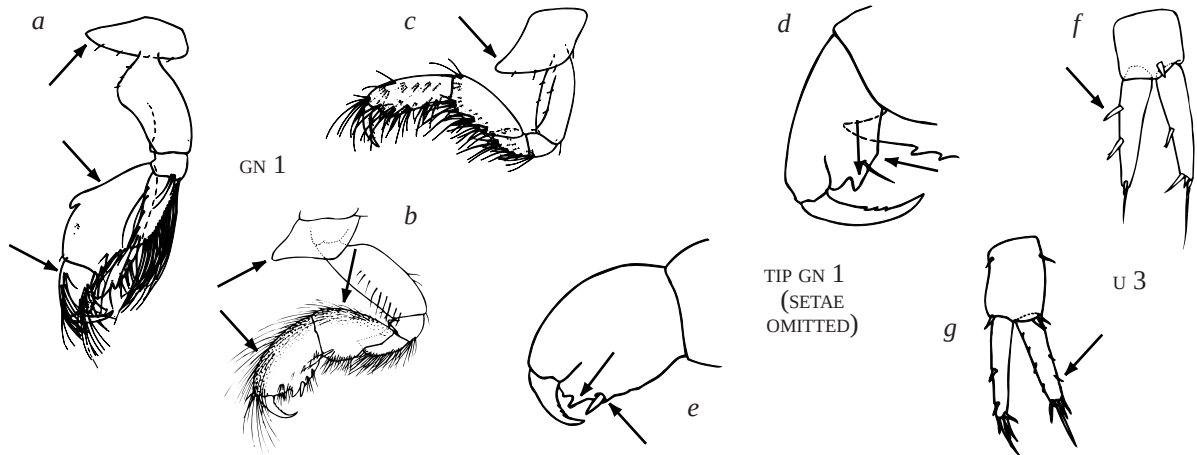


Figure 275.

- < Coxa 1 usually not produced anteroventrally, anteroventral angle rounded or subquadrate (rarely slightly produced and subacute); gnathopod 1 of male, carpus shorter than propodus, propodus, palmar process absent or located at palmar angle; uropod 3, at least 1 ramus with marginal setae 8

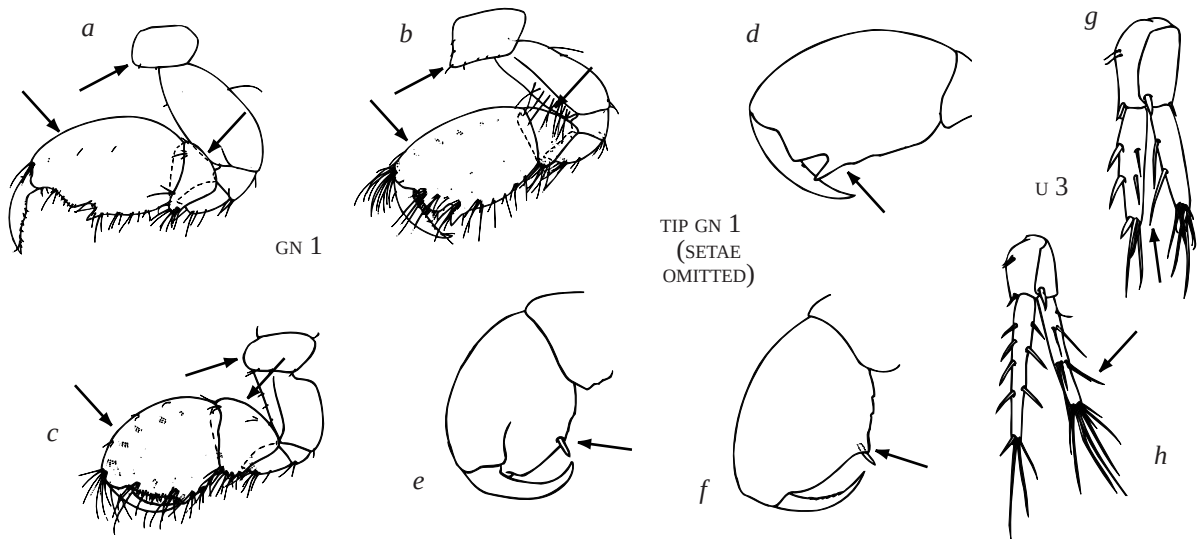


Figure 276.

7. < Maxilliped, lateral margin of proximal articles without wing-like flanges; gnathopod 1 of male carpocheate, carpus much longer than propodus, dactyl extending beyond palmar angle of propodus by approximately half its length; gnathopod 1 of female, propodus relatively slender, length at least two and one half times width *Paramicrodeutopus*

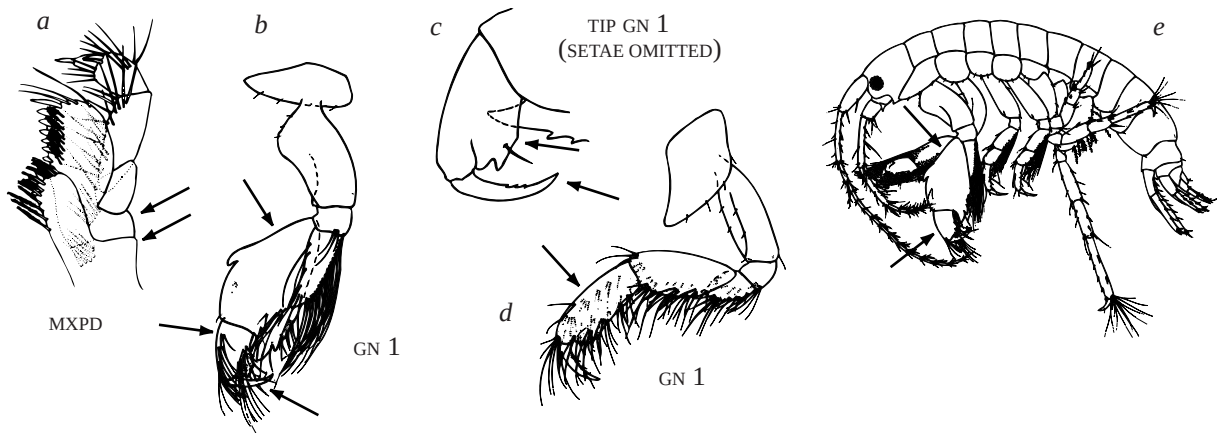


Figure 277.

- < Maxilliped, lateral margin of proximal articles with wing-like flanges; gnathopod 1 of male normally subchelate, carpus subequal to propodus in length, dactyl extending to or slightly beyond palmar angle of propodus; gnathopod 1 of female, propodus relatively stout, length twice width or less *Lembos*

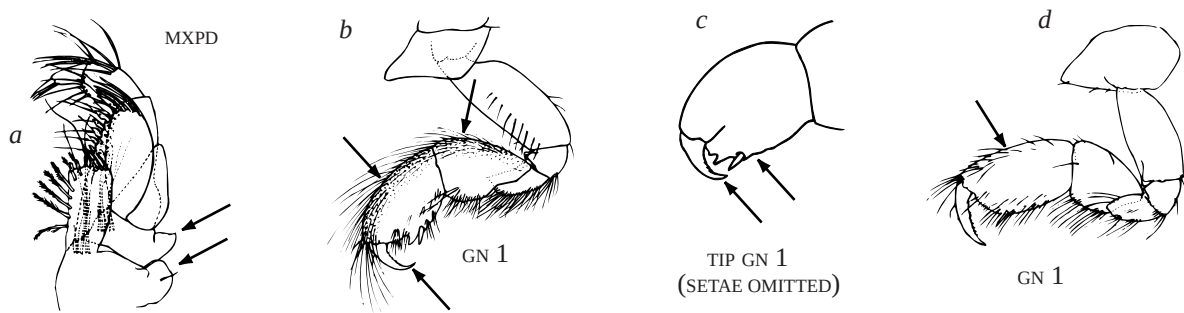


Figure 278.

8. < Antenna 2 of male, flagellum with proximal articles fused, forming single stout article, article 1 subequal to or longer than remaining flagellar articles combined; head, anteroventral angle strongly produced; gnathopod 1 of male, propodus without palmar notch, that of female enlarged, similar to that of male in size *Globosolembos*

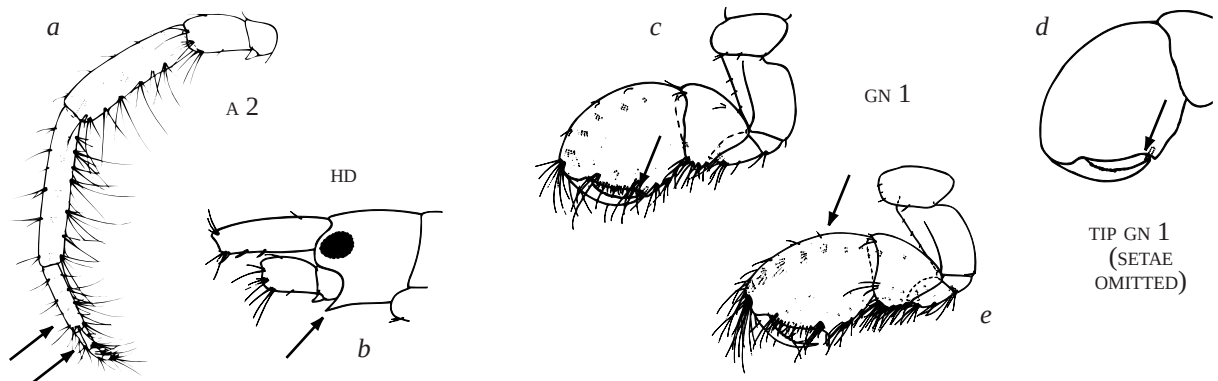


Figure 279.

- < Antenna 2 of male, flagellum with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced; gnathopod 1 of male, propodus with palmar notch, that of female unenlarged, much smaller than that of male *Bemlos*, *Plesiolembos**

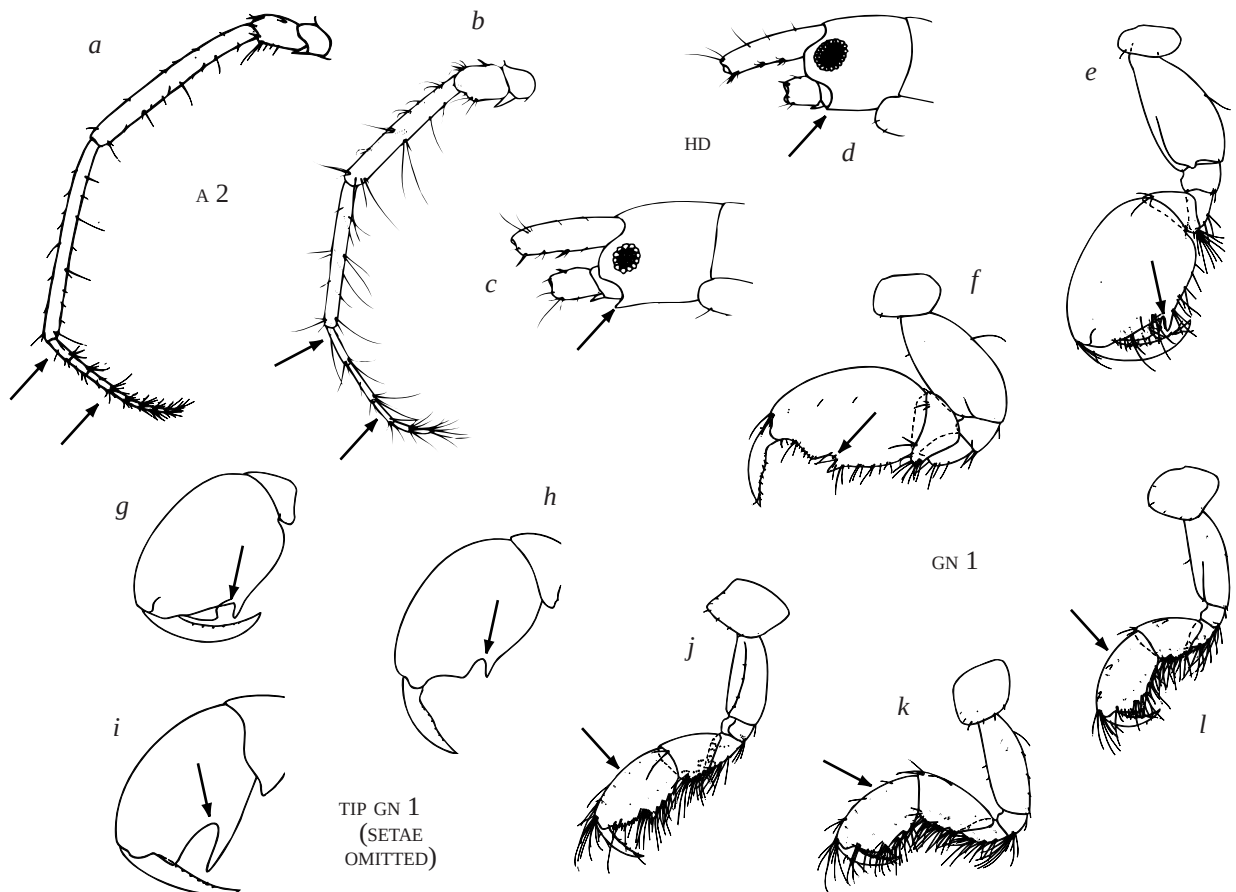


Figure 280.

* See **Remarks** sections for the family Aoridae and the genera *Bemlos* and *Plesiolembos*.

Genus *Bemlos* Shoemaker, 1925

Regional diagnosis: Antenna 1, accessory flagellum well-developed, 4-8-articulate; antenna 2, peduncle usually extending well beyond peduncle of antenna 1 (rarely slightly longer), articles slender, well-developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar with surface plates all rounded or with primary plate falcate, secondary, tertiary and quaternary plates differing in shape; maxilliped, lateral margin of proximal articles without wing-like flanges; peraeon segments of male with (usually) or without (rarely) mid-ventral sternal processes, processes without articulated terminal spine; coxae 1-4 wider than deep or with width subequal to depth, usually contiguous, touching or overlapping (occasionally slightly separated or with coxa 1 separated from coxae 2-4), ventral margin sparsely setose or lacking setae; coxa 1 usually not produced anteroventrally, anteroventral angle rounded or subquadrate (rarely slightly produced and subacute); gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus shorter than propodus, propodus with palmar notch, palmar process present, well-developed, located at palmar angle, dactyl extending to or slightly beyond palmar angle; gnathopod 1 of female, carpus shorter than propodus, propodus unenlarged, much smaller than that of male, relatively stout, length twice width or less; gnathopod 2 of both sexes, basis, anterior margin without setae or with relatively sparse short to medium setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, slightly longer than outer ramus, outer ramus slender to very slender, length 5-12 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, at least one ramus with marginal setae, outer ramus with minute second article.

Florida species: *B. brunneomaculatus*, *B. dentischium*, *B. kunkelae*, *B. cf longicornis*, *B. mackinneyi*, *B. minimus*, *B. setosus*, *B. spinicarpus spinicarpus*, *B. spinicarpus inermis*, *B. unicornis*

Remarks: Several taxa that are not currently placed in the genus *Bemlos* are nonetheless included in the following keys along with the Florida members of that genus. *Lembos unifasciatus reductus* and *L. u. unifasciatus* actually do belong in the genus *Bemlos* (Myers, pers. comm.) and key out to this genus in the key to genera; however, until the placement is formally changed in the literature, they must remain in the genus *Lembos*. In addition, members of the genus *Plesiolembos*, represented here by *P. ovalipes* and *P. rectangulatus*, differ from members of the genus *Bemlos* only in characters which are not easily discernable with a light microscope (i.e. the morphology of the plates on the surface of the left mandibular molar and the absence of a minute second article on the outer ramus of uropod 3). Therefore, for ease of identification, all of the above mentioned taxa are included in the following keys to males and females of Florida species of *Bemlos* and *Plesiolembos* and not in separate keys to their respective genera.

Females belonging to the genera *Bemlos* and *Plesiolembos* are, for the most part, very similar and are best identified by their association with males. In some cases, for males as well as females, pigmentation patterns are very useful as a means of identification and are therefore included in the keys, but it should be noted that these are not always dependable and may be somewhat faded or absent, especially in material that has been preserved for a long period of time. In the following key to females, an attempt has been made to emphasize certain characters that are somewhat different from those used by Myers (1981), with the object of providing an alternative to his key. However, both keys work best with fully adult females and subadult or juvenile females may be unidentifiable in the absence of males.

KEY TO FLORIDA SPECIES OF *BEMLOS* AND *PLESIOLEMBOS* - MALES
(including *Lembos unifasciatus*)

1. < Gnathopod 2, carpus and propodus, anterior margin lined with long, dense setae 2

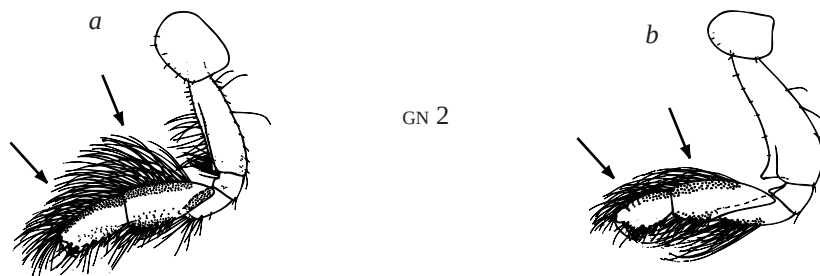


Figure 281.

- < Gnathopod 2, carpus and propodus, anterior margin weakly setose 10

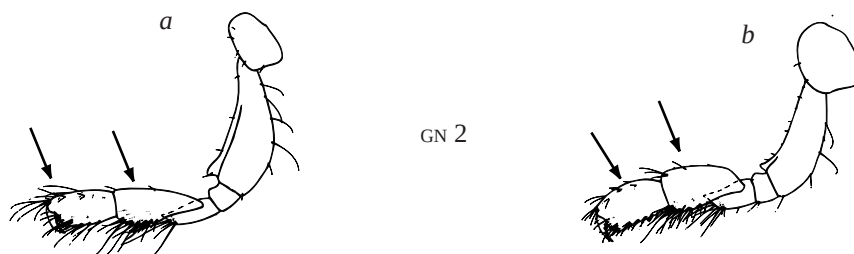


Figure 282.

2. < Gnathopod 1, propodus, anteromedial surface densely setose, setae long 3

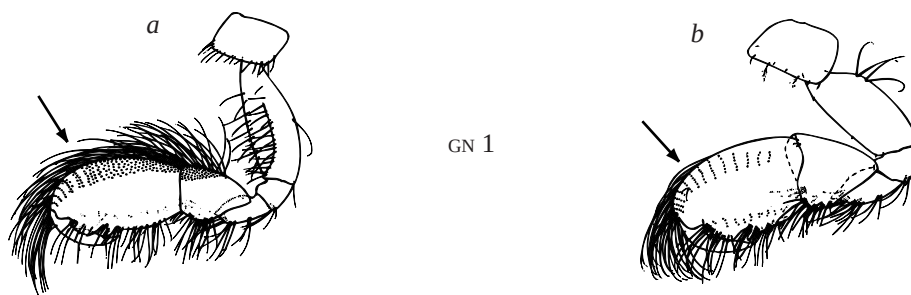


Figure 283.

- < Gnathopod 1, propodus, anteromedial surface sparsely setose, setae short to moderately long 5

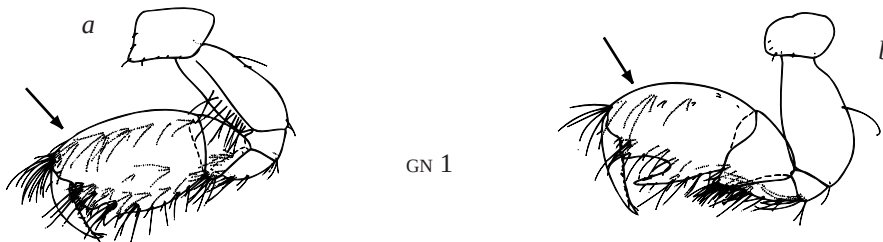


Figure 284.

3. < Gnathopods 1-2, basis, anterior margin with very short setae; gnathopod 1, carpus, anteromedial surface without long setae *Bemlos* cf *longicornis*



Figure 285.

- < Gnathopods 1-2, basis, anterior margin with moderately long to long marginal or submarginal setae; gnathopod 1, carpus, anteromedial surface with long setae 4



Figure 286.

4. < Antennae 1-2 subequal in length; coxa 1 not produced anteroventrally, anteroventral angle rounded; gnathopod 1, carpus one third to one half length of propodus, propodus slender, length twice width; peraeopods 3-4, dactyl subequal to or slightly shorter than propodus; peraeopod 5, basis, posterior margin not abruptly narrower distally, without median "heel" ...
 *Bemlos mackinneyi*

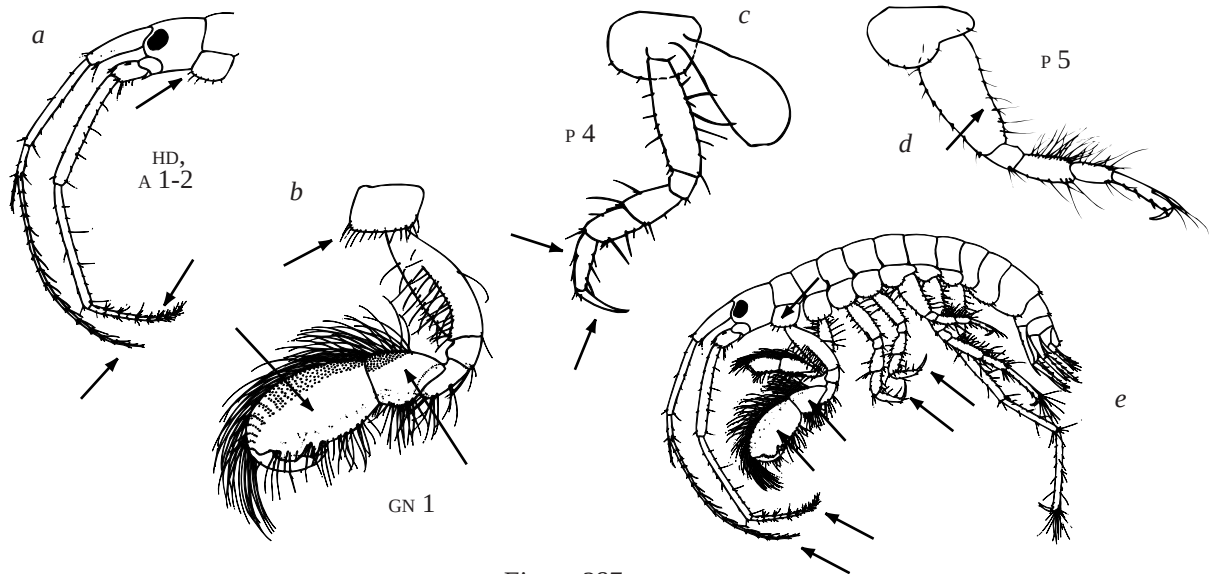


Figure 287.

- < Antenna 1 longer than antenna 2; coxa 1 slightly produced anteroventrally, anteroventral angle subacute; gnathopod 1, carpus two thirds length of propodus, propodus stout, length one and one half times width; peraeopods 3-4, dactyl no more than half length of propodus; peraeopod 5, basis, posterior margin abruptly narrower distally, with median "heel"
 *Bemlos brunneomaculatus*

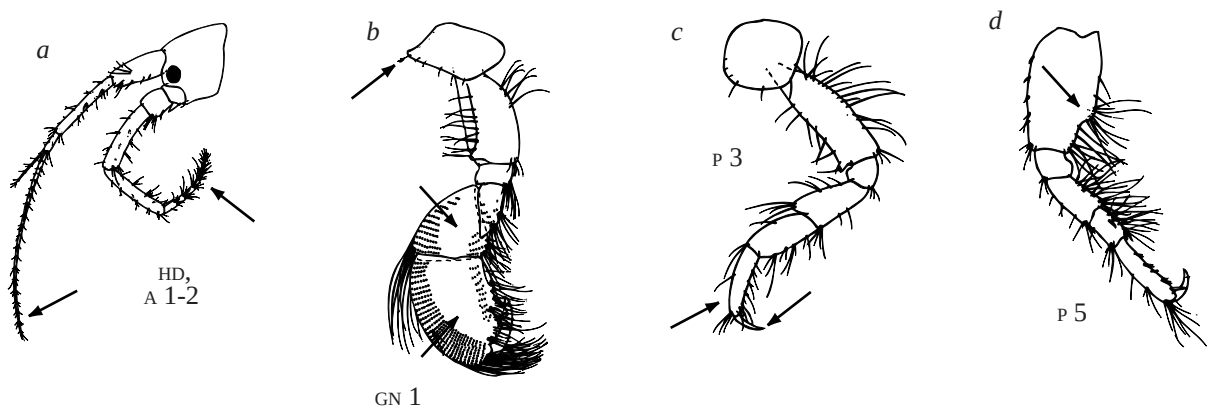


Figure 288.

5. < Antenna 2, peduncle articles 3-4, dorsal margin without short, curly setae; head, rostrum relatively short, broad, sides subequal to or shorter than width of base; gnathopods 1-2, basis, anterior margin with long marginal or submarginal setae; peraeopods 5-7 strongly setose 6

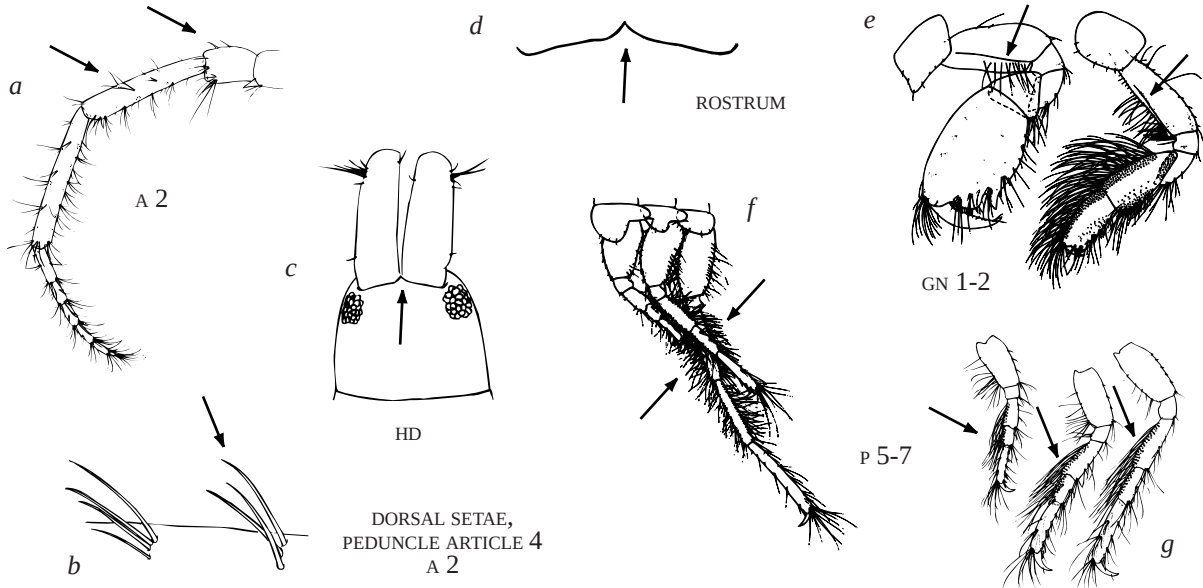


Figure 289.

- < Antenna 2, peduncle articles 3-4, dorsal margin with short, curly setae; head, rostrum relatively long, slender, sides longer than width of base; gnathopods 1-2, basis, anterior margin without long marginal or submarginal setae; peraeopods 5-7 moderately setose 7

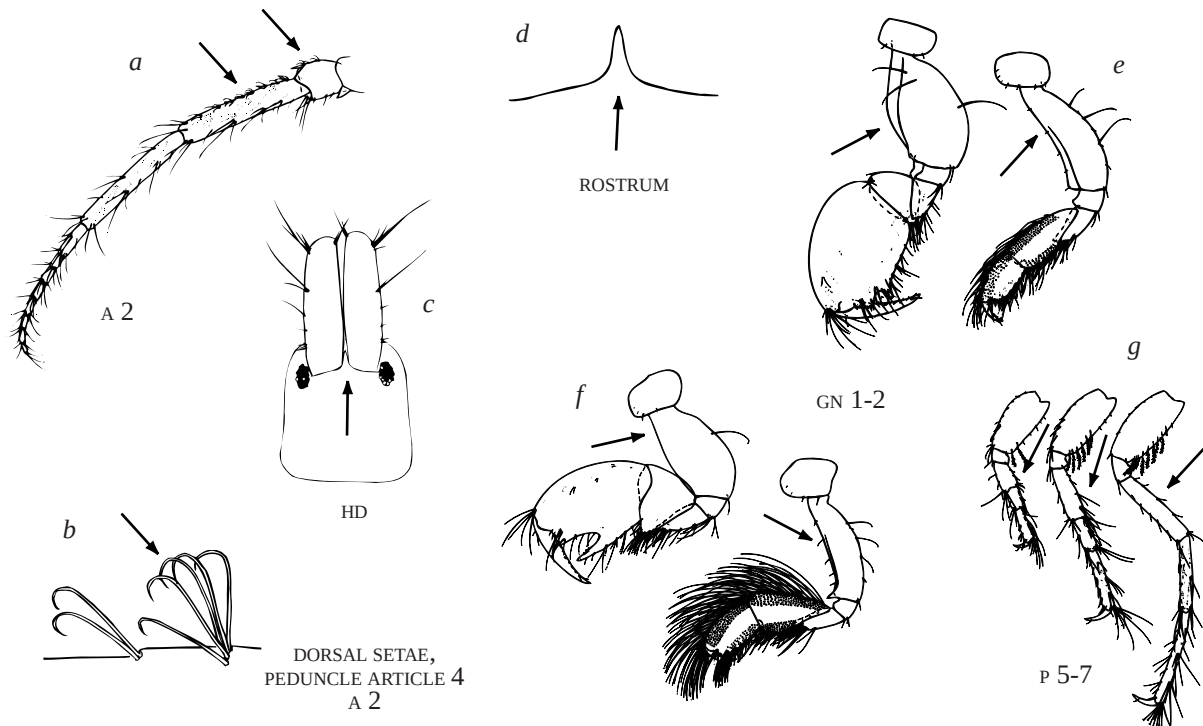


Figure 290.

6. < Peraeon segments 1-7 without mid-ventral sternal processes; coxae 1-4, ventral margin with long setae, some setae subequal to or longer than depth of coxa; coxa 1 not produced anteroventrally, anteroventral angle rounded; peraeopods 3-4, basis, merus and carpus, anterior margin with long, dense setae; small species (3 mm) *Bemlos minimus*

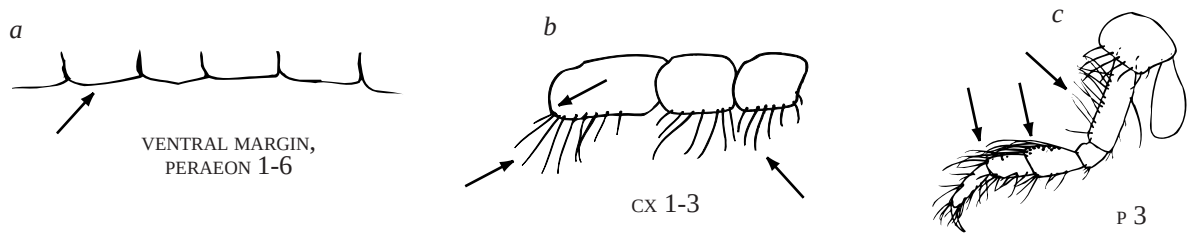


Figure 291.

- < Peraeon segment 2 with mid-ventral sternal process; coxae 1-4, ventral margin with short setae, all setae much shorter than depth of coxa; coxa 1 slightly produced anteroventrally, anteroventral angle subacute; peraeopods 3-4, basis, merus and carpus, anterior margin with short to moderately long, sparse setae; large species (8-10 mm) *Bemlos setosus*

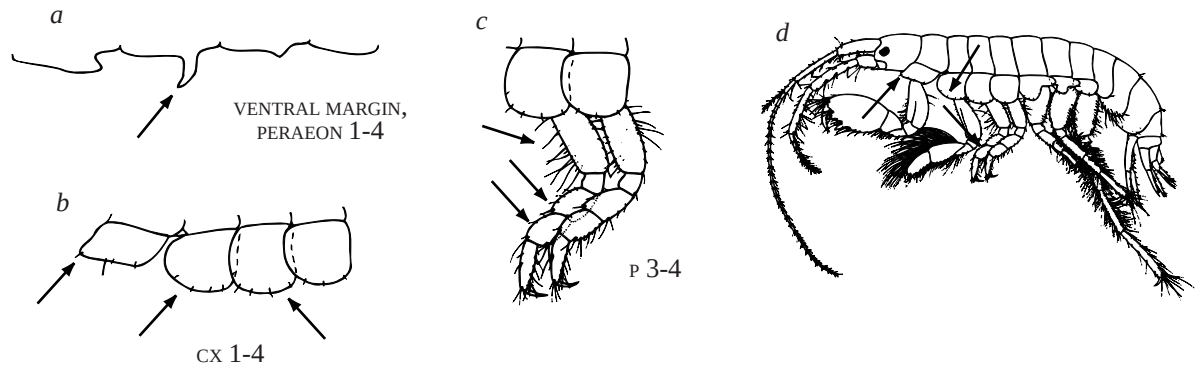


Figure 292.

7. < Body without pigmentation; peraeon segment 3 with mid-ventral sternal process much larger than those on remaining segments; gnathopod 1, propodus, palm with flat-bottomed notch; gnathopod 2, merus with posterodistal brush of very long setae, setae reaching at least to midpoint of propodus *Plesiolembos ovalipes*

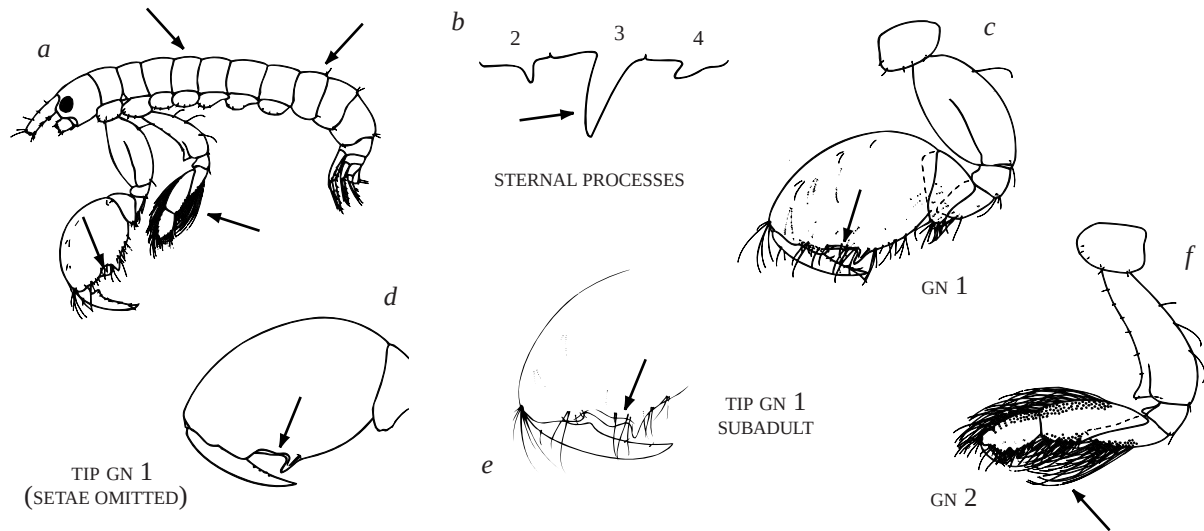


Figure 293.

- < Body with pigmentation; peraeon segments 2, 3-5 or 4-5 with mid-ventral sternal processes much larger than those on remaining segments; gnathopod 1, propodus, palm with u-shaped or v-shaped notch; gnathopod 2, merus without posterodistal brush of very long setae, setae not reaching beyond distal margin of carpus 8

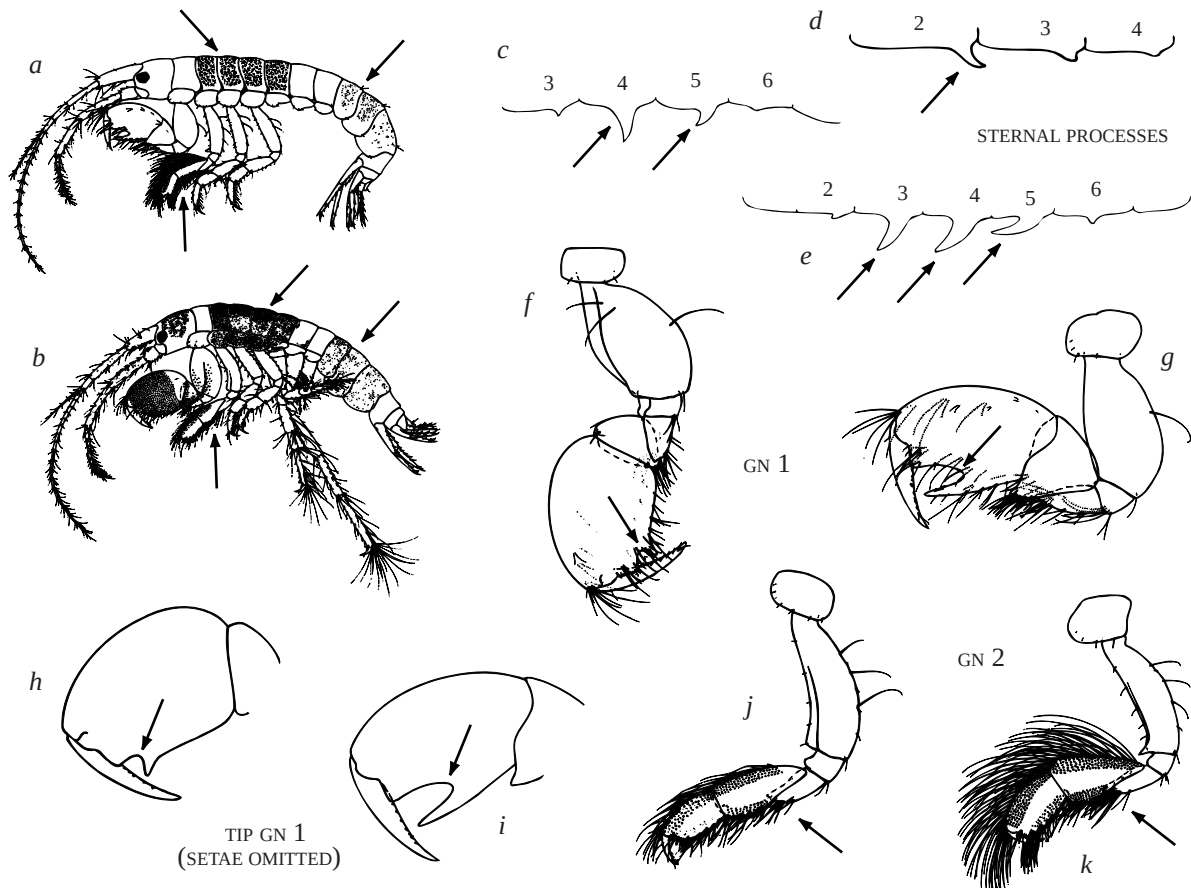


Figure 294.

8. < Head usually with dorsal pigment; peraeon segment 2, mid-ventral sternal process larger than those on remaining segments; gnathopod 1, basis of large males, anterior margin crenulate, carpus approximately one third length of propodus, propodus, palm with shallow notch, notch extending much less than half the length of the posterior margin *Bemlos unicornis*

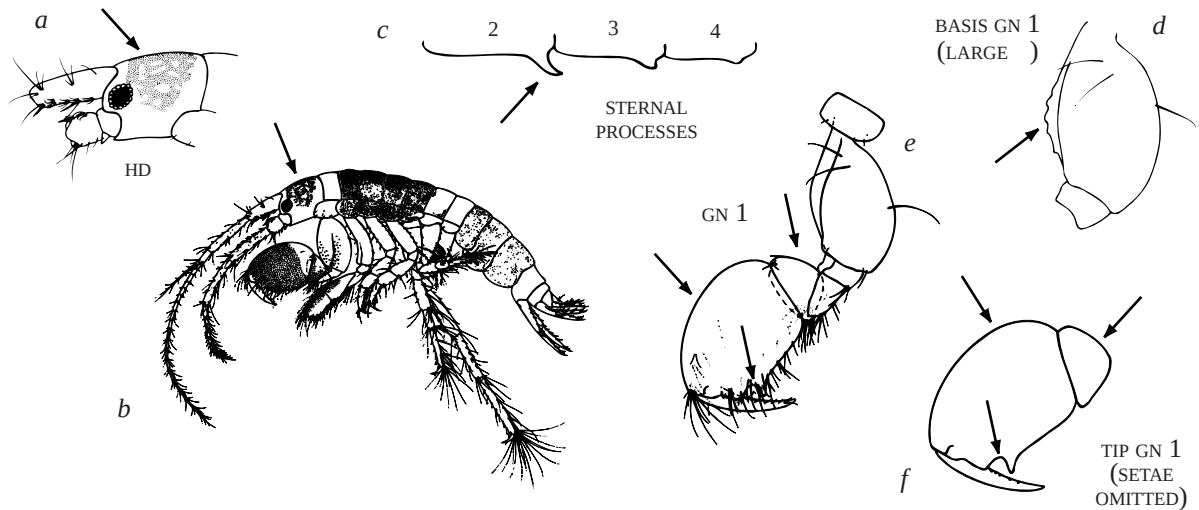


Figure 295.

- < Head usually without dorsal pigment; peraeon segments 3-5 or 4-5, mid-ventral sternal processes larger than those on remaining segments; gnathopod 1, basis of large males, anterior margin not crenulate, carpus at least one half length of propodus, propodus, palm with deep notch, notch extending nearly half the length of the posterior margin 9

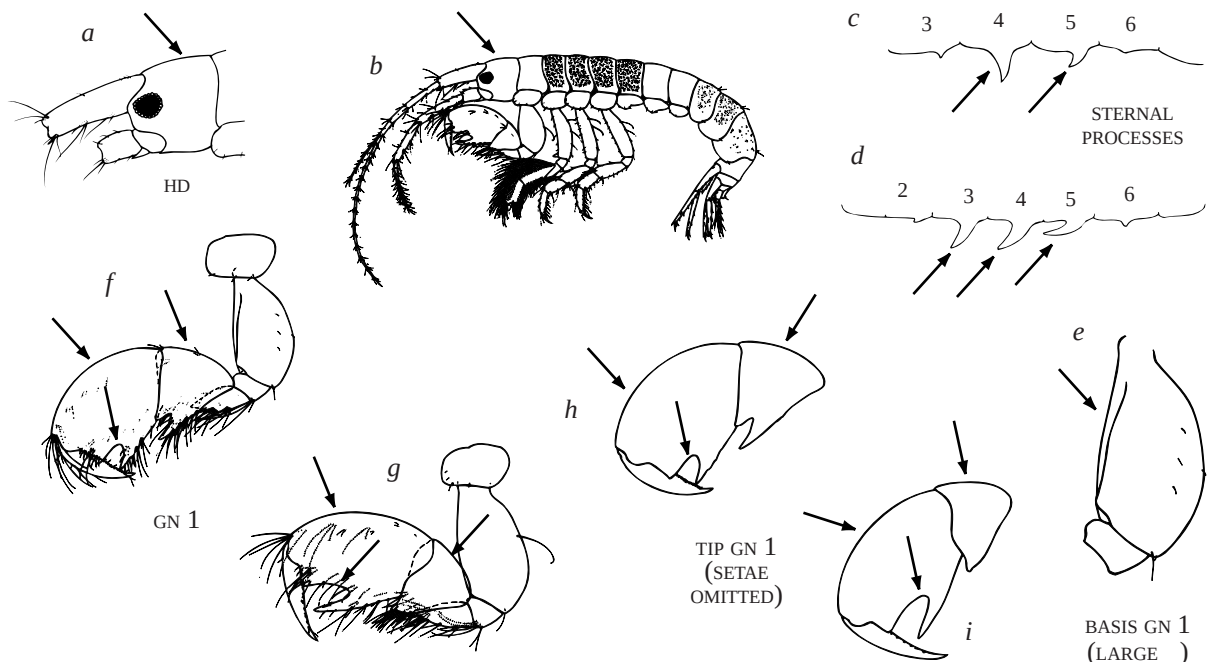


Figure 296.

9. < Gnathopod 1, carpus strongly produced posterodistally, forming elongate, acute process;
gnathopod 2, basis without slender, acute anterodistal process (may be very slightly pro-
duced), propodus relatively stout, width approximately three fourths length
..... *Bemlos spinicarpus spinicarpus*

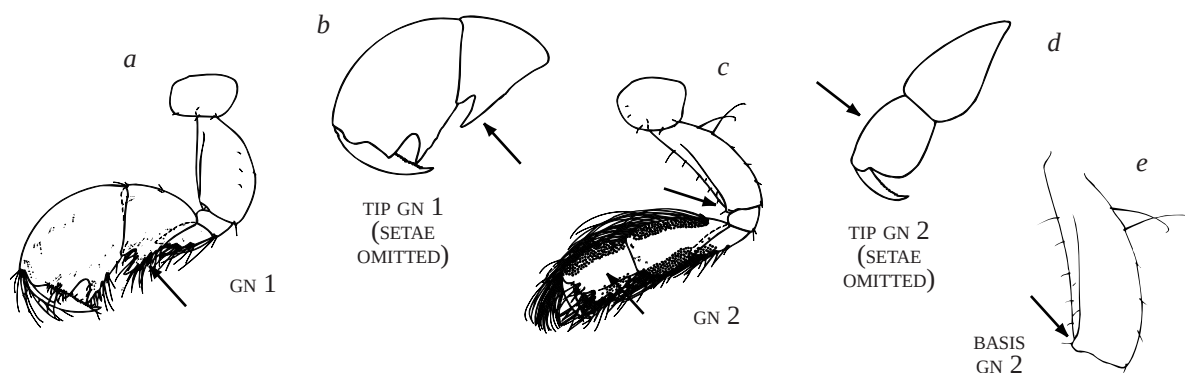


Figure 297.

- < Gnathopod 1, carpus weakly produced posterodistally, forming very short, subacute process;
gnathopod 2, basis with slender, acute anterodistal process, propodus relatively slender,
width approximately two thirds length *Bemlos spinicarpus inermis*

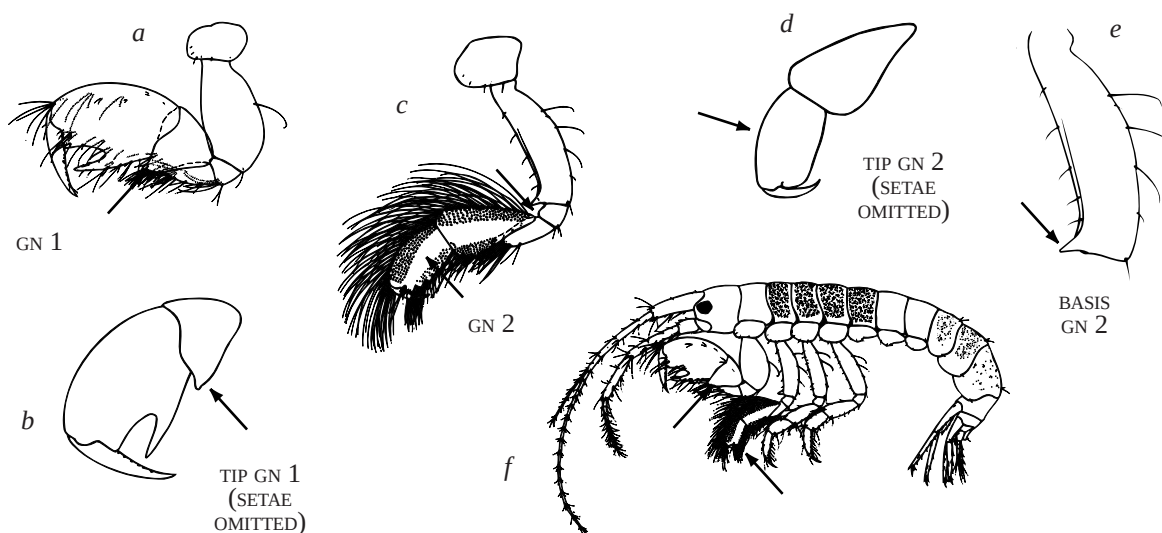


Figure 298.

10. < Pigmentation pattern on body composed of dorsal pigment band on peraeon segment 5 (occasionally 4-5) only; peraeon segments 2-4 with mid-ventral sternal process; gnathopod 2, carpus relatively slender, length approximately two and one half times width, anterior margin evenly convex, not downturned or subquadrate proximally 11

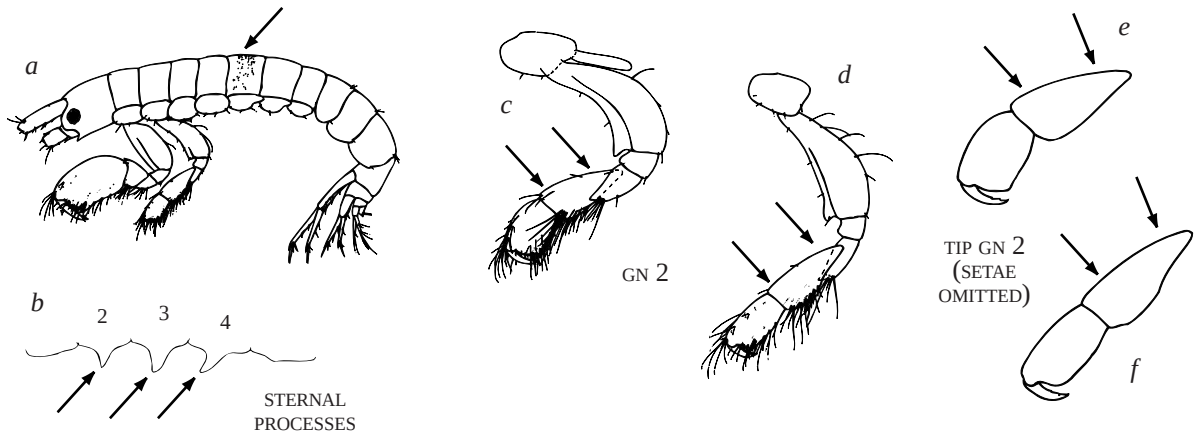


Figure 299.

- < Pigmentation pattern on body diffuse or composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1 or 1-2; peraeon segment 3 only or segments 3-4 with mid-ventral sternal process; gnathopod 2, carpus relatively stout, length not more than twice width, anterior margin moderately to strongly downturned or subquadrate proximally 12

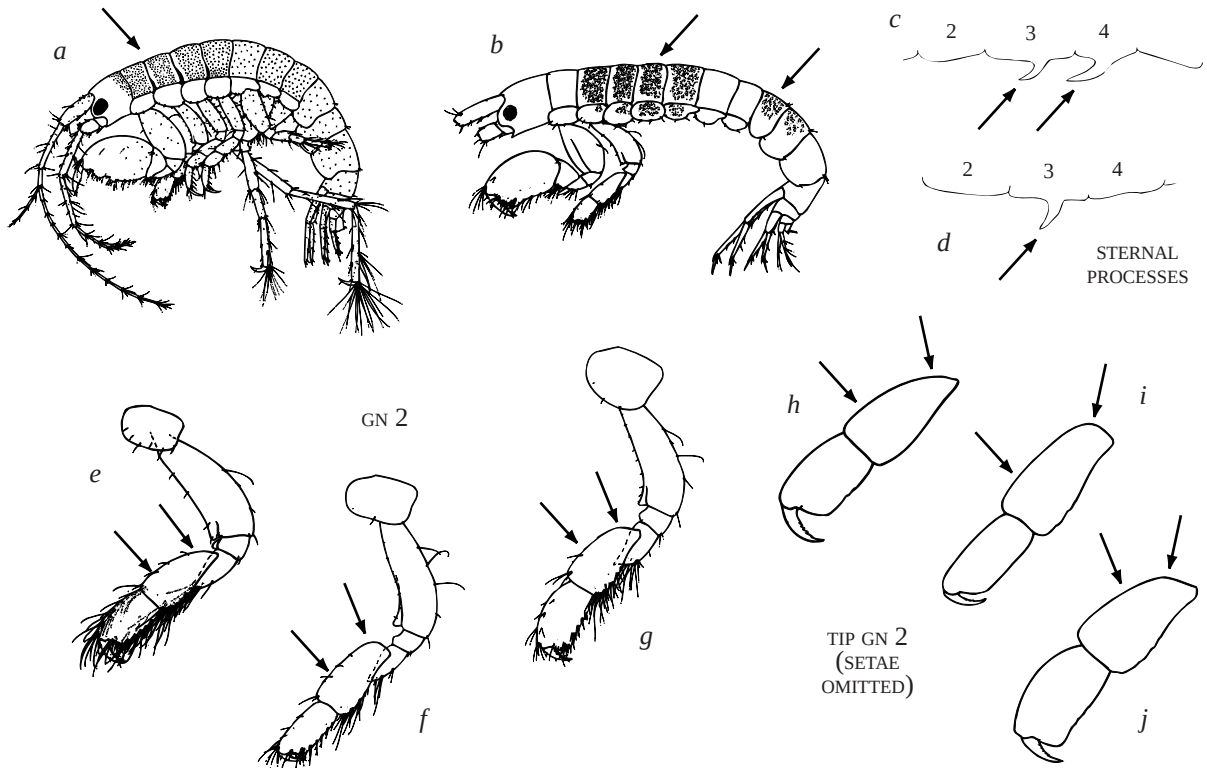


Figure 300.

11. < Gnathopod 1, propodus, posterior margin with several broad, shallow serrations, palmar notch narrow, u-shaped or v-shaped; gnathopod 2, propodus relatively slender, width approximately one half length; uropods 1-2, peduncle with very short distoventral process, length one fifth to one sixth length of peduncle *Lembos unifasciatus reductus*

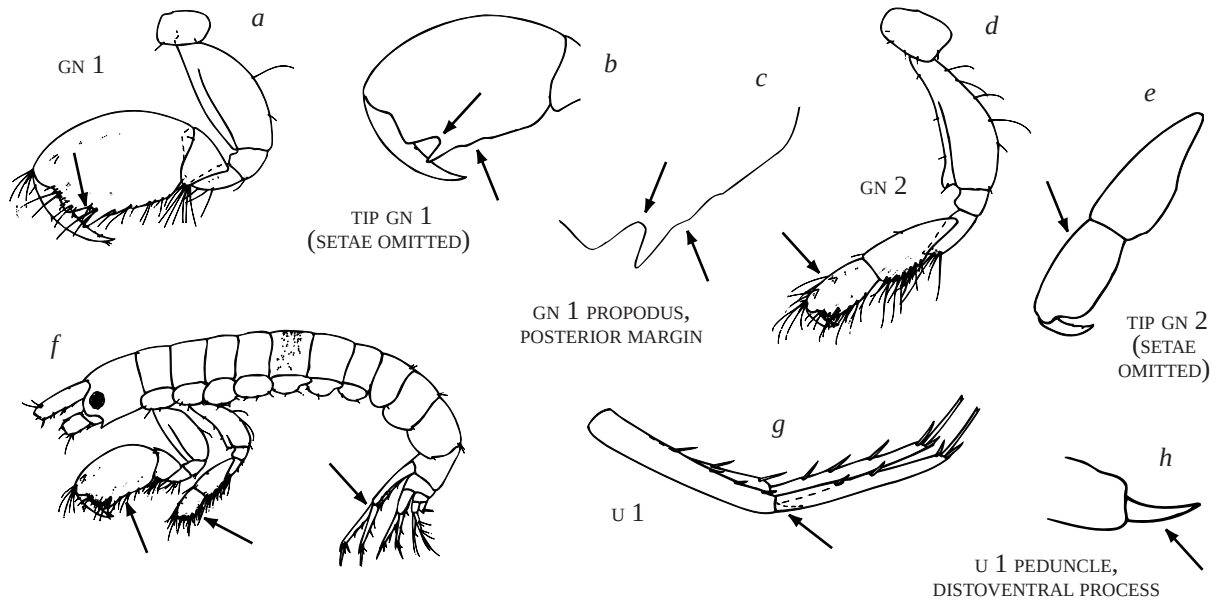


Figure 301.

- < Gnathopod 1, propodus, posterior margin smooth, without serrations, palmar notch broad, flat-bottomed; gnathopod 2, propodus relatively stout, width approximately three fourths length; uropods 1-2, peduncle with long distoventral process, length slightly less than one half length of peduncle *Lembos unifasciatus unifasciatus*

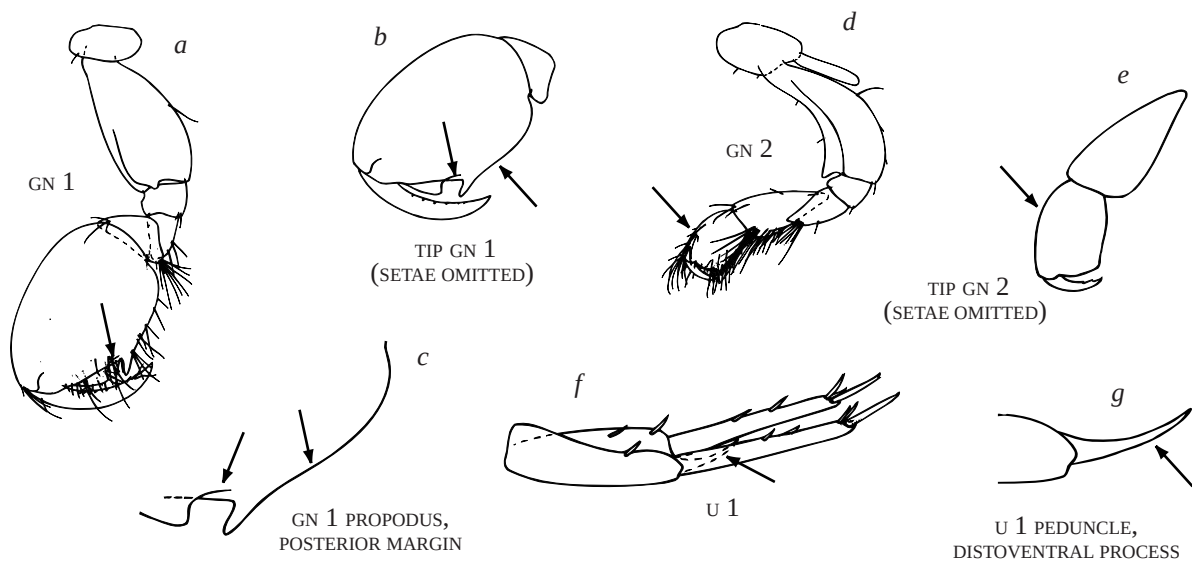


Figure 302.

12. < Mandible, palp article 3 falcate; pigmentation pattern on body diffuse; peraeon segment 3 only with mid-ventral sternal process; gnathopod 2, ischium, anterior margin not produced, without process (may be weakly produced in large males), carpus, anterior margin strongly downturned proximally, angle subquadrate *Plesiolembos rectangularatus*

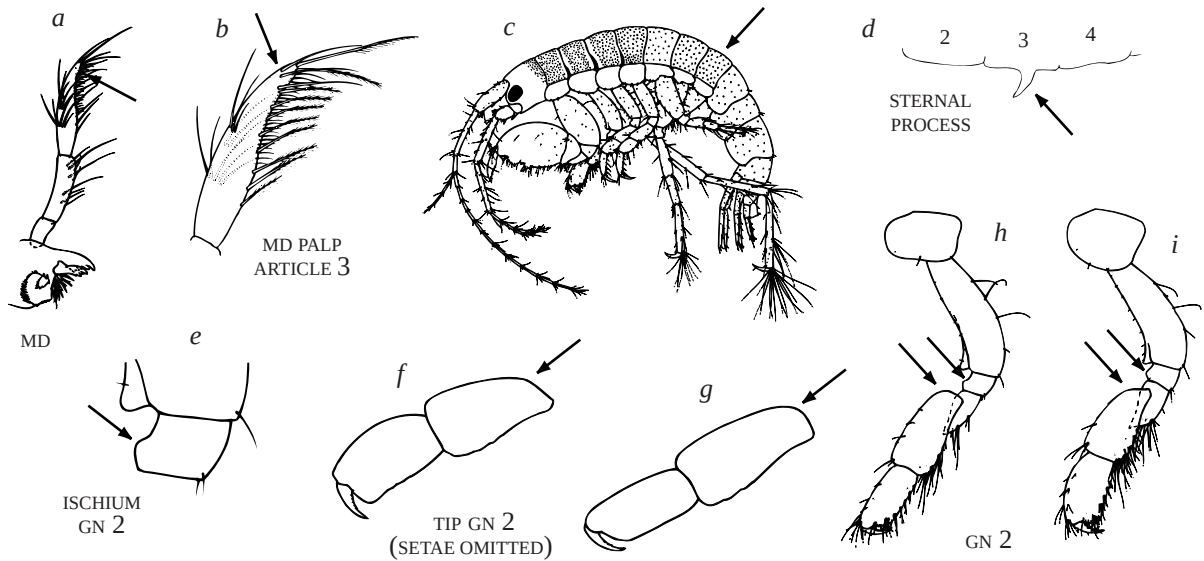


Figure 303.

- < Mandible, palp article 3 not falcate; pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1 or 1-2; peraeon segments 3-4 with mid-ventral sternal process; gnathopod 2, ischium, anterior margin produced, forming subacute process, carpus, anterior margin moderately downturned proximally, angle not subquadrate 13

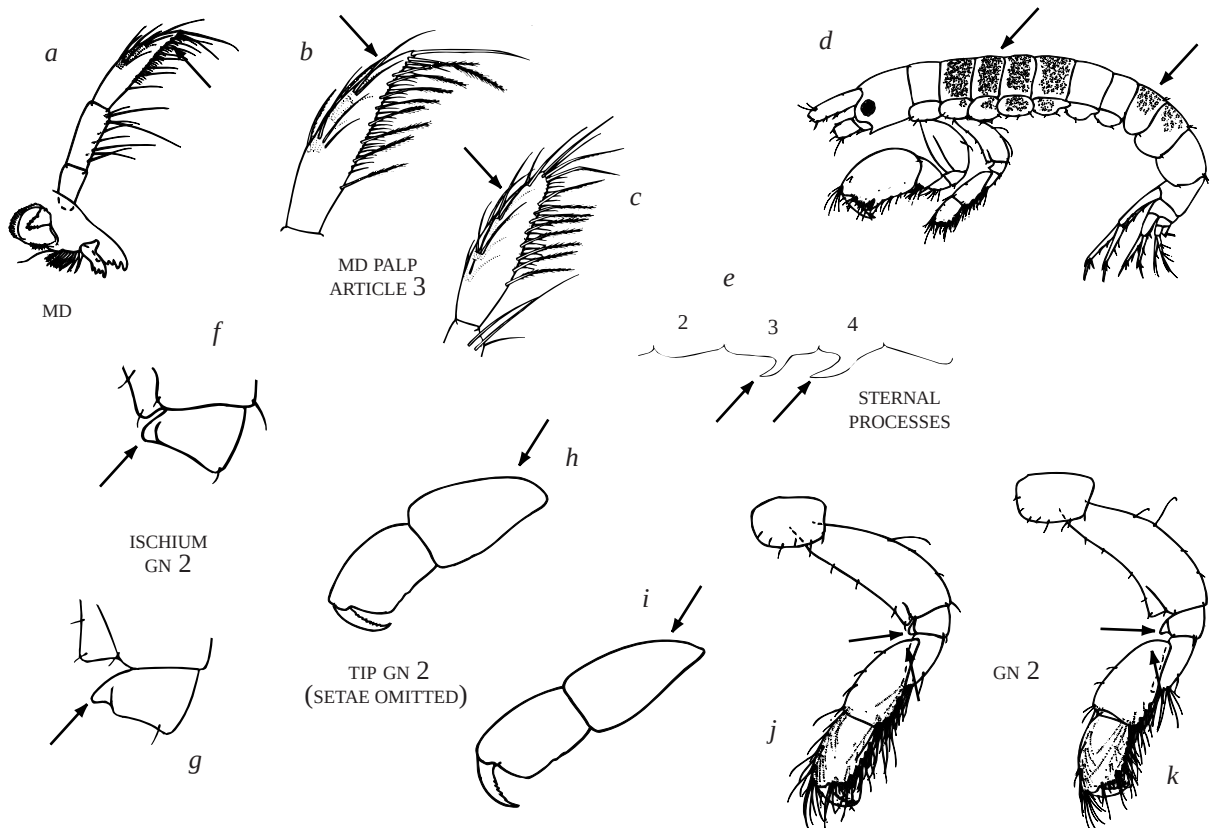


Figure 304.

13. < Antenna 2, peduncle articles 3-4, dorsal margin with short curly setae; uropod 3, inner ramus more than twice length of peduncle *Bemlos dentischium*

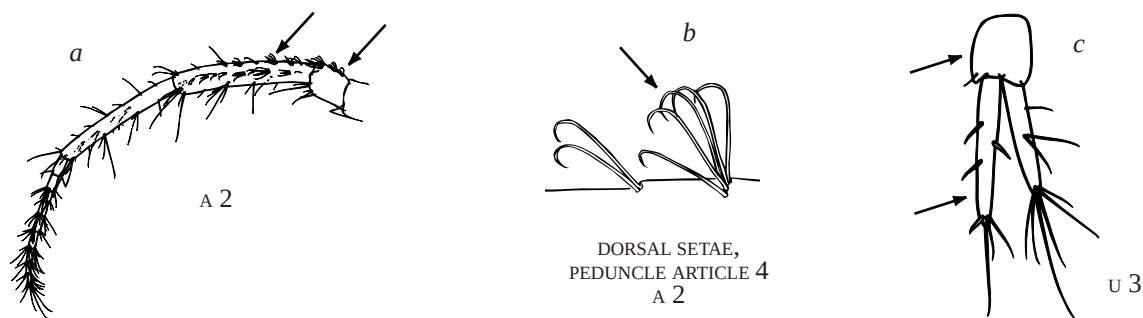


Figure 305.

- < Antenna 2, peduncle articles 3-4, dorsal margin without short curly setae; uropod 3, inner ramus approximately one third longer than peduncle *Bemlos kunkelae*

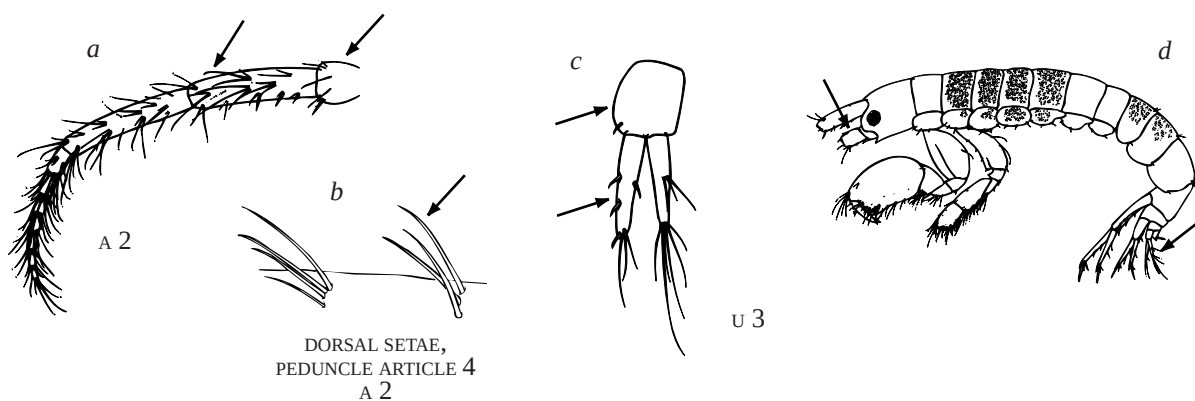


Figure 306.

KEY TO FLORIDA SPECIES OF *BEMLOS* AND *PLESIOLEMBOS* - FEMALES (including *Lembos unifasciatus*)

1. < Gnathopod 1, propodus, palmar margin slightly to moderately sinuous or notched, palmar angle with defining tooth (tooth may be very small) 2

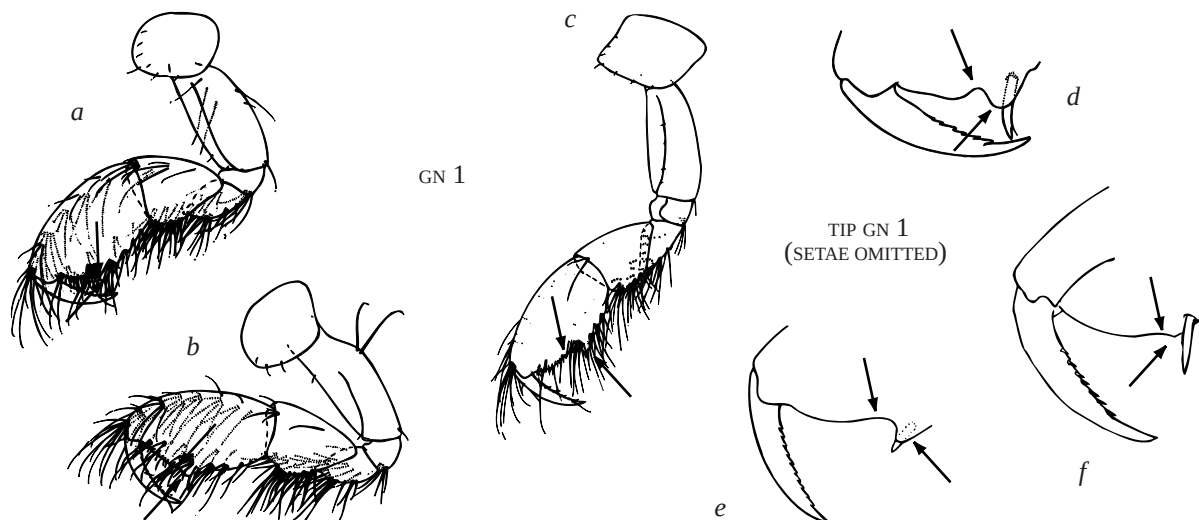


Figure 307.

- < Gnathopod 1, propodus, palmar margin flat, convex or produced medially, palmar angle without defining tooth 6

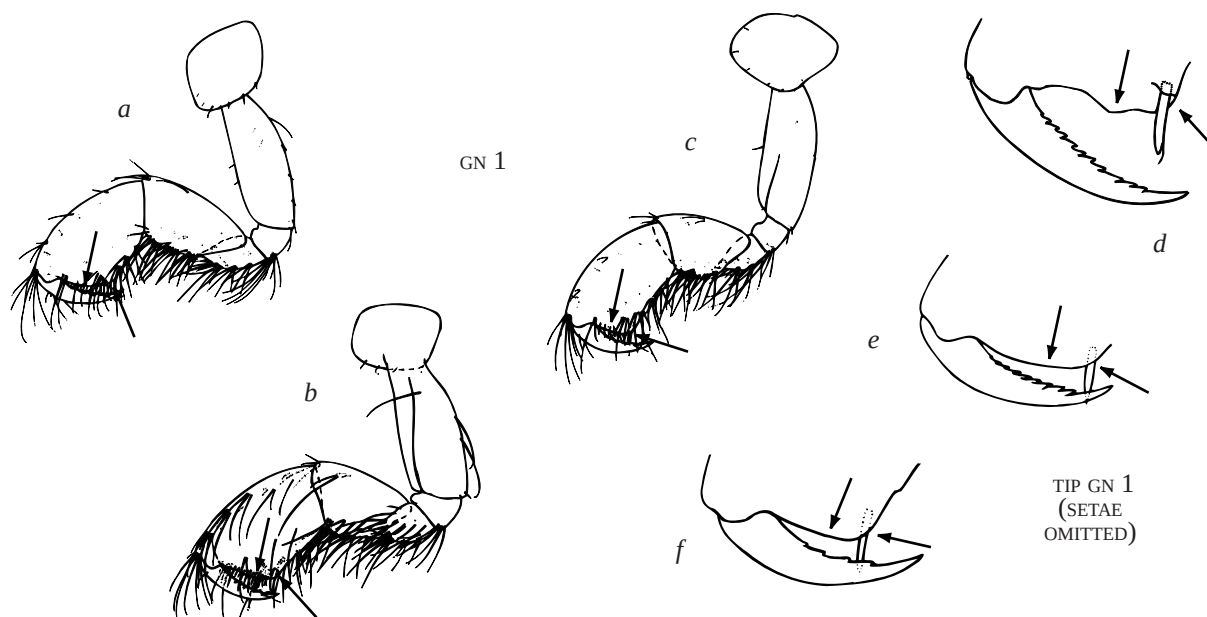


Figure 308.

2. < Gnathopod 1, propodus, palmar margin moderately sinuous or notched, palmar angle with relatively large defining tooth 3

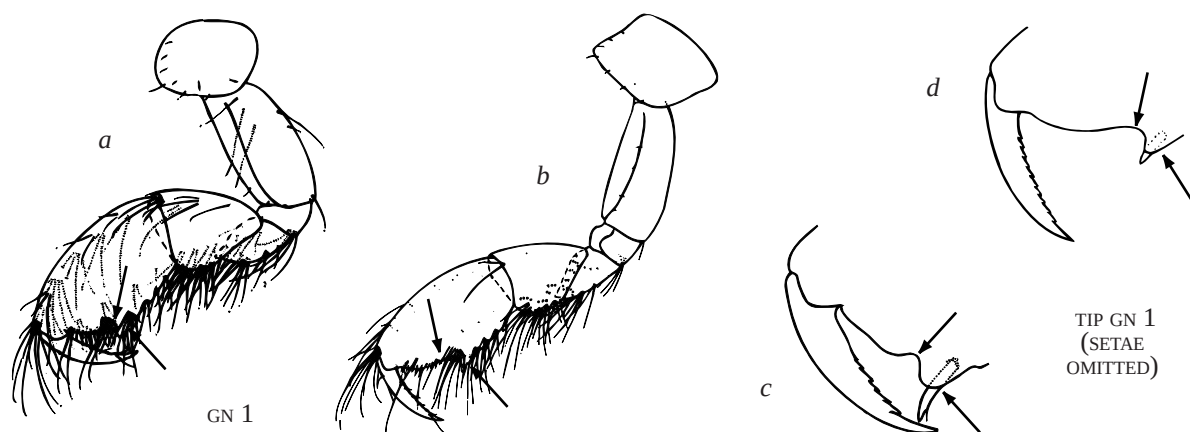


Figure 309.

- < Gnathopod 1, propodus, palmar margin slightly sinuous, palmar angle with very small defining tooth 4

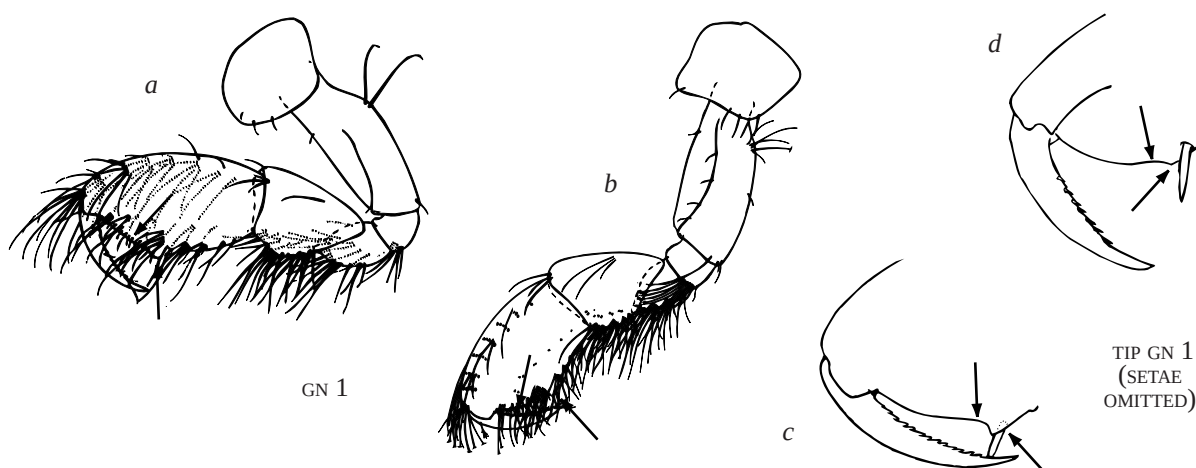


Figure 310.

3. < Head, rostrum relatively short, broad, sides subequal to or shorter than width of base; pigmentation pattern on body diffuse, generally dark on all segments; gnathopod 2, propodus relatively slender, length twice width; uropod 2, peduncle, distoventral process more than two thirds length of peduncle; large species (8-10 mm)..... *Bemlos setosus*

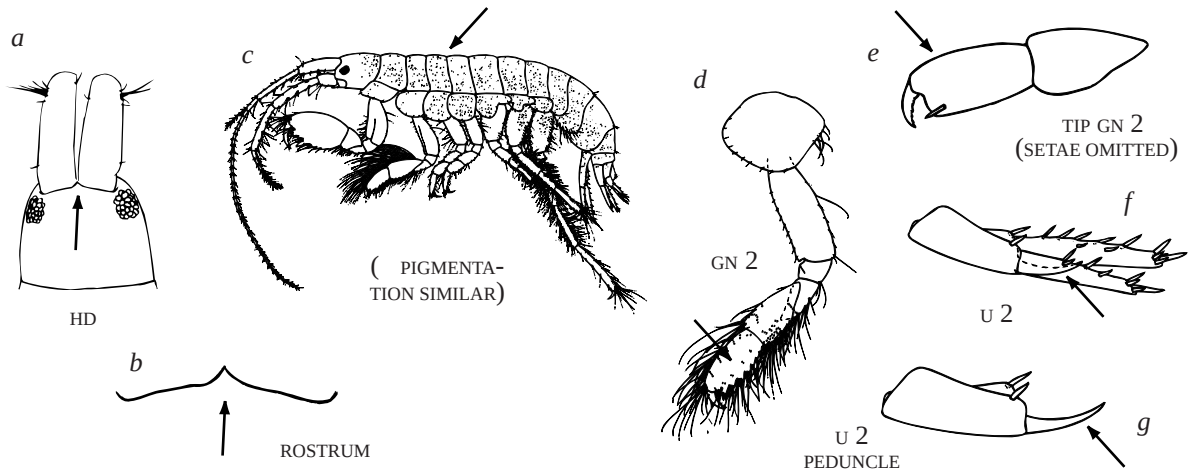


Figure 311.

- < Head, rostrum relatively long, slender, sides longer than width of base; pigmentation pattern on body composed of dorsal pigment bands on pereon segments 2-5 and pleon segment 1 or 1-2; gnathopod 2, propodus relatively stout, length one and three fourths times width; uropod 2, peduncle, distoventral process less than one half length of peduncle; small species (3.5-4.5 mm)..... *Bemlos kunkelae*

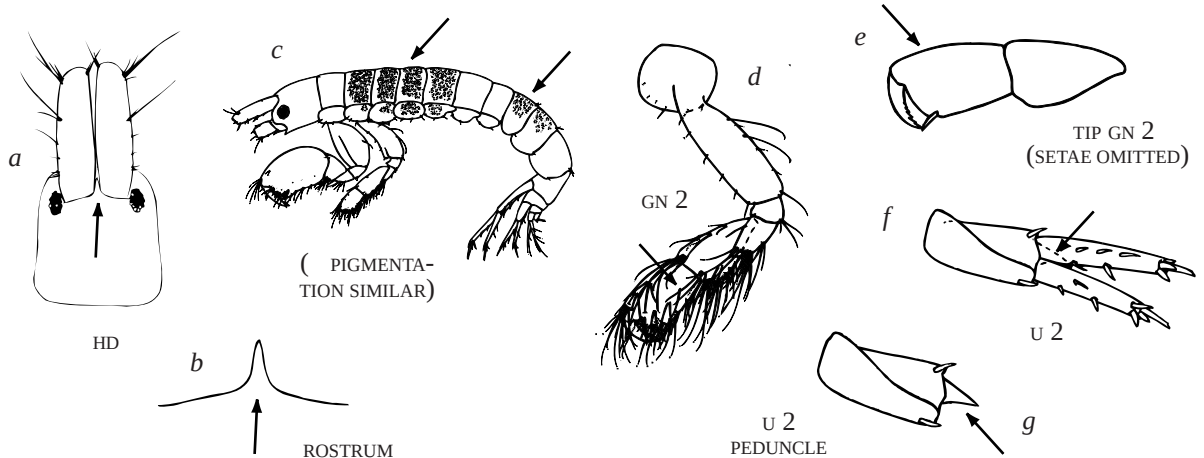


Figure 312.

4. < Gnathopod 2, basis, anterior margin with short setae *Bemlos cf longicornis*

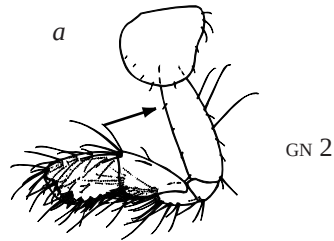


Figure 313.

- < Gnathopod 2, basis, anterior margin with moderately long to long setae 5

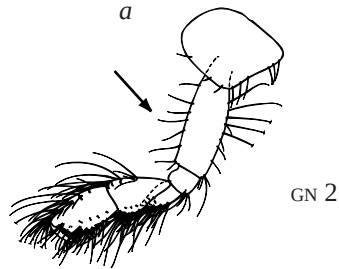


Figure 314.

5. < Gnathopod 1, basis relatively stout, length approximately two and one half times width, posterior margin obtusely angled proximally; peraeopods 3-4, dactyl no more than half length of propodus *Bemlos brunneomaculatus*

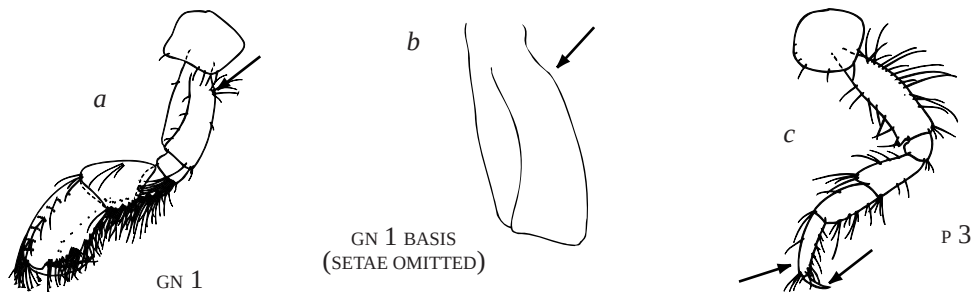


Figure 315.

- < Gnathopod 1, basis relatively slender, length approximately three times width, posterior margin evenly convex; peraeopods 3-4, dactyl subequal to or slightly shorter than propodus ..
..... *Bemlos mackinneyi*

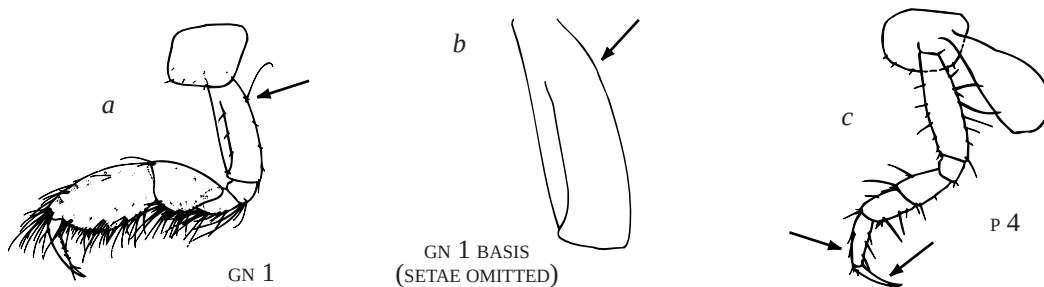


Figure 316.

6. < Gnathopod 1, propodus one and one half times length of carpus 7

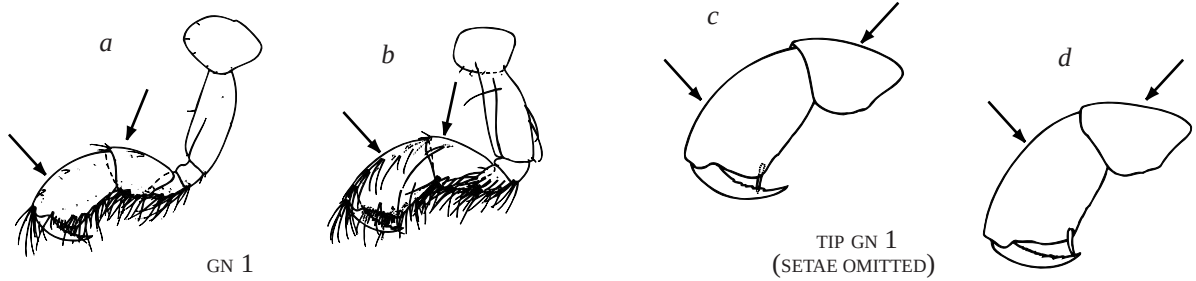


Figure 317.

- < Gnathopod 1, propodus subequal to or twice length of carpus 11

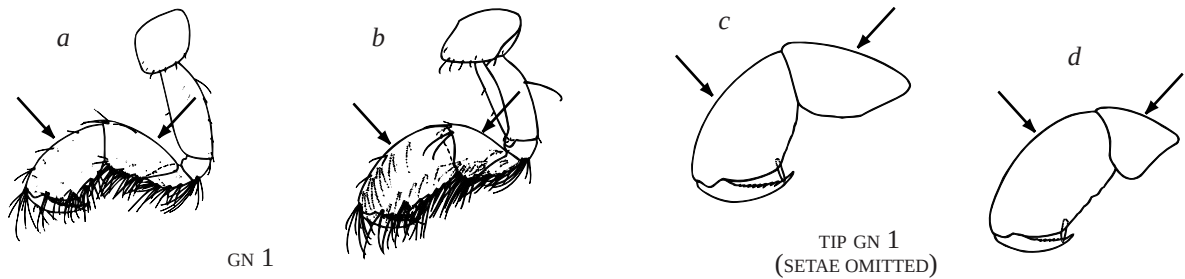


Figure 318.

7. < Pigmentation pattern on body diffuse or composed of dorsal pigment bands on pereon segments 2-5 and at least pleon segment 1; uropod 3, longest ramus at least twice length of peduncle 8

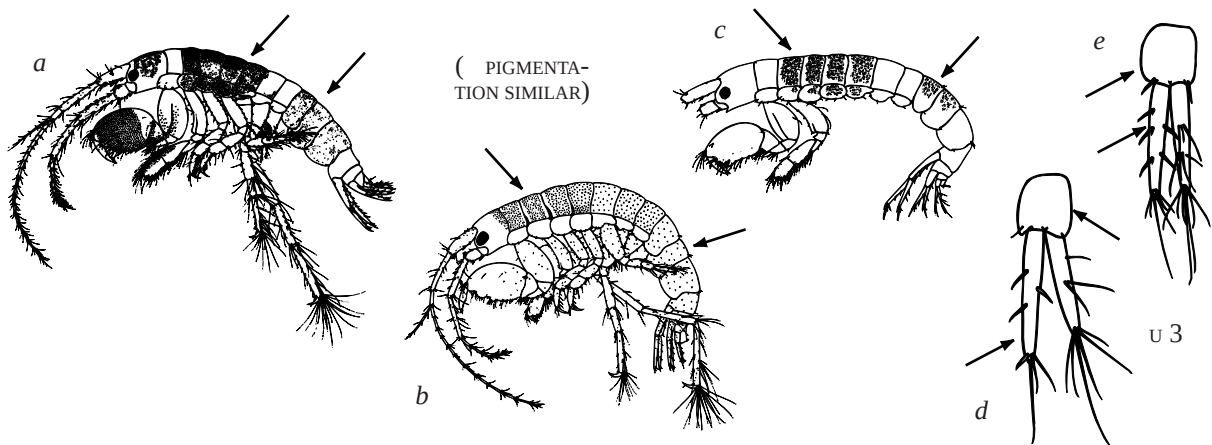


Figure 319.

- < Pigmentation pattern on body composed of dorsal pigment band on pereon segment 5 (occasionally 4-5) only; uropod 3, longest ramus subequal to or slightly longer than peduncle 10

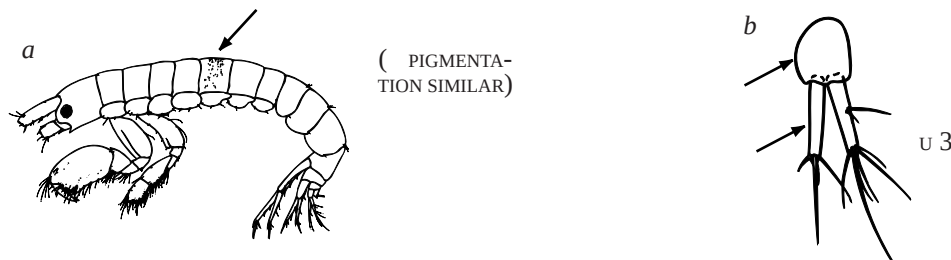


Figure 320.

8. < Pigmentation pattern on body diffuse; mandible, palp article 3 falcate *Plesiolembos rectangularatus*

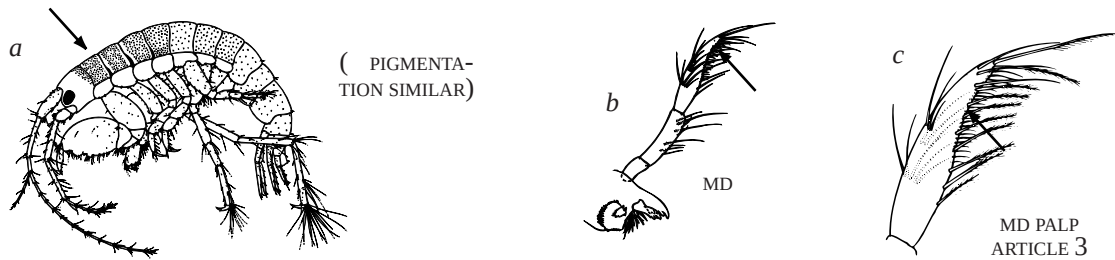


Figure 321.

- < Pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and at least pleon segment 1; mandible, palp article 3 not falcate 9

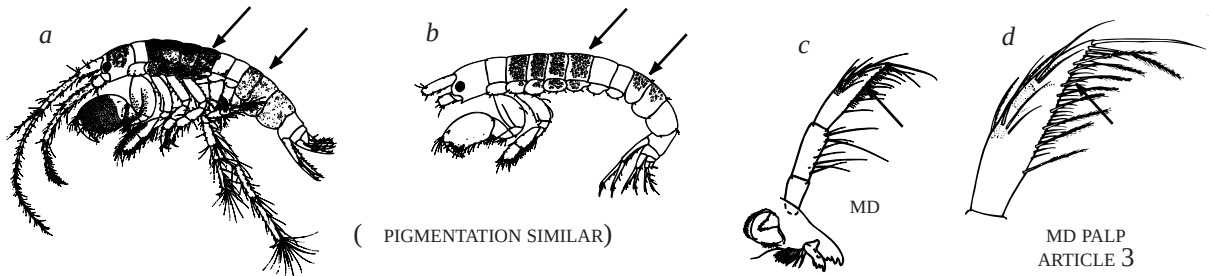


Figure 322.

9. < Head usually with dorsal pigment; gnathopod 1 of large females, propodus, palm produced medially; pleon segments 1-3 with dorsal pigment bands; moderately large species (5-7 mm) *Bemlos unicornis*

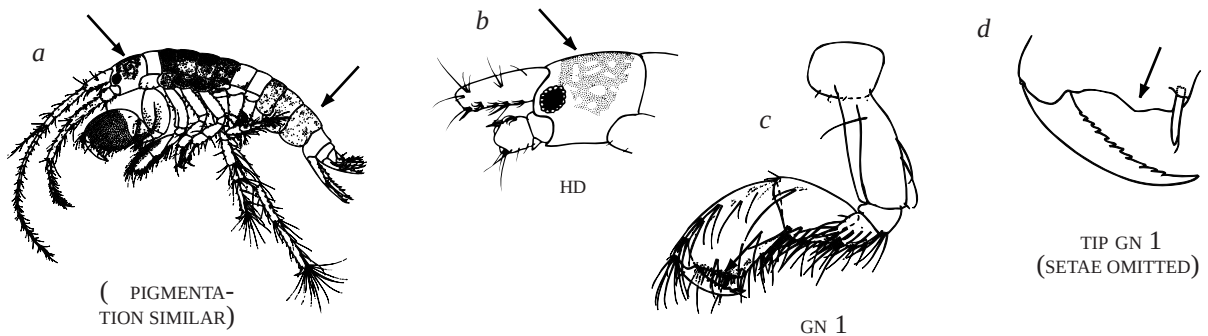


Figure 323.

- < Head usually without dorsal pigment; gnathopod 1 of large females, propodus, palm flat, not produced medially; pleon segments 1 or 1-2 with dorsal pigment bands; small species (3-4 mm) *Bemlos dentischium*

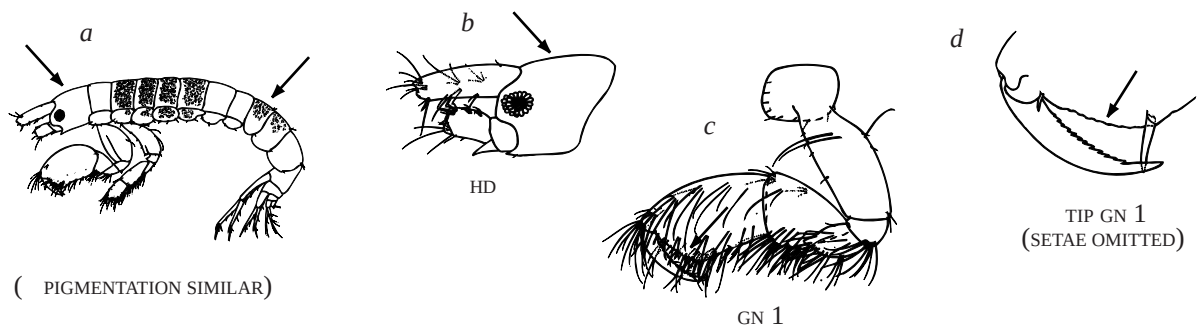


Figure 324.

10. < Uropods 1-2, peduncle with very short distoventral process, length one fifth to one sixth length of peduncle *Lembos unifasciatus reductus*



Figure 325.

- < Uropods 1-2, peduncle with long distoventral process, length slightly less than one half length of peduncle *Lembos unifasciatus unifasciatus*



Figure 326.

11. < Gnathopod 1, propodus twice length of carpus, subrectangular, width subequal to length throughout; uropod 3, inner ramus slightly longer than peduncle *Bemlos minimus*

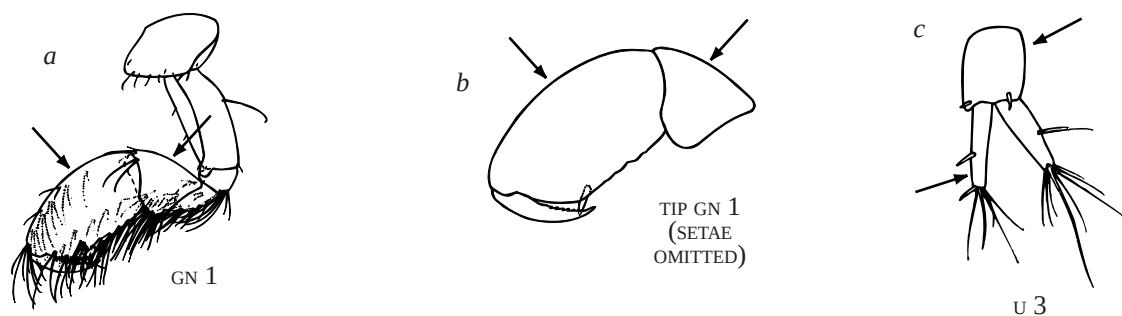


Figure 327.

- < Gnathopod 1, propodus subequal to carpus in length, subtriangular, widest distally; uropod 3, inner ramus much longer than peduncle 12

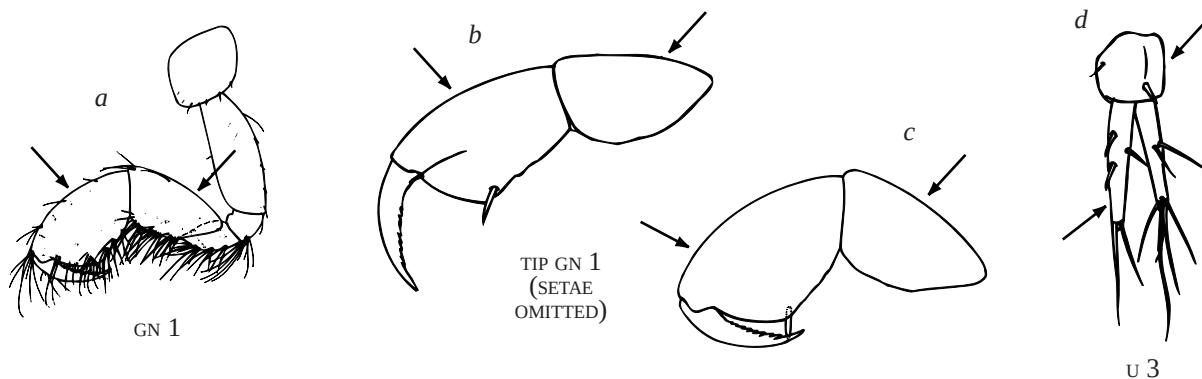


Figure 328.

12. < Body without pigmentation; uropod 1, peduncle, distoventral process short, approximately one fourth length of peduncle; small species (3-4 mm)*Plesiolembos ovalipes*

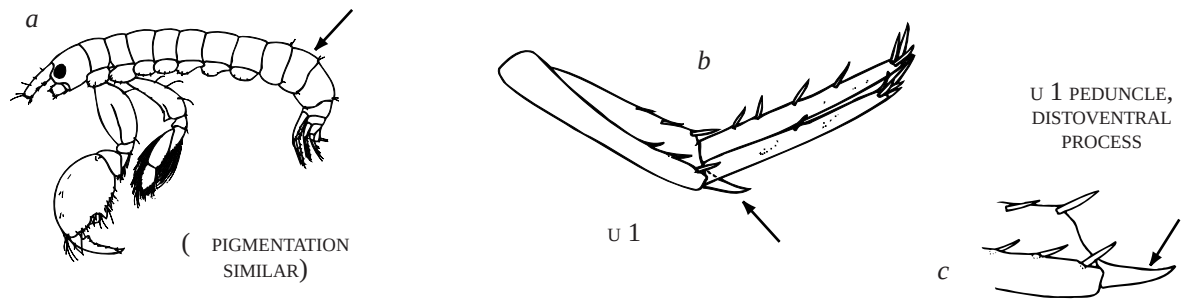


Figure 329.

- < Body with pigmentation; uropod 1, peduncle, distoventral process relatively long, approximately one third length of peduncle; moderately large species (6-7 mm) ...*Bemlos spinicarpus*

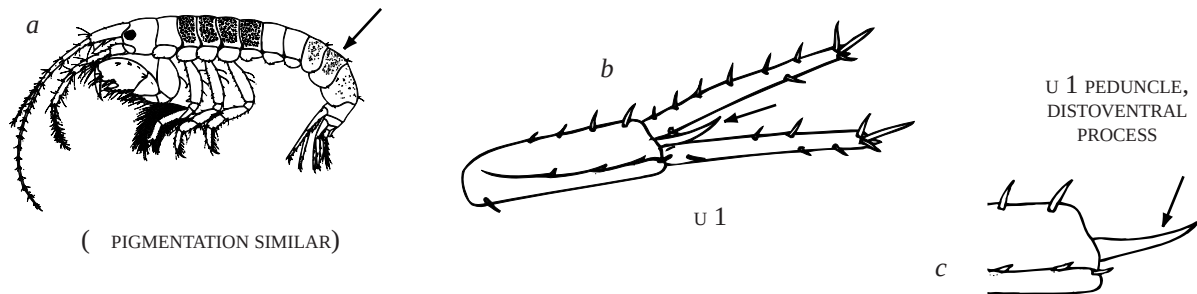


Figure 330.

***Bemlos brunneomaculatus* (Myers, 1977)**
(Figures 288, 315)

Lembos brunneomaculatus Myers, 1977a, pp. 102-111, figs. 117-123.

Bemlos brunneomaculatus: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin without short, curly setae; head usually with dorsal pigment posteriorly, rostrum very short, indistinct; mandible, palp article 3 not falcate; pigmentation pattern on body composed of irregular dorsal pigment bands on peraeon segments 1-7 and pleon segments 1-3; peraeon segments 1-7 of male without mid-ventral sternal processes (segment 2 occasionally with weak process); coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male slightly produced anteroventrally, anteroventral angle subacute; gnathopod 1 of male, basis, anterior margin with long marginal or submarginal setae, not crenulate in large individuals, carpus two thirds length of propodus, not produced posterodistally, propodus stout, length one and one half times width, anteromedial surface densely setose, setae long, posterior margin smooth, without shallow serrations, palm with shallow u-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length approximately two and one half times width, posterior margin obtusely angled proximally, propodus one and one third times length of carpus, subovate, broadest medially, palmar margin slightly sinuous, not produced medially in large individuals, palmar angle with very small defining tooth; gnathopod 2 of male, basis, anterior margin with long marginal or submarginal setae, with relatively broad, weak, subacute distal process, ischium, anterior margin not produced, without process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin lined with long, dense setae, carpus relatively stout, length not more than twice width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately half length; gnathopod 2 of female, basis, anterior margin with long setae, propodus moderately stout, length one and three fourths times width; peraeopods 3-4, basis, merus and carpus of male with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl no more than half length of propodus; peraeopods 5-7 of male strongly setose, peraeopod 5 of male, basis, posterior margin abruptly narrower distally, with median "heel"; uropods 1-2, peduncle, distoventral process long, approximately two thirds length of peduncle; uropod 3, inner ramus approximately one and one half times length of peduncle.

Distribution: East coast of Florida from Sebastian Inlet (Myers, 1977a) to Hutchinson Island (pers. obs.).

Ecology: This species occurs intertidally and in shallow water (0-2 m) at relatively high salinities. On Hutchinson Island, it is found among the algae and other growth on *Phragmatopoma* ("worm rock") reefs exposed at low tide (pers. obs.).

Remarks: *Bemlos brunneomaculatus* is very close to two other Florida species of *Bemlos*, *B. mackinneyi* and *B. cf longicornis*, and females of the three species are particularly difficult to distinguish in the absence of males. The latter two species were originally considered to be subspecies of *B. brunneomaculatus* by Myers (1978) and all are very similar in the morphology and setation of the male first gnathopod and the very short, indistinct rostrum. Males of *B. brunneomaculatus* can be separated from those of *B. cf longicornis* by the presence of long setae on the anteromedial surface of the carpus (lacking in *B. cf longicornis*) and the presence of long setae on the anterior margin of the basis of gnathopods 1-2 (very short setae in *B. cf longicornis*). Males differ from those of *B. mackinneyi* in the longer carpus (two thirds the length of the propodus versus one third to one half the propodus length in *B. mackinneyi*), the relative lengths of the antennae (antenna one longer versus subequal antennae in *B. mackinneyi*) and the length of the dactyl on peraeopods 3-4 (no more than half the length of the propodus versus subequal to the propodus in *B. mackinneyi*). Adult females can often be distinguished from those of *B. cf longicornis* by the longer setae on the anterior margin of the basis of gnathopod 2 and from those of *B. mackinneyi* by the shorter dactyls on

peraeopods 3-4 and the relatively stout basis of gnathopod 1. *Bemlos brunneomaculatus* ranges in size from 4 to 6 mm.

The material of *B. brunneomaculatus* from the Florida Keys briefly described and illustrated by Myers (1977a) appears to be closer to *B. longicornis* (see Myers, 1978) and is referred to herein as *B. cf longicornis*.

See Myers, 1977a (as *Lembos brunneomaculatus*); 1981 (as *Lembos brunneomaculatus brunneomaculatus*).

***Bemlos dentischium* (Myers, 1977)
(Figures 305, 324)**

Lembos dentischium Myers, 1977b, pp. 125-132, figs. 133-137.
Bemlos dentischium: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male unknown; antenna 2 of male, peduncle articles 3-4, dorsal margin with short curly setae; head usually without dorsal pigment (occasionally has a narrow band of pigment dorsally between eyes), rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1 or 1-2; peraeon segments 3-4 of male with mid-ventral sternal process, process on segment 4 slightly larger than that on segment 3; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus one third length of propodus, weakly produced posterodistally, propodus stout, length slightly more than one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow v-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length approximately two and one half times width, posterior margin obtusely angled proximally, propodus one and one half times length of carpus, subrectangular, width subequal to length throughout, palmar margin flat, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, with relatively broad, weak, subacute distal process, ischium, anterior margin produced, forming subacute process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin weakly setose, carpus relatively stout, length not more than twice width, anterior margin moderately downturned proximally, angle not subquadrate, propodus relatively slender, width approximately two thirds length; gnathopod 2 of female, basis, anterior margin with short setae, propodus moderately stout, length one and three fourths times width; peraeopods 3-4, basis, merus and carpus of male with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl no more than half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropod 1, peduncle, distoventral process approximately one third length of peduncle; uropod 2, peduncle, distoventral process slightly less than half length of peduncle; uropod 3, inner ramus more than twice length of peduncle.

Distribution: Offshore from Ft. Lauderdale Beach, Florida; Florida Keys (Myers, 1977b); Cuba (Ortiz, 1989); Bahamas (Myers, 1977b).

Ecology: *Bemlos dentischium* occurs among corals, sponges and algae growing on hard substrates or sand bottoms (Myers, 1977b) and has also been found on artificial sponge (Myers, 1977b) or reef habitats (Judy Robinson, pers. com.). It occurs at depths ranging from 1 to 9 m.

Remarks: When dealing with fresh material, *B. dentischium* is most easily separated from the majority of other species of *Bemlos* and *Plesiolembos* by its pigmentation pattern. Only five other species (*Lembos unifasciatus* [both subspecies], *B. minimus*, *B. spinicarpus* [both subspecies], *B. unicornis* and *B. kunkelae*) have a pattern consisting of dorsal bands of pigment on the one or more of the peraeon and pleon segments. The pattern in *B. dentischium* is composed of dark pigment bands on peraeon segments 2-5 and pleon segments 1 or 1-2 and there is no dorsal pigment on the head. *Lembos unifasciatus*, by comparison, has only a single band on peraeon segment 5 (occasionally 4-5), while *B. minimus* has weak pigment bands on the head and peraeon segments 3-4 and a diffuse dorsal spot on peraeon 6. *Bemlos spinicarpus* and *B. unicornis* are more similar to *B. dentischium*, but are somewhat more heavily banded; the former species has dorsal bands on peraeon segments 2-5 and pleon segments 1-3 and the latter is the same (although somewhat darker) with the

addition of dorsal pigment on the head. The pigmentation pattern of *B. kunkelae* is virtually identical to that of *B. dentischium* and these two species must be separated based on morphological characters. Males of these two species are most easily distinguished by the relative lengths of the inner ramus and peduncle of uropod 3 (inner ramus more than twice the length of the peduncle in *B. dentischium* versus one third longer than the peduncle in *B. kunkelae*). Females are most easily separated by the shape of the propodus of gnathopod 1 (palm flat or slightly convex, without a defining tooth at the palmar angle in *B. dentischium* versus palm moderately sinuous or notched, with a relatively large defining tooth in *B. kunkelae*).

In addition to the above mentioned pigmentation patterns, the anterior surface of the upper lip is often heavily pigmented in *B. dentischium* and *B. kunkelae*; however, unlike *B. mackinneyi*, the lower lip is usually unpigmented and there is no narrow vertical stripe of pigment near the midpoint of the mouthpart bundle.

If no pigmentation is present (or if it is very faint), male *B. dentischium* can be distinguished from those of other species by a combination of a sparsely setose anterior margin of the carpus and propodus of gnathopod 2; a moderately downturned proximal anterior margin of the carpus of gnathopod 2; a well-developed, acute anterior process on the ischium of gnathopod 2; and the inner ramus of uropod 3 twice the length of the peduncle. Weakly pigmented females can be identified by a combination of the flat palmar margin and lack of a defining tooth on the propodus of gnathopod 1; the non-falcate mandibular palp article 3; having the propodus of gnathopod 1 one and one half times the carpus in length; having the inner ramus of uropod 3 twice the length of the peduncle; and their relatively small size (3-4 mm).

See Myers, 1977b (as *Lembos dentischium*); 1981 (as *Lembos dentischium*).

***Bemlos kunkelae* (Myers, 1977)
(Figures 306, 312)**

Autonoe longipes: Kunkel, 1910, pp. 78-80, fig. 30 (not *Autonoe longipes* of Bruzelius, 1859, p. 28).

Lembos kunkelae Myers, 1977b, pp. 132-139, figs. 138-142.

Bemlos kunkelae: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin without short curly setae; head usually without dorsal pigment (occasionally has narrow band of dorsal pigment between eyes), rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1 or 1-2; peraeon segments 3-4 of male with mid-ventral sternal process, process on segment 4 slightly larger than that on segment 3; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus one third length of propodus, weakly or not produced posterodistally, propodus stout, length slightly more than one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow v-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length approximately twice width, posterior margin obtusely angled proximally, propodus one and one half times length of carpus, subrectangular, width subequal to length throughout, palmar margin moderately sinuous or notched, not produced medially in large individuals, palmar angle with relatively large defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, without distal process, ischium, anterior margin produced, forming subacute process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin weakly setose, carpus relatively stout, length not more than twice width, anterior margin moderately downturned proximally, angle not subquadrate, propodus relatively slender, width approximately two thirds length; gnathopod 2 of female, basis, anterior margin with short setae, propodus moderately stout, length one and three fourths times width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl no more than half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process approximately one third length of peduncle; uropod 3, inner ramus approximately one and one third times length of peduncle.

Distribution: Offshore from Ft. Lauderdale Beach, Florida; Biscayne Bay (Myers, 1977b); Florida Keys (Myers, 1977b); Bermuda (Kunkel, 1910); Cuba (Ortiz and Lalana, 1996).

Ecology: *Bemlos kunkelae* occurs among corals, sponges and algae growing on hard substrates or sand bottoms (Myers, 1977b), on red mangrove roots (Myers, 1977b) and it has also been found on artificial sponge (Myers, 1977b) or reef habitats (Judy Robinson, pers. com.). This species occurs at depths ranging from 2 to 9 m.

Remarks: As in *B. dentischium*, which has an identical banded pigmentation pattern to that of *B. kunkelae*, fresh material of the latter species can be distinguished from that of other *Bemlos* and *Plesiolembos* species with dorsal banding relatively easily (see **Remarks** section for *B. dentischium*). *Bemlos kunkelae* males can be separated from those of *B. dentischium* by the shorter inner ramus of uropod 3, which is one third longer than the peduncle in this species (twice as long as the peduncle in *B. dentischium*). In addition, although males of both species have a process on the anterior margin of the ischium of gnathopod 2, it is somewhat less well-developed in *B. kunkelae* than in *B. dentischium*. Females of *B. kunkelae* differ from those of *B. dentischium* by having a sinuous palmar margin with a relatively large defining tooth at the palmar angle on the propodus of gnathopod 1 (flat palm with no defining tooth in *B. dentischium*). *Bemlos kunkelae* is also similar to *B. dentischium* in

frequently having the anterior surface of the upper lip heavily pigmented and the lower lip unpigmented, thus lacking the narrow vertical stripe of pigment near the midpoint of the mouthpart bundle that is present in *B. mackinneyi*.

In unpigmented material, male *B. kunkelae* can be distinguished from those of other species by the combination of a sparsely setose anterior margin of the carpus and propodus of gnathopod 2; a moderately downturned proximal anterior margin of the carpus of gnathopod 2; a moderately well-developed, subacute anterior process on the ischium of gnathopod 2; and having the inner ramus of uropod 3 one third longer than the peduncle. Unpigmented females can be identified by a combination of the moderately sinuous palmar margin with strong defining tooth on the propodus of gnathopod 1; the distinct rostrum; having the distoventral process on the peduncle of uropod 2 less than half the length of the peduncle; and their relatively small size (3-4 mm).

See Kunkel, 1910 (as *Autonoe longipes*); Myers, 1977b (as *Lembos kunkelae*); 1981 (as *Lembos kunkelae*).

***Bemlos cf longicornis* (Myers, 1978)
(Figures 285, 313)**

Lembos brunneomaculatus Myers, 1977a (in part), p. 111, fig. 123.

Lembos brunneomaculatus longicornis Myers, 1978, pp. 190-194, figs. 158-160.

Bemlos longicornis: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male subequal to antenna 2 in length; antenna 2 of male, peduncle articles 3-4, dorsal margin without short curly setae (antenna 1-2 of male unknown in Florida material); head usually without dorsal pigment, rostrum very short, indistinct; mandible, palp article 3 not falcate; pigmentation pattern on body weak or absent; peraeon segments 1-7 of male without mid-ventral sternal processes (segment 2 occasionally with weak process); coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male slightly produced anteroventrally, anteroventral angle subacute; gnathopod 1 of male, basis, anterior margin with very short setae, not crenulate in large individuals, carpus two thirds length of propodus, not produced posterodistally, propodus stout, length one and one half times width, anteromedial surface densely setose, setae long, posterior margin smooth, without shallow serrations, palm with shallow u-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length approximately two and one half times width, posterior margin obtusely angled proximally, propodus one and one third times length of carpus, subovate, broadest medially, palmar margin slightly sinuous, not produced medially in large individuals, palmar angle with very small defining tooth; gnathopod 2 of male, basis, anterior margin with very short setae, without distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin lined with long dense setae (less dense and distal only on carpus), carpus stout, length less than twice width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately half length; gnathopod 2 of female, basis, anterior margin with very short setae, propodus moderately stout, length one and three fourths times width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl no more than half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median “heel”; uropods 1-2, peduncle, distoventral process long, approximately two thirds length of peduncle; uropod 3, inner ramus approximately one and one half times length of peduncle.

Distribution: Puerto Rico (Myers, 1978); Florida Keys (Myers, 1977a; 1978); Caribbean coast of Colombia (Ortiz and Lemaitre, 1994).

Ecology: *Bemlos cf longicornis* appears to be a very shallow-water species, occurring among sponges, coral and algae at depths of 0 to 2 m (Myers, 1977a).

Remarks: *Bemlos cf longicornis* is very similar to both *B. brunneomaculatus* and *B. mackinneyi* (see the **Remarks** section under *B. brunneomaculatus*). All three species can be distinguished from other species of *Bemlos* and *Plesiolembos* in Florida waters by the exceptionally short, indistinct rostrum and by the characteristic gnathopod 1 of the male. Males of *B. cf longicornis* can be separated from those of the other two species by the lack of long setae on the anterior margin of the basis of gnathopods 1-2 and by a similar lack of long setae on the anteromedial surface of the carpus of gnathopod 1. Females are more difficult to distinguish, but differ from those of *B. brunneomaculatus* and *B. mackinneyi* in the very short setae on the anterior margin of the basis of gnathopod 2 (long in both of the other species) and, in addition, from those of *B. mackinneyi* in having the dactyls of peraeopods 3-4 only half the length of the propodus (subequal to the propodus in *B. mackinneyi*). *Bemlos cf longicornis* is relatively small, ranging in size from 3 to 5 mm.

See Myers, 1977a (as *Lembos brunneomaculatus* from Monroe County, Florida); 1978.

***Bemlos mackinneyi* (Myers, 1978)
(Figures 287, 316)**

Lembos brunneomaculatus mackinneyi Myers, 1978, pp. 194, 196, fig. 162.

Bemlos mackinneyi: Myers, 1988, p. 188.

Bemlos sp. A: Rakocinski et al., 1993, p. 102.

Bemlos brunneomaculatus mackinneyi: Rakocinski et al., 1996, p. 350.

Regional diagnosis: Antenna 1 of male subequal to antenna 2 in length; antenna 2 of male, peduncle articles 3-4, dorsal margin without short curly setae; head usually with dorsal pigment, especially posteriorly, rostrum very short, indistinct; mandible, palp article 3 not falcate; pigmentation pattern on body mottled; peraeon segment 2 only of male with weak mid-ventral sternal process; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin with long marginal or submarginal setae, not crenulate in large individuals, carpus one third to one half length of propodus, not produced posterodistally, propodus slender, length twice width, anteromedial surface densely setose, setae long, posterior margin smooth, without shallow serrations, palm with shallow u-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively slender, length approximately 3 times width, posterior margin evenly convex, propodus one and one half times length of carpus, subovate, broadest medially, palmar margin slightly sinuous, not produced medially in large individuals, palmar angle with very small defining tooth; gnathopod 2 of male, basis, anterior margin with long marginal or submarginal setae, with relatively broad, weak, subacute distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin lined with long dense setae, carpus moderately stout, length approximately twice width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately half length; gnathopod 2 of female, basis, anterior margin with moderately long setae, propodus moderately stout, length one and three fourths times width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl subequal to or slightly shorter than propodus; peraeopods 5-7 of male strongly setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process long, approximately two thirds length of peduncle; uropod 3, inner ramus approximately one and one half times length of peduncle.

Distribution: Galveston, Texas (Myers, 1978); Dauphin Island, Alabama (Myers, 1981); Perdido Key, Florida (Rakocinski et al., 1993; 1996); West Florida Shelf off Tampa Bay (Myers, 1981); southeastern Gulf of Mexico north of the lower Florida Keys.

Ecology: This species is usually found on sand or mixed sand and shell hash bottoms, sometimes with a layer of silt, at depths of 5-6 m.

Remarks: As mentioned previously, *B. mackinneyi* is very similar to *B. brunneomaculatus* and *B. cf longicornis* (see the **Remarks** sections for these two species), but it can be distinguished from both species by having the dactyl of peraeopods 3-4 subequal to the propodus in length (dactyl half the length of the propodus in *B. brunneomaculatus* and *B. cf longicornis*). In addition, males of *B. mackinneyi* differ from those of *B. cf longicornis* by having long setae on the anterior margin of the basis of gnathopods 1-2 and the anterior margin of the carpus of gnathopod 1 (setae very short or lacking in *B. cf longicornis*) and from those of *B. brunneomaculatus* by having the second antenna subequal to the first antenna in length (shorter in *B. brunneomaculatus*) and lacking a "heel" on the posterior margin of the basis of peraeopod 5. The carpus of gnathopod 1 is also shorter relative to the length of the propodus in *B. mackinneyi* males than it is males of the other two species; however, the relative lengths and proportions of the carpus and propodus of gnathopod 1 change developmentally and slightly subadult males of *B. mackinneyi* may have a first gnathopod 1 that approaches that of *B. brunneomaculatus* in shape (i.e. the propodus is less elongate than in adults). Females of the three

species are very difficult to separate in the absence of males, especially if peraeopods 3-4 with their diagnostic long dactyls are absent, but adults of *B. mackinneyi* can sometimes be distinguished by the relatively long setae on the anterior margin of the basis of gnathopod 2 (very short in *B. cf longicornis*) and the relatively slender basis of gnathopod 1 (stouter in *B. brunneomaculatus*).

In addition to the mottled body pigmentation, the lateral margins of the outer lobe and mandibular process on the lower lip are often heavily pigmented in *B. mackinneyi*, resulting in a narrow vertical stripe of dark pigment near the midpoint of the mouthpart bundle. This is sometimes visible even when most of the rest of the pigmentation has faded away.

Bemlos mackinneyi material from the southeastern Gulf of Mexico, north of the lower Florida Keys, differs slightly from specimens occurring in the more northern parts of its range. These southern Gulf specimens tend to be smaller (3-3.5 mm) than those from the northeastern Gulf (5-6 mm), although they are similar in size to those found at Galveston, Texas, the type locality. In addition, southern Florida specimens tend to be somewhat less setose than their northern counterparts and, in particular, they usually have short rather than long setae on the anterior margin of gnathopods 1-2 in both sexes. However, they are otherwise very similar to *B. mackinneyi* material from the northern Gulf.

See Myers, 1978 (as *Lembos brunneomaculatus mackinneyi*); 1981 (as *Lembos brunneomaculatus mackinneyi*).

***Bemlos minimus* (Myers, 1977)
(Figures 291, 327)**

Lembos minimus Myers, 1977a, pp. 111-117, figs. 124-127.
Bemlos minimus: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male slightly longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin without short, curly setae; head usually with weak dorsal pigment, rostrum relatively short, broad, sides subequal to or shorter than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body composed of weak dorsal pigment bands on peraeon segments 3-4 and a large diffuse dorsal spot on peraeon segment 6; peraeon segments 1-7 of male without mid-ventral sternal processes; coxae 1-4 of male, ventral margin with long setae, some setae subequal to or longer than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin with long marginal or submarginal setae, not crenulate in large individuals, carpus slightly less than one half length of propodus, not produced posterodistally, propodus stout, length one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow u-shaped or v-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length slightly more than twice width, posterior margin slightly angled proximally, propodus twice length of carpus, subrectangular, width subequal to length throughout, palmar margin flat or slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin with long marginal or submarginal setae, without distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin lined with long, dense setae, carpus moderately stout, length approximately twice width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately half length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively slender, length twice width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with long, dense setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl no more than half length of propodus; peraeopods 5-7 of male strongly setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropod 1, peduncle, distoventral process approximately half length of peduncle; uropod 2, peduncle, distoventral process long, at least two thirds length of peduncle; uropod 3, inner ramus slightly longer than peduncle.

Distribution: Florida Keys (Myers, 1977a).

Ecology: This species is found among sponges, corals and algae at depths of 1 to 2 m.

Remarks: *Bemlos minimus* is a very small species (3 mm) and the males can immediately be distinguished from those of any other *Bemlos* or *Plesiolembos* species in the area by the presence of very long setae along the ventral margins of coxae 1-4. Females can be identified by a combination of the flat palm and lack of a defining tooth at the palmar angle of the propodus of gnathopod 1, a subrectangular propodus on gnathopod 1 that is twice as long as the carpus, having the inner ramus of uropod 3 only slightly longer than the peduncle, and by their very small size. Pigmentation in this species is distinctive when present, but it tends to be somewhat weak, consisting of dorsal pigment on the head, dorsal bands on peraeon segments 3-4, and a large diffuse dorsal spot on peraeon segment 6.

See Myers, 1977a (as *Lembos minimus*); 1981 (as *Lembos minimus*).

***Bemlos setosus* (Myers, 1978)
(Figures 292, 311)**

Lembos setosus Myers, 1978, pp. 183-191, figs. 153-157.

Bemlos setosus: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin without short, curly setae; head usually with dorsal pigment, rostrum relatively short, broad, sides subequal to or shorter than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body diffuse, generally dark on all segments; peraeon segment 2 of male with mid-ventral sternal process (segments 1 and 3 occasionally with weak process or ridge); coxae 1-4 of male, ventral margin with short setae, all setae much shorter than depth of coxa; coxa 1 of male slightly produced anteroventrally, anteroventral angle subacute; gnathopod 1 of male, basis, anterior margin with long marginal or submarginal setae, not crenulate in large individuals, carpus slightly less than one half length of propodus, not produced posterodistally, propodus stout, length one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow u-shaped or v-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively slender, length approximately two and three fourths times width, posterior margin evenly convex, propodus one and one half times length of carpus, subovate, broadest medially, palmar margin moderately sinuous, not produced medially in large individuals, palmar angle with relatively large defining tooth; gnathopod 2 of male, basis, anterior margin with long marginal or submarginal setae, without distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin lined with long, dense setae, carpus moderately stout, length approximately twice width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately half length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively slender, length twice width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with short to moderately long, sparse setae, merus and carpus of both sexes stout, length slightly greater than width, dactyl approximately two thirds length of propodus; peraeopods 5-7 of male strongly setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropod 1, peduncle, distoventral process slightly less than half length of peduncle; uropod 2, peduncle, distoventral process long, more than two thirds length of peduncle; uropod 3, inner ramus approximately one and one half times length of peduncle.

Distribution: West coast of Florida from Tampa Bay to St. Andrew Bay (Myers, 1978; 1981); Upper Laguna Madre to South Padre Island, Texas (pers. obs.).

Ecology: *Bemlos setosus* occurs in shallow (0-1 m), medium to high salinity waters, usually associated with grassbeds, often occurring intertidally (Myers, 1981).

Remarks: Adult male *B. setosus* are characterized by their relatively large size, moderately dark pigmentation, slightly produced and subacute anteroventral angle on coxa 1, carpus and propodus of gnathopod 1 without long, dense setae on the anteromedial surface, carpus and propodus of gnathopod 2 with long, exceptionally dense setae on the anterior margin, and strongly setose peraeopods 5-7. In addition, the tooth at the palmar angle on gnathopod 1 usually diverges more from the long axis of the propodus than in other species of *Bemlos* or *Plesiolembos*. Adult females of *B. setosus* belong to one of only four species that have a sinuous palmar margin with a defining tooth at the palmar angle on gnathopod 1 (the others are *B. brunneomaculatus*, *B. mackinneyi*, and *B. kunkelae*). *Bemlos setosus* females are generally larger than those of the other three species and, in addition, can be distinguished from *B. brunneomaculatus* and *B. mackinneyi* by the more strongly sinuous palm and larger defining tooth and from *B. kunkelae* by the lack of a distinctly banded pigmentation pattern, the more slender propodus of gnathopod 2, and the longer distoventral process on the peduncle of uropod 2.

Although *B. setosus* is a somewhat larger species (7-10 mm) than *B. mackinneyi* (5-6 mm), subadult and small adult males of the former species can appear fairly similar to males of the latter. Subadult male *B. setosus* are less setose than adults, particularly on the carpus and propodus of gnathopod 2, and thus can resemble males of *B. mackinneyi*, especially as the pigmentation is fairly similar.

However, the propodus of gnathopod 1 in *B. setosus* is much less setose on the anteromedial surface than is that of *B. mackinneyi*, the anterodorsal margin of the propodus is less inflated in *B. setosus*, and the anterior margin of the carpus of gnathopod 1 lacks long setae (many long setae present in *B. mackinneyi*). In addition, coxa 1 of male *B. setosus* tends to be slightly more produced and subacute anteroventrally than does that of *B. mackinneyi*. Subadult and small adult females of these two species can be quite similar as well and although the palm of the propodus of gnathopod 1 is usually less oblique and has a somewhat larger defining tooth in *B. setosus* than in *B. mackinneyi*, this difference is less distinct in subadults than in large adults. However, the palm is generally shorter than the posterior margin of the propodus in *B. setosus* females (subequal to the posterior margin in *B. mackinneyi*). The rostrum in subadults and juveniles of both sexes is somewhat smaller than in adults in *B. setosus*, again approaching the very short rostrum found in *B. mackinneyi*.

As in *B. mackinneyi*, the lateral margins of the outer lobe and mandibular process of the lower lip in *B. setosus* are often pigmented, resulting in a narrow vertical stripe of dark pigment near the middle of the mouthpart bundle. However, in *B. setosus*, there is often an additional diffuse spot of pigment on the body of the mandible, just anterior to the vertical stripe, and the anterior surface of the upper lip is frequently pigmented as well.

See Myers, 1978 (as *Lembos setosus*); 1981 (as *Lembos setosus*).

***Bemlos spinicarpus inermis* (Myers, 1979)**
(Figures 298, 330)

Lembos spinicarpus inermis Myers, 1979a, pp. 237-239, fig.181.

Bemlos spinicarpus inermis: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin with short, curly setae; head usually without dorsal pigment (occasionally present anteriorly), rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1-3; peraeon segments 2-6 of male with mid-ventral sternal processes, processes on segments 3-5 larger than those of segments 2 and 6; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus approximately half length of propodus, weakly produced posterodistally, forming very short, subacute process, propodus stout, length one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin usually smooth, without shallow serrations, palm with deep u-shaped or v-shaped notch, notch extending nearly half length of posterior margin; gnathopod 1 of female, basis relatively slender, length slightly less than three times width, posterior margin evenly convex, propodus subequal to carpus in length, subtriangular, widest distally, palmar margin flat or slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, with slender, acute distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not reaching beyond distal margin of carpus, carpus and propodus, anterior margin lined with long, dense setae, carpus moderately stout, length approximately twice width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately two thirds length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively slender, length twice width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl approximately half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropod 1, peduncle, distoventral process relatively long, approximately one third length of peduncle; uropod 2, peduncle, distoventral process long, more than two thirds length of peduncle; uropod 3, inner ramus approximately one and three fourths times length of peduncle.

Distribution: Central West Florida Shelf (Myers, 1981).

Ecology: Although specific habitat information is not available for *B. spinicarpus inermis*, the areas where it is found consist mainly of sand and shell hash bottoms with limestone outcroppings supporting a growth of sponges, corals, bryozoans and algae. In some areas these are relatively sparse; in others they are abundant. In addition, a layer of fine silt is often present. Depths range from 6 to 73 m (Myers, 1981; Joyce and Williams, 1969).

Remarks: The subspecies *Bemlos spinicarpus inermis* is very similar to the nominate subspecies, *B. spinicarpus spinicarpus*, with males differing only in the weakly posteroventrally produced carpus of the first gnathopod (very strongly produced and acute in *B. s. spinicarpus*), the stronger, acute anteroventral process on the basis of gnathopod 2 (weaker and subacute in *B. s. spinicarpus*), and the more slender carpus and propodus of gnathopod 2 (relatively stout in *B. s. spinicarpus*). Females of *B. spinicarpus spinicarpus* and *B. spinicarpus inermis* are indistinguishable.

Members of both subspecies can be usually distinguished from other *Bemlos* and *Plesiolembos* species by pigmentation pattern in fresh material. They are most similar to *B. unicornis*, *B. dentischium* and *B. kunkelae* in that regard; however, they differ from the former in the lack of

posterior dorsal pigmentation on the head, although a narrow band of pigment is occasionally present between the eyes, and have somewhat weaker pigmentation on the body (the dorsal pigmentation on the head is much more extensive and that on the body is often quite dark in *B. unicornis*). *Bemlos dentischium* and *B. kunkelae* are similar to *B. spinicarpus* in lacking dorsal pigment on the head, but they also lack pigment on pleon segment 3 (pigmentation usually present on pleon segment 3 in *B. spinicarpus*).

Males of both *B. spinicarpus inermis* and *B. spinicarpus spinicarpus* can be separated from all other species in the region by the shape of the palmar notch on the propodus of gnathopod 1. In both subspecies, it is very deep, reaching nearly halfway along the posterior margin of the propodus, while in other species it is much shallower. Females of *B. spinicarpus* differ from those of all other species except *Plesiolembos ovalipes* in the distinctly subtriangular propodus of gnathopod 1, although this article may be weakly subtriangular in *B. unicornis*, *Lembos unicornis* (both subspecies) and *P. rectangulatus*. *Bemlos spinicarpus* females differ from those of *P. ovalipes* in pigmentation (pigmentation lacking in *P. ovalipes*), size (6-7 mm versus 3-4 mm in *P. ovalipes*), and the length of the distoventral process on the peduncle of uropod 1 (one third the length of the peduncle versus one fourth the length of the peduncle in *P. ovalipes*).

See Myers, 1979a (as *Lembos spinicarpus inermis*); 1981 (as *Lembos spinicarpus inermis*).

***Bemlos spinicarpus spinicarpus* (Pearse, 1912)**
(Figures 297, 330)

Lembopsis spinicarpus Pearse, 1912, pp. 372-373, fig. 4.

Lembos spinicarpus: Myers, 1979a, pp. 232-237, figs. 178-180.

Bemlos spinicarpus inermis: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin with short, curly setae; head usually without dorsal pigment, rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1-3; peraeon segments 3-6 of male with mid-ventral sternal processes, processes on segments 4-5 larger than those of segments 3 and 6; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus slightly more than one half length of propodus, strongly produced posterodistally, forming elongate, acute process, propodus stout, length one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin usually smooth, without shallow serrations (occasionally serrate in large males), palm with deep u-shaped or v-shaped notch, notch extending nearly half length of posterior margin; gnathopod 1 of female, basis relatively slender, length slightly less than three times width, posterior margin evenly convex, propodus subequal to carpus in length, subtriangular, widest distally, palmar margin flat or slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, without slender, acute distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not reaching beyond distal margin of carpus, carpus and propodus, anterior margin lined with long, dense setae, carpus moderately stout, length approximately twice width, anterior margin evenly convex, not downturned proximally, propodus relatively stout, width approximately three fourths length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively slender, length twice width; peraeopods 3-4, basis, merus and carpus of male, anterior margin with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl approximately half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropod 1, peduncle, distoventral process relatively long, approximately one third length of peduncle; uropod 2, peduncle, distoventral process long, more than two thirds length of peduncle; uropod 3, inner ramus approximately one and three fourths times length of peduncle.

Distribution: Biscayne Bay, Florida Keys, Bahamas (Pearse, 1912; Shoemaker, 1935; Myers, 1979a; 1981); Puerto Rico (Shoemaker, 1935).

Ecology: *Bemlos spinicarpus spinicarpus* occurs in relatively shallow water (1-4 m), usually among algae or seagrasses on somewhat muddy or shelly bottoms.

Remarks: The subspecies *B. spinicarpus spinicarpus* is very similar to *B. spinicarpus inermis* and differences between males of the two subspecies are described in the **Remarks** section for the latter. As mentioned previously, females of *B. spinicarpus spinicarpus* and *B. spinicarpus inermis* are indistinguishable.

Adult males of *B. spinicarpus spinicarpus* can immediately be separated from those of all other Florida species of *Bemlos* and *Plesiolembos* by the presence of the elongate, acute posterodistal process on the carpus of gnathopod 1. This process is evident even in very small subadult males and although it is greatly reduced in these spmnns, it is still larger than that of *B. spinicarpus inermis* males. In addition, the merus of gnathopod 1 in large males of *B. spinicarpus spinicarpus* often has a small, acute posterodistal process and dactyl is broad and flattened, almost spatulate, except that the

tip remains acute. Other differences between males and females of both subspecies of *B. spinicarpus* and those of other species are discussed in the **Remarks** section for *B. spinicarpus inermis*.

Bemlos spinicarpus spinicarpus is a common, relatively large species (6-10 mm) and often occurs together with *B. unicornis*.

See Pearse, 1912 (as *Lembopsis spinicarpus*); Myers, 1979a (as *Lembos spinicarpus*); 1981 (as *Lembos spinicarpus*); Thomas, 1993.

***Bemlos unicornis* (Bynum and Fox, 1977)
(Figures 295, 323)**

Microdeutopus anomalus: Kunkel, 1910, pp. 76-78, fig. 29 [not *Gammarus anomalus* Rathke, 1843, pp. 63-65, pl. 4, fig. 7]
Lembos unicornis Bynum and Fox, 1977, pp. 23-28, figs. 15-16.
Bemlos unicornis: Myers, 1988, p. 188.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin with short, curly setae; head usually with dorsal pigment, rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 not falcate; pigmentation pattern on body composed of dorsal pigment bands on peraeon segments 2-5 and pleon segments 1-3; peraeon segments 2-4 of male with mid-ventral sternal processes, process on segment 2 larger than those on segments 3-4; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, crenulate in large individuals, carpus approximately one third length of propodus, weakly or not produced posterodistally, propodus stout, length one and one half times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow u-shaped or v-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length slightly more than twice width, posterior margin evenly convex, propodus one and one half times length of carpus, weakly subtriangular, slightly broader distally, palmar margin flat or slightly convex, produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, without slender, acute distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not reaching beyond distal margin of carpus, carpus and propodus, anterior margin lined with long, dense setae, carpus relatively slender, length two and one half times width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately half length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively stout, length one and two thirds times width; peraeopods 3-4, basis, merus and carpus of male with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl slightly more than half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process relatively long, slightly less than one third length of peduncle; uropod 3, inner ramus twice length of peduncle.

Distribution: North Carolina (Bynum and Fox, 1977); Bermuda (Shoemaker, 1935); Bahamas (Myers, 1977b); Puerto Rico (Shoemaker, 1935; Myers, 1977b); Cuba (Ortiz and Lalana, 1996); Biscayne Bay, Florida Keys (Myers, 1977b); central West Florida Shelf (Myers, 1981); Tarpon Springs, Florida (pers. obs.); Laguna de Términos, Mexico (Ledoyer, 1986); Belize (Thomas, 1993); Brazil (Serejo, 1998; Wakabara and Serejo, 1998).

Ecology: *Bemlos unicornis* is found among algae, sponges or seagrasses, often on somewhat muddy or shelly bottoms, at depths ranging from 0.3 to 18 m (Myers, 1977b; 1981; pers. obs.). It occurs in fouling growth on hard substrates and also in artificial sponge habitats (Myers, 1977b), and, in addition, it is sometimes collected in nocturnal plankton tows (Bynum and Fox, 1977).

Remarks: The pigmentation pattern in *B. unicornis*, composed of dorsal pigment bands on the head, peraeon segments 2-5 and pleon segments 1-3, is diagnostic and is frequently retained in preserved material. The presence of dark dorsal pigment on the head posterior to the eyes separates this species from most other Florida shallow-water species with dorsal pigment bands on the body (i.e. *B. dentischium*, *B. kunkelae*, *B. spinicarpus*, *Lembos unifasciatus*). The exception is *B. minimus*; however, in *B. minimus*, the head pigment is much weaker, the pigmentation on the body (also weaker) consists of dorsal bands on peraeon segments 3-4 and a diffuse spot on peraeon segment 6, and there is no pigment on the pleon. In addition to the pigmentation mentioned above, *B. unicornis* often has

dark pigment on the body of the mandible and on the anterior surface of the upper lip, resulting in the anterior part of the mouthpart bundle appearing quite dark.

Morphologically, males of *B. unicornis* can be recognized by the strongly setose anterior margin of the carpus and propodus of gnathopod 2 (weakly setose in *B. dentischium*, *B. kunkelae*, *Lembos unifasciatus*, and *Plesiolembos rectangulatus*), the sparsely setose anteromedial surface of the propodus of gnathopod 1 (densely setose in *B. brunneomaculatus*, *B. cf longicornis* and *B. mackinneyi*), the relatively long slender rostrum and the lack of long setae on the anterior margin of the basis of gnathopods 1-2 (short rostrum and short setae in *B. minimus* and *B. setosus*), the merus of gnathopod 2 lacking a posterodistal brush of very long setae (long setae present in *P. ovalipes*), and the propodus of gnathopod 2 having a shallow palmar notch (deep notch in *B. spinicarpus*). In addition, the surface of the propodus of gnathopod 1 is usually strongly tuberculate (may be weakly tuberculate in other species) and, unlike other species, large adult males of *B. unicornis* have a crenulate anterior margin on the basis of gnathopod 2. Females are distinguished by the flat or medially produced palm without a defining tooth at the palmar angle on gnathopod 1 (sinuous and with a defining tooth in *B. brunneomaculatus*, *B. cf longicornis*, *B. mackinneyi*, *B. kunkelae*, and *B. setosus*), gnathopod one having the propodus one and one half times the length of the carpus (subequal in *B. minimus*, twice length of carpus in *B. spinicarpus* and *P. ovalipes*), uropod 3 having the inner ramus at least twice the length of the peduncle (subequal to or slightly longer than the peduncle in *L. unifasciatus*), the non-falcate article 3 of the mandibular palp (falcate in *P. rectangulatus*), and the relatively large size (5-7 mm) (3-4 mm in *B. dentischium*). Also, large females of *B. unicornis* are unique in having a medially produced palmar margin on the propodus of gnathopod 1. However, it should be noted that the acute cephalic process from which this species derives its name (Bynum and Fox, 1977) is present in a number of other *Bemlos* and *Plesiolembos* species as well (e.g. *B. spinicarpus*, *B. mackinneyi*, *P. rectangulatus*) and thus is not diagnostic. See Bynum and Fox, 1977 (as *Lembos unicornis*); Myers, 1977b (as *Lembos unicornis*); Myers, 1981 (as *Lembos unicornis*); Thomas, 1993.

Genus *Globosolembos* Myers, 1988

Regional diagnosis: Antenna 1, accessory flagellum moderately well-developed, 3-4-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles slender to moderately stout, well-developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles fused, forming single stout article, article 1 subequal to or longer than remaining flagellar articles combined; head, anteroventral angle strongly produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar surface with primary plate falcate, secondary, tertiary and quaternary plates similar in shape; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male with mid-ventral sternal processes, processes without articulated terminal spine; coxae 1-4 wider than deep, usually contiguous, touching or overlapping (occasionally slightly separated), ventral margin sparsely setose or lacking setae; coxa 1 not produced anteroventrally, anteroventral angle rounded or subquadrate; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus much shorter than propodus, propodus without palmar notch, palmar process present or absent, if present then poorly developed, located at palmar angle, dactyl extending to palmar angle; gnathopod 1 of female, carpus much shorter than propodus, propodus enlarged, similar to that of male in size, very stout, length much less than twice width; gnathopod 2 of both sexes, basis, anterior margin without setae or with relatively sparse short to medium setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, slightly longer than outer ramus, outer ramus slender to very slender, length 5-10 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, at least 1 ramus with marginal setae, outer ramus without minute second article.

Florida species: *G. francanni*, *G. smithi*

KEY TO FLORIDA SPECIES OF *GLOBOSOLEMBOS*

1. < Antenna 2 of male stout, slightly shorter than antenna 1; gnathopod 1 of male, propodus, anterior margin and anteromedial surface with relatively sparse short to moderately long setae, palm well-defined, sinuous, with defining tooth at palmar angle; peraeopods 3-4, carpus, posterior (flexor) margin without spines, propodus, posterior margin with 1 proximal spine *Globosolembos smithi*

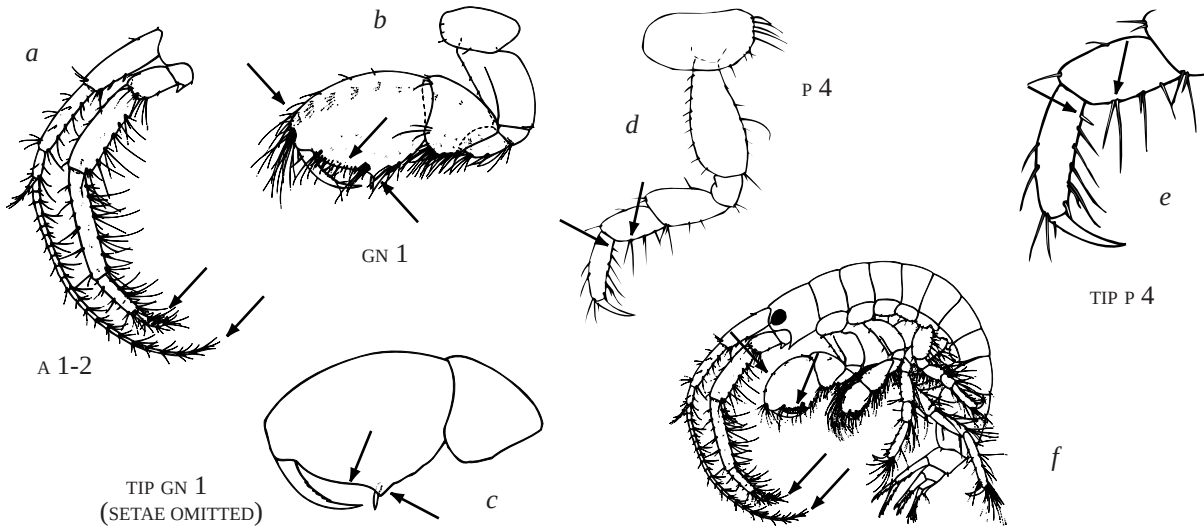


Figure 331.

- < Antenna 2 of male slender, much shorter than antenna 1; gnathopod 1 of male, propodus, anterior margin and anteromedial surface lined with very long, dense setae, palm poorly defined, convex, without defining tooth at palmar angle; peraeopods 3-4, carpus, posterior (flexor) margin with 2-3 spines, propodus, posterior margin with 4-5 spines along entire margin *Globosolembos francanni*

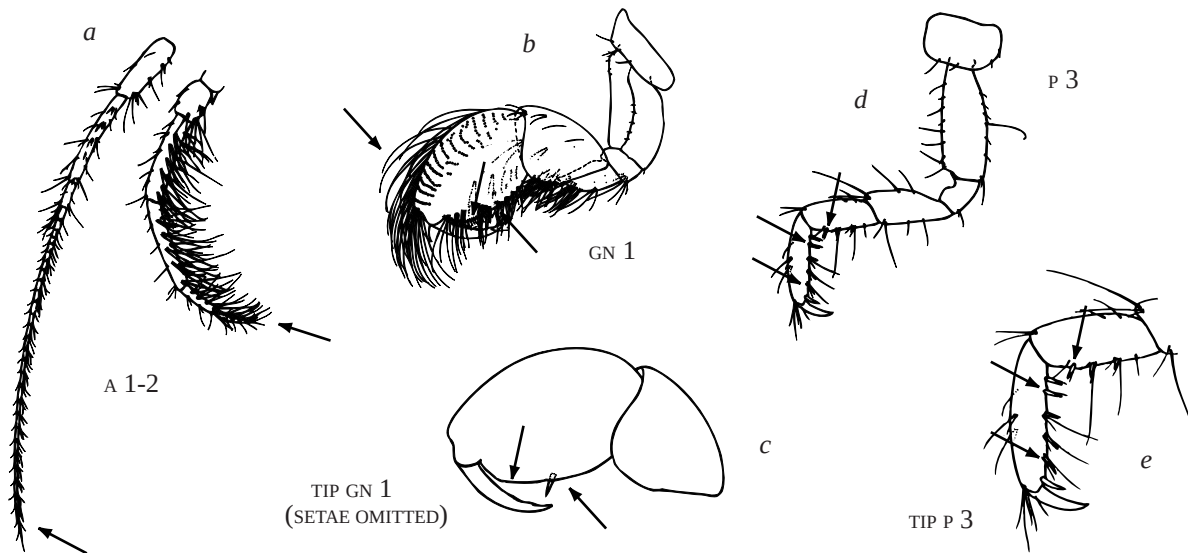


Figure 332.

***Globosolembos francanni* (Reid, 1951)
(Figure 332)**

Lembos francanni Reid, 1951, p. 254, fig. 46.

Lembos (*Bemlos*) *francanni*: Myers, 1968, pp. 1174-1175, fig. 2.

Lembos (*Globosolembos*) *francanni*: Myers, 1983, pp. 343-348, figs. 220-223.

Globosolembos francanni: Myers, 1988, p. 189.

Regional diagnosis: Antenna 2 of male slender, much shorter than antenna 1; gnathopod 1 of male, propodus, anterior margin and anteromedial surface lined with very long, dense setae, palm poorly defined, convex, without defining tooth at palmar angle; peraeopods 3-4, carpus, posterior (flexor) margin with 2-3 spines, propodus, posterior margin with 4-5 spines along entire margin.

Distribution: Western Atlantic: Hutchinson Island, Florida (pers. obs.); Looe Key Reef, Florida (Myers, 1983); Los Testigos, Lesser Antilles (Myers, 1968); eastern Atlantic: Cape Verde Islands (Reid, 1951).

Ecology: *Globosolembos francanni* has only been found intertidally in Florida waters (Myers, 1983; pers. obs.), occurring in deeper waters in the Caribbean and eastern Atlantic (Reid, 1951; Myers, 1968). It is found in high salinity waters on coral and coral rubble bottoms (Reid, 1951; Myers, 1983), as well as on sabellariid ("worm rock") reefs (pers. obs.) at depths ranging from 0 (intertidal) to 40 m.

Remarks: *Globosolembos francanni* is apparently quite rare in Florida waters, but this could be due to its possible confusion with *G. smithi*, a very similar, relatively common species. Males can be immediately separated from those of *G. smithi*, however, by the long anterior marginal setae, convex palm and lack of a defining tooth at the palmar angle of the propodus of gnathopod 1 (relatively short setae and sinuous palm with defining tooth in *G. smithi*) and by the presence of spines on the posterior margin of the carpus (2-3 spines) and propodus (4-5 spines) of peraeopods 3-4 (carpus without spines, propodus with single proximal spine in *G. smithi*). The latter character can also be used to distinguish between females of the two species. The pigmentation pattern is often very weak in both *G. francanni* and *G. smithi*, especially in preserved material, but it appears to differ slightly between the two. In addition to diffuse pigmentation on the body, *G. francanni* usually has a large spot of pigment on coxa 2, whereas *G. smithi* frequently has a similar spot on coxae 1-4 and occasionally has weak, narrow dorsal bands on the peraeon and pleon segments. Adults of *G. francanni* range from 4 to 8 mm in length.

See Myers, 1968 (as *Lembos* [*Bemlos*] *francanni*); Myers, 1983 (as *Lembos* [*Globosolembos*] *francanni*).

***Globosolembos smithi* (Holmes, 1905)**
(Figure 331)

Autonoe sp. Smith, 1873, p. 562.

Autonoe smithi Holmes, 1905, pp. 516-517, unnumbered fig.

Lembos smithi: Stebbing, 1906, p. 737.

Globosolembos smithi: Myers, 1988, p. 189.

Regional diagnosis: Antenna 2 of male stout, slightly shorter than antenna 1; gnathopod 1 of male, propodus, anterior margin and anteromedial surface with relatively sparse, short to moderately long setae, palm well-defined, sinuous, with defining tooth at palmar angle; pereopods 3-4, carpus, posterior (flexor) margin without spines, propodus, posterior margin with 1 proximal spine.

Distribution: East coast of the United States from Cape Cod to the Florida Keys (Bousfield, 1973; Thomas, 1993); Gulf of Mexico from Florida to Yucatan (Myers, 1981; Thomas, 1993); Cuba (Ortiz and Lalana, 1996); Brazil (Wakabara and Serejo, 1998).

Ecology: *Globosolembos smithi* is a relatively common species and occurs in a variety of habitats, ranging from fouling growth (algae, sponges, ascidians, etc.) on pilings and other hard substrates to grassbeds on sandy shell hash or mud bottoms (Bousfield, 1973; Myers, 1977a; pers. obs.). It is a euryhaline species, occurring in both estuarine inshore habitats and high salinity back reef and offshore areas, and is found from the lower intertidal zone out to a depth of 73 m (Bousfield, 1973; Myers, 1981; Thomas, 1993).

Remarks: *Globosolembos smithi* is very similar to its congener, *G. francanni*, but can be distinguished by the characters discussed in the **Remarks** section for the latter species. Although the palmar margin of the propodus of gnathopod 1 is somewhat less sinuous in subadult males than in adults, the defining tooth is still present at the palmar angle, even in very small (2 mm) individuals, thus distinguishing them from subadult males of *G. francanni*. In addition, *G. smithi* does not attain as large a size as *G. francanni*, ranging in length from 4 to 6 mm (4 to 8 mm in *G. francanni*).

See Bousfield, 1973 (as *Lembos smithi*); Myers, 1977a (as *Lembos smithi*); Myers, 1981 (as *Lembos smithi*); Thomas, 1993.

Genus *Grandidierella* Coutière, 1904

Regional diagnosis: Antenna 1, accessory flagellum vestigial, 1-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles slender to moderately stout, well-developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles fused, forming single article, article 1 shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar surface without plates; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segment 1 of male with mid-ventral sternal process, process without articulated terminal spine; coxae 1-4 wider than deep or with width subequal to depth, well-separated, not overlapping, ventral margin sparsely setose or lacking setae; coxa 1 not produced anteroventrally, anteroventral angle subquadrate; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male complexly subchelate, carpus much longer than propodus, propodus without palmar notch or process, dactyl extending beyond palmar angle of propodus by more than half its length; gnathopod 1 of female, carpus subequal to or slightly longer than propodus, propodus unenlarged, similar to or slightly smaller than that of male, relatively stout, length less than twice width; gnathopod 2 of both sexes, basis, anterior margin without setae or with sparse, very short setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, subequal to outer ramus in length, outer ramus slender, length 5-6 times width; uropod 3, peduncle without distomedial expansion, uniramous, ramus not reduced, with marginal setae, with minute second article.

Florida species: *G. bonnieroides*

***Grandidierella bonnieroides* Stephensen, 1948**
(Figure 267)

Grandidierella megnae: Chilton, 1921, pp. 548-552, fig. 10, a-i. [not *Grandidierella megnae* (Giles) Tattersall, 1922, pp. 455-456, pl. 19, figs 1-12].

Unciolella lunata: Schellenberg, 1928, pp. 669-671, fig. 207 [not *Unciolella lunata* Chevreux, 1911, pp. 264-266, fig. 16, pl. 10, figs. 5-16].

Grandidierella bonnieri: K.H. Barnard, 1935, p. 299; Shoemaker, 1948, p. 11, fig. 3 [not *Grandidierella bonnieri* Stebbing, 1908, pp. 120-123, pl. 6].

Grandidierella bonnieroides Stephensen, 1948, pp. 12-16, fig. 3.

Regional diagnosis: That of the genus.

Distribution: Cosmopolitan in warm-temperate and tropical waters. In Florida, it is common along both the east and west coasts, as well as in the Florida Keys.

Ecology: *Grandidierella bonnieroides* is a very widespread euryhaline species, occurring at salinities of less than 1 to over 40 ppt (Heard, 1982). It is found in tidal rivers, salt marshes, mangrove swamps, bays and lagoons (Heard, 1982), frequently in grassbeds (e.g. Ledoyer, 1986; Stoner, 1983; Ortiz and Winfield, 1995) or on oyster reefs. This species builds short, broad tubes of detritus which it attaches horizontally to the vegetation or to hard substrates such as submerged pieces of wood or shell (Heard, 1982). *Grandidierella bonnieroides* is most common in relatively shallow waters (0-8 m), where it is often present in large numbers.

Remarks: *Grandidierella bonnieroides* is a somewhat variable species morphologically, especially with regard to the size and number of sternal processes on the peraeon segments of the adult male and the stoutness of the male second antenna (Myers, 1970). The size is also variable, with adults ranging in length from 4 to 9 mm, and, in addition, the typical heavy, dark pigmentation pattern is sometimes absent, particularly in juveniles or in populations found in the Florida Keys. However, members of this species can be easily separated from those of the other aorid species in the region by the combination of a carpochele gnathopod 1 in the male (subchele in *Bemlos*, *Globosolembos*, *Lembos*, *Leptocheirus*, *Pediorophium*, *Plesiolembos*, and *Unciola* species), a slender carpus and propodus of gnathopod 1 in the female (stout in *Globosolembos*, *Pediorophium*, and *Unciola* species), a uniramous uropod 3 (biramous in members of all other genera except *Pediorophium* and *Unciola*) and a dark pigment band across the top of the head (also present in some species of *Bemlos*). The latter two characters alone are very useful for rough sorting this species from mixed samples.

See Shoemaker, 1948 (as *G. bonnieri*); Myers, 1970; Heard, 1982.

Genus *Lembos* Bate, 1857

Regional diagnosis: Antenna 1, accessory flagellum moderately well-developed, 3-4-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles slender, well-developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar surface with primary plate triangular, secondary, tertiary and quaternary plates similar in shape; maxilliped, lateral margin of proximal articles with wing-like flange; peraeon segments of male with mid-ventral sternal processes, processes without articulated terminal spine; coxae 1-4 wider than deep or with width subequal to depth, contiguous, touching or overlapping, ventral margin sparsely setose or lacking setae; coxa 1 moderately produced anteroventrally, anteroventral angle subacute; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus subequal to propodus in length, propodus with palmar notch, palmar process present, well-developed, located on palmar margin distal to palmar angle, dactyl extending to or slightly beyond palmar angle of propodus; gnathopod 1 of female, carpus subequal to or slightly shorter than propodus, propodus unenlarged, smaller than that of male, relatively stout, length twice width or less; gnathopod 2 of both sexes, basis, anterior margin without setae or with relatively sparse short to medium setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, slightly longer than outer ramus, outer ramus slender to very slender, length 7-10 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, without marginal setae (spines may be present), outer ramus with minute second article.

Florida species: *L. hypacanthus*, *L. unifasciatus reductus*, *L. unifasciatus unifasciatus*, *L. websteri*

Remarks: As mentioned in the **Remarks** section for the genus *Bemlos*, *Lembos unifasciatus reductus* and *L. unifasciatus unifasciatus* are actually members of that genus (Myers, pers. comm.) and key out to it in the key to genera. Although they remain in the genus *Lembos* pending the formal change in their status in the literature, for ease of identification, they are included in the key to Florida species of *Bemlos* and not in the following key to *Lembos* species.

KEY TO FLORIDA SPECIES OF *LEMBOS* (excluding *L. unifasciatus*)

1. < Peraeon segments 2-5 or 3-5 of male with midventral (sternal) processes, those of segments 3-4 relatively stout; gnathopod 2 of male, basis, anterodistal process not recurved, subtriangular (occasionally absent), propodus not narrowing distally, palm not exceptionally short, approximately two fifths length of posterior margin; gnathopod 2 of female, propodus relatively stout, length twice width, at most slightly narrower than carpus, sparsely setose anteriorly *Lembos websteri*

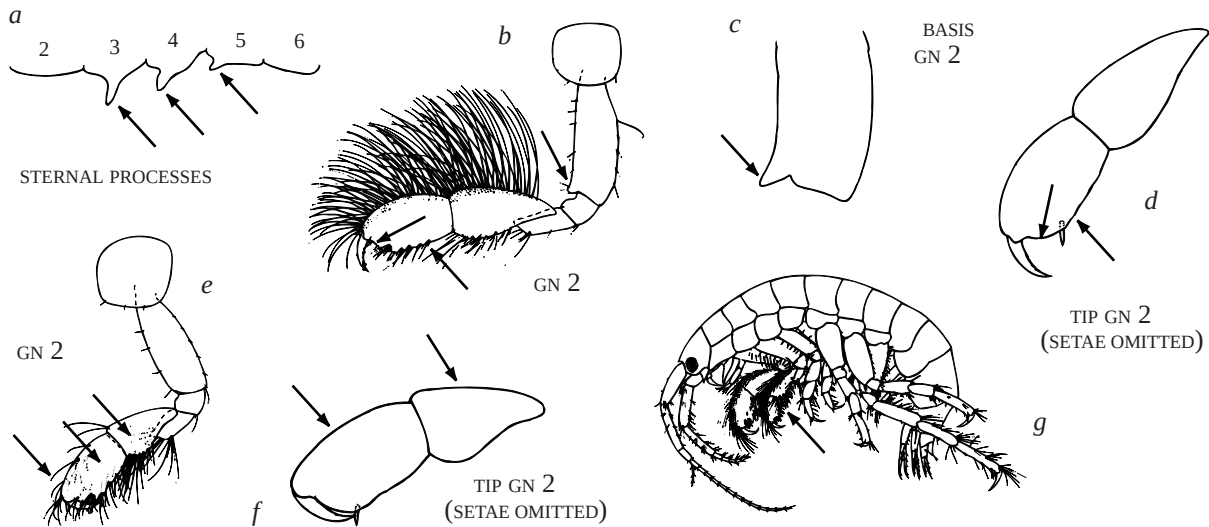


Figure 333.

- < Peraeon segments 3-7 of male with midventral (sternal) processes, those of segments 3-4 relatively slender; gnathopod 2 of male, basis, anterodistal process recurved, hook-like, propodus narrowing distally, palm very short, approximately one fifth length of posterior margin; gnathopod 2 of female, propodus relatively slender, length two and one half to three times width, distinctly narrower than carpus, densely setose anteriorly *Lembos hypacanthus*

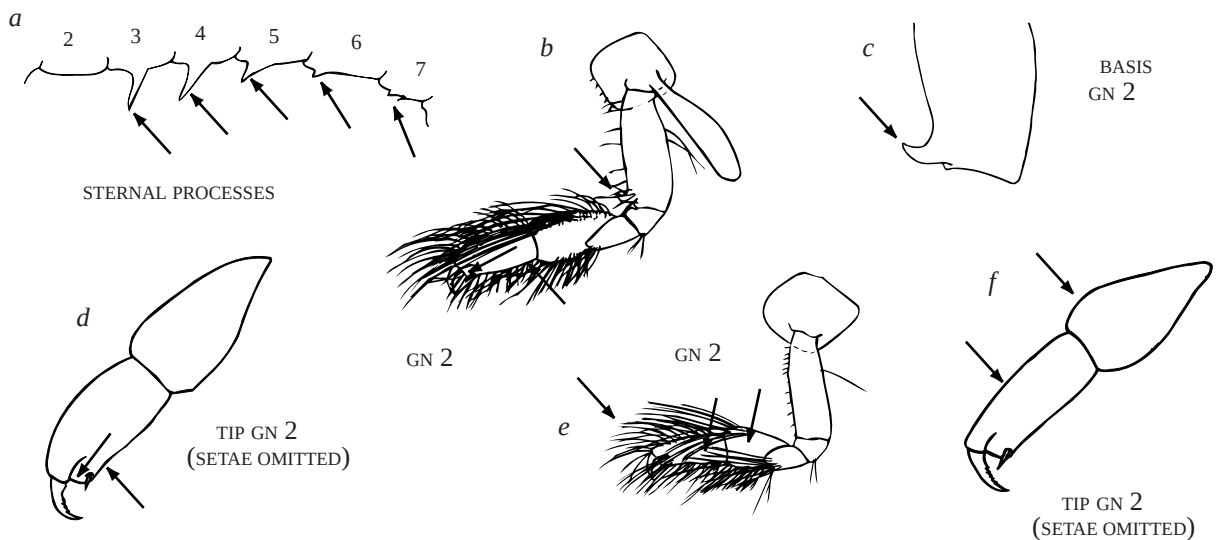


Figure 334.

***Lembos hypacanthus* K.H. Barnard, 1916**
(Figure 334)

Lembos hypacanthus K. H. Barnard, 1916, pp. 237-239, pl. 28, figs. 5-6.
Lembos sp. Fox, 1978, p. 162.

Regional diagnosis: Peraeon segments 3-7 of male with midventral (sternal) processes, those of segments 3-4 relatively slender; gnathopod 2 of male, basis, anterodistal process recurved, hook-like, propodus narrowing distally, palm very short, approximately one fifth length of posterior margin; gnathopod 2 of female, propodus relatively slender, length two and one half to three times width, distinctly narrower than carpus, densely setose anteriorly.

Distribution: North Carolina (Myers and Lyons, 1987); South Carolina (Fox, 1978); St. Catherines Island, Georgia (pers. obs.); Brevard County, Florida (Myers and Lyons, 1987); Brazil (Wakabara and Serejo, 1998); South Africa (Barnard, 1916; Myers and Lyons, 1987).

Ecology: *Lembos hypacanthus* occurs among algae in the fouling growth on pilings, buoys, etc. and also on shallow algae-covered bottoms. It is found subtidally to depths of more than 35 m (Fox, 1978).

Remarks: The morphology of the male gnathopod 1 in this species is quite distinctive and differs from that of all other regional aorid species except *L. websteri* in the presence of a process on the palmar margin of the propodus that is located distal to the palmar angle and thus does not define the palm. However, there appear to be virtually no differences between *L. hypacanthus* and *L. websteri* in the morphology of this appendage. The two species are distinguishable by the shape of the anterodistal process on the basis of gnathopod 2 in the male (recurved and hook-like in *L. hypacanthus*, not recurved and subtriangular in *L. websteri*), by the relative lengths of the palm and posterior margin of the propodus of gnathopod 2 in the male (palm one fifth the length of the posterior margin in *L. hypacanthus*, palm two fifths the length of the posterior margin in *L. websteri*), and by the relative width of the propodus of gnathopod 2 in the female (slender in *L. hypacanthus*, stout in *L. websteri*). *Lembos hypacanthus* can attain a slightly larger size than *L. websteri*, ranging in length from 4 to 7 mm, compared to 3 to 6 mm for *L. websteri*.

Specimens of *L. hypacanthus* from Brevard County, Florida (Myers and Lyons, 1987) and central Georgia agree well with South African material described and illustrated by Myers and Lyons (1987). However, as mentioned above, this species is very similar to *L. websteri* and it is possible that some records of the latter species, particularly those from the more southern parts of its range, actually refer to *L. hypacanthus*. Additional material from the possible zone of overlap along the mid-Atlantic coast of the United States needs to be closely examined to clarify the distributions of these two species.

The body pigmentation in this species consists of dorsal pigment bands on peraeon segments 1-7 and pleon segments 1-3. There are also relatively large, irregular spots on coxae 1-5. Pigmentation on the head is somewhat variable and there may or may not be a large dorsal pigment patch on the anterior part of the head, between the eyes. However, there is usually a distinctive, longitudinally oriented stripe or subtriangular patch located dorsomedially on the posterior part of the head, adjacent to peraeon segment 1. These pigmentation patterns are often retained well in preserved material, especially in larger individuals.

See Myers and Lyons, 1987.

***Lembos unifasciatus reductus* Myers, 1979**
(Figures 301, 325)

Lembos unifasciatus reductus Myers, 1979a, pp. 244-246, fig. 185.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin without short, curly setae; head usually without dorsal pigment, rostrum relatively long, slender, sides slightly longer than width of base; mandible, palp article 3 weakly falcate; pigmentation pattern on body composed of dorsal pigment band on peraeon segment 5 (occasionally 4-5) only; peraeon segments 2-4 of male with mid-ventral sternal processes, processes subequal in size; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus one third to one fourth length of propodus, weakly or not produced posterodistally, propodus stout, length one and two thirds times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin with several broad, shallow serrations, palm with shallow u-shaped or v-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length slightly more than twice width, posterior margin obtusely angled proximally, propodus one and one half times length of carpus, weakly subtriangular, slightly broader distally, palmar margin flat or slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, with relatively broad, weak, subacute distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not reaching beyond distal margin of carpus, carpus and propodus, anterior margin weakly setose, carpus relatively slender, length approximately two and one half times width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width approximately one half length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively stout, length one and one half times width; peraeopods 3-4, basis, merus and carpus of male with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl slightly more than half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process very short, one fifth to one sixth length of peduncle; uropod 3, inner ramus subequal to or slightly longer than peduncle.

Distribution: Biscayne Bay; Florida Bay; southeastern Gulf of Mexico between Cape Romano and the lower Florida Keys; Central West Florida Shelf (Myers, 1979a); Apalachee Bay, Florida.

Ecology: Little specific ecological information is available for this species, but on the West Florida Shelf, it was found in areas of sand and shell bottom, frequently interspersed with limestone outcrops. Brown, green and calcareous algae, seagrass (*Halophila*), sponges, stony corals, bryozoans and alcyonarians were also abundant in these areas, and a layer of silt was often present (Myers, 1981; Joyce and Williams, 1969). *Lembos unifasciatus reductus* also occurs on mixed sand and shell hash bottoms in Florida Bay and Biscayne Bay. It is found at depths ranging from 2 to 73 m.

Remarks: As mentioned previously (see the **Remarks** sections for the genera *Bemlos* and *Lembos*), both subspecies of *L. unifasciatus* actually belong in the genus *Bemlos* (Myers, pers. comm.) and *L. unifasciatus reductus* is included here provisionally, pending its formal transfer to that genus.

Both males and females of *L. unifasciatus reductus* can be separated from those of other *Bemlos* and *Plesiolembos* species by the extremely short distoventral process on the peduncle of uropod 1. This process is only one fifth to one sixth of the length of the peduncle in *L. unifasciatus reductus* and it is at least one third of the length of the peduncle in all but two other species in the area. In these two species, *Plesiolembos ovalipes* and *P. rectangulatus*, the peduncular process on uropod 1 is also short, although at one fourth the length of the peduncle, it is still longer than that of *L. unifasciatus*.

reductus. Males of *L. unifasciatus reductus* also differ from those of the former species in the lack of long, dense setae on the anterior margin of the carpus and propodus of gnathopod 2 (present in *P. ovalipes*) and in the lack of a posterodistal brush of very long setae on the merus of gnathopod 2 (present in *P. ovalipes*). They differ from those of the latter species in the evenly convex anterior margin of the carpus of gnathopod 2 (strongly downturned and subquadrate proximally in *P. rectangulatus*) and the non-falcate article 3 of the mandibular palp (falcate in *P. rectangulatus*). Females can be distinguished from those of *P. ovalipes* and *P. rectangulatus* by the having the inner ramus of uropod 3 subequal to the peduncle in length (at least twice the length of the peduncle in *P. ovalipes* and *P. rectangulatus*), having the propodus of gnathopod 1 one and one half times the length of the carpus (subequal to the carpus in *P. ovalipes*), and having a non-falcate mandibular palp article 3 (falcate in *P. rectangulatus*).

The pigmentation pattern of *L. unifasciatus reductus* is distinctive and is usually retained in preserved material, although it may be very weak. This pattern, consisting of a single dorsal pigment band on pereopod segment 5 (occasionally segments 4-5), is shared only by *L. unifasciatus unifasciatus*. Members of both sexes of *L. unifasciatus reductus* can be distinguished from those of *L. unifasciatus unifasciatus* by the very short distoventral process on the peduncle of uropod 1 (one fifth to one sixth the length of the peduncle in *L. unifasciatus reductus*; nearly one half the length of the peduncle in *L. unifasciatus unifasciatus*). In addition, males of *L. unifasciatus reductus* have a u-shaped or v-shaped palmar notch and several broad, shallow serrations on the posterior margin of the propodus of gnathopod 1, whereas in *L. unifasciatus unifasciatus* the notch is flat-bottomed and the posterior margin of the propodus is smooth. Members of the two subspecies overlap in size, although *Lembos unifasciatus reductus* (3-5 mm) has a somewhat broader size range than *L. unifasciatus unifasciatus* (3-4 mm).

See Myers, 1979a; Myers, 1981.

***Lembos unifasciatus unifasciatus* Myers, 1977**
(Figures 302, 326)

Lembos unifasciatus Myers, 1977a, pp. 117-124, figs. 128-132.

Lembos unifasciatus unifasciatus Myers, 1981, p. 29, fig. 12.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin without short, curly setae; head usually without dorsal pigment, rostrum relatively long, slender, sides slightly longer than width of base; mandible, palp article 3 weakly falcate; pigmentation pattern on body composed of dorsal pigment band on peraeon segment 5 (occasionally 4-5) only; peraeon segments 2-4 of male with mid-ventral sternal processes, processes subequal in size; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus one third to one fourth length of propodus, weakly or not produced posterodistally, propodus stout, length one and two thirds times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow flat-bottomed notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively stout, length slightly more than twice width, posterior margin obtusely angled proximally, propodus one and one half times length of carpus, weakly subtriangular, slightly broader distally, palmar margin flat or slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, with relatively broad, weak, subacute distal process, ischium, anterior margin not produced, without subacute process, merus without posterodistal brush of very long setae, setae not reaching beyond distal margin of carpus, carpus and propodus, anterior margin weakly setose, carpus relatively slender, length slightly less than two and one half times width, anterior margin evenly convex, not downturned proximally, propodus relatively stout, width approximately three fourths length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively stout, length one and one half times width; peraeopods 3-4, basis, merus and carpus of male with short to moderately long, sparse setae, merus and carpus of both sexes slender, length at least one and one half times width, dactyl slightly more than half length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process long, length slightly less than half length of peduncle; uropod 3, inner ramus subequal to or slightly longer than peduncle.

Distribution: Offshore from Ft. Lauderdale Beach, Florida; Florida Keys (Myers, 1977a); Bahamas (Myers, 1977a); Puerto Rico (Thomas, 1993).

Ecology: *Lembos unifasciatus unifasciatus* occurs among corals, sponges and algae growing on hard substrates or sand bottoms (Myers, 1977a) and has also been found in artificial sponge (Myers, 1977a) or reef habitats (Judy Robinson, pers. com.). It occurs at depths ranging from 1 to 9 m.

Remarks: As mentioned previously (see the **Remarks** sections for the genera *Bemlos* and *Lembos*), both subspecies of *L. unifasciatus* actually belong in the genus *Bemlos* (Myers, pers. comm.) and *L. unifasciatus unifasciatus* is included here provisionally, pending its formal transfer to that genus.

Males of both subspecies of *L. unifasciatus* can be separated from those of all other Florida shallow-water species of *Bemlos* and *Plesiolembos*, except *B. dentischium*, *B. kunkelae*, and *P. rectangulatus*, by the weakly setose anterior margin of the carpus and propodus of gnathopod 2. They can be distinguished from males of these three species by the more slender carpus (length approximately two and one half times width) with its evenly convex anterior margin (carpus with length not more than twice the width and anterior margin moderately to strongly downturned proximally in the other three species). In addition, male *L. unifasciatus* differ from those of *B. dentischium* and *B. kunkelae* in their lack of a subacute process on the anterior margin of the ischium of gnathopod 2 and from *P. rectangulatus* by the non-falcate article 3 of the mandibular palp. Females can be distinguished from

all but *B. kunkelae* and *B. minimus* by the relatively short rami of uropod 3, with the inner ramus subequal to (*L. unifasciatus*, *B. minimus*) or up to one third longer than the peduncle (*B. kunkelae*) (at least one and one half times length of peduncle in the remaining species). Females of *L. unifasciatus* also differ from those of *B. kunkelae* in having a flat palmar margin and no defining tooth at the palmar angle of the propodus of gnathopod 1 (sinuous palmar margin with a relatively large defining tooth in *B. kunkelae*) and from those of *B. minimus* in having a weakly subtriangular propodus of gnathopod 1 that is only one and one half times the length of the carpus (subrectangular and twice the length of the carpus in *B. minimus*). Finally, the pigmentation pattern of *L. unifasciatus* is distinctive and serves to separate members of this subspecies from all regional species and subspecies except *L. unifasciatus reductus*. This pattern, composed of a dorsal pigment band on pereon segment 5 (occasionally on segments 4-5), is usually present, even in preserved material. Differences between the two subspecies of *L. unifasciatus* are discussed in the **Remarks** section for *L. unifasciatus reductus*. *Lembos unifasciatus unifasciatus* is relatively small, ranging in size from 3 to 4 mm.

See Myers, 1977a; Myers, 1981; Thomas, 1993.

***Lembos websteri* Bate, 1857 (Figure 333)**

Lembos websteri Bate, 1857, p. 142.

Microdeutopus websteri: Bate and Westwood, 1862, p. 291.

Microdentopus websterii: Bate, 1862: 164, pl. 30, fig. 2.

Microdeutopus bidentatus Stebbing, 1876, p. 73, pl. 4, fig. 1a, pl. 5, figs. 1, 1b.

Autonoe websteri: Sars, 1895, p. 547, pl. 194.

Regional diagnosis: Pereon segments 2-5 or 3-5 of male with midventral (sternal) processes, those of segments 3-4 relatively stout; gnathopod 2 of male, basis, anterodistal process not recurved, subtriangular (occasionally absent), propodus not narrowing distally, palm not exceptionally short, approximately two fifths length of posterior margin; gnathopod 2 of female, propodus relatively stout, length twice width, at most slightly narrower than carpus, sparsely setose anteriorly.

Distribution: Atlantic coast of the United States from Cape Cod to northern Florida (Bousfield, 1973); European coast from southern Norway to the Mediterranean (Chevreux and Fage, 1925; Lincoln, 1979; Myers, 1982).

Ecology: *Lembos websteri* is found living among algae, sponge, hydroid, etc. growths, from the intertidal zone out to depths of 37 m (Bousfield, 1973; Dickinson et al., 1980; Myers, 1982).

Remarks: *Lembos websteri* is very similar to *L. hypacanthus* in morphology and differences between the two, as well as other regional aorid species, are outlined in the **Remarks** section for the latter species. No Florida material of *L. websteri* was seen during the course of this study and it may be that the more southern records of this species actually refer to *L. hypacanthus*, with *L. websteri* occurring in the cooler, more northern waters. Adult *L. websteri* range from 3 to 6 mm in length.

See Bousfield, 1973; Lincoln, 1979; Myers, 1979b; 1982.

Genus *Leptocheirus* (Stimpson, 1853)

Regional diagnosis: Antenna 1, accessory flagellum moderately well-developed, 3-4-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles slender, well-developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobes subquadrate or rounded anteriorly; mandible (left), molar surface without plates; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male without mid-ventral sternal processes; coxae 1-4 deeper than wide, contiguous, overlapping, ventral margin densely setose; coxa 1 not produced anteroventrally, anteroventral angle rounded; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus subequal to propodus in length, without palmar notch (may have shallow depression) or process, dactyl extending to palmar angle of propodus; gnathopod 1 of female, carpus slightly longer than propodus, propodus unenlarged, similar to that of male in size, relatively stout, length twice width or less; gnathopod 2 of both sexes, basis, anterior margin with dense fringe of very long setae, setae subequal to or longer than length of basis; peraeopods 5-7, basis stout, width at least three fourths length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, slightly longer than outer ramus, outer ramus slender, length 6-8 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, without marginal setae (spines may be present), outer ramus with minute second article.

Florida species: *L. plumulosus*

Remarks: *Leptocheirus* is somewhat atypical for an aorid in that coxal plates 1-4 are much better developed than is usual for members of this family, extending approximately halfway along the basis of the corresponding appendage (peraeopod or gnathopod). Also, unlike many other aorids, which are notorious for dropping appendages, individuals of *Leptocheirus* often retain the peraeopods and antennae when preserved. It should be noted here that *Leptocheirus rhizophorae* Ortiz and Lalana, 1980, from Cuba, has a 1-articulate accessory flagellum on antenna 1 and *L. pinguis* (Stimpson, 1853), a cold-water species that occurs on the east coast of the U.S. as far south as Bogue Sound, North Carolina (Bousfield, 1973; Fox and Bynum, 1975; Dickinson et al., 1980), has a 5-7-articulate accessory flagellum and an anteroventrally produced and narrowly rounded coxa 1. These species, therefore, do not quite fit the above diagnosis, which was based on the only species reported from Florida waters thus far, *L. plumulosus*.

***Leptocheirus plumulosus* Shoemaker, 1932
(Figure 271)**

Leptocheirus plumulosus Shoemaker, 1932, pp. 548-551, figs. 1-2.

Regional diagnosis: That of the genus.

Distribution: East coast of the United States from Cape Cod to northern Florida (Bousfield, 1973).

Ecology: This species is usually found in shallow (0-5 m) estuarine habitats (Bousfield, 1973), although Shoemaker (1932) and Dickinson et al. (1980) reported finding it in deeper waters (9-43 fm [16-79 m] and 7-16 m, respectively) in Chesapeake Bay. *Leptocheirus plumulosus* builds tubes of detritus and sand grains on mud or sandy mud bottoms in areas with some current present (Bousfield, 1973).

Remarks: *Leptocheirus plumulosus*, as well as other members of the genus *Leptocheirus*, can be distinguished from all other Florida aorids by the extremely long setae on the basis of gnathopod 2, and by the relatively large, deeper than wide, ventrally setose coxae 1-4. In addition, the inwardly flexed propodus of gnathopod 1 in the adult male distinguishes it from all but members of the genus *Rudilemboides*. They can be distinguished from male *Rudilemboides* by the much larger size (6-13 mm vs 3-4 mm), by the lack of sternal processes and by the smaller carpus and larger propodus of gnathopod 1. The pigmentation pattern of *L. plumulosus* is pronounced and is usually retained in preserved material. Virtually the entire dorsal and lateral surface of the head, except for the ocular lobes, is pigmented and there are dorsal bands of pigmentation across all of the peraeon, pleon and urosome segments. Also, coxae 1-5 and the bases of peraeopods 5-7 have a large irregular pigment spot proximally. As mentioned above, this is a moderately large species, with adult lengths ranging from 6-13 mm, and males are usually smaller than females.

A second species of *Leptocheirus*, *L. rhizophorae*, occurs in the mangroves of the lagoon system at Tunas de Zaza on the southern coast of Cuba (Ortiz and Lalana, 1980) and in the lagoonal *Ruppia maritima* grass flats of Alvarado, Veracruz, Mexico (Ortiz and Winfield, 1995; Winfield et al., 1997). Although this species has not been reported from the Florida Keys, similar habitats are common there and it seems possible that its distribution may extend to include that area. *Leptocheirus plumulosus* can be distinguished from *L. rhizophorae* by the relatively long, 3-4 articulate accessory flagellum on antenna 1 (short, 1-articulate in *L. rhizophorae*), the shorter article 1 on the palp of maxilla 1 (approximately one fourth the length of article 2 in *L. plumulosus*, slightly less than half the length of article 2 in *L. rhizophorae*), and by the subequal, similar coxae 1-2 (coxa 1 smaller, coxae 1-2 dissimilar in *L. rhizophorae*).

See Shoemaker, 1932; Bousfield, 1973.

Genus *Paramicrodeutopus* Myers, 1988

Regional diagnosis: Antenna 1, accessory flagellum moderately well-developed, 3-4-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles slender, well-developed; articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar surface with primary plate triangular or subtriangular, secondary plate reduced or absent, tertiary and quaternary plates absent; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male with mid-ventral sternal processes, processes without articulated terminal spine; coxae 1-4 wider than deep or with width subequal to depth, contiguous, touching or overlapping, ventral margin sparsely setose or lacking setae; coxa 1 moderately to strongly produced anteroventrally, anteroventral angle subacute; gnathopods 1-2 of female slender; gnathopod 1 of male carpocheate, carpus much longer than propodus, propodus with palmar notch (notch absent in subadults), palmar process present, well-developed, located on palmar margin slightly distal to palmar angle, dactyl extending beyond palmar angle of propodus by approximately half its length; gnathopod 1 of female, carpus subequal to propodus in length, propodus unenlarged, slightly larger than that of male, relatively slender, length at least two and one half times width; gnathopod 2 of both sexes, basis, anterior margin without setae or with relatively sparse short to medium setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, slightly longer than outer ramus, outer ramus slender, length 6-8 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, without marginal setae (spines may be present), outer ramus with minute second article.

Florida species: *P. myersi*

***Paramicrodeutopus myersi* (Bynum and Fox, 1977)
(Figure 277)**

Microdeutopus sp. nov.? Myers, 1969, pp. 127-129, figs 13f-g, 14k, 15, 20i.

Microdeutopus sp. Fox and Bynum, 1975, p. 225.

Microdeutopus myersi Bynum and Fox, 1977, pp. 28-31, figs. 17-18.

Paramicrodeutopus myersi: Myers, 1988, p. 190.

Regional diagnosis: That of the genus.

Distribution: Bogue Sound, North Carolina (Bynum and Fox, 1977) south to the Florida Keys (Myers, 1981); southwestern Gulf of Mexico north of the lower Florida Keys; central West Florida Shelf (Myers, 1981); Apalachee Bay and St. Andrew Sound, Florida..

Ecology: *Paramicrodeutopus myersi* is a euryhaline species, occurring in estuarine to fully marine waters. It is generally associated with muddy to sandy shell or rubble bottoms, often covered with algae, seagrasses and sponges, and is found at depths of 1 to 73 m (Bynum and Fox, 1977; Myers, 1981; pers. obs.). This species is sometimes collected in night plankton tows (pers. obs.).

Remarks: Male *P. myersi* specimens can be distinguished from those of all other Florida aorid species except *Rudilemboides naglei*, *Rudilemboides* sp. A and *Grandidierella bonnieroides* by the carpochele gnathopod 1. They can be distinguished from males of these three species by the strongly produced, subacute anteroventral angle of coxa 1 (unproduced and rounded in the other species) and by the presence of a small, finger-like projection located on the anterior margin of the carpus of gnathopod 1 (lacking in other species). In addition, the ocular lobe is subquadrate anteriorly in *P. myersi*, whereas that of the two *Rudilemboides* species is acute. Females are more difficult to separate, but can generally be identified by the produced, subacute coxa 1 combined with their small size (3-4 mm) and lack of pigmentation. *Bemlos setosus* sometimes has a very weakly produced, subacute coxa 1, but is much larger than *P. myersi* (7-10 mm) and usually retains some evidence of a pigmentation pattern. *Lembos hypacanthus* and *L. websteri* both have a moderately produced, subacute coxa 1 and a banded pigmentation pattern, as well as a slightly larger body size 3-7 mm. In addition, the carpus and propodus of gnathopod 1 in females of the latter two species are shorter and stouter than those of *P. myersi*.

Although adult males of *P. myersi* have a well-developed palmar process on the propodus of gnathopod 1, in subadults and juveniles this process is very weak or lacking. In addition, the spine at the palmar angle that is present in subadult males is replaced by a seta in large adults.

See Myers, 1969 (as *Microdeutopus* sp. nov.?); Bynum and Fox, 1977 (as *Microdeutopus myersi*); Myers, 1981 (as *Microdeutopus myersi*).

Genus *Pediorophium* Karaman, 1980

Regional diagnosis: Antenna 1, accessory flagellum vestigial, 1-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles 3-4 very stout, well-developed, width greater than that of article 5, article 4 with ventromedial (male) or dorsolateral (female) marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobes subquadrate anteriorly; mandible (left), molar surface without plates; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male without mid-ventral sternal processes; coxae 1-4 wider than deep or with width subequal to depth, well-separated, not touching or overlapping, ventral margin sparsely setose or lacking setae; coxa 1 strongly produced anteroventrally, anteroventral angle acute; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus shorter than propodus, propodus with palmar notch, palmar process present, well-developed, located at palmar angle, dactyl extending to palmar angle of propodus; gnathopod 1 of female, carpus shorter than propodus, propodus enlarged, slightly smaller than that of male, relatively stout, length twice width or less; gnathopod 2 of both sexes, basis, anterior margin without setae or with relatively sparse short setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width one half length or less; epimeron 3 with posteroventral hook; uropods 1-2, inner ramus greatly reduced, vestigial, outer ramus stout, length 2-3 times width; uropod 3, peduncle without distomedial expansion, uniramous, ramus very reduced, vestigial.

Florida species: *P. laminosum*

***Pedicatorophium laminosum* (Pearse, 1912)
(Figure 269)**

Unciola laminosa Pearse, 1912, pp. 377-378, fig. 7.

Rildardanus laminosa: Barnard, 1973, p. 22.

Pedicatorophium laminosum: Karaman, 1980b, pp. 17-18.

Regional diagnosis: That of the genus.

Distribution: Southeast coast of the United States from Virginia and North Carolina (Dickinson et al., 1980) to Hutchinson Island, Florida (pers. obs.); eastern Gulf of Mexico from just north of the lower Florida Keys to Dauphin Island, Alabama (Pearse, 1912; Shoemaker, 1945b; Myers, 1981; pers. obs.); western Gulf of Mexico east of North Padre Island, Texas (McKinney, 1977); Cape la Vela, Caribbean coast of Colombia (Shoemaker, 1945b).

Ecology: *Pedicatorophium laminosum* is an offshore species, typically occurring at depths of 18 to 80 m (Pearse, 1912; Shoemaker, 1945b; Myers, 1981; Dickinson et al., 1980); however, in Florida it does occasionally occur in shallower waters (6-8 m) off of Tampa Bay (Myers, 1981) and Hutchinson Island (pers. obs.). This species is found on a variety of bottom types, ranging from unvegetated fine or muddy sand, shelly sand or shell (Dickinson et al. 1980; pers. obs.) to silty, shelly sand bottoms covered with a mix of algae, alcyonarians, bryozoans, seagrasses, corals and sponges, interspersed with limestone outcroppings (Myers, 1981; Joyce and Williams, 1969).

Remarks: *Pedicatorophium laminosum* individuals can be separated from those of other Florida shallow-water aorid species except those belonging to the genera *Grandidierella*, and *Unciola* by the widely separated coxal plates and the uniramous uropod 3 (contiguous coxal plates and biramous uropod 3 in members of other genera). Specimens of *P. laminosum* can be separated from those of *G. bonnieroides* by the stout peduncle of antenna 2 (slender in *G. bonnieroides*), the subchelate male gnathopod 1 (carpochelate in *G. bonnieroides*), the presence of a posteroventral hook on epimeron 3 (absent in *G. bonnieroides*), and the stout outer ramus on uropods 1-2 (slender in *G. bonnieroides*). Superficially, *P. laminosum* is very similar to members of the genus *Unciola*, but can be distinguished easily by the presence of a greatly reduced inner ramus on uropods 1-2 (inner ramus not reduced, slightly shorter than outer ramus in *Unciola*) and unexpanded peduncle of uropod 3 (expanded in *Unciola*). In addition, *P. laminosum* is a relatively small species, with adult lengths ranging from 3 to 5 mm, whereas both Florida species of *Unciola* tend to be at least slightly larger, ranging from 6 to 16 mm in length.

Pigmentation is usually absent in preserved material of *P. laminosum*, but in life the head, body and coxae have reddish-brown patches of pigment and the dactyl of gnathopod 1 has a deep red dorsal patch proximally (Myers, 1981).

See Shoemaker, 1945b (as *Unciola laminosa*); Myers, 1981 (as *Rildardanus laminosa*).

Genus *Plesiolembos* Myers, 1988

Regional diagnosis: Antenna 1, accessory flagellum well-developed, 4-5- articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles slender, well-developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar surface with primary plate falcate, secondary, tertiary and quaternary plates similar in shape; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male with mid-ventral sternal processes, processes without articulated terminal spine; coxae 1-4 wider than deep or with width subequal to depth, contiguous, touching or overlapping, ventral margin sparsely setose or lacking setae; coxa 1 not produced anteroventrally, anteroventral angle rounded or subquadrate; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus shorter than propodus, propodus with palmar notch, palmar process present, well-developed, located at palmar angle, dactyl extending to or slightly beyond palmar angle; gnathopod 1 of female, carpus shorter than propodus, propodus unenlarged, much smaller than that of male, relatively stout, length twice width or less; gnathopod 2 of both sexes, basis, anterior margin without setae or with relatively sparse short setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook; uropods 1-2, inner ramus not reduced, subequal to or slightly longer than outer ramus, outer ramus slender to very slender, length 7-11 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, at least 1 ramus with marginal setae, outer ramus without minute second article.

Florida species: *P. ovalipes*, *P. rectangulatus*

Remarks: As mentioned in the **Remarks** section for the genus *Bemlos*, *Plesiolembos ovalipes* and *P. rectangulatus* are included in the same key with Florida species of *Bemlos* because it is very difficult, if not impossible, to separate members of these two genera using characters that are easily visible under a light microscope. The main differences between them include differences in the morphology of the plates on the surface of the left mandibular molar (the primary plate is falcate and the secondary, tertiary and quaternary plates are similar to each other in shape in *Plesiolembos* species, whereas the plates are all rounded or the primary plate is falcate and the remaining 3 plates differ in shape in members of the genus *Bemlos*) and in the presence of a vestigial second article on the outer ramus of uropod 3 in *Bemlos* species (lacking in *Plesiolembos*) (Myers, 1988). Even when present, this article is very difficult to see as it is hidden among the long terminal setae on the outer ramus of uropod 3. Thus, for identification purposes, it is more practical to include the *Plesiolembos* species and the very similar Florida members of the genus *Bemlos* together in a single key.

***Plesiolembos ovalipes* (Myers, 1979)
(Figures 293, 329)**

Lembos ovalipes Myers, 1979a, pp. 139-146, figs. 143-147.
Plesiolembos ovalipes: Myers, 1988, p. 190.

Regional diagnosis: Antenna 1 of male unknown; antenna 2 of male, peduncle articles 3-4, dorsal margin with short, curly setae; head without dorsal pigment, rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 not falcate; body without pigmentation; peraeon segments 2-4 of male with mid-ventral sternal processes, process on segment 3 much larger than those segments 2 and 4; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus one third to one fourth length of propodus, weakly or not produced posterodistally, propodus stout, length one and two thirds times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow, flat-bottomed notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively slender, length slightly less than three times width, posterior margin evenly convex, propodus subequal to carpus in length, subtriangular, widest distally, palmar margin flat or slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, with relatively slender, subacute distal process, ischium, anterior margin slightly produced, forming weak, subacute process, merus with posterodistal brush of very long setae, setae reaching at least to midpoint of propodus, carpus and propodus, anterior margin lined with long, dense setae, carpus relatively slender, length approximately two and one half times width, anterior margin evenly convex, not downturned proximally, propodus relatively slender, width one half length; gnathopod 2 of female, basis, anterior margin with short to medium setae, propodus relatively stout, length one and three fourths times width; peraeopods 3-4 unknown; peraeopods 5-7 of male moderately setose, peraeopod 5, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process short, approximately one fourth length of peduncle; uropod 3, inner ramus two to two and one half times length of peduncle.

Distribution: Lower Florida Bay north of Marathon (pers. obs.); southeastern Gulf of Mexico between Cape Romano and Cape Sable, Florida (pers. obs.); central West Florida Shelf off Tampa Bay (Myers, 1979a, 1981).

Ecology: In Florida Bay, *P. ovalipes* occurs on sandy or silty mud bottoms among seagrasses and soft corals. Offshore from Tampa Bay, on the central West Florida Shelf, it occurs in areas characterized by sand and shell hash bottoms, often with a layer of silt, interspersed with limestone outcroppings and abundant algae, sponges, corals and alcyonarians (Myers, 1981; Joyce and Williams, 1969). *Plesiolembos ovalipes* is found at depths of 2 to 37 m.

Remarks: Adult males of *P. ovalipes* can be easily separated from those of other Florida species of *Bemlos* and *Plesiolembos* by the diagnostic posterodistal brush of very long setae on the merus of gnathopod 2. However, this brush is located somewhat medially and is often not readily visible unless the medial surface of the gnathopod is examined. Females can be distinguished from all but those of *Bemlos spinicarpus* by the subequal carpus and propodus of gnathopod 1 (propodus at least one and one third times the length of the carpus in other species) and by the distinctly subtriangular propodus of gnathopod 1 (at most weakly subtriangular in other species). *Plesiolembos ovalipes* females differ from those of *B. spinicarpus* in the shorter distoventral process on the peduncle of uropod 1 (one fourth the length of the peduncle in *P. ovalipes* versus one third the length of the peduncle in *B. spinicarpus*), in the lack of pigmentation (*B. spinicarpus* is usually pigmented), and in the smaller body size (3-4 mm versus 6-7 mm in *B. spinicarpus*).

Specimens of *P. ovalipes* from Florida Bay have larger eyes than those illustrated by Myers (1979a, 1981) for specimens from the deeper waters off Tampa Bay. In the Florida Bay material, the eyes completely fill the ocular lobe and are usually reddish in color, as opposed to being somewhat smaller and darker in West Florida Shelf material.

See Myers, 1979a (as *Lembos ovalipes*); Myers, 1981 (as *Lembos ovalipes*).

***Plesiolembos rectangulatus* (Myers, 1977)
(Figures 303, 321)**

Lembos rectangulatus Myers, 1977b, pp. 139-146, figs. 143-147.

Lembos habanensis Ortiz, 1980, pp. 93-97, figs. 1-5.

Plesiolembos rectangulatus: Myers, 1988, p. 190.

Regional diagnosis: Antenna 1 of male longer than antenna 2; antenna 2 of male, peduncle articles 3-4, dorsal margin with short, curly setae; head often with weak dorsal pigment posteriorly, rostrum relatively long, slender, sides longer than width of base; mandible, palp article 3 falcate; pigmentation pattern on body diffuse; peraeon segment 3 only of male with mid-ventral sternal process; coxae 1-4 of male, ventral margin with short setae, setae much shorter than depth of coxa; coxa 1 of male not produced anteroventrally, anteroventral angle rounded; gnathopod 1 of male, basis, anterior margin without long marginal or submarginal setae, not crenulate in large individuals, carpus one third to one fourth length of propodus, weakly produced posterodistally, propodus stout, length one and two thirds times width, anteromedial surface sparsely setose, setae short to moderately long, posterior margin smooth, without shallow serrations, palm with shallow flat-bottomed or u-shaped notch, notch extending much less than half length of posterior margin; gnathopod 1 of female, basis relatively slender, length approximately 3 times width, posterior margin evenly convex or weakly angled proximally, propodus one and one half times length of carpus, weakly subtriangular, slightly broader distally, palmar margin flat to slightly convex, not produced medially in large individuals, palmar angle without defining tooth; gnathopod 2 of male, basis, anterior margin without long marginal or submarginal setae, with moderately slender, subacute or narrowly rounded distal process, ischium, anterior margin usually not produced, without process (may be weakly produced in large males), merus without posterodistal brush of very long setae, setae not extending beyond distal margin of carpus, carpus and propodus, anterior margin weakly setose, carpus relatively stout, length not more than twice width, anterior margin strongly downturned proximally, angle subquadrate, propodus slender to moderately stout, width slightly less than half length to two thirds length; gnathopod 2 of female, basis, anterior margin with short setae, propodus relatively stout, length one and two thirds times width; peraeopods 3-4, basis, merus and carpus of male with short to moderately long, sparse setae, merus and carpus of both sexes moderately slender, length usually less than one and one half times width, dactyl approximately two thirds length of propodus; peraeopods 5-7 of male moderately setose, peraeopod 5 of male, basis, posterior margin not abruptly narrower distally, without median "heel"; uropods 1-2, peduncle, distoventral process short, approximately one fourth length of peduncle; uropod 3, inner ramus at least twice length of peduncle.

Distribution: Bahamas (Myers, 1977b); Cuba (Ortiz, 1980;1989); Biscayne Bay; Florida Keys (Myers, 1977b); west coast of Florida from Florida Bay north to Anclote Key (Myers, 1981; pers. obs.); Apalachee Bay, Florida.

Ecology: *Plesiolembos rectangulatus* is found among sponges, corals and algae growing on hard substrates or sand bottoms, and it has also been found in artificial sponge habitats (Myers, 1977b). In addition, this species occurs in grassbeds on sandy or silty mud and shell hash bottoms. It is found in relatively shallow water, at depths ranging from 0 (intertidal) to 3 m.

Remarks: *Plesiolembos rectangulatus* males can be distinguished from those of all other regional species of *Bemlos* and *Plesiolembos* except *Lembos unifasciatus* (both subspecies), *Bemlos dentischium* and *B. kunkelae* by the weakly setose anterior margin of the carpus and propodus of gnathopod 2 (densely setose in the other species). They differ from those of *L. unifasciatus* in the relatively stout carpus of gnathopod 2 with its strongly downturned anteroproximal margin (carpus slender, with an evenly convex anterior margin in *L. unifasciatus*) and from the latter two species in the falcate mandibular palp article 3 (non-falcate in *B. dentischium* and *B. kunkelae*), the lack of a strong, subacute process on the anterior margin of the ischium of gnathopod 2 (process present in *B. dentischium* and *B. kunkelae*), the more strongly downturned, subquadrate anteroproximal margin of the carpus of gnathopod 2 (not subquadrate in *B. dentischium* and *B. kunkelae*), and the lack of a

banded pigmentation pattern (present in *B. dentischium* and *B. kunkelae*). Females are difficult to identify in the absence of males, but can be recognized by the combination of a flat palm and lack of a defining tooth on the propodus of gnathopod 1, the falcate mandibular palp article 3, having the propodus of gnathopod 1 one and one half times the length of the carpus, the relatively short distoventral process on the peduncle of uropod 1 (approximately one fourth the length of the peduncle), the long rami on uropod 3 (inner ramus more than twice the length of the peduncle), and the weak or absent pigmentation pattern in preserved material.

Plesiolembos rectangulatus is a small species, ranging in size from 3 to 4.5 mm. Although some diffuse pigmentation is present in fresh specimens, it is usually faded or absent in preserved material in this species. In addition, the morphology of the palmar notch on gnathopod 1 of the male varies developmentally, with that of subadult males usually u-shaped, changing to flat-bottomed in large adults. Also, the shape of the mandibular palp article 3 is sometimes only weakly falcate, especially in subadults. Finally, there appears to be some variation in eye size, with adult males having slightly larger eyes than adult females.

See Myers, 1977b (as *Lembos rectangulatus*); Myers, 1981 (as *Lembos rectangulatus*).

Genus *Rudilemboides* Barnard, 1959

Regional diagnosis: Antenna 1, accessory flagellum moderately well-developed, 2-3-articulate; antenna 2, peduncle extending slightly beyond peduncle of antenna 1, articles very slender, poorly developed, articles 3-4, width similar to that of article 5, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe acute anteriorly; mandible (left), molar surface without plates; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male with mid-ventral sternal processes, processes with well-developed articulated terminal spine; coxae 1-4 with width subequal to depth, contiguous, touching or overlapping, ventral margin sparsely setose or lacking setae; coxa 1 not produced anteroventrally (occasionally slightly produced in male), anteroventral angle rounded or subquadrate; gnathopod 1 of male complexly subchelate, carpus much longer than propodus, propodus with or without palmar notch, palmar process present or absent, if present then well-developed, located at palmar angle, dactyl extending to palmar angle of propodus or beyond palmar angle by half its length; gnathopods 1-2 of female very slender; gnathopod 1 of female, carpus subequal to or slightly longer than propodus, propodus unenlarged, smaller than or similar to that of male in size, slender, length more than two and one half times width; gnathopod 2 of both sexes, basis, anterior margin without setae or with sparse, short setae, if present, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 without posteroventral hook (may have minute tooth); uropods 1-2, inner ramus not reduced, slightly longer than outer ramus, outer ramus slender to very slender, length 6-10 times width; uropod 3, peduncle without distomedial expansion, biramous, rami not reduced, rami without marginal setae (spines may be present), outer ramus with minute second article.

Florida species: *R. naglei*

Remarks: The characteristic poorly developed peduncle of antenna 2 in members of this genus is detectable even when most of the antenna is missing. Peduncle article 3 is usually present in such cases and it is very small relative to that of species belonging to other aorid genera. In addition, adult males of *Rudilemboides* species usually have the propodus of gnathopod 1 flexed inwards, so that the right and left first gnathopods seem to form a circle, with the propodus and dactyl of each side nearly touching in the middle. Although male *Leptocheirus* also have a medially flexed propodus, in members of that genus the carpus is much smaller and the propodus larger than in *Rudilemboides*, and the gnathopod itself is shorter. This distinctive feature can be very useful in rough sorting male *Rudilemboides* specimens from mixed samples.

***Rudilemboides naglei* Bousfield, 1973**
(Figure 273)

Rudilemboides naglei Bousfield, 1973, p. 171, pl. L, fig. 1; Barnard and Karaman, 1991, p. 234.
Acuminodeutopus naglei: Myers, 1981, p. 60, fig. 32.

Regional diagnosis: That of the genus.

Distribution: East coast of the United States from Cape Cod to Georgia (Bousfield, 1973); Biscayne Bay; Florida Keys; eastern Gulf of Mexico from south of Cape Sable to Dauphin Island, Alabama (Myers, 1981; Rakocinski et al., 1993; 1996; pers. obs.).

Ecology: *Rudilemboides naglei* occurs in grassbeds and on shelly sand bottoms from the low water line out to a depth of 55 m (Bousfield, 1973; Myers, 1981).

Remarks: There appear to be two forms of this species in Florida waters, although some intergradation occurs between them. The typical form, shown by Bousfield (1973) and Myers (1981), is usually found in grassbeds, occasionally in shelly sand, and often retains the pigmentation pattern upon preservation; the second form is usually found on shelly sand bottoms and either lacks pigmentation or loses it upon preservation. The two forms differ slightly in the morphology of the male gnathopod 1 (the sand-bottom form has a somewhat more serrate posterior margin on the carpus) and the development of the eyes (the ommatidia are somewhat more dispersed in the sand-bottom form). Both forms occur in the area between the Florida Keys and Tampa Bay, although they are not usually found together in the same sample. It is possible that the sand-dwelling form represents a new species, but the males are very close to those of *R. naglei* in most respects and the females are virtually identical. It will be necessary to compare material of this form with the types and additional north-eastern United States specimens of *R. naglei*, as well as with those of *R. heardi* (see below) to be sure of its status.

Rudilemboides heardi, a species described from northeast Cuban waters by Ortiz and Lalana (1996), is similar to *R. naglei* in the morphology of the male (the female is unknown). It differs from typical *R. naglei* males in lacking a midventral marginal spine on the first peduncular article of antenna 1 (spine present in *R. naglei*, although sometimes weak or represented by a seta, especially in females), having more widely dispersed ommatidia in the eye (ommatidia moderately closely set in *R. naglei*), having a more anteroventrally produced male coxa 1 (unproduced or weakly produced in *R. naglei*), having a more serrate posterior margin of the carpus of gnathopod 1 (weakly serrate in *R. naglei*), having more slender peraeopods, and having a shorter inner ramus on uropod 3 (slightly more than half the length of the outer ramus vs slightly shorter than the outer ramus in *R. naglei*). However, these differences are based on a comparison with the typical form of *R. naglei* and several of them (e.g. eyes, serration of carpus of gnathopod 1) do not hold up well when *R. heardi* is compared with the sand-dwelling form, which appears to be somewhat intermediate between the typical *R. naglei* and *R. heardi*. As mentioned above, comparisons with type material of both described species will be necessary to clarify the taxonomy of this variable genus in south Florida waters. Although *R. heardi* has not been reported from tropical Florida to date, it may eventually be found to occur there.

There is an additional, undescribed species of *Rudilemboides* found on limestone and sand bottoms in somewhat deeper waters (15-20 m) in the southeastern Gulf of Mexico and Biscayne Bay. Males of this species are easily distinguished from those of *R. naglei* by the shape of the propodus of gnathopod 1, which is relatively quite broad and has 2 large, blunt-tipped processes on the palmar margin (slender and without processes, palm obsolescent in *R. naglei*). In addition, the carpus of gnathopod 1 is finely serrate (coarsely serrate in *R. naglei*) and the basis of gnathopod 2 is broad proximally and subrectangular, with a straight anterior margin (slender proximally, broader and produced anterodistally, with a concave anterior margin in *R. naglei*). In both sexes, the acute anterior process on the ocular lobe is slightly shorter and more medially directed in the undescribed species than in *R. naglei*, but there are few other differences between females of the two species and they are best identified by their association with males.

In addition to the above mentioned variability in morphology within *R. naglei*, some developmental variation occurs as well, particularly in the morphology of gnathopod 1 in the male. Gnathopod 1 of indeterminate (too small to be sexed) juveniles resembles that of the female, but even in very small males the carpus is somewhat enlarged and stouter than it would be in a similarly sized female. The propodus is relatively stouter in subadult males than in adult males and has a more distinct palmar margin, which is gradually reduced as the individual matures. Also, the characteristic medially flexed propodus of the adult male *R. naglei* begins to be evident at a very small size, well before the gnathopod has fully developed its adult morphology.

When present, pigmentation in *R. naglei* consists of dorsal bands on pereopod segments 1-2 or 1-3 and segment 5 or 6, as well as several small spots on coxae 1-7, epimera 1-3 and the bases of pereopods 5-7. This pattern may be very faint or absent altogether in preserved material, small juveniles or specimens of the sand-bottom form.

Although *R. naglei* has not been reported from the coastal waters of northeastern Florida, it seems likely that it occurs in the grassbeds there. It is a small species, with adults ranging from 2.5 to 4 mm in length.

See Bousfield, 1973; Myers, 1981 (as *Acuminodeutopus naglei*).

Genus *Unciola* Say, 1818

Regional diagnosis: Antenna 1, accessory flagellum well-developed, 3-5-articulate; antenna 2, peduncle extending well beyond peduncle of antenna 1, articles 3-4 of male very stout, well-developed, those of female moderately stout, width greater than that of article 5 in both sexes, article 4 without marginal notch, flagellum of male with proximal articles unfused, article 1 much shorter than remaining flagellar articles combined; head, anteroventral angle weakly to moderately produced, ocular lobe subquadrate or rounded anteriorly; mandible (left), molar surface without plates; maxilliped, lateral margin of proximal articles without wing-like flange; peraeon segments of male without mid-ventral sternal processes; coxae 1-4 wider than deep or with width subequal to depth, well-separated, not touching or overlapping, ventral margin sparsely setose or lacking setae; coxa 1 slightly produced anteroventrally, anteroventral angle subacute; gnathopods 1-2 of female not exceptionally slender; gnathopod 1 of male normally subchelate, carpus shorter than propodus, propodus without palmar notch, palmar process present, moderately well-developed, located at palmar angle, dactyl extending to palmar angle of propodus; gnathopod 1 of female, carpus shorter than propodus, propodus slightly enlarged, smaller than that of male, stout, length less than twice width; gnathopod 2 of both sexes, basis, anterior margin with short setae, setae much shorter than length of basis; peraeopods 5-7, basis slender, width approximately one half length; epimeron 3 with posteroventral hook; uropods 1-2, inner ramus not greatly reduced, slightly shorter than outer ramus, outer ramus stout, length 2-3 times width; uropod 3, peduncle with distomedial expansion, uniramous, ramus reduced, with marginal setae, without minute second article.

Florida species: *U. dissimilis*, *U. serrata*, *Unciola* sp. C

KEY TO FLORIDA SPECIES OF *UNCIOLA*

1. < Mandible, palp articles 2-3 slender, length at least 5 times width; antennae 1-2 of both sexes, ventral margin of peduncular articles and flagellum lined with short to moderately long, sparse setae; antenna 2 of male, peduncle article 3 with large, stout acute distal process on ventromedial margin; peraeopod 7 slightly longer than peraeopod 6; epimera 2-3, posteroventral process well-developed, separated from posterior margin by broad u-shaped notch *Unciola* sp. C

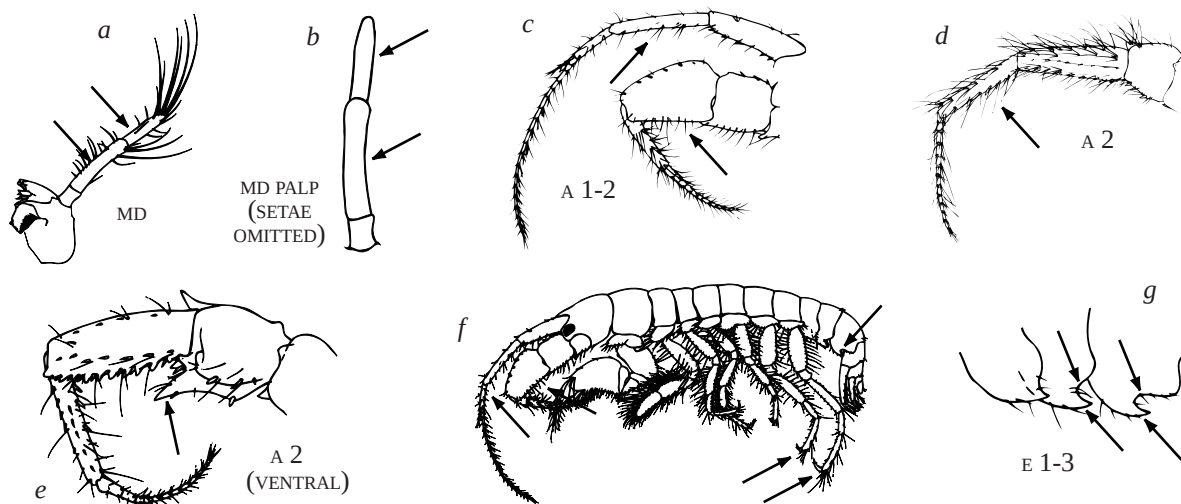


Figure 335.

- < Mandible, palp articles 2-3 stout, length approximately three times width; antennae 1-2 of both sexes, ventral margin of peduncular articles and flagellum lined with long, dense setae; antenna 2 of male, peduncle article 3 without distal process on ventromedial margin; peraeopod 7 subequal to peraeopod 6 in length; epimera 2-3, posteroventral process weak, separated from posterior margin by narrow, subtriangular notch 2

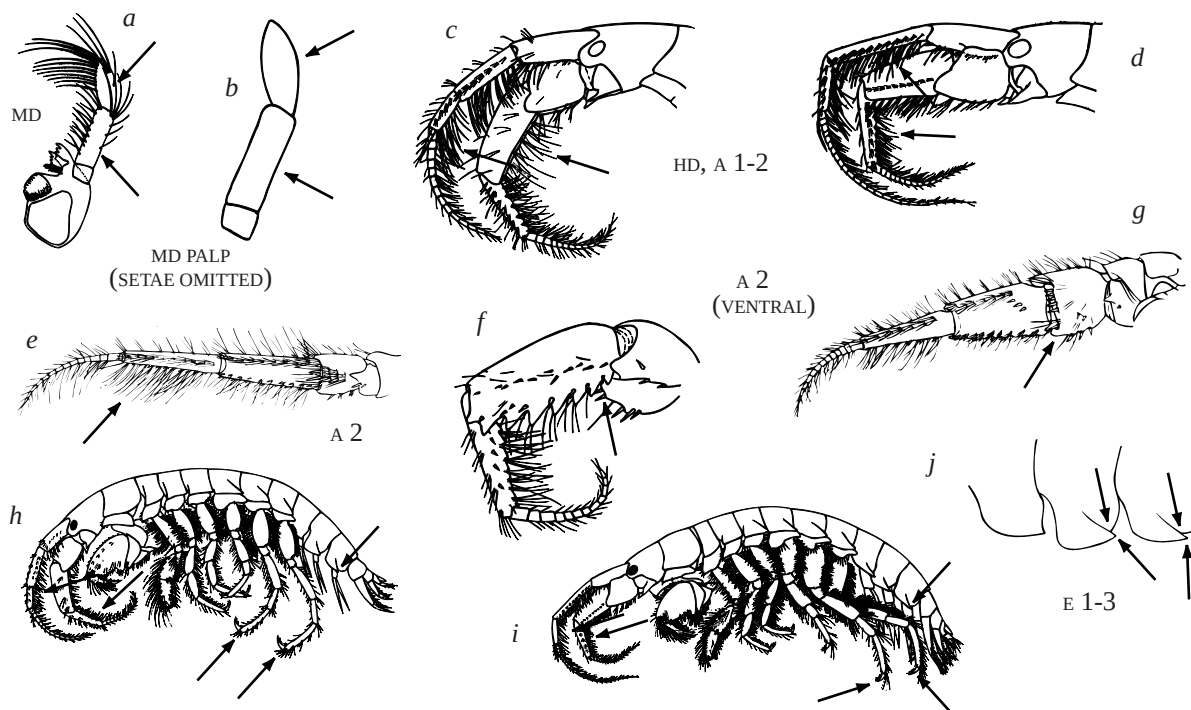


Figure 336.

2. < Maxilliped, palp article 3 broad, subovate; antenna 1 of male, peduncle article 2 longer than article 1; antenna 2 of male, peduncle article 4, ventromedial margin entire, not serrate; uropod 1, outer ramus, outer margin with 6-8 spines; uropod 3, ramus distinctly longer than distal peduncular process, ramus and distal peduncular process strongly setose *Unciola dissimilis*

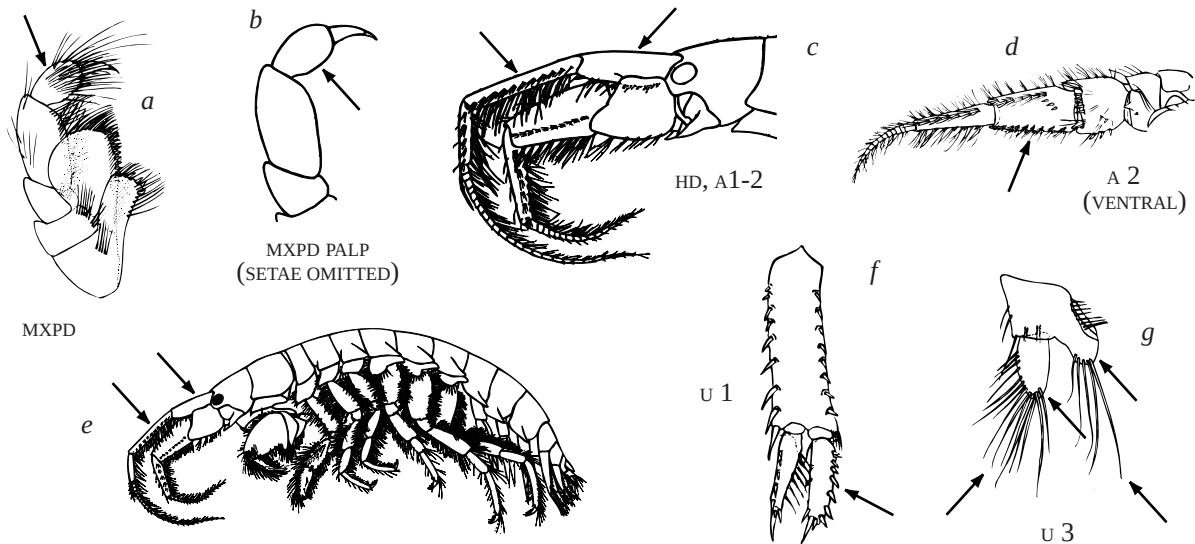


Figure 337.

- < Maxilliped, palp article 3 slender, subrectangular; antenna 1 of male, peduncle article 2 subequal to article 1 in length; antenna 2 of male, peduncle article 4, ventromedial margin strongly serrate; uropod 1, outer ramus, outer margin with 2-4 spines; uropod 3, ramus subequal to or slightly longer than distal peduncular process, ramus and distal peduncular process weakly setose *Unciola serrata*

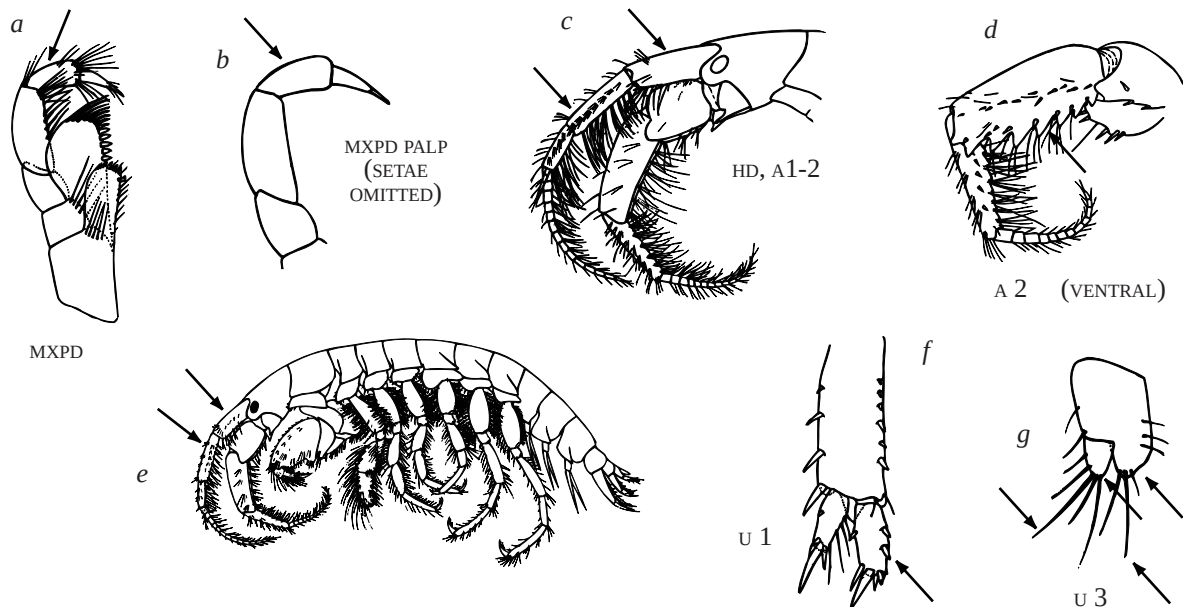


Figure 338.

***Unciola dissimilis* Shoemaker, 1945
(Figure 337)**

Unciola dissimilis Shoemaker, 1945b, pp. 462-463, fig. 8.

Regional diagnosis: Mandible, palp articles 2-3 stout, length approximately three times width; maxilliped, palp article 3 broad, subovate; antennae 1-2 of both sexes, ventral margin of peduncular articles and flagellum lined with long, dense setae; antenna 1 of male, peduncle article 2 longer than article 1; antenna 2 of male, peduncle article 3 without distal process on ventromedial margin, article 4, stout, subtrapezoidal in lateral view, tapering distally, ventromedial margin entire, not serrate; peraeopod 7 subequal to peraeopod 6 in length; epimera 2-3, posteroventral process weak, separated from posterior margin by narrow, subtriangular notch; uropod 1, outer ramus, outer margin with 6-8 spines; uropod 3, ramus distinctly longer than distal peduncular process, ramus and distal peduncular process strongly setose.

Distribution: Northwestern Atlantic from Cape Ann, Massachusetts, to Florida (Bousfield, 1973; Bowen et al., 1979).

Ecology: *Unciola dissimilis* inhabits sandy mud or coarse sand bottoms at a wide range of depths, occurring from the low tide line out to 547 fathoms (1000 m) (Shoemaker, 1945b; Bousfield, 1973).

Remarks: Only the maximum depth of occurrence is given by Bowen et al. (1979) for this species (50-100 m in their study) and it may not be found in waters of less than 10 m in Florida. However, as mentioned above, it occurs from the low water line out to depths of 547 fathoms (1000 m) in the more northern parts of its range (Shoemaker, 1945b; Bousfield, 1973) and it is therefore possible that it also occurs in shallow water off the Florida coast. For that reason, it is included herein.

Male *U. dissimilis* can be readily separated from those of both *U. serrata* and *Unciola* sp. C by the lack of serrations on the ventromedial margin of antenna 4, peduncle article 4 (serrations present in other two species). If antenna 2 is missing, males (and females as well) can be recognized by the stout, subovate article 3 on the maxillipedal palp (slender and subrectangular in the other two species), by having the ramus of uropod 3 extending well beyond the tip of the distal peduncular process (extending subequally in *U. serrata* and *Unciola* sp. C), and by having 6-8 spines along the outer margin of the outer ramus of uropod 1 (2-4 in *U. serrata* and *Unciola* sp. C). In addition, *U. dissimilis* is larger than the other two species, ranging in length from 12 to 16 mm (6-10 mm for *U. serrata*; 5-8 mm for *Unciola* sp. C).

See Shoemaker, 1945b; Bousfield, 1973.

***Unciola serrata* Shoemaker, 1945
(Figure 338)**

Unciola serrata Shoemaker, 1945b, p. 464-465, fig. 9.

Regional diagnosis: Mandible, palp articles 2-3 stout, length approximately three times width; maxilliped, palp article 3 slender, subrectangular; antennae 1-2 of both sexes, ventral margin of peduncular articles and flagellum lined with long, dense setae; antenna 1 of male, peduncle article 2 subequal to article 1 in length; antenna 2 of male, peduncle article 3 without distal process on ventromedial margin, article 4, slender, subrectangular in lateral view, not tapering distally, ventromedial margin strongly serrate, serrations large; peraeopod 7 subequal to peraeopod 6 in length; epimera 2-3, posteroventral process weak, separated from posterior margin by narrow, subtriangular notch; uropod 1, outer ramus, outer margin with 2-4 spines; uropod 3, ramus subequal to or slightly longer than distal peduncular process, ramus and distal peduncular process weakly setose.

Distribution: Northwestern Atlantic from Vineyard Sound, Massachusetts, south to St. Simons Island, Georgia (Shoemaker, 1945b; Bousfield, 1973).

Ecology: *Unciola serrata* is found on clayey silt, sandy mud, sand, shelly sand and gravel bottoms at depths ranging from the low water line to 54 m (Bousfield, 1973; Dickinson et al., 1980).

Remarks: Although *U. serrata* has been reported from Florida waters (Myers, 1981), that record actually refers to *Unciola* sp. C, a new species of *Unciola* found in the eastern Gulf of Mexico (see the **Remarks** section under *Unciola* sp. C for a comparison of the two species). However, on the east coast of the United States, *U. serrata* does occur as far south as central Georgia (Shoemaker, 1945b) and very likely occurs on the sand and shell hash bottoms of northeastern Florida as well. For this reason, as well as for the purpose of distinguishing it from *Unciola* sp. C, this species is included herein.

Unciola serrata males are immediately recognizable by the subrectangular (in lateral view) peduncle article 4 of antenna 2 with its strong, coarse serrations on the ventromedial margin (subtrapezoidal with small or absent serrations in *Unciola* sp. C and *U. dissimilis*, respectively). Unfortunately, because article 4 is more or less subtriangular overall, with the flat surface ventrally, it is difficult to see these serrations if the antenna is viewed laterally. However, if the specimen is turned on its back and the second antennae are viewed ventrally, the serrations are very obvious, as is the lack of a large ventromedial distal process on article 3 (present in *Unciola* sp. C). Additionally, individuals of both sexes can be separated from those of *Unciola* sp. C by the weak posteroventral process and narrow, subtriangular notch on epimera 2-3 (process well-developed, notch broad and u-shaped in *Unciola* sp. C) and from those of *U. dissimilis* by the slender, subrectangular article 3 of the maxillipedal palp (broad and subovate in *U. dissimilis*) and by the relatively short ramus on uropod 3 (subequal to the distal peduncular process in length vs. extending well beyond it in *U. dissimilis*). *Unciola serrata* is a moderately large species, with adults ranging from 6 to 10 mm in length.

See Shoemaker, 1945b; Bousfield, 1973.

***Unciola* sp. C**
(Figure 335)

Unciola serrata: Myers, 1981, p. 57, figs. 30-31.

Regional diagnosis: Mandible, palp articles 2-3 slender, length at least 5 times width; maxilliped, palp article 3 slender, subrectangular; antennae 1-2 of both sexes, ventral margin of peduncular articles and flagellum lined with short to moderately long, sparse setae; antenna 1 of male, peduncle article 2 slightly longer than article 1; antenna 2 of male, peduncle article 3 with large, stout acute distal process on ventromedial margin, article 4 stout, subtrapezoidal in lateral view, tapering distally, ventromedial margin serrate, serrations small; peraeopod 7 slightly longer than peraeopod 6; epimera 2-3, posteroventral process well-developed, separated from posterior margin by broad u-shaped notch; uropod 1, outer ramus, outer margin with 2-4 spines; uropod 3, ramus subequal to or slightly longer than distal peduncular process, ramus and distal peduncular process weakly setose.

Distribution: Eastern Gulf of Mexico from the central West Florida Shelf off of Tampa Bay to south of Grand Isle, Louisiana (Myers, 1981; pers. obs.).

Ecology: On the central West Florida Shelf, *Unciola* sp. C occurs on bottoms composed of silty shell mixed with coralline algae and foraminiferan tests, in areas supporting sparse loggerhead sponge and bryozoan populations (Myers, 1981; Joyce and Williams, 1969). In other areas, it has been found on open medium sand bottoms with a small amount of shell (pers. obs.). Depths of occurrence range from 1 to 55 m.

Remarks: Material of *Unciola* sp. C has been previously reported and illustrated from the Gulf of Mexico as *Unciola serrata* by Myers (1981) and although the two species are very similar in some respects, they are quite different in others. The most notable similarities include the presence of serrations on antenna 2, peduncle article 4 of the male; the slender, subrectangular palp article 3 of the maxilliped; the number of outer marginal spines on the outer ramus of uropod 1 and the length of the ramus of uropod 3 relative to the length of the distal peduncular process. The more prominent differences are as follows: (1) antennae 1 and 2 of both sexes lack the long, dense ventral marginal setae that are found in *U. serrata*; (2) in antenna 1 of the male, article 2 of the peduncle is slightly longer than article 1 and is relatively slender (subequal to article 1 and stouter in *U. serrata*); (3) antenna 2, peduncle article 3 of the male has a large, acute distal process on the ventromedial margin (absent in *U. serrata*); (4) antenna 2, peduncle article 4 of the male is subtrapezoidal in lateral view, narrowing distally, and the ventromedial margin has relatively small serrations (subrectangular in lateral view, ventromedial margin with relatively large serrations in *U. serrata*); (5) mandibular palp articles 2-3 are slender (stout in *U. serrata*); (6) the palm of the propodus of gnathopod 2 in the male is flat to slightly concave (slightly convex in *U. serrata*); (7) the dactyls of peraeopods 3-4 are very long and slender (shorter and stouter in *U. serrata*); (8) peraeopod 7 is slightly longer than peraeopod 6 (subequal in *U. serrata*); and (9) epimera 2-3 have a well-developed posteroventral process and a broad, u-shaped posteroventral notch (weak process and narrow, v-shaped notch in *U. serrata*).

Unciola sp. C also resembles *U. irrorata* Say, 1818, a species found along the northeast coast of the United States, in several respects, including the presence of a process on peduncle article 3 of antenna 2 in the male, the subtrapezoidal (in lateral view), ventromedially serrate peduncle article 4 of the male second antenna, the slender mandibular palp, the flat to slightly concave palm of the male second gnathopod, and the unequal peraeopods 6-7. However, the antennae are more setose in *U. irrorata*, the process on antenna 2, peduncle article 3 of the male appears to be articulated and more slender than in *Unciola* sp. C (see illustrations and description in Shoemaker, 1945b), the serrations on antenna 2, peduncle article 4 of the male are smaller, and epimera 2-3 have a longer, more well-developed posteroventral process in *U. irrorata* than in *Unciola* sp. C. In addition, *Unciola* sp. C is a somewhat smaller species than *U. irrorata*, with adults ranging in length from 5 to 8 mm (10-13 mm for *U. irrorata*). Both *U. serrata* and *U. irrorata* have been reported from the western Gulf of

Mexico by McKinney (1977); however, given the presence of a third species in the Gulf bearing some resemblance to each of these species, these records need to be verified.

As in *U. serrata*, it is difficult to see the small serrations on the ventromedial margin of the male antenna 2, peduncle article 4, if the antenna is viewed laterally. However, if the specimen is turned on its back and the second antennae are viewed ventrally, the serrations are very obvious. This is also true of the diagnostic stout, subacute distal process on the ventromedial margin of peduncle article 3 of the male second antenna.

Juveniles of *Unciola* sp. C and *U. serrata* are quite similar and juvenile males of the former species even lack the diagnostic distal process on the ventromedial margin of antenna 2, peduncle article 3. However, even very small juveniles of both sexes can be separated by the relative stoutness of the mandibular palp articles (slender in *Unciola* sp. C; stout in *U. serrata*) and the shape of the posteroventral margin of epimera 2-3 (well-developed process and broad, u-shaped notch in *Unciola* sp. C; very weak process and virtually nonexistent notch in *U. serrata*).

See Myers, 1981 (as *Unciola serrata*).

Family Argissidae Walker, 1904

Regional diagnosis: Eyes with 4 paired peripheral facets; coxae 1-3 becoming shorter posteriorly; gnathopod 1 well-developed, with 7 articles; gnathopod 2, article 3 not elongate, less than twice as long as wide; urosome segments 1-3 separate.

Florida genera: *Argissa*

Remarks: This family is monotypic, with *Argissa* constituting the only known genus worldwide.

Genus *Argissa* Boeck, 1871

Regional diagnosis: That of the family.

Florida species: *Argissa hamatipes*

Remarks: Only two species have been described from this genus, *A. hamatipes* (Norman, 1869) from the Atlantic and Pacific coasts of North America, northern European waters, the Arctic Ocean and South Africa, and *A. stebbingi* Bonnier, 1896 from southern European waters, West Africa, the Mediterranean Sea, Indian Ocean and Sea of Japan. Barnard (1971) has synonymized these two species as *A. hamatipes*; however, there appear to be differences between them based on the illustrations available in the literature and, as pointed out by Ruffo (1982), if they are synonymous, the distribution would be very wide (cosmopolitan, at depths ranging from 2 to 1919m). It seems more likely that, on closer examination, these two species will be found to represent a complex of similar species.

Argissa hamatipes (Norman, 1869) (Figure 27, Volume 1)

Syrrhoë hamatipes Norman, 1869, p. 279.

Argissa typica Boeck, 1871, p. 125.

Argissa hamatipes: Stebbing, 1906, p. 277.

Regional diagnosis: That of the family.

Distribution: Northern Europe; Arctic Ocean; northwestern Atlantic from the Gulf of St. Lawrence to Cape Cod Bay (Bousfield, 1973; 2001); North Carolina (Fox and Bynum, 1975); southeastern Gulf of Mexico between Cape Romano, Florida and the lower Florida Keys, Tampa Bay, Apalachee Bay (pers. obs.), Perdido Key, Florida (Rakocinski et al., 1993; 1996); northwestern Gulf of Mexico off Texas (McKinney, 1977); Pacific coast of North America from the Bering Sea to Baja California (Barnard, 1967; Bousfield, 2001); South Africa (Griffiths, 1975).

Ecology: *Argissa hamatipes* occurs on medium to fine sand, sand mixed with fine shell hash or gravel (Bousfield, 1973; Dickinson et al., 1980; pers. obs.), or stony or rocky bottoms (Shoemaker, 1930; Bousfield, 1973). It is epibenthic and pelagic (Bousfield, 1973) and may be collected in the plankton (Fox and Bynum, 1975) as well as in benthic samples. The depth range over which this species occurs is extremely broad, ranging from 2 m in the northern Gulf of Mexico (Rakocinski et al., 1993) to 1720 m in the Cedros Trench, Baja California (Barnard, 1967).

Remarks: *Argissa hamatipes* is easily identified by the unusual eye with its 4 pairs of peripheral facets and by the decreasing size of coxae 1-3. Adults of this species range from 3 to 6 mm in length. As mentioned in the **Remarks** section for the genus, given the wide range of habitat types and depths at which this species has been reported, it seems likely that more than one species has been referred to as *Argissa hamatipes* and material from the Gulf of Mexico may prove to be new when carefully compared to type material or material from other regions.

See Shoemaker, 1930; Bousfield, 1973, Lincoln, 1979.

Family Haustoriidae Stebbing, 1906

Regional diagnosis: Antenna 1 longer than peduncle of antenna 2, not strongly geniculate between peduncle articles 1 and 2 (may be weakly geniculate), peduncle article 1 not greatly enlarged, not overhanging articles 2 and 3, accessory flagellum present; ocular lobe produced anteriorly, distally subacute, without small sharp angle or cusp, not bearing eye; eyes weak or absent, without 4 paired or 4-6 pigmented marginal facets, accessory eye absent; buccal mass normal, rounded or subquadrate, not strongly produced ventrally; maxilliped, palp well-developed, 3-articulate; gnathopod 1 simple, 7-articulate; coxae 1-2 not reduced, not hidden by following coxae; coxae 1-3 not decreasing in length; coxae 2-3 not twice as long as coxae 1 and 4; coxae 2-4 without small medial process on posterior margin; gnathopod 2, article 3 not elongate, less than twice as long as wide, propodus and dactyl together not mitten-shaped; peraeopods 3-7 6-articulate, dactyl absent; peraeopod 5 not doubly geniculate at article 4, not geniculate at article 5; peraeopods 5-7, distal articles broad, flattened; peraeopod 7 not elongate, article 6 not subdivided, uniarticulate; uropod 1, inner ramus at least one half length of outer ramus (rarely absent); uropod 2 present; uropod 3 well-developed, biramous, rami subrectangular, not broadly paddle-shaped; urosome segments 1-3 separate; telson not partially fused to urosome segment 3, usually cleft or emarginate (rarely entire), if cleft, lobes subquadrate or subovate, lateral margins with spines or setae, tips flattened or rounded.

Florida genera: *Acanthohaustorius*, *Haustorius*, *Lepidactylus*, *Neohaustorius*, *Parahaustorius*, *Protohaustorius*, *Pseudohaustorius*.

Remarks: The following keys are intended to be used with adult or large subadult specimens and will not work well with small juveniles. Because identification is often dependant on spine counts, numbers of articles in the accessory flagellum, the shapes of particular articles on peraeopods 6-7, or other characters which may change developmentally, many juveniles are best identified by their association with adults. In addition, certain characters normally used to identify some groups of haustoriids (e.g. the relative lengths of the rami of uropod 1, separation of the telson lobes) have been avoided as much as possible in these keys, either because they may change drastically during development or because they are particularly difficult to determine.

Within the keys and text for the family Haustoriidae, the convention of referring to the articles of the peraeopods by number (e.g. article 2, article 3, article 4) rather than by name (e.g. basis, ischium, merus) has been followed. This is in contrast to other families in the guide, where these articles are referred to by name, and was done for ease of comparison with the literature, in which the numbering convention is almost universally followed for this family.

Two morphological features of haustoriids should be mentioned at this point. First, it is important to note that there is no article 7 (dactyl) present on peraeopods 3-7, so that the terminal article is actually article 6 (propodus). Second, the mandibular palp, which is important in the identification of genera and in the identification of members of the genus *Protohaustorius*, is very large in haustoriids and may be easily seen without dissection. It projects anteriorly between the peduncles of the second antennae and may be gently pulled ventrally for viewing the comb row setae of article 3.

Bousfield (1973) and Barnard and Karaman (1991) present alternate keys to the genera included here, with the addition of *Eohaustorius*, a northern Pacific genus.

KEY TO FLORIDA GENERA OF HAUSTORIIDAE

1. < Pleon segment 3, posterodorsal margin strongly decurved or recurved, forming shelf overhanging urosome, dorsal margin not continuous with that of urosome 1 2

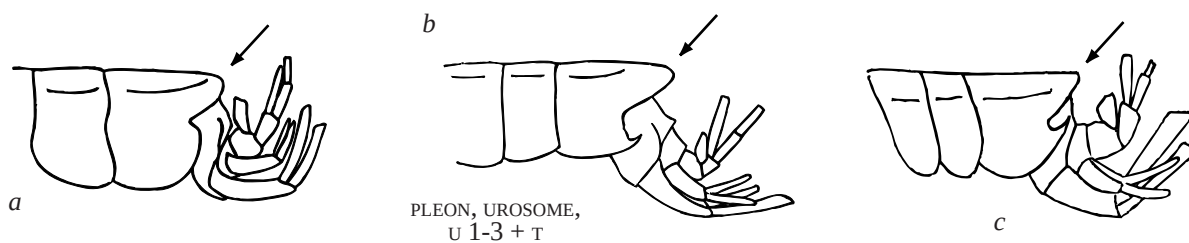


Figure 339.

- < Pleon segment 3, posterodorsal margin not strongly decurved or recurved (may be slightly decurved), not forming shelf overhanging urosome, dorsal margin continuous with that of urosome 1 4

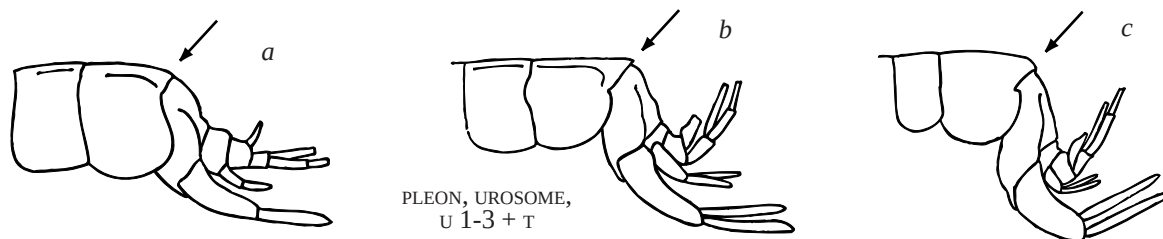


Figure 340.

2. < Antenna 1, accessory flagellum 3-5-articulate; maxilla 2, outer plate slender, strongly curved; epimeron 3 rounded posteroventrally, lacking posteroventral tooth *Haustorius*

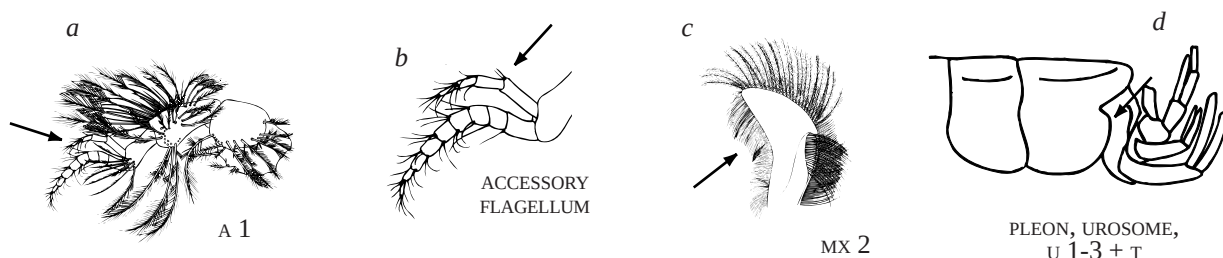


Figure 341.

- < Antenna 1, accessory flagellum 2-articulate; maxilla 2, outer plate stout, straight or slightly curved; epimeron 3 with posteroventral tooth 3

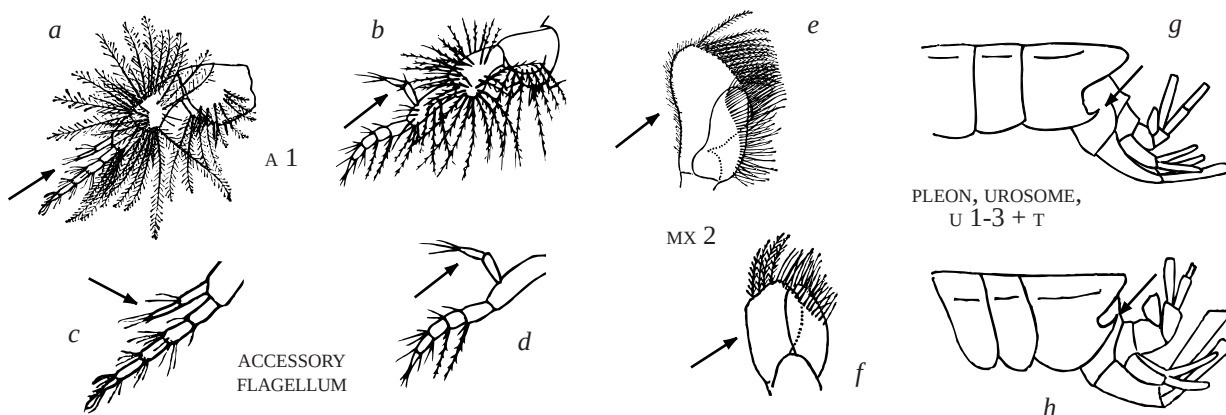


Figure 342.

3. < Antenna 1, insertion of accessory flagellum on peduncle article 3 terminal; maxilla 2, outer plate much longer than inner; peraeopod 6, article 5 with subtruncate distal margin; coxa 7, posterior lobe not extending beyond posterior margin of article 2; uropod 1, rami slender, inner ramus subequal to or shorter than outer *Acanthohaustorius*

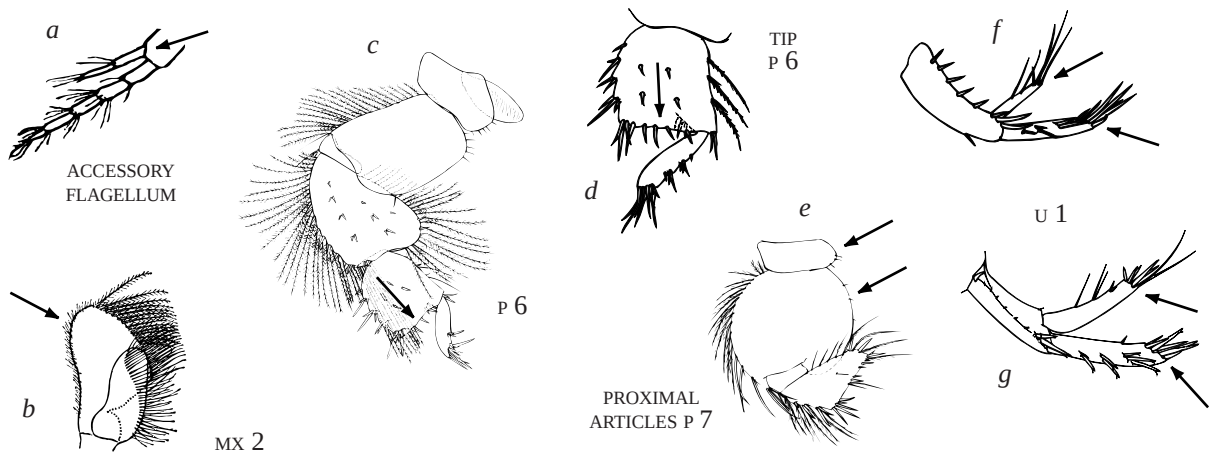


Figure 343.

- < Antenna 1, insertion of accessory flagellum on peduncle article 3 subterminal; maxilla 2, outer plate subequal to or slightly longer than inner; peraeopod 6, article 5 with convex distal margin; coxa 7, posterior lobe extending beyond posterior margin of article 2; uropod 1, rami stout, inner ramus longer than outer *Pseudohaustorius*

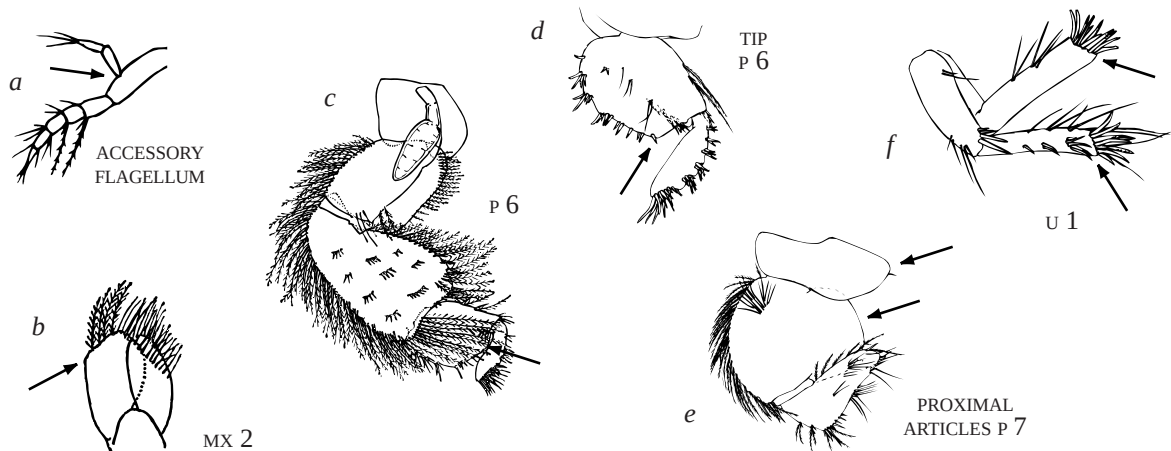


Figure 344.

4. < Antenna 2, peduncle article 5 with expanded posterodistal lobe; mandible without incisor process; uropod 2 uniramous; telson entire or slightly emarginate *Neohaustorius*

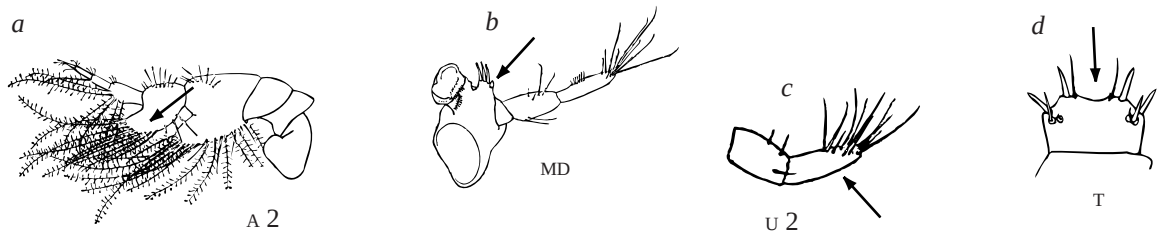


Figure 345.

- < Antenna 2, peduncle article 5 without expanded posterodistal lobe; mandible with incisor process; uropod 2 biramous; telson shallowly v-cleft or cleft nearly to base 5

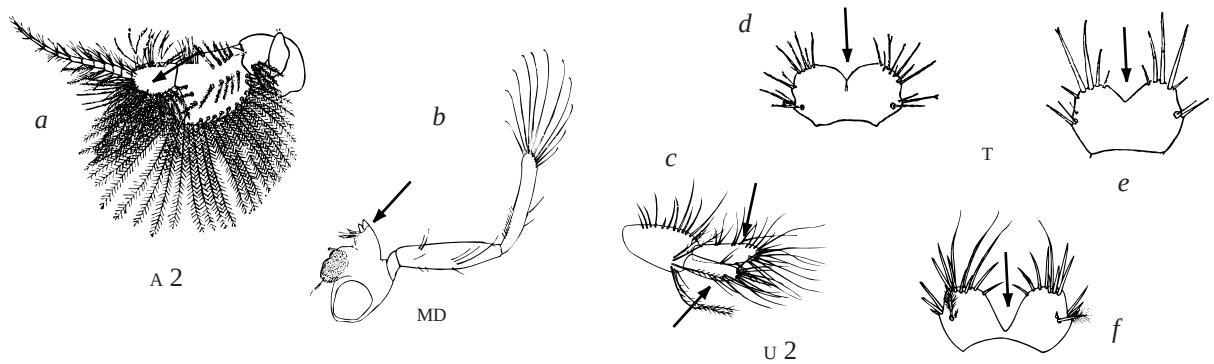


Figure 346.

5. < Mandible, palp article 3 with median row of comb setae; pereopod 6, article 5 with distal margin subequal to or slightly wider than length of article 6; pereopod 7, article 4 subtriangular, narrowing posteriorly, spines restricted to apex and distal margin; telson cleft nearly to base *Lepidactylus*

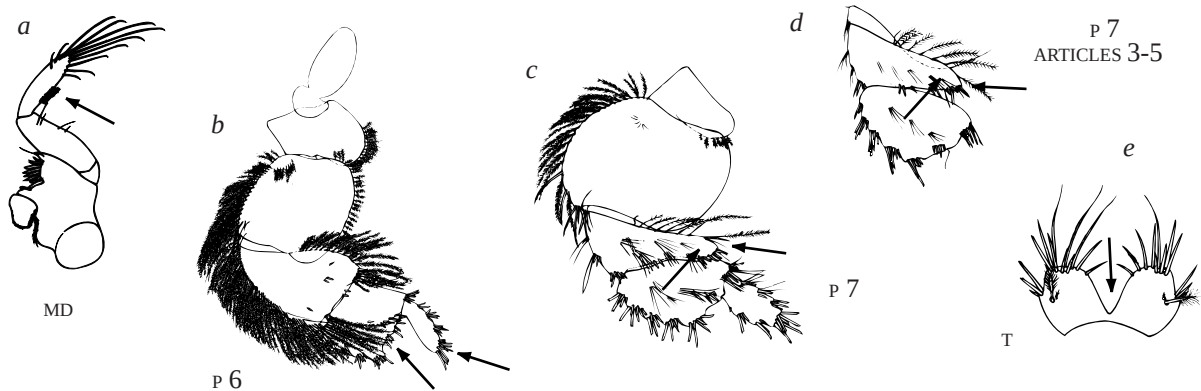


Figure 347.

- < Mandible, palp article 3 with proximal or distal row of comb setae; pereopod 6, article 5 with distal margin narrower than length of article 6; pereopod 7, article 4 usually subrectangular, posterior margin with 3-4 strong spines (occasionally subtriangular, posterior margin with 1 strong spine, if subtriangular, then coxa 7 acute posteriorly); telson shallowly v-cleft distally 6

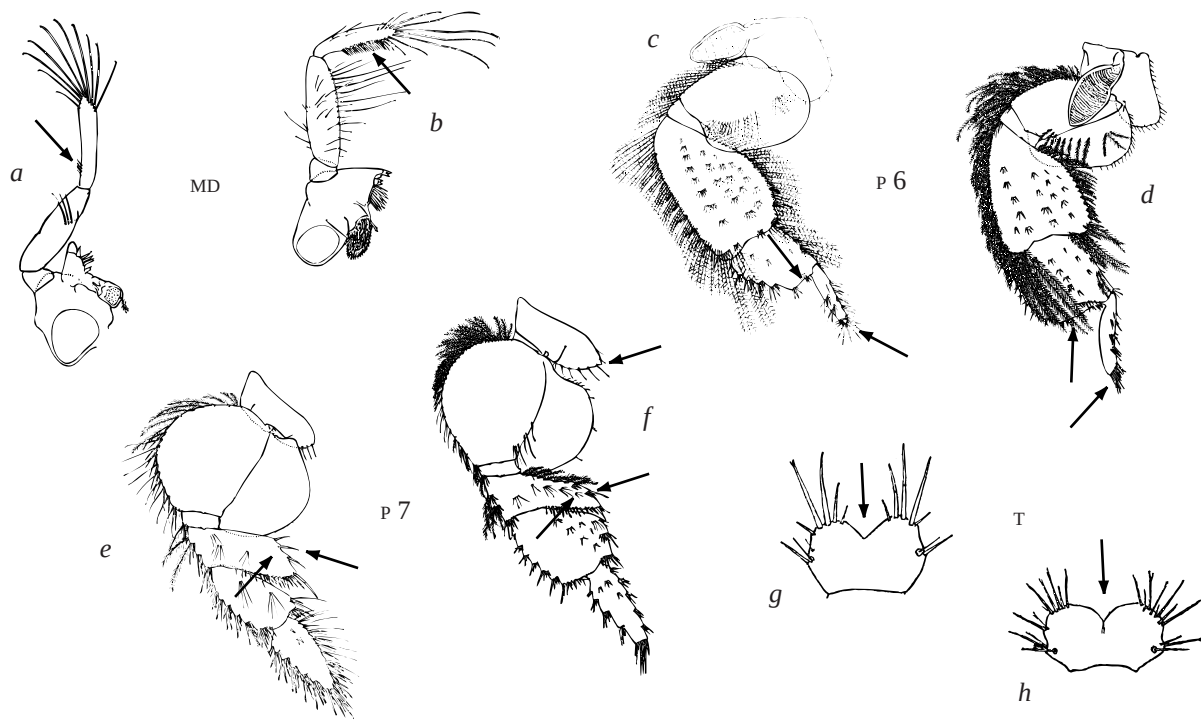


Figure 348.

6. < Antenna 1 weakly geniculate between articles 1 and 2; body slender fusiform in dorsal view; mandible, palp article 3 with proximal row of comb setae; maxilla 2, outer plate subequal to or slightly longer than inner; maxilliped, palp article 3 clavate; peraeopod 6, article 6 with 0-1 distal spine clusters on posterior margin; uropod 2 reduced *Protohaustorius*

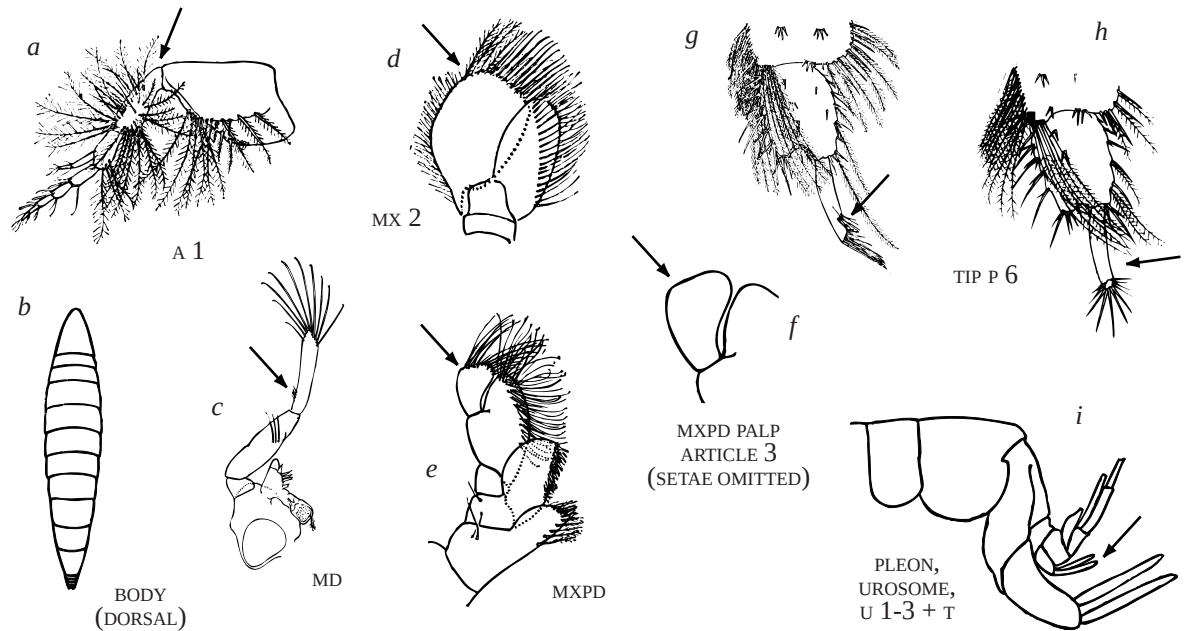


Figure 349.

- < Antenna 1 not geniculate between articles 1 and 2; body broad fusiform in dorsal view; mandible, palp article 3 with distal row of comb setae; maxilla 2, outer plate much longer than inner; maxilliped, palp article 3 geniculate; peraeopod 6, article 6 with 3-4 spine clusters on posterior margin; uropod 2 well-developed *Parahaustorius*

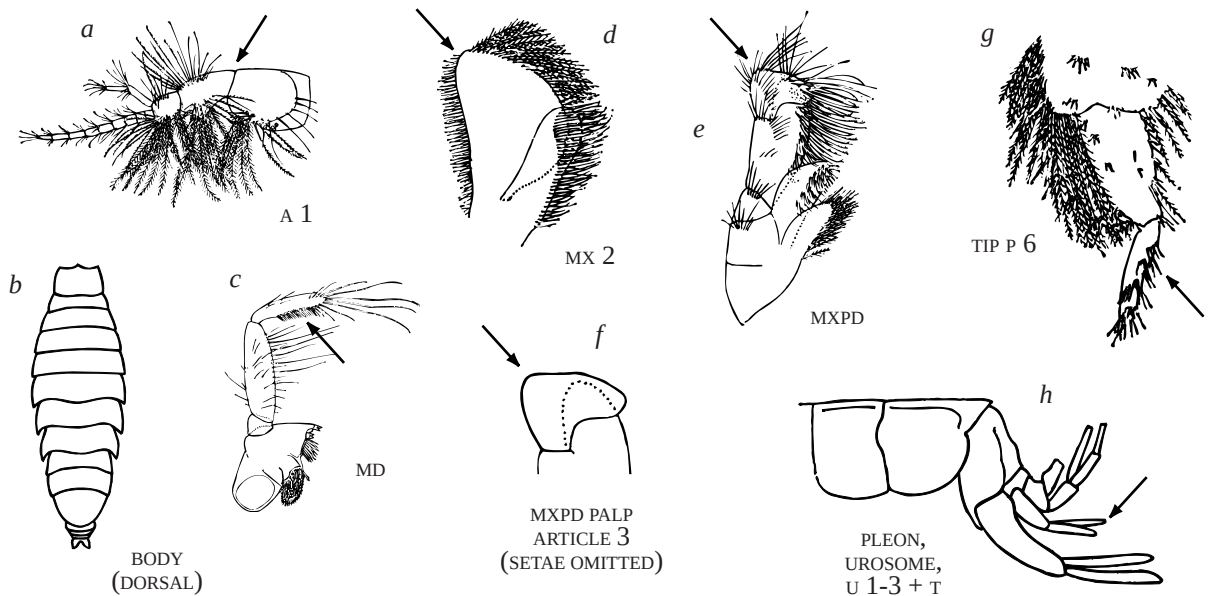


Figure 350.

Genus *Acanthohaustorius* Bousfield, 1965

Regional diagnosis: Antenna 1 not geniculate between articles 1 and 2, accessory flagellum 2-articulate, inserted terminally on peduncle article 3; antenna 2, peduncle article 5 without expanded posterodistal lobe, flagellum article 1 not elongate, no more than twice as long as wide; body broad fusiform in dorsal view; mandible with incisor process, palp article 3 with median row of comb setae; maxilla 2, outer plate stout, straight or slightly curved, much longer than inner; maxilliped, palp article 3 geniculate; coxa 7, posterior lobe usually acute or subacute posteriorly (rarely rounded), not extending beyond posterior margin of article 2; peraeopod 6, article 5 with subtruncate distal margin, distal margin subequal to length of article 6, article 6 with 2-4 spine clusters on posterior margin; peraeopod 7, article 4 subtriangular or subtrapezoidal, narrowing posteriorly, posterior margin with 1-3 moderately strong spines; pleon segment 3, posterodorsal margin strongly decurved or recurved, forming shelf overhanging urosome, dorsal margin not continuous with that of urosome 1; epimeron 3 with posteroventral tooth; uropod 1, rami slender, inner ramus subequal to or shorter than outer; uropod 2 well-developed, biramous; telson usually cleft nearly to base (rarely narrowly uncleft distally).

Florida species: *A. bousfieldi*, *A. cf intermedius*, *A. pansus*, *A. shoemakeri*, *A. uncinus*, *Acanthohaustorius* sp. A, *Acanthohaustorius* sp. C.

Remarks: *Acanthohaustorius mills*i has been reported from eastern Florida waters (e.g. Bousfield, 1973; Charvat et al., 1990); however it seems likely that these records actually refer to *Acanthohaustorius* sp. C, a form which appears to be intermediate between *A. mills*i and *A. similis*, but somewhat closer to the latter species. Because of the confusion surrounding the taxonomy and distribution of these taxa, which can only be resolved by a comparison of the type material with specimens from Georgia and Florida, both *A. similis* and *A. mills*i are included in the following key, although they may not actually occur in Florida.

KEY TO FLORIDA SPECIES OF *ACANTHOHAUSTORIUS*

1. < Uropod 1, peduncle with very short, stubby spines on dorsolateral margin *Acanthohaustorius bousfieldi*

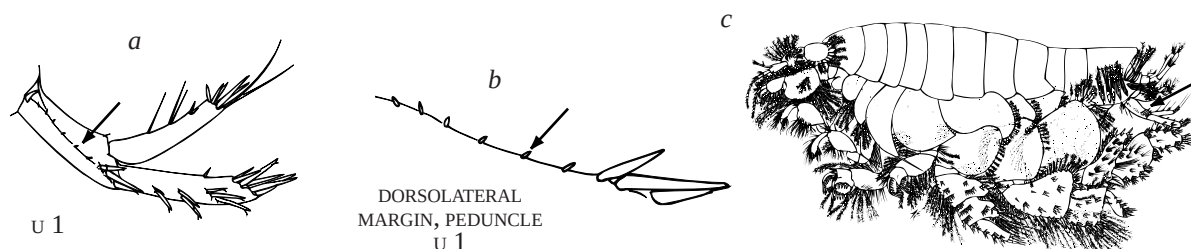


Figure 351.

- < Uropod 1, peduncle with moderately long to long slender spines on dorsolateral margin 2

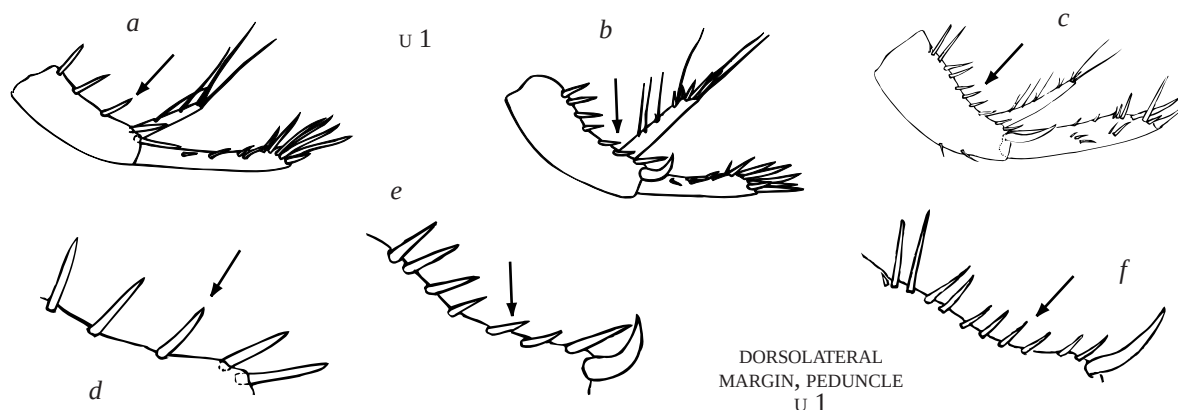


Figure 352.

2. < Pleon segment 3, posterodorsal margin strongly recurved, shelf large, conical *Acanthohaustorius cf intermedius*

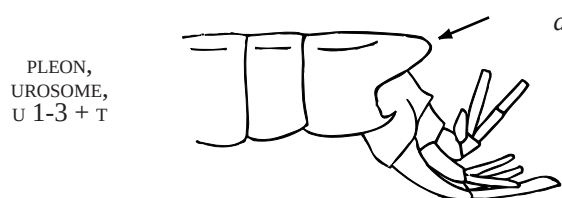


Figure 353.

- < Pleon segment 3, posterodorsal margin decurved or slightly recurved, shelf small 3

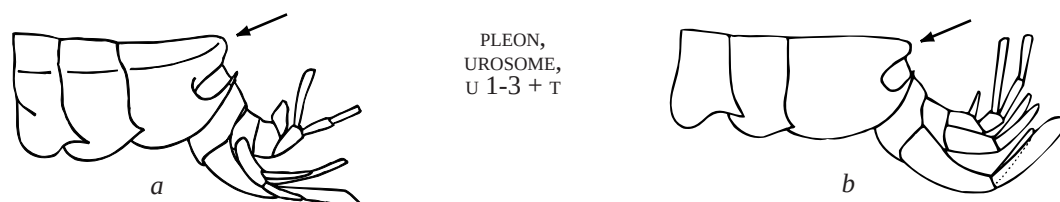


Figure 354.

3. < Uropod 1, peduncle with stout, dorsally hooked interrampal spine . *Acanthohaustorius uncinus*

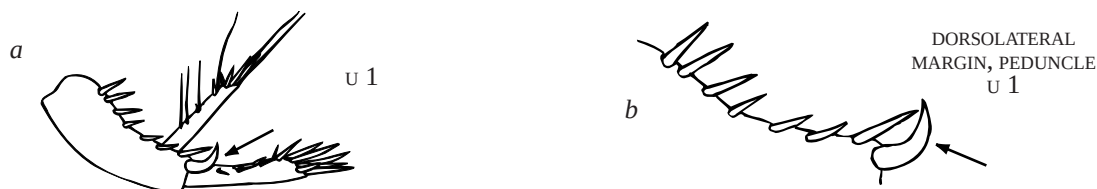


Figure 355.

- < Uropod 1, peduncle without stout, dorsally hooked interrampal spine (may have large, slightly curved spine)..... 4

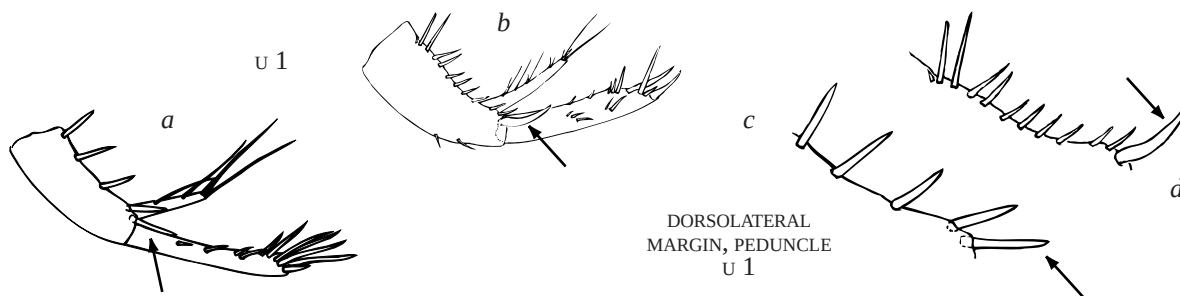


Figure 356.

4. < Uropod 1, peduncle, distal interrampal spine longer and much stouter than other interrampal spines, outer ramus, stout apical spine subequal to or slightly shorter than subapical spines
..... *Acanthohaustorius shoemakeri*

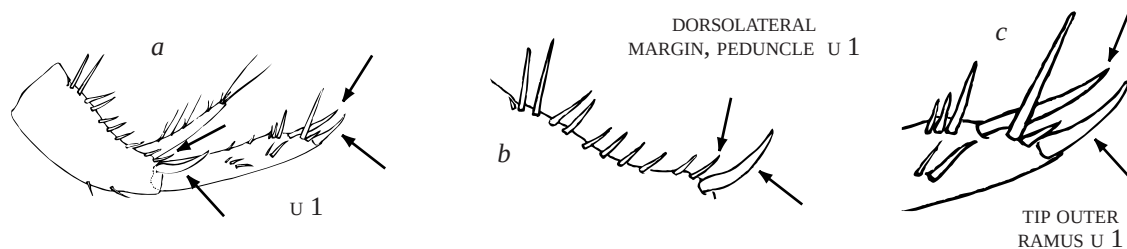


Figure 357.

- < Uropod 1, peduncle, distal interrampal spine not longer and stouter than other interrampal spines, outer ramus, stout apical spine much shorter than subapical spines 5

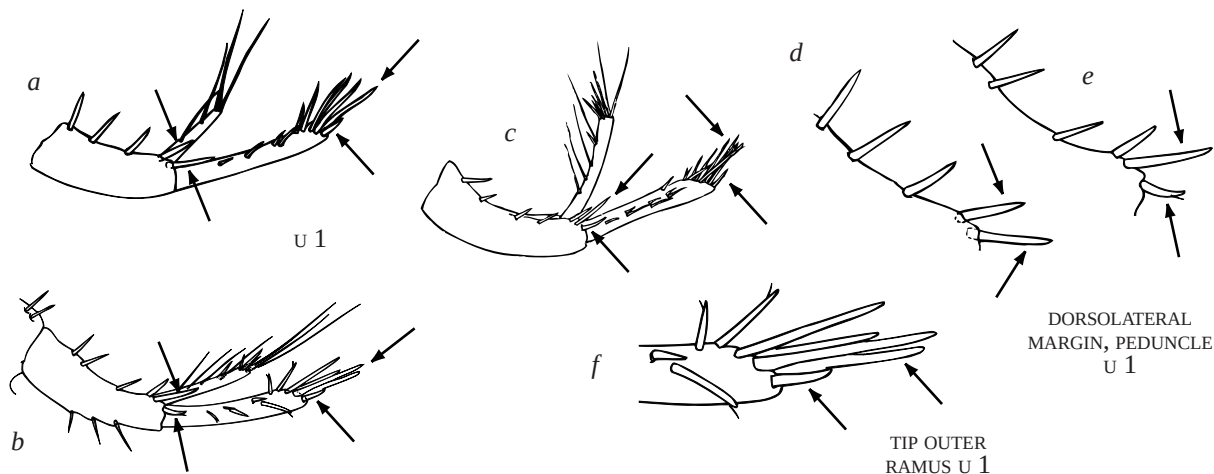


Figure 358.

5. < Coxa 7, posterior lobe rounded or subacute posteriorly; uropod 1, peduncle with very long slender spines on dorsolateral margin, spines subequal in length 6

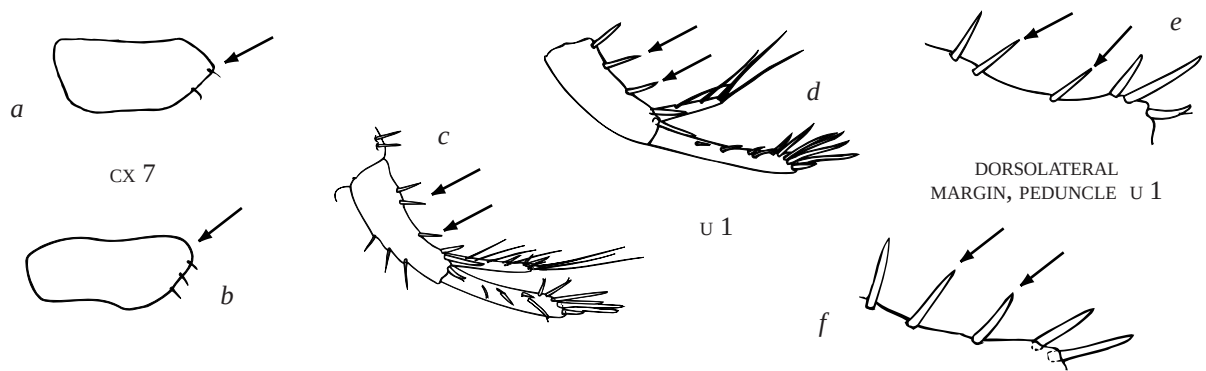


Figure 359.

- < Coxa 7, posterior lobe acute posteriorly; uropod 1, peduncle with moderately long spines on dorsolateral margin, spines decreasing in length distally 7

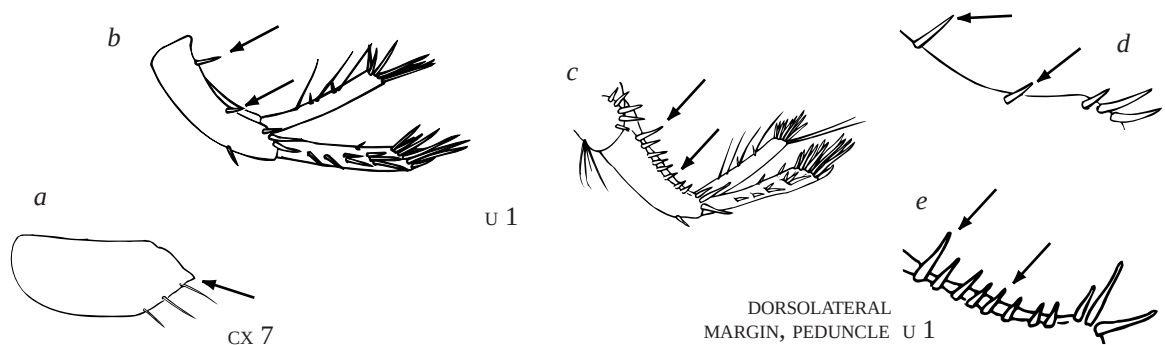


Figure 360.

6. < Peraeopod 6, article 5 with 4-7 long spines on distal margin; peraeopod 7, article 5, posterior margin with cluster of 1-2 setae inserted proximal to posterodistal angle; epimeron 3, posteroventral tooth long, slender; uropod 1, peduncle without ventral spines
 *Acanthohaustorius* sp. A

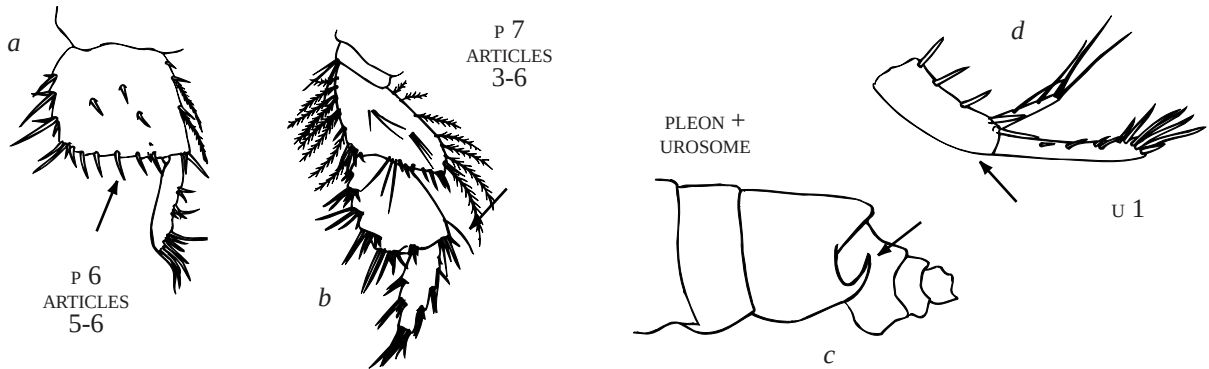


Figure 361.

- < Peraeopod 6, article 5 with 1-3 short spines on distal margin; peraeopod 7, article 5, posterior margin without setae inserted proximal to posterodistal angle; epimeron 3, posteroventral tooth short, stout; uropod 1, peduncle with 2-3 ventral spines
 *Acanthohaustorius pansus*

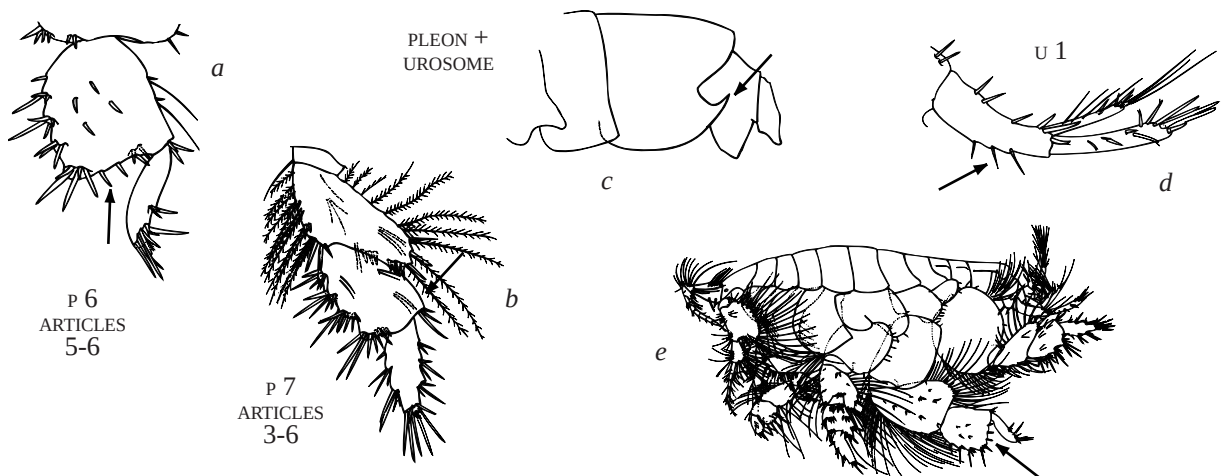


Figure 362.

7. < Peraeopod 6, article 5 with 9-10 spine groups (composed of 1 or more spines) on lateral surface; uropod 1, peduncle with 8-10 spines on dorsolateral margin (in addition to interrampal spines) *Acanthohaustorius similis*

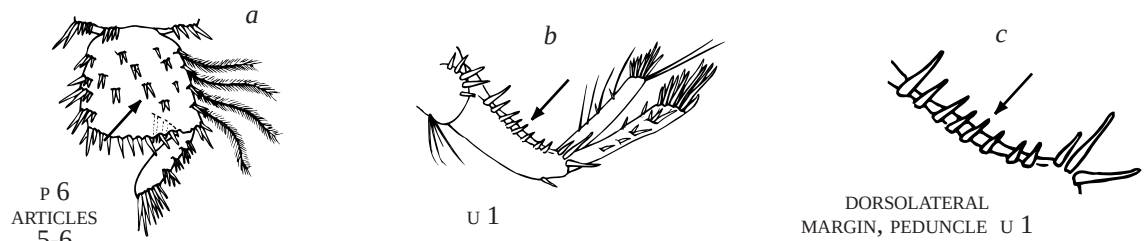


Figure 363.

- < Peraeopod 6, article 5 with 3-7 spine groups (composed of 1 or more spines) on lateral surface; uropod 1, peduncle with 2-4 spines on dorsolateral margin (in addition to interrampal spines) 8

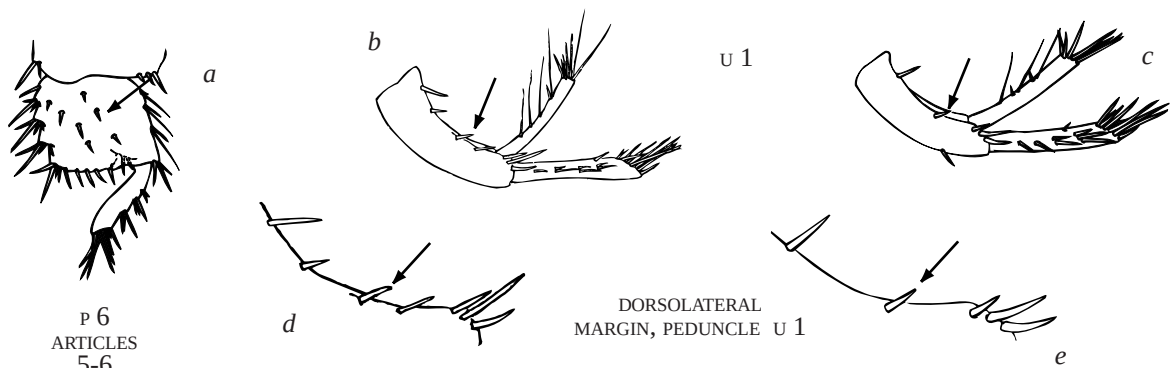


Figure 364.

8. < Peraeopod 7, article 5, posterior margin evenly convex, without spines proximal to posterodistal angle; epimeron 3, posteroventral tooth very long, reaching as far as dorsolateral pleonal notch; uropod 1, peduncle without ventral spines, inner ramus with 2 long, very slender apical setae *Acanthohaustorius mills*

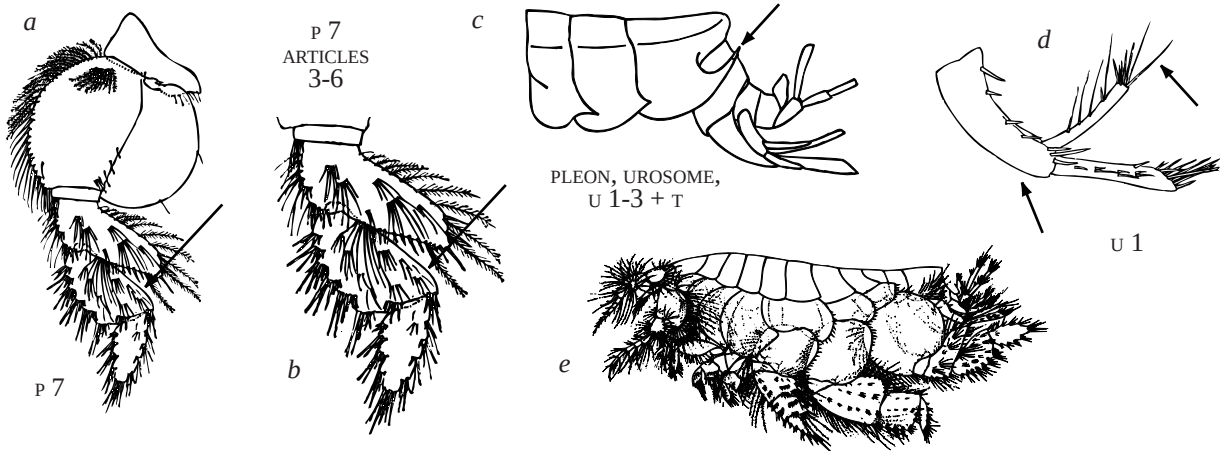


Figure 365.

- < Peraeopod 7, article 5, posterior margin obtusely angled distally, with 1-2 spines proximal to posterodistal angle; epimeron 3, posteroventral tooth moderately long, reaching one half to two thirds distance to dorsolateral pleonal notch; uropod 1, peduncle with 1 ventral marginal spine, inner ramus without long, slender apical setae *Acanthohaustorius* sp. C

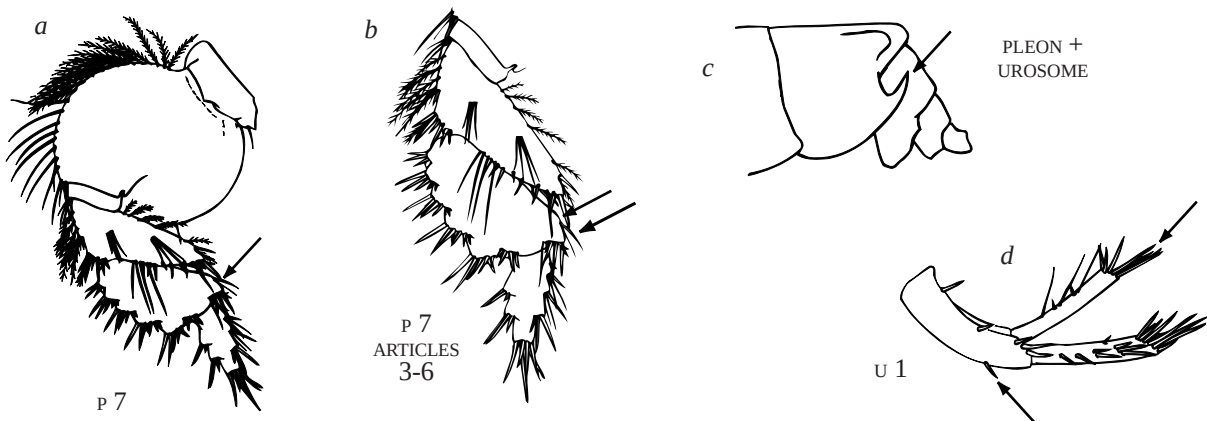


Figure 366.

***Acanthohaustorius bousfieldi* Frame, 1980
(Figure 351)**

Acanthohaustorius sp. A: Dickinson et al., 1980, p. 28.

Acanthohaustorius bousfieldi Frame 1980, pp. 76-79, figs. 1-3.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 6, article 5 with 6-8 spinegroups on lateral surface, with 3-4 moderately long spines on distal margin; peraeopod 7, article 5, posterior margin evenly convex, without spines or setae proximal to posterodistal angle; pleon segment 3, posterodorsal margin decurved, shelf small; epimeron 3, posteroventral tooth long, slender, reaching nearly to dorsolateral pleonal notch; uropod 1, peduncle without ventral spines, dorsolateral margin with 6-9 very short, stubby spines (in addition to interrampal spines), subequal in length, without stout, dorsally hooked interrampal spine, distal interrampal spine not longer and stouter than other interrampal spines, inner ramus with 2 very long, slender apical setae, outer ramus, stout apical spine shorter than subapical spines.

Distribution: Northwestern Atlantic from Long Island Sound south to Virginia (Frame, 1980) and east central Florida (Thomas and Barnard, 1984).

Ecology: *Acanthohaustorius bousfieldi* occurs on clean, coarse sand bottoms or in poorly sorted shell hash at depths ranging from 8 to 30 m (Frame, 1980; Thomas and Barnard, 1984).

Remarks: This relatively large (6-11 mm) species is easily recognized by the short stubby spines on the dorsolateral margin of the peduncle of uropod 1. As in other haustoriids, males are somewhat smaller than females and Florida specimens generally tend to be less spinose and setose than material from the more northern parts of the range.

See Dickinson et al., 1980 (as *Acanthohaustorius* sp. A); Frame, 1980; Thomas and Barnard, 1984.

***Acanthohaustorius cf intermedius* Bousfield, 1965
(Figure 353)**

Acanthohaustorius intermedius Bousfield, 1965, pp. 202-203, figs. 1c, 3e, 4a, 24-25.
Acanthohaustorius sp. B: Rakocinski et al., 1993, p. 102.

Regional diagnosis: Coxa 7, posterior lobe subacute posteriorly; peraeopod 6, article 5 with 3-5 spine groups on lateral surface, with 2-3 short to moderately long spines on distal margin; peraeopod 7, article 5, posterior margin obtusely angled distally, with cluster of 2-3 spines proximal to posterodistal angle; pleon segment 3, posterodorsal margin strongly recurved, shelf large, conical; epimeron 3, posteroventral tooth short, stout, reaching less than one half distance to dorsolateral pleonal notch; uropod 1, peduncle with 1 ventral spine, dorsolateral margin with 6-7 moderately long, slender spines (in addition to interrampal spines), subequal in length, without stout, dorsally hooked interrampal spine, distal interrampal spine not longer and stouter than other interrampal spines, inner ramus with 2-3 very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Northwestern Atlantic from Cape Cod and Georges Bank to northeastern Florida (Bousfield, 1973); Perdido Key, Florida (Rakocinski et al., 1993; 1996 [as *Acanthohaustorius* sp. B]); Pelican Bay, Alabama.

Ecology: This species occurs in fine sand from the low intertidal region to depths of 40 m (Bousfield, 1973). Although it may be found in very shallow water on protected shores, on open, high energy beaches, *A. cf intermedius* is found in somewhat deeper water, where sediments are finer. For example, Gulf of Mexico populations from Perdido Key, Florida, were found at depths of 2 to 6 m (the greatest depth sampled by Rakocinski et al., 1993; 1996).

Remarks: *Acanthohaustorius cf intermedius* can be distinguished from all other species of *Acanthohaustorius* in the region by the large, conical posterodorsal shelf on pleon segment 3, which projects far out over the urosome. However, there are some slight differences between specimens from northwestern Florida and Georgia and the original description of the type material from Massachusetts. First, coxa 7 is shown to have a truncate posterior margin in the types, while in Georgia and Florida specimens it is subacute. Also, peraeopod 7, article 4 in Georgia and Florida material has 2 large spines on the posterior margin above the posteroventral angle, while the types have only 1. The Georgia and Florida specimens agree well with each other and probably represent a southern form of *A. intermedius*. This is a relatively small species, ranging in size from 3 to 5 mm.

See Bousfield, 1965, 1973.

Acanthohaustorius mills Bousfield, 1965
(Figure 365)

Acanthohaustorius mills Bousfield, 1965, pp. 199-201, figs. 1b, 3f, 4b, 22-23.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 6, article 5 with 3-7 spine groups on lateral surface, with 5-7 long spines on distal margin; peraeopod 7, article 5, posterior margin evenly convex, without spines proximal to posterodistal angle (rarely has 1 slender seta); pleon segment 3, posterodorsal margin decurved, shelf small; epimeron 3, posteroventral tooth very long, reaching as far as dorsolateral pleonal notch; uropod 1, peduncle without ventral spines, dorsolateral margin with 2-4 moderately long, slender spines (in addition to interrampal spines), decreasing in length distally, without stout, dorsally hooked interrampal spine, distal interrampal spine not longer and stouter than other interrampal spines, inner ramus with 2 very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Northwestern Atlantic from southern Maine to northeastern Florida (Bousfield, 1973) (but see **Remarks** sections for the genus *Acanthohaustorius* and for *Acanthohaustorius* sp. C).

Ecology: *Acanthohaustorius mills* is most common in protected fine to medium sand habitats in medium to high salinity waters (Bousfield, 1973). It is found at depths ranging from the low water line out to 50 m, although deeper records may actually refer to *A. similis*, which usually replaces *A. mills* in offshore waters (Frame, 1980).

Remarks: *Acanthohaustorius mills* is very close to both *A. similis* and *Acanthohaustorius* sp. C, from which it can be distinguished by the lack of spines on the ventral margin of the peduncle. However, *A. similis* occasionally lacks these spines as well, and in such cases *A. mills* can be recognized by the smaller number of facial spine groups on peraeopod 6, article 5 (3-7 compared to 9-10 in *A. similis*) and the smaller number of spines on the dorsolateral margin of the peduncle of uropod 1 (2-4 compared to 8-10 in *A. similis*). *Acanthohaustorius mills* is a medium-sized haustoriid, ranging in length from 5 to 8 mm.

See Bousfield, 1965, 1973.

***Acanthohaustorius pansus* Thomas and Barnard, 1984
(Figure 362)**

Acanthohaustorius pansus Thomas and Barnard, 1984, pp. 910-918, figs. 1-5.

Regional diagnosis: Coxa 7, posterior lobe subacute or rounded posteriorly; peraeopod 6, article 5 with 3-4 spine groups on lateral surface, with 1-3 short spines on distal margin; peraeopod 7, article 5, posterior margin evenly convex, without spines or setae proximal to posterodistal angle; pleon segment 3, posterodorsal margin decurved, shelf small; epimeron 3, posteroventral tooth short, stout, reaching less than one half distance to dorsolateral pleonal notch; uropod 1, peduncle with 2-3 ventral spines, dorsolateral margin with 3-4 long, slender spines (in addition to interramal spines), subequal in length, without stout, dorsally hooked interramal spine, distal interramal spine not longer and stouter than other interramal spines, inner ramus with 2-3 very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Florida, from Sebastian Inlet (Charvat et al., 1990) to the Florida Keys and the north-eastern Gulf of Mexico (Thomas and Barnard, 1984; Thomas, 1993).

Ecology: This species occurs in coarse, medium or fine sand, often near rock or reef outcroppings, at depths of 1 to 40 m (Thomas and Barnard, 1984; Thomas, 1993; Charvat et al., 1990; pers. obs.).

Remarks: *Acanthohaustorius pansus* can be distinguished from all but two other species of *Acanthohaustorius* in the region by the rounded or subacute posterior margin of the posterior lobe of coxa 7. Of these two, it is most easily separated from *A. cf intermedius* by its lack of an extremely large conical shelf on the posterior margin of pleon segment 3 and from *Acanthohaustorius* sp. A by the presence of ventral spines on the peduncle of uropod 1 and the short posteroventral tooth on epimeron 3. The completely separated lobes of the telson, mentioned by Thomas and Barnard (1984) and Thomas (1993) as diagnostic for this species, are difficult to see and the apparent degree of separation depends a great deal on the angle of viewing. Because of this, this character has not been used here. *Acanthohaustorius pansus* is cream-colored in life, with small silvery eyes (Thomas, 1993) and ranges in length from 3 to 5 mm.

See Thomas and Barnard, 1984; Thomas, 1993.

***Acanthohaustorius shoemakeri* Bousfield, 1965
(Figure 357)**

Acanthohaustorius shoemakeri Bousfield, 1965, pp. 204-206, figs. 28-29.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 6, article 5 with 4-6 spine groups on lateral surface, with 4-6 long spines on distal margin; peraeopod 7, article 5, posterior margin slightly angled distally, with cluster of 1-3 spines proximal to posterodistal angle; pleon segment 3, posterodorsal margin decurved or slightly recurved, shelf small; epimeron 3, posteroventral tooth moderately long, stout, reaching one half to two thirds distance to dorsolateral pleonal notch; uropod 1, peduncle with 1-2 ventral spines, dorsolateral margin with 4-8 moderately long to long, slender spines (in addition to interrampal spines), decreasing in length distally, without stout, dorsally hooked interrampal spine, distal interrampal spine longer and much stouter than other interrampal spines, inner ramus with 2-3 very long, slender apical setae, outer ramus, stout apical spine subequal to or slightly shorter than subapical spines.

Distribution: Northwestern Atlantic from Cape Cod, Massachusetts, to Georgia (Bousfield, 1973); Sebastian Inlet (Charvat et al., 1990) and the Indian River Lagoon system, Florida (Nelson, 1995); Perdido Key, Florida (Rakocinski et al., 1993; 1996).

Ecology: This species is found in medium fine to fine sand, usually in somewhat deeper waters, although the actual reported depth range is from 1 to 20 m (Bousfield, 1973; Charvat, 1990; Rakocinski et al., 1993; 1996).

Remarks: *Acanthohaustorius shoemakeri* can be readily recognized by the distinctive morphology of uropod 1. In this species, the distal interrampal spine on the peduncle of uropod 1 is longer and much stouter than the other interrampal spines and, in addition, the apical spine on the outer ramus is very large and stout and is nearly as long as the more slender subapical spines. The only other species of *Acanthohaustorius* in the area with a very stout distal interrampal spine on the peduncle is *A. uncinus*; however, in that species the spine is strongly dorsally hooked, while in *A. shoemakeri* it is only slightly curved. No other known species in the area has such a well-developed apical spine on the outer ramus of uropod 1; in all other species the apical spine is much shorter than the subapical spines.

There are some slight morphological differences between specimens from different parts of the range of *Acanthohaustorius shoemakeri*. For example, in Gulf of Mexico material from Perdido Key, Florida, the posterior margin of peraeopod 7, article 4 is somewhat more tapering than in material from South Carolina, and has 3-4 rather than 4-5 spines, resembling the illustrations of the type material described by Bousfield (1965) from Martha's Vineyard, Massachusetts. In addition, Perdido Key specimens have fewer spines on the dorsolateral margin of the peduncle of uropod 1 than either the South Carolina or the type material (4-6 compared to 7-8). However, the specimens are very similar in all other respects and adults range in size from 4.5 to 7 mm across the entire range.

See Bousfield, 1965, 1973.

***Acanthohaustorius similis* Frame, 1980
(Figure 363)**

Acanthohaustorius sp. B: Dickinson et al., 1980, p. 28.

Acanthohaustorius similis Frame, 1980, pp. 79-83, figs. 4-5.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 6, article 5 with 9-10 spine groups on lateral surface, with 6-8 long spines on distal margin; peraeopod 7, article 5, posterior margin slightly angled distally, with 1 spine proximal to posterodistal angle; pleon segment 3, posterodorsal margin decurved or slightly recurved, shelf small; epimeron 3, posteroventral tooth very long, reaching as far as dorsolateral pleonal notch; uropod 1, peduncle with 0-2 ventral spines, dorsolateral margin with 8-10 moderately long, slender spines (in addition to interrampal spines), decreasing in length distally, without stout, dorsally hooked interrampal spine, distal interrampal spine not longer and stouter than other interrampal spines, inner ramus with 2 very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Northwestern Atlantic from Nantucket, Massachusetts, south to Cape Hatteras (Dickinson et al., 1980 [as *Acanthohaustorius* sp. B]; Frame, 1980).

Ecology: *Acanthohaustorius similis* occurs in clean, fine sand, occasionally mixed with shell or gravel, at depths of 3 to 74 m, generally replacing *A. millsii* in deeper offshore waters (Dickinson et al., 1980 [as *Acanthohaustorius* sp. B]; Frame, 1980).

Remarks: As mentioned in the **Remarks** section for *A. millsii*, *A. similis* is very close to both that species and *Acanthohaustorius* sp. C. It can be distinguished from both of these species by the greater number of spines on the lateral surface of peraeopod 6, article 5 (9-10 spine groups as opposed to 3-7 in *A. millsii* and *Acanthohaustorius* sp. C) and by the greater number of spines on the dorsolateral margin of the peduncle of uropod 1 (8-10 spines as opposed to 2-4 in the other two species). Although *A. similis* has not been reported from Florida waters, it is included here because of its very close resemblance to *A. millsii* and *Acanthohaustorius* sp. C and because of the possibility that it may occur there, especially in the offshore waters of the northeastern part of the state. Adult *A. similis* range in length from 5-7 mm.

See Dickinson et al., 1980 (as *Acanthohaustorius* sp. B); Frame, 1980.

***Acanthohaustorius uncinus* Foster, 1989
(Figure 355)**

Acanthohaustorius uncinus Foster, 1989, pp. 190-193, pls. I-III.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 6, article 5 with 3-5 spine groups on lateral surface, with 4-6 moderately long spines on distal margin; peraeopod 7, article 5, posterior margin evenly convex, without spines proximal to posterodistal angle; pleon segment 3, posterodorsal margin decurved or slightly recurved, shelf small; epimeron 3, posteroventral tooth long, slender, nearly reaching dorsolateral pleonal notch; uropod 1, peduncle without ventral spines, dorsolateral margin with 2-3 moderately long, slender spines (in addition to interramal spines), subequal in length, with stout, dorsally hooked interramal spine; distal interramal spine longer and stouter than other interramal spines, inner ramus with 1-2 very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Eastern Gulf of Mexico from Cape Sable, Florida to East Ship Island, Mississippi (Foster, 1989; Rakocinski et al., 1996; pers. obs.).

Ecology: *Acanthohaustorius uncinus* occurs in fine to medium somewhat shelly sand, often with a little silt or near grassbeds, at depths of 1 to 12 m (Foster, 1989; pers. obs.).

Remarks: This species is easily recognized by the presence of the large, dorsally hooked distal interramal spine on the peduncle of uropod 1. *Acanthohaustorius shoemakeri* also has a large spine in this location, but it is only slightly curved, not dorsally hooked. In addition, in *A. shoemakeri* the stout apical spine on the outer ramus is nearly as long as the subapical spines, while that of *A. uncinus* is much shorter than the subapical spines. *Acanthohaustorius uncinus* is a relatively small species, ranging from 3 to 5 mm in length, and the males are usually somewhat smaller than the females.

See Foster, 1989.

***Acanthohaustorius* sp. A**
(Figure 361)

Regional diagnosis: Coxa 7, posterior lobe subacute posteriorly; peraeopod 6, article 5 with 3-5 spine groups on lateral surface, with 4-7 long spines on distal margin; peraeopod 7, article 5, posterior margin evenly convex, with cluster of 1-2 setae proximal to posterodistal angle; pleon segment 3, posterodorsal margin slightly recurved, shelf small; epimeron 3, posteroventral tooth long, slender, nearly reaching dorsolateral pleonal notch; uropod 1, peduncle without ventral spines, dorsolateral margin with 2-4 very long, slender spines (in addition to interrampal spines), subequal in length, without stout, dorsally hooked interrampal spine, distal interrampal spine not longer and stouter than other interrampal spines, inner ramus with 2 very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Northern Gulf of Mexico from Panama City Beach, Florida, to West Ship Island, Mississippi (Rakocinski et al., 1993; 1996; pers. obs.).

Ecology: *Acanthohaustorius* sp. A occurs in medium to high salinity waters on medium to fine sand bottoms, occasionally with small amounts of silt, at depths of 1 to 8 m (Rakocinski et al., 1993; 1996; pers. obs.).

Remarks: The dorsolateral spines on the peduncle of uropod 1 in this species are longer than those of any other known species of *Acanthohaustorius* in the region. In addition, the long slender posteroventral tooth on epimeron 3 is distinctive; the only other species in which this tooth is as long is *A. millsi*, which to date has not been found in the Gulf of Mexico. *Acanthohaustorius* sp. A can also be distinguished from *A. millsi* by the presence of a cluster of 1-2 setae inserted proximal to the posteroventral angle on peraeopod 7, article 5 (absent in *A. millsi*). Adults of *Acanthohaustorius* sp. A range from 3 to 4 mm in length.

***Acanthohaustorius* sp. C**
(Figure 366)

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 6, article 5 with 3-7 spine groups on lateral surface, with 2-4 moderately long spines on distal margin; peraeopod 7, article 5, posterior margin obtusely angled distally, with cluster of 1-2 spines proximal to posterodistal angle; pleon segment 3, posterodorsal margin decurved or slightly recurved, shelf small; epimeron 3, posteroventral tooth moderately long, slender, reaching one half to two thirds distance to dorsolateral pleonal notch; uropod 1, peduncle with 1 ventral spine, dorsolateral margin with 2-4 moderately long, slender spines (in addition to interrampal spines), decreasing in length distally, without stout, dorsally hooked interrampal spine, distal interrampal spine not longer and stouter than other interrampal spines, inner ramus without very long, slender apical setae, outer ramus, stout apical spine much shorter than subapical spines.

Distribution: Northwestern Atlantic from Sapelo Island, Georgia to northeastern Florida.

Ecology: This species occurs subtidally on medium to fine sand at depths of 1-3 m.

Remarks: Size range 3-4 mm (Georgia material). This species is probably the taxon that has been referred to in the literature as *A. millsii* from northeastern Florida (e.g. Bousfield, 1973; Charvat et al., 1990) and has possibly been confused with that species at more northern sites as well. Material from Georgia appears to be somewhat intermediate between *A. millsii* and *A. similis*. According to Frame (1980) and Thomas and Barnard (1984), *Acanthohaustorius millsii* has 3-4 spines on the dorsolateral margin and no spines on the ventral margin of the peduncle of uropod 1, and has no spines on the posterior margin of peraeopod 7, article 5, whereas *A. similis* has 8-10 dorsolateral spines on the dorsolateral margin and 0-2 (usually 1) ventral spines on the peduncle of uropod 1, and 1-2 spines on the posterior margin of peraeopod 7, article 5. The Georgia specimens have 3-4 spines on the dorsolateral margin and 1 spine on the ventral margin of the peduncle of uropod 1, and 1 spine on the posterior margin of peraeopod 7, article 5. For now, Georgia and Florida material is tentatively referred to as a separate species, pending a comparison with the type material.

See Bousfield, 1965, 1973 (*A. millsii*); Frame, 1980 (*A. similis*).

Genus *Haustorius* Müller, 1775

Regional diagnosis: Antenna 1 not geniculate between articles 1 and 2, accessory flagellum 3-5-articulate, inserted terminally on peduncle article 3; antenna 2, peduncle article 5 without expanded posterodistal lobe, flagellum article 1 not elongate, slightly longer than wide or subquadrate; body broad fusiform in dorsal view; mandible with incisor process, palp article 3 with median row of comb setae; maxilla 2, outer plate slender, strongly curved, much longer than inner; maxilliped, palp article 3 geniculate; coxa 7, posterior lobe subacute posteriorly, not extending beyond posterior margin of article 2; pereopod 6, article 5 with subtruncate distal margin, distal margin subequal to or slightly wider than length of article 6, article 6 with 4-5 spine clusters on posterior margin; pereopod 7, article 4 subtrapezoidal, narrowing posteriorly, posterior margin with 1-2 clusters of weak to moderately strong spines; pleon segment 3, posterodorsal margin strongly decurved or recurved, forming shelf overhanging urosome, dorsal margin not continuous with that of urosome 1; epimeron 3 rounded posteroventrally, lacking posteroventral tooth; uropod 1, rami slender, subequal or outer ramus slightly shorter than inner; uropod 2 well-developed, biramous; telson cleft halfway to base.

Florida species: *H. canadensis*, *H. jayneae*, *Haustorius* sp. D

KEY TO FLORIDA SPECIES OF *HAUSTORIUS*

1. < Rostrum very long, reaching distal margin of antenna 1, peduncle article 1; pereopod 6, article 5, distal margin very short, indistinct *Haustorius* sp. D

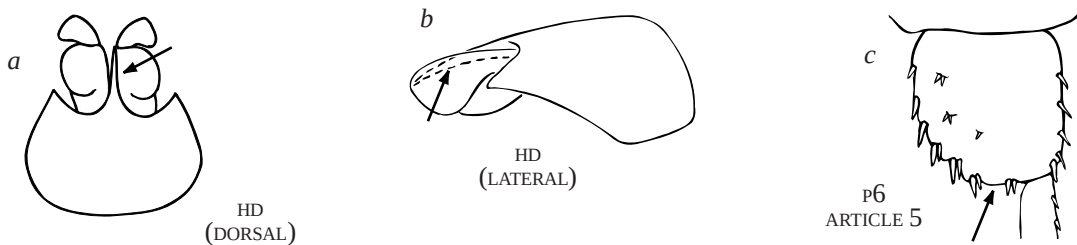


Figure 367.

- < Rostrum moderately long, reaching no more than halfway along antenna 1, peduncle article 1; pereopod 6, article 5, distal margin moderately long to long, distinct 2

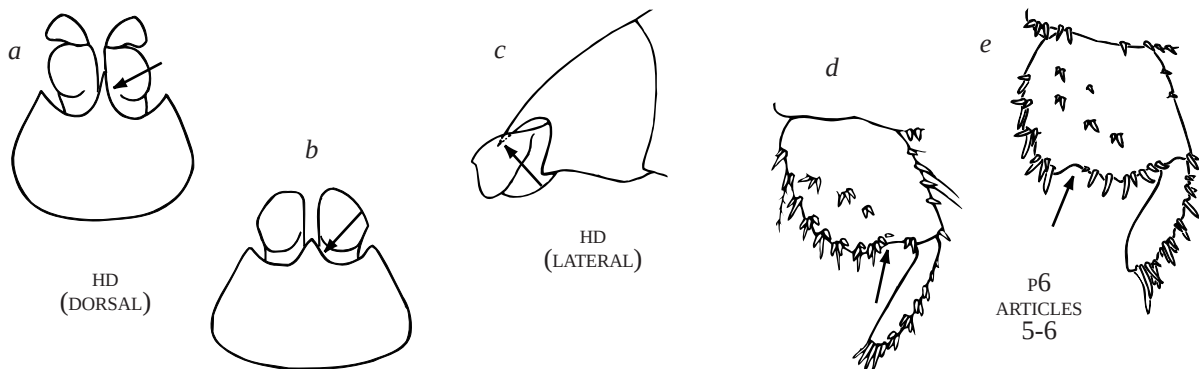


Figure 368.

2. < Rostrum extending slightly beyond apices of anterolateral lobes of head; peraeopod 6, article 5, distal margin sinuous, anterodistal angle produced; peraeopod 7, article 4, distolateral margin with spines along posterior one half; uropod 1, peduncle, dorsolateral margin with 1-2 proximal spines *Haustorius jayneae*

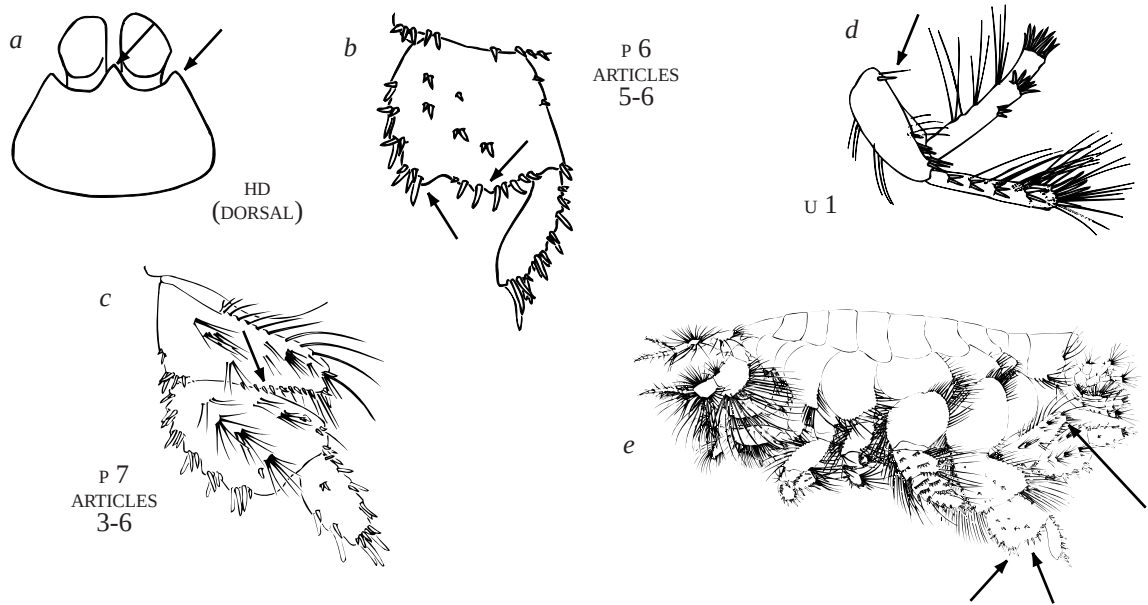


Figure 369.

- < Rostrum extending well beyond apices of anterolateral lobes of head; peraeopod 6, article 5, distal margin straight to slightly concave, anterodistal angle evenly rounded, not produced; peraeopod 7, article 4, distolateral margin with spines along posterior one fourth; uropod 1, peduncle, dorsolateral margin with 3-4 proximal spines *Haustorius canadensis*

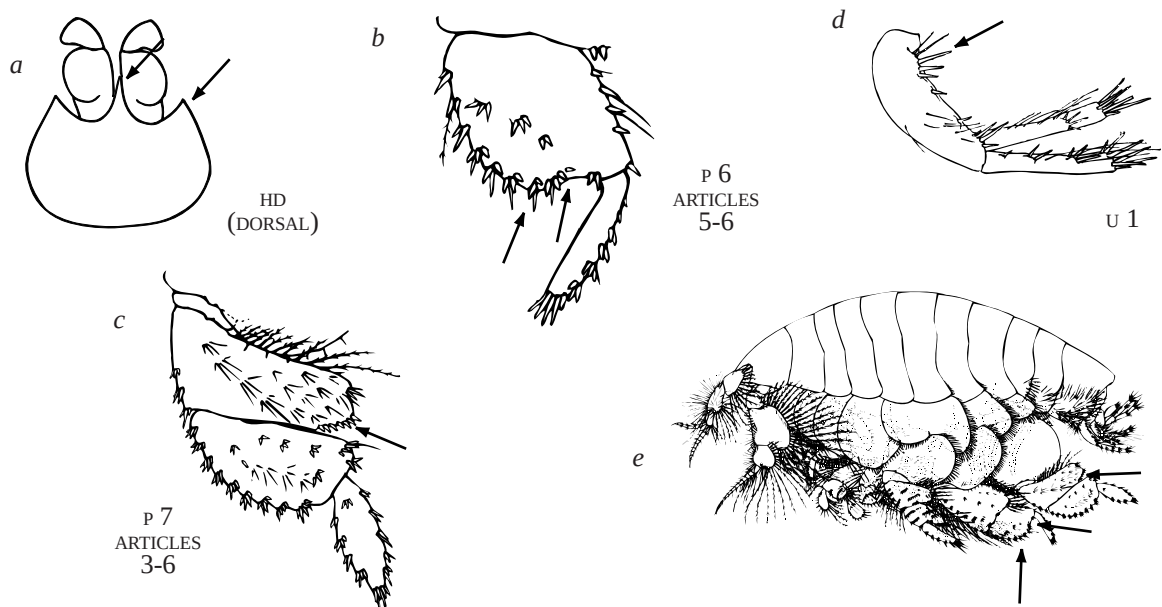


Figure 370.

***Haustorius canadensis* Bousfield, 1962
(Figure 370)**

Haustorius arenarius: Paulmier, 1905, p. 157, fig. 25.

Haustorius canadensis Bousfield, 1962, pp. 68-71, figs. 3-4.

Regional diagnosis: Rostrum moderately long, extending well beyond apices of anterolateral lobes of head, reaching no more than halfway along antenna 1, peduncle article 1; peraeopod 6, article 5, distal margin moderately long, distinct, straight to slightly concave, anterodistal angle evenly rounded, not produced; peraeopod 7, article 4, distolateral margin with spines along posterior one fourth; uropod 1, peduncle, dorsolateral margin with 3-4 proximal spines, 1-2 proximal setae.

Distribution: Northwestern Atlantic from the southwestern Gulf of St. Lawrence to Chesapeake Bay (Bousfield, 1973); Sapelo Island, Georgia (pers. obs.); Melbourne Beach and Sebastian Inlet, Florida (Charvat et al., 1990).

Ecology: In the northern parts of its range, *H. canadensis* is an intertidal species found in medium to fine, clean sand on open beaches and also along salt marsh creeks and bars (Bousfield, 1973; Watling and Maurer, 1972). In Florida waters, it is more likely to be found in the shallow subtidal zone of similar habitats, possibly as a result of increased temperatures and dessication stress in the inbtertidal zone (Charvat et al., 1990).

Remarks: Individuals from southern populations of this species are generally smaller than those from the more northern parts of the range. Bousfield (1962,1973) reports a considerable size range of 7 to 18 mm for *Haustorius canadensis* from New England and Canada; specimens from Georgia range from 4 to 6 mm in length, but are otherwise very similar to specimens from further north.

Haustorius canadensis can be readily distinguished from *Haustorius* sp. D by the much shorter rostrum and from *H. jayneae* by the evenly rounded anterodistal angle and straight to slightly concave distal margin of peraeopod 6, article 5 (the anterodistal angle is produced and the distal margin is sinuous in *H. jayneae*). In addition, peraeopod 7, article 4 has spines extending along the posterior quarter of the distal margin in *H. canadensis*, while these spines extend along the posterior half of the distal margin in *H. jayneae* (*Haustorius* sp. D is somewhat intermediate). Note that there are spines on the distomedial margin of peraeopod 7, article 4, that extend halfway along the margin in *H. canadensis*, but the row on the distolateral margin is much shorter.

See Bousfield, 1962, 1965, 1973.

***Haustorius jayneae* Foster and LeCroy, 1991
(Figure 369)**

Haustorius sp. A: Rakocinski et al., 1991, p. 693.

Haustorius jayneae Foster and LeCroy, 1991, pp. 260-267, figs. 1-4.

Regional diagnosis: Rostrum moderately long, extending slightly beyond apices of anterolateral lobes of head, reaching no more than halfway along antenna 1, peduncle article 1; peraeopod 6, article 5, distal margin long, distinct, sinuous, anterodistal angle produced; peraeopod 7, article 4, distolateral margin with spines along posterior one half; uropod 1, peduncle, dorsolateral margin with 1-2 proximal spines, 0-1 proximal setae.

Distribution: Northern Gulf of Mexico from Cape San Blas, Florida to West Ship Island, Mississippi (Foster and LeCroy, 1991; Rakocinski et al., 1991 [as *Haustorius* sp. A]).

Ecology: This species is found on medium to fine sand bottoms on open beaches from the swash zone and beach pools out to a depth of 2 m (Foster and LeCroy, 1991; Rakocinski et al., 1993; 1996). In the swash zone in particular, it is often one of the most abundant taxa found, dropping off rapidly in numbers with increasing distance from shore (Foster and LeCroy, 1991; Rakocinski et al., 1993).

Remarks: *Haustorius jayneae* is a relatively large species, ranging from 5 to 9 mm in length and is currently the only species of *Haustorius* that has been described from the Gulf of Mexico. However, at least one other undescribed species is known to occur on Texas beaches (Robertson and Shelton, 1980). This species may be distinguished from the east coast *H. canadensis* and *Haustorius* sp. D by the produced anterodistal angle and sinuous distal margin of peraeopod 6, article 5 (unproduced anterodistal angle and straight to slightly concave distal margin in *H. canadensis*; unproduced anterodistal angle and indistinct distal margin in *Haustorius* sp. D). In addition, *H. canadensis* has a slightly longer and *Haustorius* sp. D has a much longer rostrum than does *H. jayneae*.

See Foster and LeCroy, 1991.

***Haustorius* sp. D
(Figure 367)**

Haustorius sp. (long rostrate form): Bousfield, 1973, p. 112.

Regional diagnosis: Rostrum very long, extending well beyond apices of anterolateral lobes of head, reaching distal margin of antenna 1, peduncle article 1; peraeopod 6, article 5, distal margin very short, indistinct, anterodistal angle evenly rounded, not produced; peraeopod 7, article 4, distolateral margin with spines along posterior one fourth; uropod 1, peduncle, dorsolateral margin with 3-4 proximal spines, 1-2 proximal setae.

Distribution: *Haustorius* sp. D occurs along the east coast of the United States from North Carolina (Fox and Bynum, 1975) to St. Augustine Beach, Florida (John Foster, pers. com.).

Ecology: *Haustorius* sp. D is found in the intertidal and shallow subtidal zones of exposed, high energy beaches (Fox and Bynum, 1975; John Foster, pers. com.).

Remarks: This species is most easily recognized by its very long rostrum, which reaches the end of antenna 1, peduncle article 1.

See Bousfield, 1973.

Genus *Lepidactylus* Say, 1818

Regional diagnosis: Antenna 1 not geniculate between articles 1 and 2, accessory flagellum 2-5-articulate, inserted terminally on peduncle article 3; antenna 2, peduncle article 5 without expanded posterodistal lobe, flagellum article 1 not elongate, slightly longer than wide; body broad fusiform in dorsal view; mandible with incisor process, palp article 3 with median row of comb setae; maxilla 2, outer plate stout, slightly curved, much longer than inner; maxilliped, palp article 3 geniculate; coxa 7, posterior lobe rounded posteriorly, not extending beyond posterior margin of article 2; peraeopod 6, article 5 with subtruncate distal margin, distal margin subequal to or slightly wider than length of article 6, article 6 with 2-3 spine clusters on posterior margin; peraeopod 7, article 4 subtriangular, narrowing posteriorly, spines restricted to apex and distal margin; pleon segment 3, posterodorsal margin not strongly decurved or recurved (may be slightly decurved), not forming shelf overhanging urosome, dorsal margin continuous with that of urosome 1; epimeron 3 rounded posteroventrally, lacking posteroventral tooth; uropod 1, rami slender, subequal or outer ramus slightly shorter than inner; uropod 2 well-developed, biramous; telson cleft nearly to base.

Florida species: *L. dytiscus*, *Lepidactylus* cf *triarticulatus*

KEY TO FLORIDA SPECIES OF *LEPIDACTYLUS*

1. < Antenna 1, accessory flagellum 2-articulate; pereopod 7, article 2, posterior margin lined with setae, article 5, posterior margin with cluster of 1-4 setae inserted proximal to posterodistal angle; uropod 1, peduncle, dorsolateral margin with spines along entire margin, with 1 long, stout interrampal spine; telson, lobes separated by narrow V-shaped or U-shaped cleft *Lepidactylus dytiscus*

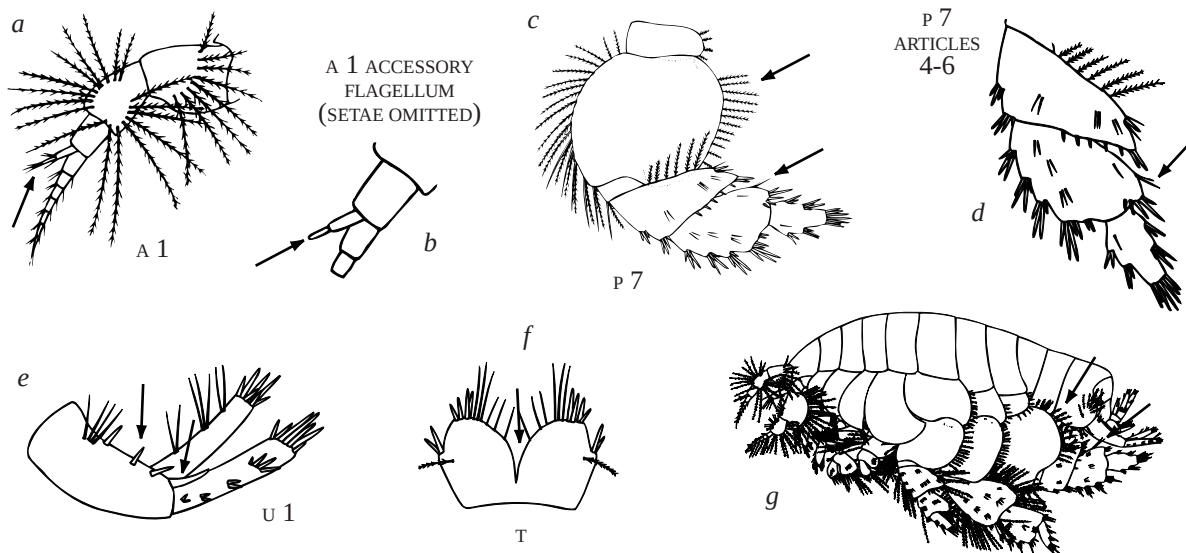


Figure 371.

- < Antenna 1, accessory flagellum 3-5 articulate; pereopod 7, article 2, posterior margin without setae, article 5, posterior margin without setae inserted proximal to posterodistal angle; uropod 1, peduncle, dorsolateral margin with proximal and distal spines only, with 3-4 short, slender interrampal spines; telson, lobes separated by broad, V-shaped cleft *Lepidactylus cf triarticulatus*

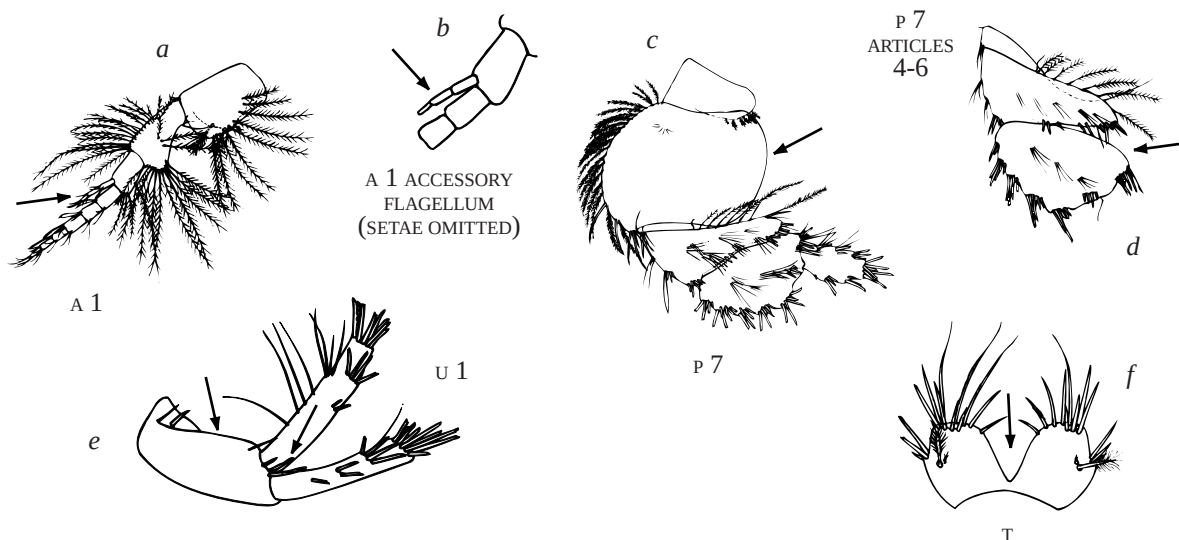


Figure 372.

***Lepidactylus dytiscus* Say, 1818
(Figure 371)**

Lepidactylus dytiscus Say, 1818, pp. 380-382.

Regional diagnosis: Antenna 1, accessory flagellum 2-articulate; peraeopod 7, article 2, posterior margin lined with setae, article 5, posterior margin with cluster of 1-4 setae inserted proximal to posterodistal angle; uropod 1, peduncle with 1 stout, curved interramal spine; telson, lobes separated by narrow V-shaped or U-shaped cleft.

Distribution: Northwestern Atlantic from the upper Chesapeake Bay area of Maryland to Cape Canaveral, Florida (Grant and Lazo-Wasem, 1982).

Ecology: *Lepidactylus dytiscus* is found intertidally to a depth of 3 m and is most abundant in muddy sand on protected estuarine beaches. However, it also occurs in smaller numbers on more exposed beaches with cleaner sand and relatively high salinities (Dexter, 1967; Grant and Lazo-Wasem, 1982).

Remarks: Members of this relatively common species vary greatly in size, ranging from 3 to 7 mm in length. While populations of smaller individuals are the most common, other populations composed of larger individuals do occur. Large specimens are very similar to small ones overall, with the main differences being the presence of greater numbers of spines and setae on the appendages, more accessory blades on the lacinia mobilis of the mandible, and more flagellar articles in the antennae of large individuals (Grant and Lazo-Wasem, 1982). The stout interramal spine on the peduncle of uropod 1 is sexually dimorphic in size and is larger in males than in females.

See Croker, 1967; Robertson and Shelton, 1980; Grant and Lazo-Wasem, 1982.

***Lepidactylus cf triarticulatus* Robertson and Shelton, 1980
(Figure 372)**

Lepidactylus triarticulatus Robertson and Shelton, 1980, pp. 415-419, figs. 1-22.
Lepidactylus sp. A: Rakocinski et al., 1991, p. 693.

Regional diagnosis: Antenna 1, accessory flagellum 3-5-articulate; pereopod 7, article 2, posterior margin without setae, article 5, posterior margin without setae inserted proximal to posterodistal angle; uropod 1, peduncle with 3-4 slender, straight interramal spines; telson, lobes separated by broad, V-shaped cleft.

Distribution: Northern Gulf of Mexico from Destin, Florida to West Ship Island, Mississippi (*L. cf triarticulatus*) (Rakocinski et al., 1991 [as *Lepidactylus* sp. A]; pers. obs.); Grand Isle, Louisiana to northern Padre Island, Texas (*L. triarticulatus*) (Robertson and Shelton, 1980).

Ecology: This species is found intertidally to a depth of 2 m on fine, poorly sorted sand beaches. It may be found on either protected or open beaches, but tends to be restricted to the higher intertidal areas on the open beaches, extending out into subtidal habitats on protected beaches (Robertson and Shelton, 1980; Rakocinski et al., 1991 [as *Lepidactylus* sp. A]). In the northeastern Gulf it tends to be replaced by *Haustorius jayneae* on open, surf-exposed beaches (Rakocinski et al., 1991).

Remarks: The major differences between *L. triarticulatus* from the western Gulf of Mexico and *L. cf triarticulatus* from the eastern Gulf consist of differences in body size and corresponding differences in the numbers of articles in the antennal flagella and the accessory flagellum, and in the numbers of spines and setae on some of the appendages. These characters also tend to be somewhat variable within populations of *L. cf triarticulatus*, with smaller adult individuals having, for example, 3 articles in the accessory flagellum and larger ones having 4-5 articles. Because these characters are precisely those which tend to vary with increasing size (bigger individual amphipods often have more spines, setae, flagellar articles, etc. than do smaller conspecifics), it seems likely that material from east of the Mississippi River is actually referable to Robertson and Shelton's (1980) Texas species, *L. triarticulatus*. Similar variation in spine and flagellar article counts with variation in size was observed for populations of *L. dytiscus* on the east coast of the U.S. (Grant and Lazo-Wasem, 1980). *Lepidactylus cf triarticulatus* ranges in size from 4 to 7 mm, almost the same range as that of *L. dytiscus* (3-7 mm).

Lepidactylus cf triarticulatus superficially appears very similar to *Haustorius jayneae*, but can be distinguished from that species by the lack of a shelf overhanging the urosome (although the posterodorsal margin of pleon segment 3 may be slightly decurved in *L. cf triarticulatus*, it does not overhang the urosome). In addition, pereopod 3, article 5 has much more elongate posterior lobe in *H. jayneae* than in *L. cf triarticulatus*, article 4 of pereopod 7 is subrectangular in *H. jayneae* and subtriangular in *L. cf triarticulatus* and *L. cf triarticulatus* has a more deeply cleft telson. Finally, *H. jayneae* has long, slender apical setae emerging from between the apical spines on the rami of uropod 1, especially the outer ramus; these are lacking in *L. cf triarticulatus*.

See Robertson and Shelton, 1980.

Genus *Neohaustorius* Bousfield, 1965

Regional diagnosis: Antenna 1 not geniculate between articles 1 and 2, accessory flagellum 2-articulate, inserted terminally on peduncle article 3; antenna 2, peduncle article 5 with expanded posterodistal lobe, flagellum article 1 slightly longer than wide to twice as long as wide; body broad fusiform in dorsal view; mandible without incisor process, palp article 3 with median row of comb setae; maxilla 2, outer plate stout, slightly curved, much longer than inner; maxilliped, palp article 3 geniculate; coxa 7, posterior lobe rounded posteriorly, not extending beyond posterior margin of article 2; peraeopod 6, article 5 with subtruncate distal margin, distal margin much narrower than length of article 6, article 6 with 1 spine cluster on posterior margin; peraeopod 7, article 4 subtriangular, narrowing posteriorly, spines restricted to apex and distal margin; pleon segment 3, posterodorsal margin not strongly decurved or recurved, not forming shelf overhanging urosome, dorsal margin continuous with that of urosome 1; epimeron 3 rounded posteroventrally, lacking posteroventral tooth; uropod 1, rami slender, inner ramus shorter than outer or absent; uropod 2 reduced, uniramous; telson entire or slightly emarginate.

Florida species: *N. schmitzi*.

Neohaustorius schmitzi Bousfield, 1965 (Figure 345)

Neohaustorius schmitzi Bousfield, 1965, pp. 188-190, figs. 1i, 2d, 4j, 18-19.

Regional diagnosis: That of the genus.

Distribution: Northwestern Atlantic from Cape Cod Bay to northeastern Florida (Bousfield, 1965; 1973).

Ecology: *Neohaustorius schmitzi* is found intertidally in clean fine to medium sand on open and protected beaches (Dexter, 1967; Bousfield, 1973). It occurs across a wide range of salinities, ranging from as low as 6 o/oo to full strength seawater (Bousfield, 1973).

Remarks: This species is easily separated from other sympatric haustoriid taxa by the presence of an expanded posterodistal lobe on antenna 2, article 5 and by the uniramous uropod 1. Both of these features are evident even in very small juveniles. A second species of *Neohaustorius*, *N. biarticulatus*, which is found from the mid-Atlantic states north to Cape Cod, also has the expanded posterodistal lobe on antenna 2, article 5, but has a biramous uropod 1; however, the inner ramus in that species is very short. Adults of *N. schmitzi* range in length from 3 to 6 mm and males are usually smaller than females (Dexter, 1971).

See Croker, 1967; Dexter, 1971; Bousfield, 1965, 1973.

Genus *Parahaustorius* Bousfield, 1965

Regional diagnosis: Antenna 1 not geniculate between articles 1 and 2, accessory flagellum 2-articulate, inserted terminally on peduncle article 3; antenna 2, peduncle article 5 without expanded posterodistal lobe, flagellum article 1 subquadrate or slightly longer than wide, not elongate; body broad fusiform in dorsal view; mandible with incisor process, palp article 3 with distal row of comb setae; maxilla 2, outer plate stout, straight or slightly curved, much longer than inner; maxilliped, palp article 3 geniculate; coxa 7, posterior lobe acute or rounded, not extending beyond posterior margin of article 2; peraeopod 6, article 5 with subtruncate distal margin, distal margin narrower than length of article 6, article 6 with 3-4 spine clusters on posterior margin; peraeopod 7, article 4 subrectangular, posterior margin with 3-4 strong spines (occasionally subtriangular, posterior margin with 1 strong spine); pleon segment 3, posterodorsal margin not strongly decurved or recurved, not forming shelf overhanging urosome, dorsal margin continuous with that of urosome 1; epimeron 3 rounded posteroventrally, lacking posteroventral tooth; uropod 1, rami slender, inner ramus slightly shorter than outer; uropod 2 well-developed, biramous; telson shallowly v-cleft distally.

Florida species: *P. holmesi*, *P. longimerus*, *P. obliquus*

KEY TO FLORIDA SPECIES OF *PARAHAUSTORIUS*

1. < Peraeopod 6, article 4 slightly longer than article 5, broadest distally; peraeopod 7, article 4 narrowing posteriorly, posterior margin much shorter than anterior margin, with 1 stout spine above those at posterodistal angle, article 6 narrow, length 2.5 times width *Parahaustorius holmesi*

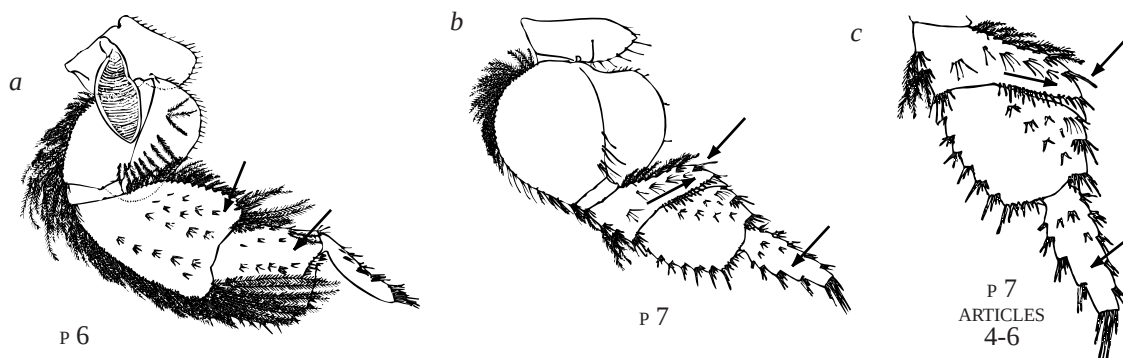


Figure 373.

- < Peraeopod 6, article 4 one and one half times length of article 5, broadest medially; peraeopod 7, article 4 subrectangular, posterior margin subequal to anterior margin in length, with 2-3 stout spines above those at posterodistal angle, article 6 moderately broad, length 2 times width 2

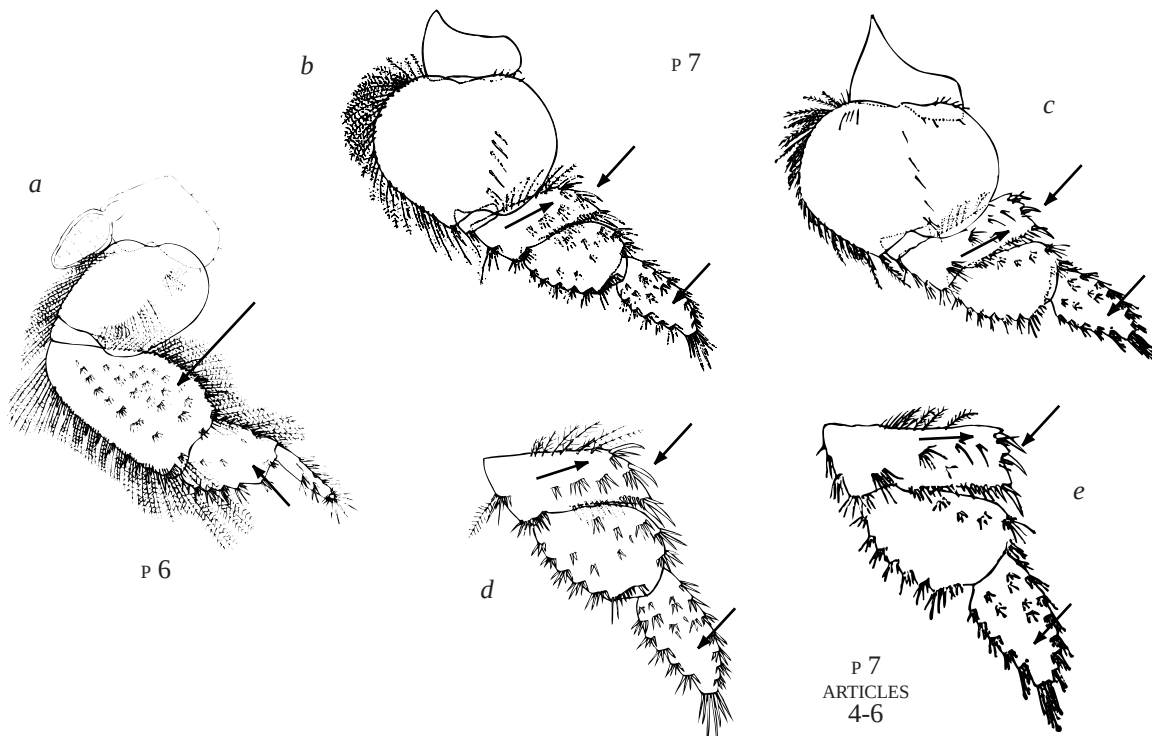


Figure 374.

2. < Coxa 7, posterior lobe acute posteriorly; peraeopod 3, article 6, posterodistal angle subquadrate, with spines only; peraeopod 7, article 4, posterior margin truncate or slightly oblique, posterodistal angle with 1 stout spine longer than remaining spines
 *Parahaustorius longimerus*

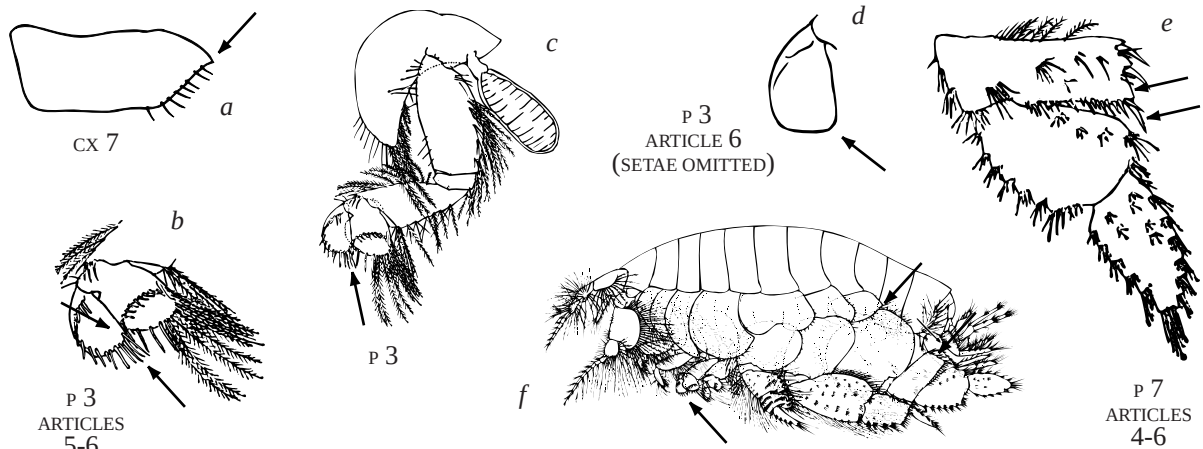


Figure 375.

- < Coxa 7, posterior lobe rounded posteriorly; peraeopod 3, article 6, posterodistal angle evenly rounded, with spines and plumose setae; peraeopod 7, article 4, posterior margin oblique, posterodistal angle with 2 stout subequal spines longer than remaining spines
 *Parahaustorius obliquus*

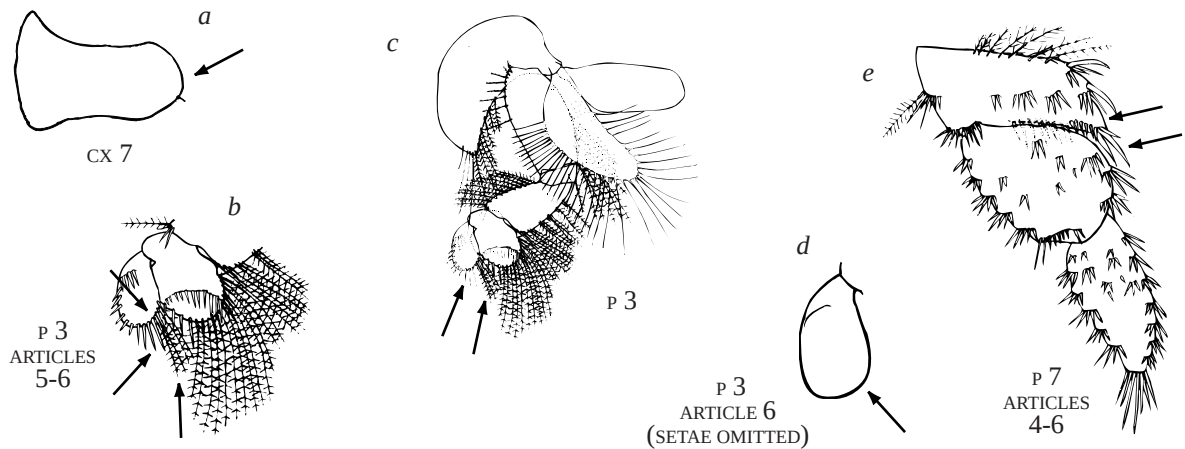


Figure 376.

***Parahaustorius holmesi* Bousfield, 1965
(Figure 373)**

Parahaustorius holmesi Bousfield, 1965, pp. 180-182, figs. 1h, 3b, 4f, 12-13.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 3, article 6, posterodistal angle subquadrate, with spines only; peraeopod 6, article 4 slightly longer than article 5, broadest distally; peraeopod 7, article 4 narrowing posteriorly, posterior margin oblique, much shorter than anterior margin, with 1 stout spine above those at posterodistal angle, posterodistal angle with 1 stout spine longer than remaining spines, article 6 narrow, length 2.5 times width.

Distribution: Northwestern Atlantic from Georges Bank and Cape Cod, Massachusetts to Chesapeake Bay (Bousfield, 1973); Sebastian Inlet, Florida (Charvat et al., 1990).

Ecology: *Parahaustorius holmesi* occurs on fine, clean sand in offshore waters (16-50 m) in the more northern parts of its range (Bousfield, 1973; Dickinson et al., 1980), occurring nearer shore (1-2 m) in the south (Charvat et al., 1990).

Remarks: *Parahaustorius holmesi* is usually found in more offshore waters than is *P. longimerus*, the other east coast member of the genus found in Florida waters. It can be distinguished from this species (and from *P. obliquus* from the western Gulf of Mexico) by the posteriorly tapering article 4 of peraeopod 7 (subrectangular in the other 2 species) and by the relatively short article 4 of peraeopod 6 (slightly longer than article 5 versus one and one half times the length of article 5 in *P. longimerus* and *P. obliquus*). This is a large species, ranging from 9 to 13 mm in length.

See Bousfield, 1965, 1973; Robertson and Shelton, 1978.

***Parahaustorius longimerus* Bousfield, 1965
(Figure 375)**

Parahaustorius longimerus Bousfield, 1965, pp. 178-180, figs. 1f, 3a, 4d, 10-11.

Regional diagnosis: Coxa 7, posterior lobe acute posteriorly; peraeopod 3, article 6, posterodistal angle subquadrate, with spines only; peraeopod 6, article 4 one and one half times length of article 5, broadest medially; peraeopod 7, article 4 subrectangular, posterior margin truncate or slightly oblique, subequal to anterior margin in length, with 2-3 stout spines above those at posterodistal angle, posterodistal angle with 1 stout spine longer than remaining spines, article 6 moderately broad, length 2 times width.

Distribution: Northwestern Atlantic from Cape Cod Bay and Georges Bank to Sebastian Inlet and the Indian River Lagoon system of northeastern Florida (*Parahaustorius longimerus*) (Bousfield, 1973; Charvat et al., 1990; Nelson, 1995); northeastern Gulf of Mexico from St. Andrew Bay, Florida to West Ship Island, Mississippi (*Parahaustorius cf longimerus*) (John Foster, pers. com.; Rakocinski et al., 1993; 1996).

Ecology: *Parahaustorius longimerus* is found in clean fine to medium sand on open beaches from the lower intertidal zone to depths of 8 m (Bousfield, 1973; Rakocinski et al., 1993; 1996). It may occasionally occur on protected shores (Fox and Bynum, 1975; Nelson, 1995) or in nearshore plankton samples (Fox and Bynum, 1975).

Remarks: Material from the northeastern Gulf of Mexico is very similar to *P. longimerus* from the east coast of the U.S., differing chiefly in the slightly more oblique posterior margin on peraeopod 7, article 4, the somewhat stouter posterodistal spines on that same article and the somewhat smaller number of spines in the comb row of mandibular palp article 3. *Parahaustorius longimerus* differs from *P. holmesi* in the subrectangular article 4 of peraeopod 7 (narrowing posteriorly in *P. holmesi*) and the relatively long article 4 of peraeopod 6 (one and one half times the length of article 5 versus slightly longer than article 5 in *P. holmesi*). It differs from *P. obliquus* in the more truncate posterior margin of article 4 of peraeopod 7, having only 1 elongate spine on the posterodistal angle of that article (2 spines in *P. obliquus*), and having the posterodistal angle of article 6 of peraeopod 3 subquadrate, without plumose setae (evenly rounded, with plumose setae in *P. obliquus*). The length of the largest interramal spine on the peduncle of uropod 1 relative to the length of the inner ramus has previously been used to distinguish *P. longimerus* from *P. holmesi* (Bousfield, 1973) and *P. obliquus* (Robertson and Shelton, 1980). However, the length of this spine appears to be variable within populations of *P. longimerus* and is not always less than half the length of the inner ramus, as indicated by these authors. *Parahaustorius longimerus* is a large species, with adults ranging in length from 6-11 mm (females are usually larger than males).

See Bousfield, 1965, 1973; Robertson and Shelton, 1978.

***Parahaustorius obliquus* Robertson and Shelton, 1978**
(Figure 376)

Parahaustorius obliquus Robertson and Shelton, 1978, pp. 54-61, figs. 3-5.

Regional diagnosis: Coxa 7, posterior lobe rounded posteriorly; peraeopod 3, article 6, posterodistal angle evenly rounded, with spines and plumose setae; peraeopod 6, article 4 one and one half times length of article 5, broadest medially; peraeopod 7, article 4 subrectangular, posterior margin oblique, subequal to anterior margin in length, with 2-3 stout spines above those at posterodistal angle, posterodistal angle with 2 stout subequal spines longer than remaining spines, article 6 moderately broad, length 2 times width.

Distribution: Northwestern Gulf of Mexico from eastern Texas (Sea Rim State Park and the Bolivar Peninsula) to North Padre Island, Texas (Robertson and Shelton, 1978); ? Melbourne Beach and Sebastian Inlet, Florida (Charvat et al., 1990).

Ecology: *Parahaustorius obliquus* is found in fine clean sand on open beaches from the lower intertidal zone out to a depth of 1.5 m (Robertson and Shelton, 1978).

Remarks: This species can be distinguished from both *P. longimerus* and *P. holmesi* by the presence of plumose setae on the posterodistal margin of peraeopod 3, article 6 (lacking in *P. longimerus* and *P. holmesi*) and by the evenly rounded posteroventral angle of that article (subquadrate in the other two species). In addition, *P. obliquus* has 2 subequal long spines at the posteroventral angle of peraeopod 7, article 4, while *P. longimerus* and *P. holmesi* have only 1. *Parahaustorius obliquus* can be separated from Atlantic coast specimens of *P. longimerus* by the more oblique posterior margin on peraeopod 7, article 4; however *P. cf longimerus* from the eastern Gulf of Mexico has a slightly oblique posterior margin on that article and can be difficult to distinguish from *P. obliquus* based on this character alone. *Parahaustorius obliquus* is slightly smaller than the other two species, ranging in length from 3 to 9 mm.

Charvat et al. (1990) reported finding *P. obliquus* together with *P. longimerus* and *P. holmesi* at Melbourne Beach and Sebastian Inlet on the northeast coast of Florida. However, because this species was previously known only from Texas and has not been found to date in the eastern Gulf of Mexico or at other U.S. east coast localities, this record should be regarded with caution until material from that area can be compared with the types of *P. obliquus*.

See Robertson and Shelton, 1978.

Genus *Protohaustorius* Bousfield, 1965

Regional diagnosis: Antenna 1 weakly geniculate between articles 1 and 2, accessory flagellum 2-articulate, inserted terminally on peduncle article 3; antenna 2, peduncle article 5 without expanded posterodistal lobe, flagellum article 1 elongate, more than twice as long as wide; body slender fusiform in dorsal view; mandible with incisor process, palp article 3 with proximal row of comb setae; maxilla 2, outer plate stout, straight, subequal to or slightly longer than inner; maxilliped, palp article 3 clavate; coxa 7, posterior lobe subacute or rounded posteriorly, not extending beyond posterior margin of article 2; peraeopod 6 article 5 with subtruncate distal margin, distal margin much narrower than length of article 6, article 6 with 0-1 spine clusters on posterior margin; peraeopod 7, article 4 subrectangular, posterior margin with 3-4 strong spines; pleon segment 3, posterodistal margin not strongly decurved or recurved, not forming shelf overhanging urosome, dorsal margin continuous with that of urosome 1; epimeron 3 rounded posteroventrally, lacking posteroventral tooth; uropod 1, rami slender, subequal or inner ramus slightly shorter than outer; uropod 2 reduced, biramous; telson shallowly v-cleft distally.

Remarks: This is a tremendously variable genus, with many characters that are used to define the species varying not only between species, but between populations and individuals as well (and occasionally, even between the right and left sides of the same individual!) In addition, there are frequently developmental changes in the numbers of spines and setae on certain appendages that can obscure specific differences shown by the adults. A comparison of both the type material and a series of additional specimens from the type localities of all 3 species with material from the Gulf and Atlantic coasts of Florida will be necessary before the exact range of variation within each species can be determined. In the following key, every effort has been made to include characters with non-overlapping ranges of counts in adult specimens, but occasional individuals may fall outside the indicated range for the species they represent. Also, although the number of spines in the comb row of mandibular palp article 3 has frequently been used to distinguish between species of *Protohaustorius* (e.g. Bousfield, 1973; Robertson and Shelton, 1980), it was not used in this case because of overlapping ranges of counts in material from Florida collections.

Florida species: *P. cf bousfieldi*, *P. cf deichmannae*, *P. cf wigleyi*

KEY TO FLORIDA SPECIES OF *PROTOHAUSTORIUS*

1. < Coxa 7, posterior margin without setae; peraeopod 7, article 4, posterior margin shorter than anterior margin, with 1-2 spine groups above posterodistal angle; uropod 1, peduncle, dorso-lateral margin with distal spines only *Protohaustorius* cf *deichmannae*

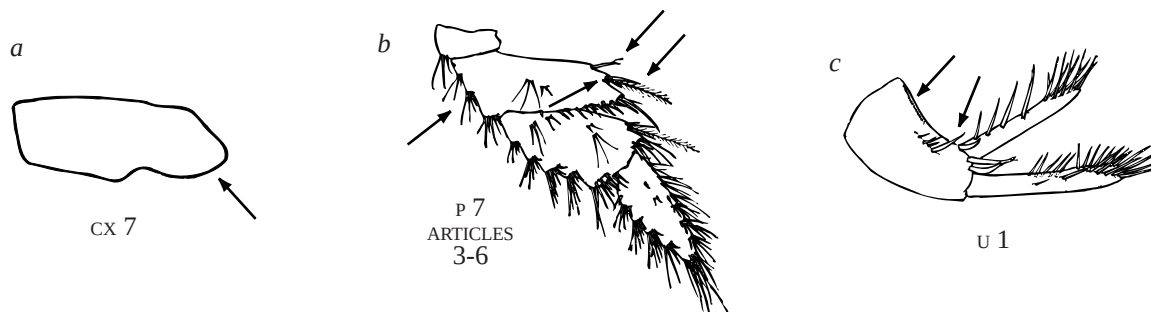


Figure 377.

- < Coxa 7, posterior margin with setae; peraeopod 7, article 4, posterior margin subequal to or longer than anterior margin, with 3-4 (occasionally 2) spine groups above posterodistal angle; uropod 1, peduncle, dorsolateral margin with both proximal and distal spines 2

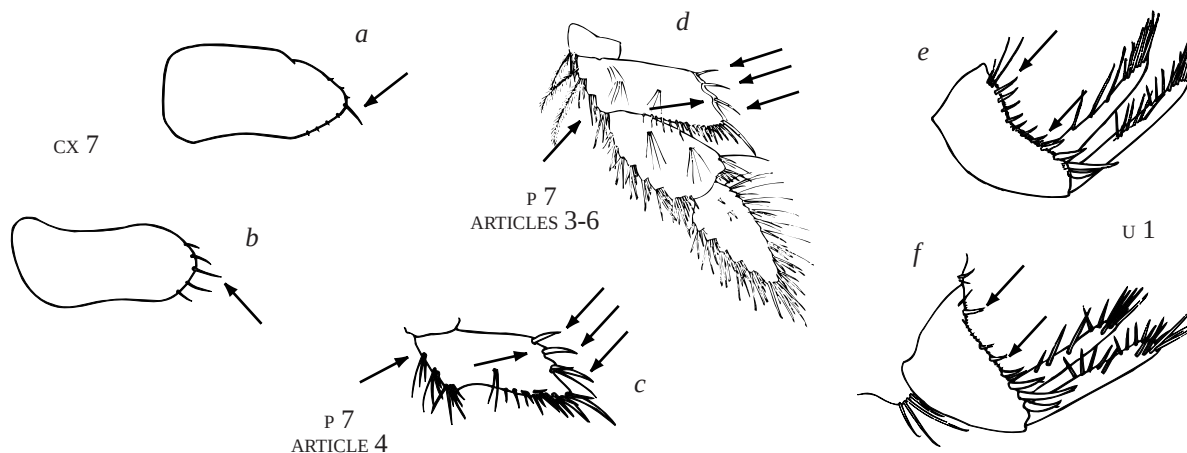


Figure 378.

2. < Maxilla 1, inner plate very reduced, with 1 marginal seta; coxa 7, posterior lobe narrowly rounded, with 1-2 marginal setae (additional tiny setules may be present); peraeopod 7, article 6 slender, length approximately 3 times width *Protohaustorius* cf *bousfieldi*

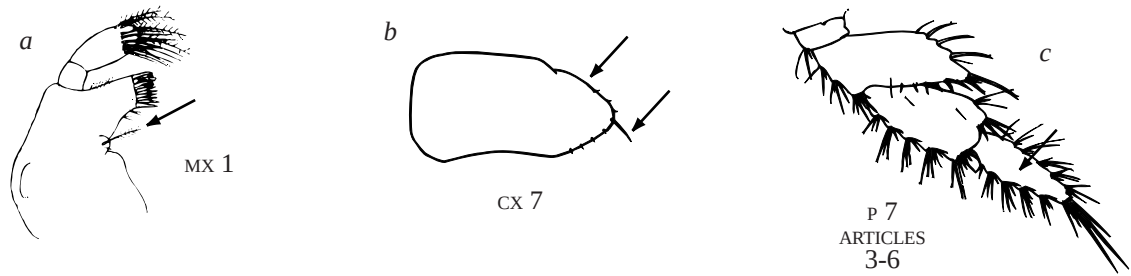


Figure 379.

- < Maxilla 1, inner plate somewhat reduced, with 2-5 marginal setae; coxa 7, posterior lobe broadly rounded, with 3-5 setae; peraeopod 7, article 6 stout, length approximately 2 times width *Protohaustorius* cf *wigleyi*

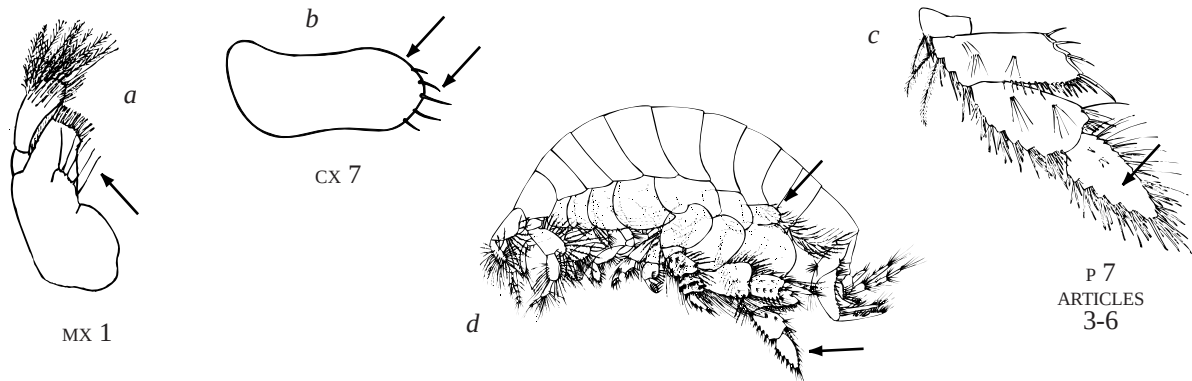


Figure 380.

***Protohaustorius cf bousfieldi* Robertson and Shelton, 1978
(Figure 379)**

Protohaustorius bousfieldi Robertson and Shelton, 1978, pp. 48-54, figs. 1-2.

Regional diagnosis: Mandible, palp article 3 with 1-3 spines in comb row; maxilla 1, inner plate very reduced, with 1 marginal seta; coxa 7, posterior lobe narrowly rounded, with 1-2 marginal setae (additional tiny setules may be present); peraeopod 7, article 4, posterior margin subequal to or longer than anterior margin, with 3-4 (occasionally 2) spine groups (groups may contain only 1 spine) above posterodistal angle, article 6 slender, length approximately 3 times width; uropod 1, peduncle, dorsolateral margin lined with spines along entire margin in large adult individuals, with small gap between 1 proximal and 2-3 distal spines (in addition to 3 interramal spines) in smaller adult and subadult individuals.

Distribution: Northern Gulf of Mexico at Perdido Key, Florida (*Protohaustorius cf bousfieldi*) (Rakocinski et al., 1993; 1996); Sabine Pass to Point Bolivar, Texas (*Protohaustorius bousfieldi*) (Robertson and Shelton, 1978).

Ecology: This species is found in clean fine sand on open beaches (Robertson and Shelton, 1978; Rakocinski et al., 1993), as well as in muddy sand on protected flats (Robertson and Shelton, 1978). It occurs from the low intertidal zone to depths of 7 m (Robertson and Shelton, 1978; Rakocinski et al., 1993).

Remarks: *Protohaustorius cf bousfieldi* from the eastern Gulf of Mexico is very similar to type material of *P. bousfieldi* from Texas, but there are several differences. First, the specimens from the eastern Gulf are somewhat larger, ranging from 3 to 5 mm in length compared to 2 to 4 mm for Texas material, and at least some of the differences may be size related. In Perdido Key material, the flagellum of antenna 1 is 4-5-articulate (4-articulate in Texas material), article 3 of the mandibular palp has 1-3 spines in the comb row (2-4 in Texas material), peraeopod 6, article 6 is subequal to article 5 in length, with 1 posterodistal spine group (article 6 shorter than 5, without a posterodistal spine group in Texas material), and, in large specimens, there is no gap in the spines along the dorsolateral margin of the peduncle of uropod 1 (gap present in Texas material and in small *P. cf bousfieldi*).

See Robertson and Shelton, 1978.

***Protohaustorius cf deichmannae* Bousfield, 1965
(Figure 377)**

Protohaustorius deichmannae Bousfield, 1965, pp. 173-175, figs. 1k, 2c, 4k, 6-7.

Regional diagnosis: Mandible, palp article 3 with 4-5 spines in comb row; maxilla 1, inner plate somewhat reduced, with 5 marginal setae; coxa 7, posterior lobe narrowly rounded, without marginal setae; peraeopod 7, article 4, posterior margin shorter than anterior margin, with 1-2 spine groups (groups may contain only 1 spine) above posterodistal angle, article 6 slender, length approximately 3 times width; uropod 1, peduncle, dorsolateral margin without proximal spines, with 1-2 distal spines (in addition to 3 interramal spines).

Distribution: Northwestern Atlantic from Saco Bay, Maine to Georgia (*P. deichmannae*) (Bousfield, 1973); Melbourne Beach and Sebastian Inlet, Florida (*P. cf deichmannae*) (Charvat, 1990).

Ecology: *Protohaustorius deichmannae* is found in fine, silty sand in protected bays and estuaries, from shallow subtidal depths to 20 m (Bousfield, 1973); it has also been found (as *P. cf deichmannae*) on exposed fine-medium sand beaches (Charvat, 1990).

Remarks: Although material referable to *P. cf deichmannae* from Florida was not seen during the preparation of this key, it may prove to be the same as material of *P. cf wigleyi* from Jupiter Island, Florida. The habitat at Melbourne Beach, Sebastian Inlet and Jupiter Island is very similar and corresponds more closely with the habitat reported for *P. wigleyi* (open sandy beach) than that for *P. deichmannae* (protected silty sand flats). It is, however, quite shallow and, at least in the more northern parts of its range, *P. wigleyi* is more common in deeper offshore waters (Bousfield, 1965). See Bousfield, 1965, 1973; Robertson and Shelton, 1978.

***Protohaustorius cf wigleyi* Bousfield, 1965
(Figure 380)**

Protohaustorius wigleyi Bousfield, 1965, pp. 175-177, figs. 1l, 2b, 4l, 8-9.

Regional diagnosis: Mandible, palp article 3 with 3-8 spines in comb row; maxilla 1, inner plate somewhat reduced, with 2-5 marginal setae; coxa 7, posterior lobe broadly rounded, with 3-5 marginal setae; pereopod 7, article 4, posterior margin subequal to or slightly longer than anterior margin, with 3-4 spine groups (groups may contain only 1 spine) above posterodistal angle, article 6 stout, length approximately 2 times width; uropod 1, peduncle, dorsolateral margin lined with spines along entire margin in large adult individuals, with small gap between 1 proximal and 2-3 distal spines (in addition to 3 interramal spines) in smaller adult and subadult individuals.

Distribution: Northwestern Atlantic from central Maine and Georges Bank to North Carolina (*P. wigleyi*) (Bousfield, 1973); Sapelo Island, Georgia (*P. cf wigleyi*) (pers. obs.); Melbourne Beach and Sebastian Inlet, Florida (*P. wigleyi*) (Charvat et al., 1990); Jacksonville and Jupiter Island, Florida (*P. cf wigleyi*) (pers. obs.).

Ecology: This species occurs in fine clean sand from the shoreline on open beaches to depths of 146 m (Bousfield, 1973). In the northern parts of its range, it is more common in deeper offshore waters (Bousfield, 1965), but apparently occurs nearer shore in Georgia and Florida (Charvat et al., 1990; pers. obs.).

Remarks: *Protohaustorius cf wigleyi* differs from *P. wigleyi* by having fewer setae on mandibular palp article 3 (3-8 in *P. cf wigleyi*, 10 in *P. wigleyi*) and fewer setae on a somewhat more reduced inner plate of maxilla 1 (2-5 in *P. cf wigleyi*, 8 in *P. wigleyi*), possibly a function of the generally smaller size of *P. cf wigleyi*. In addition, smaller individuals have a gap in the spines along the dorsolateral margin of the peduncle of uropod 1, which is not mentioned by Bousfield (1965) in his description of *P. wigleyi* from New England. *Protohaustorius cf wigleyi* ranges from 3 to 6 mm in length, while specimens of *P. wigleyi* from farther north reach a length of 7.5 mm (Bousfield, 1973). See Bousfield, 1965, 1973; Robertson and Shelton, 1978.

Genus *Pseudohaustorius* Bousfield, 1965

Regional diagnosis: Antenna 1 not geniculate between articles 1 and 2, accessory flagellum 2-articulate, inserted subterminally on peduncle article 3; antenna 2, peduncle article 5 without expanded posterodistal lobe, flagellum article 1 not elongate, slightly longer than wide or subquadrate; body broad fusiform in dorsal view; mandible with incisor process, palp article 3 with distal row of comb setae; maxilla 2, outer plate stout, straight, subequal to or slightly longer than inner; maxilliped, palp article 3 clavate; coxa 7, posterior lobe rounded posteriorly, extending beyond posterior margin of article 2; peraeopod 6, article 5 with convex distal margin, distal margin wider than length of article 6, article 6 with 3-5 spine clusters on posterior margin; peraeopod 7, article 4 subtriangular, narrowing posteriorly, posterior margin with 1-2 moderately strong spines; pleon segment 3, posterodorsal margin recurved, forming shelf overhanging urosome, dorsal margin not continuous with that of urosome 1; epimeron 3 with posteroventral tooth; uropod 1, rami stout, inner ramus longer than outer; uropod 2 well-developed, biramous; telson, distal margin straight or shallowly v-cleft.

Remarks: Species of *Pseudohaustorius* from Florida waters are relatively easy to distinguish from other haustoriids by the subterminal insertion of the accessory flagellum on peduncle article 3 of antenna 1 and by the large posterior lobe of coxa 7, which extends well beyond the posterior margin of the basis of peraeopod 7.

Florida species: *P. americanus*, *P. caroliniensis*, *Pseudohaustorius* sp. B.

KEY TO FLORIDA SPECIES OF *PSEUDOHAUSTORIUS*

1. < Peraeopod 6, article 5, distal margin evenly convex; peraeopod 7, article 4 short, extending one half length of posterior margin of article 5; uropod 3, outer ramus, terminal article extending beyond tip of inner ramus; telson subtruncate, distal margin straight or slightly emarginate *Pseudohaustorius* sp. B

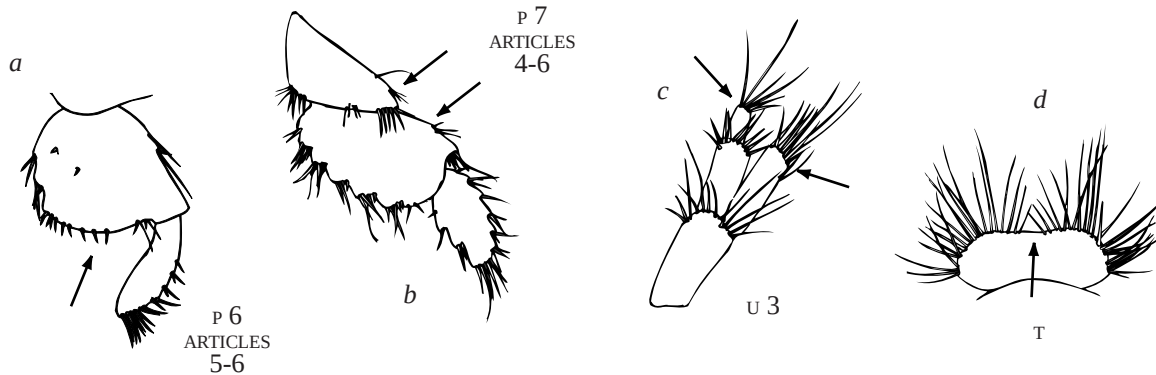


Figure 381.

- < Peraeopod 6, article 5, distal margin obtusely angled, slightly flattened anteriorly; peraeopod 7, article 4 long, extending two thirds length of posterior margin of article 5; uropod 3, outer ramus, terminal article not extending beyond tip of inner ramus; telson, distal margin with broad, shallow V-cleft 2

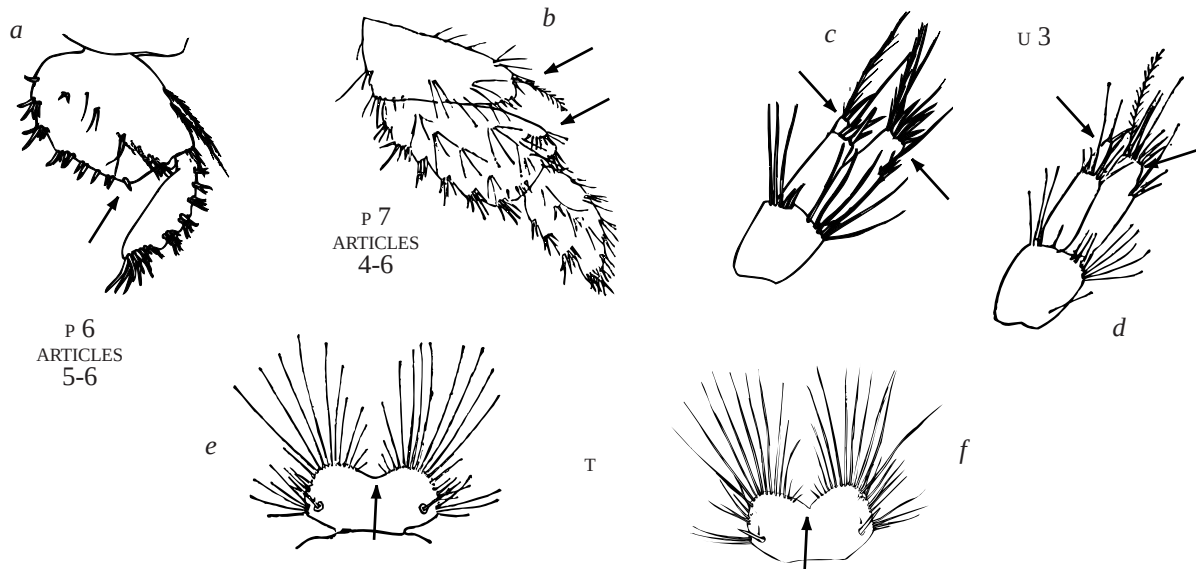


Figure 382.

2. < Coxa 7, posterior lobe without setae along posteroventral margin, with 1 small apical seta;
 uropod 3, outer ramus , terminal article very short, subquadrate (rarely absent)
 *Pseudohaustorius americanus*

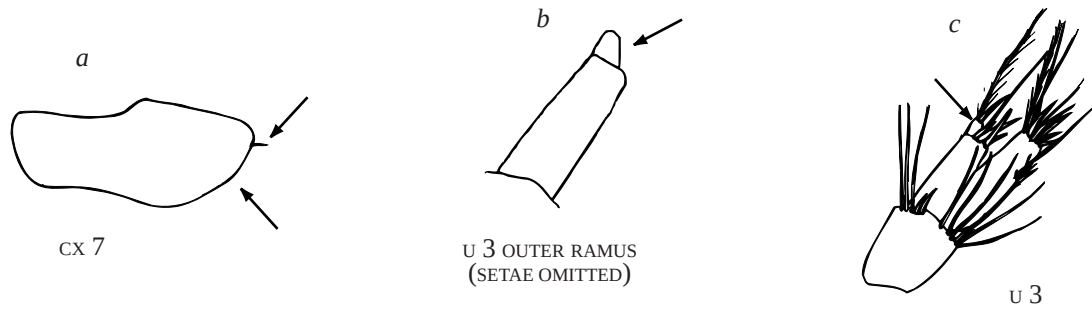


Figure 383.

- < Coxa 7, posterior lobe with 2-5 small setae along posteroventral margin, without apical seta;
 uropod 3, outer ramus, terminal article short, subrectangular .. *Pseudohaustorius caroliniensis*

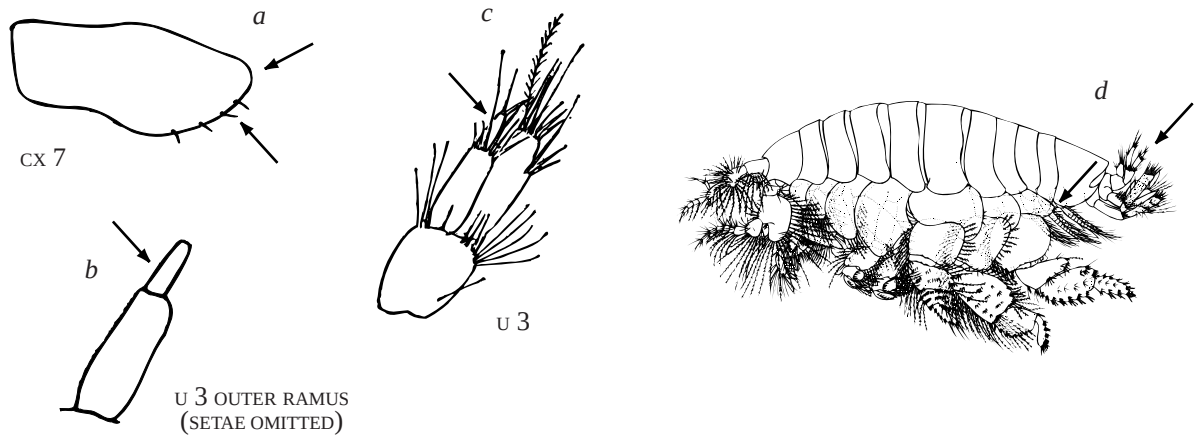


Figure 384.

***Pseudohaustorius americanus* (Pearse, 1908)
(Figure 383)**

Haustorius americanus Pearse, 1908, pp. 28-29, figs. 2.
Pseudohaustorius americanus: Bousfield, 1965, p. 191.
Pseudohaustorius sp. A: Rakocinski et al., 1993, p. 102.

Regional diagnosis: Coxa 7, posterior lobe without setae on posteroventral margin, with 1 small apical seta; peraeopod 6, article 5, distal margin obtusely angled, slightly flattened anteriorly; peraeopod 7, article 4 long, extending two thirds length of posterior margin of article 5; uropod 3, outer ramus, terminal article very short, subquadrate (rarely absent), not extending as far as tip of inner ramus; telson, distal margin with broad, shallow V-cleft.

Distribution: Northern Gulf of Mexico from Perdido Key, Florida to Cameron, Louisiana (Rakocinski et al., 1993; 1996 [as *Pseudohaustorius* sp. A]; Pearse, 1908).

Ecology: *Pseudohaustorius americanus* occurs on fine clean sand bottoms at depths of 1 to 6 m (Rakocinski et al., 1993; 1996; pers. obs.).

Remarks: This species is very close to *P. caroliniensis* from the east coast of the U.S., differing chiefly in the shorter terminal article on the outer ramus of uropod 3 and the more sparsely setose coxa 7. Pearse (1908) and Bousfield (1965) both state that the terminal article of the outer ramus of uropod 3 is lacking in this species, based upon an examination of the holotype. However, although it is very small, this article is present on the majority of specimens examined from the eastern Gulf, but it is occasionally absent on otherwise undamaged material. The preferred habitat for *P. americanus* is also somewhat different from that of *P. caroliniensis*, with *P. americanus* occurring on more open sandy beaches and *P. caroliniensis* inhabiting somewhat sheltered silty or muddy sand.

Pseudohaustorius americanus is a relatively large species, ranging from 6 to 8.5 mm in length. See Pearse, 1908 (as *Haustorius americanus*); Bousfield, 1965, 1973.

***Pseudohaustorius caroliniensis* Bousfield, 1965
(Figure 384)**

Pseudohaustorius caroliniensis Bousfield, 1965, pp. 191-193, figs. 30-31.

Regional diagnosis: Coxa 7, posterior lobe with 2-5 small setae along posteroventral margin, without apical seta; peraeopod 6, article 5, distal margin obtusely angled, slightly flattened anteriorly; peraeopod 7, article 4 long, extending two thirds length of posterior margin of article 5; uropod 3, outer ramus, terminal article short, subrectangular, usually extending subequally with tip of inner ramus, occasionally shorter; telson, distal margin with broad, shallow V-cleft.

Distribution: Northwestern Atlantic from Cape Cod, Massachusetts to the Indian River Lagoon and the St. Lucie Inlet, Florida (Bousfield, 1973; Nelson, 1995; pers. obs.).

Ecology: *Pseudohaustorius caroliniensis* is found in fine silty or muddy sand on protected shores (Bousfield, 1973; Nelson, 1995), sometimes occurring in *Halodule* grassbeds. It occurs from the low intertidal zone out to a depth of 10 m (Bousfield, 1975), but is usually subtidal in Florida.

Remarks: *Pseudohaustorius caroliniensis* is closest to *P. americanus* from the Gulf of Mexico (see the **Remarks** section for *P. americanus* for a discussion of the differences between these two species). This is a relatively large species, with adult lengths ranging from 6 to 8 mm.

See Bousfield, 1965, 1973.

***Pseudohaustorius* sp. B**
(Figure 381)

Regional diagnosis: Coxa 7, posterior lobe without setae along posteroventral margin, with 0-1 tiny apical seta; peraeopod 6, article 5, distal margin evenly convex; peraeopod 7, article 4 short, extending one half length of posterior margin of article 5; uropod 3, outer ramus, terminal article short, subrectangular, extending beyond tip of inner ramus; telson subtruncate, distal margin straight or slightly emarginate.

Distribution: Southwestern Gulf of Mexico between Cape Romano and Cape Sable, Florida.

Ecology: This relatively uncommon species has been found in offshore, high salinity waters from this area, but the specific depth and habitat type are unknown.

Remarks: *Pseudohaustorius* sp. B resembles *P. borealis* Bousfield, 1965, an offshore species which occurs from Georges Bank to Virginia (Bousfield, 1973), in the shape of the telson (straight distal margin), the shape of peraeopod 6, article 5 (distal margin evenly convex) and the length of the outer ramus of uropod 3 (terminal article extending beyond tip of inner ramus). However, article 4 of peraeopod 7 is much shorter in *P. sp. B*, only reaching halfway along the posterior margin of article 5 (reaching two thirds of the length of the posterior margin of article 5 in *P. borealis*) and coxa 7 extends well beyond the posterior margin of the basis (extends slightly beyond the posterior margin of the basis in *P. borealis*). In addition, the terminal article of the outer ramus of uropod 3 is distinctly shorter than the proximal article (subequal in *P. borealis*) and coxa 7 has, at most, a single tiny apical seta on the posterior lobe (posteroventral margin of posterior lobe lined with setae in *P. borealis*). *Pseudohaustorius* sp. B ranges from 6 to 7 mm in length.

GLOSSARY

A1-2 - antennae 1-2.

Abdomen - the posterior six body segments, consisting of three anterior pleon segments and three posterior urosome segments.

Accessory claw - small curved subapical process on the extensor margin of the dactyl.

Accessory eye - small cluster of one to several ommatidia located adjacent to the primary eye.

Accessory flagellum - small secondary ramus of antenna 1, attached to the distomedial margin of peduncle article 3; may be vestigial or lacking, rarely as long as the primary flagellum.

Acuminate - produced into a sharp point; acute.

Acute - sharply pointed.

Antenna - one of two paired, multi-articulate appendages attached to the anterodorsal margin of the head, anterior to the mouthparts. In amphipods, these appendages are referred to as antenna 1 (anterior pair) and antenna 2 (posterior pair). In most other crustacean groups, however, the term antenna refers only to the second, or posterior, pair of these appendages, with the first being referred to as the antennule.

Antennal sinus - one of two emarginations of the anterior margin of the head, separated by the cephalic or ocular lobe, that allow the sideways rotation of the antennae. The superior antennal sinus lies at the base of antenna 1; the inferior antennal sinus lies at the base of antenna 2.

Anterior - front end; towards the front.

Apical - at the apex, tip or distal end; terminal.

Article - individual unit or subdivision of an appendage.

Attenuate - very slender, weak.

Basis - article 2 of a gnathopod or peraeopod.

Basofacial spine - stout spine located on the proximolateral surface of the peduncle of uropod 1 in some amphipod groups.

Beveled - diagonally truncated; oblique.

Biarticulate - composed of two articles.

Bifurcate - divided into two non-articulating branches; forked.

Biramous - having two articulating branches (rami).

Brood plate - see **oostegite**.

Brood pouch - see **marsupium**.

Buccal mass - conical, subquadrate or styliform bundle made up of closely appressed mouthparts, located on the ventral surface of the head.

Calceoli - small disk-like, rounded or oblong articulated sensory structures attached to the segments of the antennal peduncle and flagellum.

Carapace - cuticular layer attached to the posterior margin of the head and extending anteriorly and posteriorly, often covering the entire head and thorax; present in many crustaceans, but not found in amphipods.

Carinate - having at least one laterally compressed, acute ridge, carina, or keel; usually dorsal.

Carpal lobe - expansion or elongation of the posterior margin of the carpus, often extending distally along the posterior margin of the propodus.

Carpochelate - condition of a prehensile appendage, usually a gnathopod, in which it is formed by the closure of the dactylus (article 7) on a fixed projection of the carpus (article 5).

Carpus - article 5 of a gnathopod or peraeopod.

Castellate - lined with short, closely-set, distally truncate processes.

Castello serrate - lined with short, closely-set blunt serrations or teeth.

Cephalic lobe - forward expansion of the anterolateral margin of the head between the bases of the peduncles of antennae 1-2; often bearing the eyes and referred to as the ocular lobe.

Chelate - condition of a prehensile appendage, usually a gnathopod, in which it is formed by the closure of the dactylus (article 7) on a subequal, parallel, fixed, distally directed subterminal projection of the propodus (article 6); pincer-like. Propodus usually linear.

Circumtropical - distributed throughout the tropics.

Clavate - club-shaped; broadened distally.

Cleft - split or divided; often used to describe a telson that is separated into two lobes by a narrow incision or gap.

Complexly subchelate - see **subchelate**.

Couplet - numbered section of a dichotomous key, consisting of a pair of contrasting descriptions.

Comb row - a row of short, stiff, straight or slightly curved setae resembling the teeth of a comb.

Comb setae - the setae making up a comb row.

Congener - belonging to the same genus.

Conspecific - belonging to the same species.

Cosmopolitan - having a worldwide distribution; ubiquitous.

Cotype - syntype; each specimen of a type series for which no holotype has been designated.

Coxa - article 1 of a gnathopod or peraeopod.

Coxal gill - a respiratory structure attached to the posteromedial surface of the coxa of gnathopod 2 and peraeopods 3-6 or 7.

Coxal plate - a flattened lateral expansion of the coxa of a peraeon appendage, often forming a shield for the gills and oostegites and providing a chamber through which the respiratory current can be drawn by the beating of the pleopods.

Crenulate - lined with small bumps, tubercles or rounded teeth.

Cryptic - hidden, camouflaged.

Cusp - small tooth or process.

CX1-7 - coxae 1-7.

Dactyl - terminal article of a gnathopod or peraeopod (article 7), or of the maxillipedal palp (article 3 or 4).

Dactylar hinge tooth - process on palmar margin of propodus adjacent to articulation with dactyl.

Dendritic - branching.

Dentate - toothed.

Dichotomous - divided into two parts; used to describe a taxonomic key made up of pairs of contrasting descriptions, each of which serves to divide the larger group of organisms being identified into two, mutually exclusive smaller groups.

Distal - located away from the body or point of attachment.

Domicolous - living in a nest, tube or other refuge (a domicile).

Dorsal - pertaining to the back; in amphipods refers to the upper or top surface or margin.

Emarginate - having a shallow marginal depression, slightly concave, hollowed out or indented.

Entire - complete; having a simple, smooth, unmodified margin; not cleft (telson), serrate, crenulate, or incised.

Epimeral plate - see **epimeron**.

Epimeron (epimera) - ventrolateral, laminar extension(s) of pleonal segments 1-3 enclosing the peduncles of the pleopods.

Estuarine - referring to shallow, often partially enclosed, coastal waters that have a variable salinity regime caused by the mixing of fresh and salt water; usually found adjacent to river mouths.

Euryhaline - referring to organisms that are tolerant of a wide range of salinities.

Excavate - having a deep marginal depression, strongly emarginate, deeply concave.

Extensor margin - the margin of an article on the side away from the direction of flexion (“on the outside of the bend”), the side on which the extensor muscles are located.

Facial - on a flat surface; not marginal.

Flagellum - the multiarticulate distal part of the antenna, exclusive of the peduncle; begins distal to peduncle article 3 for antenna 1 and distal to peduncle article 5 for antenna 2.

Falcate - strongly curved and tapering distally; sickle-shaped.

Flexor margin - the margin of an article on the side towards the direction of flexion (“on the inside of the bend”), the side on which the flexor muscles are located.

Foliaceous - broad and flat, leaf-like, often with marginal setae.

Geniculate - bent and fixed at a right angle, knee-like.

Globular - round, bulbous, globe-like.

GN1-2 - gnathopods 1-2.

Gnathopod - a paired uniramous appendage attached to one of the first 2 pereon segments; usually subchelate or otherwise dissimilar to the remaining 5 paired pereon appendages (pereopods).

HD - head.

Hyperadult - unusually large and well-developed adult individual.

Incisor - the distal, often toothed, cutting edge of the mandible.

Ischium - article 3 of a gnathopod or pereopod.

Labium - see **lower lip**.

Labrum - see **upper lip**.

Lacinia mobilis - small articulated plate located on the mandible at the base of the incisor, just distal to the spine row.

Laminar - thin, flat, plate-like.

Lanceolate - tapering distally to an acute or subacute tip; lance-shaped.

Lateral - outer; towards the outside.

Laterally compressed - flattened from side to side.

Linear - with parallel margins; slender, rod-shaped or subrectangular.

Linguiform - tongue-shaped.

LL - lower lip; labium.

Locking spine - large spine on the distal flexor margin of the pereopod propodus.

Lower lip - a fleshy, bilobed plate located on the posterior margin of the mouth.

Mandible - one of the first, or most anterior, pair of articulated mouthparts, located on either side of the mouth; typically composed of a base or body, molar, incisor, spine row, lacinia mobilis and 3-articulate palp.

Marsupium - chamber for holding eggs or recently hatched juveniles; formed by overlapping oostegites and located ventrally, between the bases of the gnathopods and peraeopods; brood pouch.

Maxilla 1 - one of the second pair of articulated mouthparts; typically composed of a basal article, inner plate, outer plate, and 2-articulate palp.

Maxilla 2 - one of the third pair of articulated mouthparts, immediately posterior to maxilla 1; typically composed of a basal article, inner plate, and outer plate.

Maxilliped - most posterior pair of mouthparts, derived from the first thoracic segment which, in amphipods, is fused with the head; fused basally and typically composed of an inner plate, outer plate, and 4-articulate palp.

MD - mandible.

Medial - inner; towards the middle.

Median - central, on the mid-line or at the mid-point.

Merus - article 4 of a gnathopod or peraeopod.

Molar - medial process on the mandible, normally subcylindrical with a distally flattened grinding surface, but often reduced or modified.

Monotypic - describes a taxon containing only one taxon at the next lowest level in the taxonomic hierarchy (e.g. a family containing one genus; a genus containing one species).

Morphology - shape, form.

Mouthpart bundle - see **buccal mass**.

Multiarticulate - composed of many articles.

MX1-2 - maxillae 1-2.

MXPD - maxilliped.

Oblique - angled; not perpendicular to the vertical axis of the article.

Ocular lobe - see **cephalic lobe**.

Oligohaline - (1) referring to organisms that are only tolerant of low salinities; (2) referring to low salinity or brackish waters (0.5-3.0 ppt).

Ommatidia - individual facets of the subintegumentary compound eye.

Oostegite - thin, flat plate lined with setae, attached to the posteromedial margin of the coxa of gnathopod 2 and peraeopods 3-5 in females, just proximal to the coxal gill. In adult females, these plates interlock and overlap, forming the marsupium for holding eggs and newly hatched juveniles; in subadult females, they are more sac-like and lack setae.

Oostegite bud - sac-like developing oostegite found in subadult female amphipods.

Ovate - oval-shaped.

P1-7 - peraeopods 1-7.

Palm - portion of the posterior margin of the gnathopod upon which the dactyl closes for grasping. Usually delimited distally by the dactylar articulation and proximally by a change in the curvature of the margin or by the presence of spines or setae.

Palmar angle - proximal end of the palm where the curvature of the margin changes.

Palp - small, uniramous, articulated appendage found on the lateral margin of the mandible, maxilla 1, and maxilliped.

Parachelate - condition of a prehensile appendage, usually a gnathopod, occasionally a peraeopod, in which it is formed by the closure of the dactylus (article 7) on a very short, parallel or subparallel, fixed, distally directed, subterminal projection of the propodus (article 6); dactyl may overlap tip of projection. Propodus usually linear.

Peduncle - combined, typically robust, proximal or basal articles of the antennae, pleopods and uropods; 3-articulate in antenna 1, 5-articulate in antenna 2, 1-2 (usually 1)-articulate in the pleopods, 1-articulate in the uropods.

Penes - small, paired genital processes located on the ventral surface of the peraeon just medial to the coxa of peraeopod 7 in males, through which the sperm is released.

Peraeon - combined 7 free thoracic segments of the body, located immediately behind the head and bearing the gnathopods and peraeopods.

Peraeopod - a paired, uniramous thoracic appendage attached to each peraeon segment; typically 7-articulate. The anterior 2 pairs, called gnathopods, are usually modified and morphologically distinct from the posterior 5 pairs.

Pleon - combined anterior 3 abdominal segments, located just posterior to the peraeon, bearing the paired, biramous pleopods (occasionally used to refer to the entire 6 segments of the abdomen).

Pleopod - a paired, biramous appendage attached to each pleon segment; typically composed of a uniarticulate basal peduncle and marginally setose, multiarticulate rami. Used in swimming and in the creation of water currents for respiration.

PLPD1-3 - pleopods 1-3.

Plumose - feather-like; lined with very fine microsetae.

Polytypic - describes a taxon containing more than one taxon at the next lowest level in the taxonomic hierarchy (e.g. a family containing more than one genus; a genus containing more than one species).

Posterior - back end; towards the rear.

Ppt - parts per thousand.

Produced - narrowly expanded.

Propodus - article 6 of a gnathopod or peraeopod.

Proximal - located close to the body or point of attachment.

Pyriform - broadest at the base; pear-shaped.

Raker row - see **spine row**.

Ramus (rami) - branch(es) of an appendage.

Recurved - curved back on itself.

Reniform - kidney-shaped.

Rostrum - forward projection of the anterodorsal margin of the head between the peduncles of antenna 1.

Segment - individual unit or subdivision of the body.

Sensu lato - in the broad sense (Latin); usually used to refer to a taxon as it was defined before a revision restricted its definition (e.g. *Amphilochus sensu lato*).

Sensu stricto - in the strict or narrow sense (Latin); usually used to refer to a taxon as it is defined after a revision has restricted its definition (e.g. *Amphilochus sensu stricto*).

Serrate - with a series of saw-like teeth or sharp processes.

Seta - bristle or hair; a slender, flexible chitinous extension of the cuticle, articulated with the surface of the body or appendage.

Setose - having setae.

Sexually dimorphic - having a different form or appearance in males and females.

Sibling species - two or more closely related, often sympatric, species that are morphologically indistinguishable, but are reproductively isolated.

Simple - condition of a prehensile appendage, usually a gnathopod, in which none of the articles are expanded to meet the dactylus (article 7) when closed (articles usually linear).

Sinuuous - s-shaped, with both convex and concave portions.

Spine - a stout, inflexible seta.

Spine row (mandibular) - row of small spinules located on the mandible between the base of the incisor and the molar.

Spinose - having spines.

Splayed - flared or extended laterally.

Spur - a sharp process.

Sternal processes - processes located mid-ventrally on pereopod segments 1-7.

Stridulating ridges - small ridges usually found in rows on the ventral margins of the coxae and the lateral or anterior margins of the gnathopod or pereopod bases. These ridges function in sound production when two opposing rows are rubbed together.

Styliform - very slender, elongate and sharply pointed at the tip.

Subacute - nearly acute.

Subapical - nearly at the apex or tip.

Subchelate - condition of a prehensile appendage, usually a gnathopod, occasionally a pereopod or palp, in which it is formed by the closure of the dactylus (article 7) on the oblique or transverse (non-parallel) expanded distal margin (palm) of the propodus (article 6). The term *complexly subchelate* is sometimes used to refer to a prehensile appendage formed by the closure of the dactylus on a non-parallel fixed process of any article other than the propodus (eg. carpocheate, merocheate).

Subconical - nearly conical.

Subcylindrical - nearly cylindrical.

Subequal - nearly equal.

Submarginal - nearly on the margin.

Subovate - nearly oval.

Subquadrate - nearly square.

Subrectangular - nearly rectangular.

Subround - nearly round.

Sympatric - occurring in the same geographic area.

Systematics - the study of the evolutionary relationships among organisms.

T - telson.

Taxonomy - the identification and classification of organisms.

Telson - a small flap attached to the posterior margin of urosome segment 3, just above the anus; may be cleft, entire, laminar, fleshy, emarginate or otherwise modified, but always present in amphipods.

Terminal - at the tip or distal end.

Terminal adult - an individual with fully adult morphology.

Tooth - an acute, non-articulated process.

Transverse - perpendicular to the long axis of an article.

Triturative - having a ridged surface used for grinding or crushing.

Truncate - with distal margin transverse, quadrate, cut-off.

U1-3 - uropods 1-3.

UL - upper lip; labrum.

Uniarticulate - composed of one article.

Uniramous - having one branch (ramus).

Upper lip - a fleshy plate or lobe located on the anterior margin of the mouth; distal margin may be entire, incised or emarginate, usually minutely setose or pilose.

Uropod - a paired, typically biramous, appendage attached to each urosome segment; usually composed of a peduncle and 2 uniarticulate rami, but may be uniramous, without rami or completely absent.

Urosome - combined posterior 3 abdominal segments (sometimes referred to as pleon segments 4-6), located just posterior to the pleon and bearing the paired, typically biramous uropods and the telson.

Ventral - pertaining to the abdomen; in amphipods refers to the lower or bottom surface or margin.

Vestigial - very reduced, degenerate, poorly developed.

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APPENDIX: FIGURE SOURCES

The illustrations used in this document were obtained from a variety of sources and include both published figures and original drawings. In many cases, the illustrations have been modified from the original, to better illustrate the character being described. Sources for all illustrations are listed below and published sources are cited in full in the Literature Cited section. Illustrations that have been noticeably changed from the original are listed as being “modified from” the original source, while those that have not been changed (other than by removing labels or adjusting positioning) are referred to as being “from” the original source. Permission has been obtained for the use of those illustrations obtained from copyrighted publications and this copyrighted material is credited as follows:

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Figure 209a, e-f, j from Barnard & Thomas, 1989 (a, f, j from Figures 3, 2, and 4, respectively; e modified from Figure 4); b from Bousfield, 1973, Plate XXXVII 1; c-d, h-i, k from LeCroy, unpublished drawings; g from Goeke & Heard, 1983, Figure 2.

Figure 210a, c from Bousfield, 1973 (a from Plate XXXVIII 2; c modified from Plate XXXVIII 2); b, d-e, g from LeCroy, unpublished drawings; f from Barnard, 1969, Figure 58.

Figure 211a-b, g, i-j from Barnard & Thomas, 1989 (a modified from Figure 4; b, i from Figure 3; g, j from Figures 4 and 5, respectively); c-f, h, k from LeCroy, unpublished drawings.

Figure 212a-k from LeCroy, unpublished drawings.

Figure 213a, d, f from Bousfield, 1973 (a, f from Plate XXXVII 1; d modified from Plate XXXVII 1); b-c, e, g-j from LeCroy, unpublished drawings.

Figure 214a, d, f, j-k from Barnard & Thomas, 1989 (a, d from Figure 3; f from Figure 5; j-k modified from Figure 5); b-c, e, h-i, l from LeCroy, unpublished drawings; g from Shoemaker, 1933, Figure 2.

Figure 215a-b from LeCroy, unpublished drawings; c modified from Bousfield, 1973, Plate XXXVII 1.

Figure 216a-b from LeCroy, unpublished drawings; c modified from Bousfield, 1973, Plate XXXVII 2.

Figure 217a-e, g, i from LeCroy, unpublished drawings; f modified from Bousfield, 1973, Plate XXXVII 2; h from Goeke & Heard, unpublished drawing.

Figure 218a-e, g-h from LeCroy, unpublished drawings; f from Goeke & Heard, unpublished drawing.

Figure 219a-c, e-h, l-m from LeCroy, unpublished drawings; *d, i-k* from Bousfield, 1973 (*d, j-k* modified from Plate XXXVIII 1; *i* from Plate XXXVIII 1).

Figure 220a, c from LeCroy, unpublished drawings; *b, e-h, j-m* from Barnard & Thomas, 1989 (*b, f, m* modified from Figures 2, 5 and 3, respectively; *e, h* from Figure 5; *g, j-l* modified from Figure 4); *d, i* from Shoemaker, 1933 (*d* from Figure 2; *i* modified from Figure 2).

Figure 221a-j from Barnard & Thomas, 1989 (*a, e, g* modified from Figures 4, 5 and 1, respectively; *b, f* from Figures 3 and 1, respectively; *c, h-i* modified from Figure 3; *d, j* from Figure 5).

Figure 222a, d-e, j from Shoemaker, 1933 (*a, e, j* modified from Figure 2; *d* from Figure 2); *b-c, f-i* from LeCroy, unpublished drawings.

Figure 223a-h from LeCroy, unpublished drawings.

Figure 224a-e from LeCroy, unpublished drawings.

Figure 225a-f from LeCroy, unpublished drawings.

Figure 226a-d, f-h from LeCroy, unpublished drawings; *e* modified from Goeke & Heard, 1983, Figure 1.

Figure 227a-d from LeCroy, unpublished drawings.

Figure 228a, d-e from LeCroy, unpublished drawings; *b-c* modified from Bousfield, 1973, Plate XXXVI 2

Figure 229a-c, e from LeCroy, unpublished drawings; *d, f, h* from Goeke & Heard, 1983 (*d* modified from Figure 1; *f, h* from Figure 1).

Figure 230a-g from LeCroy, unpublished drawings.

Figure 231a-f from LeCroy, unpublished drawings.

Figure 232a-f from LeCroy, unpublished drawings.

Figure 233a-c, e-h from Thomas & Barnard, 1990 (*a, b, h* from Figures 2, 3 and 1, respectively; *c, e-g* modified from Figure 1); *d* from LeCroy, unpublished drawings.

Figure 234a, d, f-g from McKinney, 1978 (*a, d, f* modified from Figures 3, 1 and 2, respectively; *g* from Figure 4); *b-c* from LeCroy, unpublished drawings; *e, h* modified from Barnard & Thomas, 1983, Figures 1 and 3, respectively.

Figure 235a-d from McKinney, 1978 (*a-c* modified from Figure 3; *d* modified from Figure 4).

Figure 236a-b, d-e, g-h from McKinney, 1978 (*a* modified from Figure 1; *b, d-e, g-h* modified from Figure 2); *c, f* from LeCroy, unpublished drawings.

Figure 237a-c from LeCroy, unpublished drawings.

Figure 238a-d from McKinney, 1978 (*a-c* modified from Figure 2; *d* modified from Figure 1); *e* modified from Barnard & Thomas, 1983, Figure 3.

Figure 239a-e from Barnard & Thomas, 1983 (*a* modified from Figure 3; *b, d* modified from Figure 2; *c* modified from Figure 1; *e* from Figure 1).

Figure 240a-d from McKinney, 1978 (*a, c* modified from Figure 1; *b, d* modified from Figure 2).

Figure 241a-c from McKinney, 1978 (*a-b* modified from Figures 1 and 2, respectively; *c* from Figure 1).

Figure 242a-b modified from McKinney, 1978, Figure 2.

Figure 243a-b from LeCroy, unpublished drawings.

Figure 244a, c modified from McKinney, 1978, Figure 4; *b, d* modified from Shoemaker, 1933a, Figure 2.

Figure 245a-c from McKinney, 1978 (*a-b* modified from Figure 3; *c* modified from Figure 4).

Figure 246a-c from Shoemaker, 1933a (*a-b* from Figure 2; *c* modified from Figure 2).

Figure 247a-b, d-e modified from Bousfield, 1973, Plate LIII 2; *c, f-g* from LeCroy, unpublished drawings.

Figure 248a, h from Shoemaker, 1935 (*a* modified from Figure 5; *h* from Figure 4); *b-e, i-l* from LeCroy, unpublished drawings); *f-g* modified from Bousfield, 1973, Plates LIV 2 and LV 2, respectively.

Figure 249a from LeCroy, unpublished drawings.

Figure 250a-b from Bousfield, 1973 (*a* from Plate LIII 2; *b* modified from Plate LIII 2).

Figure 251a,d-f from Bousfield, 1973 (*a, f* modified from Plate LIV 2; *d* from Plate LV 1; *e* modified from Plate LV 1); *b-c, g-i* from LeCroy, unpublished drawings.

Figure 252a, c-d from Bousfield, 1973 (*a, d* modified from Plate LV 2; *c* from Plate LV 2); *b* modified from Shoemaker, 1935, Figure 5; *e-f* from LeCroy, unpublished drawings.

Figure 253a modified from Kunkel, 1910, Figure 36; *b-c* from LeCroy, unpublished drawings.

Figure 254a modified from Barnard, 1965, Figure 15; *b* modified from Ruffo, 1954, Figure I; *c* modified from Bousfield, 1973, Plate LV 1; *d-g* from LeCroy, unpublished drawings.

Figure 255a, c, f, i, k from LeCroy, unpublished drawings; *b, d-e, g-h, j, l* from Bousfield, 1973 (*b, d-e* from Plate LV 1; *g-h, j, l* modified from Plate LV 1).

Figure 256a, c-d, g-h, j-k, n-o from LeCroy, unpublished drawings; *b, i* from Bousfield, 1973 (*b* from Plate LIV 2; *i* modified from Plate LIV 2); *e-f* modified from Shoemaker, 1933a, Figure 8; *l* modified from Ruffo, 1954, Figure I; *m* modified from Barnard, 1965, Figure 15.

Figure 257a modified from Barnard, 1965, Figure 15; *b* modified from Shoemaker, 1933a, Figure 8; *c-e* from LeCroy, unpublished drawings.

Figure 258a, c-e from LeCroy, unpublished drawings; *b* modified from Ruffo, 1954, Figure I.

Figure 259a-i from LeCroy, unpublished drawings.

Figure 260a, f from Bousfield, 1973 (*a* modified from Plate LIV 2; *f* from Plate LIV 2); *b-e, g-l* from LeCroy, unpublished drawings.

Figure 261a-b, f, j from Bousfield, 1973 (*a, f, j* modified from Plate LIV 2; *b* from Plate LIV 2); *c-e, g-i* from LeCroy, unpublished drawings.

Figure 262a-e, g-i from LeCroy, unpublished drawings; *f* modified from Ruffo, 1954, Figure I.

Figure 263a-c from Shoemaker, 1935 (*a* from Figure 5; *b-c* modified from Figure 4); *d-f* from LeCroy, unpublished drawings.

Figure 264a, c-f from LeCroy, unpublished drawings; *b, g* modified from Bousfield, 1973, Plate LV 2.

Figure 265a, c modified from Myers, 1981, Figures 26 and 30, respectively; *b* modified from Heard, 1982, Figure 43; *d-e* from LeCroy, unpublished drawings; *f* from Bousfield, 1973, Plate LII 2.

Figure 266a, f-h from Bousfield, 1973 (*a, h* modified from Plate XLVIII 1; *f-g* from Plate L 1 and 2, respectively); *b-e* from Myers, 1981 (*b-c* modified from Figures 24 and 15, respectively; *d-e* modified from Figure 13).

Figure 267a-b, e-f, h, j from Heard, 1982 (*a-b, e-f* modified from Figure 43; *j* from Figure 43); *c-d, i* from LeCroy, unpublished drawings; *g* from Myers, 1970, Figure 2.

Figure 268a-d, f-h, j-k from Myers, 1981 (*a, c, g* from Figure 27; *b, f* from Figure 31; *d, h, j* modified from Figure 30; *k* modified from Figure 26); *e* from LeCroy, unpublished drawings; *i* modified from Bousfield, 1973, Plate LII 2.

Figure 269a-e, g from Myers, 1981 (*a-b* modified from Figure 27; *c-d* from Figure 27; *e, g* modified from Figure 26); *f* from LeCroy, unpublished drawings.

Figure 270a-b, f-g from Bousfield, 1973 (*a-b* modified from Plate LII 1; *f* from Plate LII 2; *g* modified from Plate LII 2); *c-e* from Myers, 1981 (*c* from Figure 31; *d-e* modified from Figure 30).

Figure 271a-d modified from Bousfield, 1973, Plate XLVIII 1.

Figure 272a-f from Myers, 1981 (*a-c, f* modified from Figures 32, 13, 24 and 15, respectively; *d-e* from Figures 21 and 23, respectively); *g* modified from Bousfield, 1973, Plate L 1.

Figure 273a, e modified from Myers, 1981, Figure 32; *b-c* from LeCroy, unpublished drawings; *d* modified from Bousfield, 1973, Plate L 1.

Figure 274a-g, i-j from Myers, 1981 (*a, c* modified from Figures 10 and 15, respectively; *b, e* modified from Figure 24; *d, g* modified from Figure 22; *f, i* modified from Figure 8; *j* from Figure 25); *h* from LeCroy, unpublished drawing; *k-l* from Bousfield, 1973, Plates LI 1 and L 2, respectively; *m* from Bynum & Fox, 1977, Figure 16.

Figure 275a, c from Myers, 1981, Figure 25; *b, g* from Bousfield, 1973 (*b* modified from Plate L 2; *g* from Plate L 2); *d-e* from LeCroy, unpublished drawings; *f* from Bynum & Fox, 1977, Figure 18.

Figure 276a-d, f from Myers, 1981 (*a-b* from Figures 18 and 21, respectively; *c, f* modified from Figure 22; *d* modified from Figure 13); *e, g-h* from LeCroy, unpublished drawings.

Figure 277a from Bynum & Fox, 1977, Figure 17; *b, d-e* from Myers, 1981 (*b, d* from Figure 25; *e* modified from Figure 24); *c* from LeCroy, unpublished drawings.

Figure 278a-b, d from Bousfield, 1973 (*a-b* modified from Plate L 2; *d* from Plate L2); *c* from LeCroy, unpublished drawings.

Figure 279a-e from Myers, 1981 (*a-d* modified from Figure 22; *e* from Figure 23).

Figure 280a-l from Myers, 1981 (*a-d, g-i* modified from Figures 15, 17, 13, 19, 12, 18 and 9, respectively; *e, j-k* from Figures 12, 21 and 9, respectively; *f, l* from Figure 18).

Figure 281a-b from Myers, 1981, Figures 21 and 19, respectively.

Figure 282a-b from Myers, 1981, Figures 13 and 18, respectively.

Figure 283a from Myers, 1981, Figure 16; *b* modified from Myers, 1978, Figure 160.

Figure 284a-b modified from Myers, 1981, Figures 21 and 9, respectively.

Figure 285a-b from Myers, 1978 (*a* modified from Figure 160; *b* from Figure 160).

Figure 286a-b from Myers, 1981, Figure 16.

Figure 287a-b, d-e from Myers, 1981 (*a, d-e* modified from Figure 15; *b* from Figure 16; *c* from LeCroy, unpublished drawings).

Figure 288a, c from Myers, 1977a, Figures 117 and 121, respectively; *b, d* from Myers, 1981, Figure 14.

Figure 289a, g from Myers, 1977a, Figures 125 and 126, respectively; *b-d* from LeCroy, unpublished drawings; *e-f* from Myers, 1981 (*e* from Figure 21; *f* modified from Figure 20).

Figure 290a, g from Myers, 1977b, Figures 148 and 152, respectively; *b-d* from LeCroy, unpublished drawings; *e-f* from Myers, 1981 (*e* modified from Figure 11; *f* from Figure 9).

Figure 291a from LeCroy, unpublished drawing; *b-c* from Myers, 1977a (*b* modified from Figure 126; *c* from Figure 126).

Figure 292a from Myers, 1978, Figure 156; *b-d* modified from Myers, 1981, Figure 20.

Figure 293a-b, e-f from Myers, 1981 (*a* modified from Figure 19; *b, e-f* from Figure 19); *c-d* from Myers, 1979a (*c* from Figure 183; *d* modified from Figure 183).

Figure 294a-b, f-k from Myers, 1981 (*a, b* modified from Figures 8 and 10, respectively; *f, h* modified from Figure 11; *g, i* modified from Figure 9; *j* from Figure 11; *k* from Figure 9); *c, e* from Myers, 1979a, Figures 180 and 181, respectively; *d* from Myers, 1977b, Figure 151.

Figure 295a-b, d-f from Myers, 1981 (*a-b* modified from Figure 10; *d* from Figure 11; *e-f* modified from Figure 11); *c* from Myers, 1977b, Figure 151.

Figure 296a-b, e-i from Myers, 1981 (*a-b* modified from Figure 8; *e-f, h* modified from Figure 7; *g, i* modified from Figure 9); *c-d* from Myers, 1979a, Figures 180 and 181, respectively.

Figure 297a-e from Myers, 1981 (*a, c* from Figure 7; *b, d-e* modified from Figure 7).

Figure 298a-f from Myers, 1981 (*a-b, d-e* modified from Figure 9; *c* from Figure 9; *f* modified from Figure 8).

Figure 299a, c-f from Myers, 1981 (*a, f* modified from Figure 13; *c* from Figure 12; *d* from Figure 13; *e* modified from Figure 12); *b* from Myers, 1977a, Figure 130.

Figure 300a-b, f-g, i-j from Myers, 1981 (*a* modified from Figure 17; *b* modified from Figure 13; *f-g* from Figure 18; *i-j* modified from Figure 18); *c-e, h* from Myers, 1977b (*c-e* from Figures 137, 144 and 140, respectively; *h* modified from Figure 140).

Figure 301a-h from Myers, 1981 (*a, d, g* from Figure 13; *b-c, e-f, h* modified from Figure 13).

Figure 302a-g from Myers, 1981 (*a, d, f* from Figure 12; *b-c, e, g* modified from Figure 12).

Figure 303a-b, d from Myers, 1977b, Figure 144; *c, e-i* from Myers, 1981 (*c* modified from Figure 17; *e-g* modified from Figure 18; *h-i* from Figure 18).

Figure 304a-c, e-k from Myers, 1979b (*a-b* from Figure 133; *c* modified from Figure 138; *e* from Figure 137; *f, i* modified from Figure 140; *g-h* modified from Figure 135; *j* from Figure 140; *k* from Figure 135); *d* modified from Myers, 1981, Figure 13.

Figure 305a, c from Myers, 1977b, Figures 133 and 134, respectively; *b* from LeCroy, unpublished drawings.

Figure 306a, c from Myers, 1977b, Figures 138 and 141, respectively; *b* from LeCroy, unpublished drawings; *d* modified from Myers, 1981, Figure 13.

Figure 307a, d from Myers, 1977b (*a* from Figure 141; *d* modified from Figure 141); *b* from Myers, 1978, Figure 160; *c, e* from Myers, 1981 (*c* from Figure 21; *e* modified from Figure 21); *f* from LeCroy, unpublished drawings.

Figure 308a, c, e-f from Myers, 1981 (*a* from Figure 9; *c* from Figure 18; *e-f* modified from Figures 9 and 18, respectively); *b, d* from Myers, 1977b (*b* from Figure 151; *d* modified from Figure 151).

Figure 309a, c from Myers, 1977b (*a* from Figure 141; *c* modified from Figure 141); *b, d* from Myers, 1981 (*b* from Figure 21; *d* modified from Figure 21).

Figure 310a from Myers, 1978, Figure 160; *b-c* from Myers, 1977a (*b* from Figure 120; *c* modified from Figure 120); *d* from LeCroy, unpublished drawings).

Figure 311a-b from LeCroy, unpublished drawings; *c* modified from Myers, 1981, Figure 20; *d-g* from Myers, 1978 (*d* from Figure 156; *e* modified from Figure 156; *f-g* modified from Figure 154).

Figure 312a-b from LeCroy, unpublished drawings; *c* modified from Myers, 1981, Figure 13; *d-g* from Myers, 1977b (*d, f* from Figures 141 and 139, respectively; *e, g* modified from Figures 141 and 139, respectively).

Figure 313a from Myers, 1978, Figure 161.

Figure 314a from Myers, 1977a, Figure 120.

Figure 315a-c from Myers, 1977a (*a, c* from Figures 120 and 121, respectively; *b* modified from Figure 120).

Figure 316a-b from Myers, 1981 (*a* from Figure 16; *b* modified from Figure 16); *c* from LeCroy, unpublished drawings.

Figure 317a-d from Myers, 1981 (*a* from Figure 18; *b* from Figure 11; *c* modified from Figure 16; *d* modified from Figure 11).

Figure 318a, c from Myers, 1981 (*a* from Figure 9; *c* modified from Figure 9); *b, d* from Myers, 1977a (*b* from Figure 127; *d* modified from Figure 127).

Figure 319a-c modified from Myers, 1981, Figures 10, 17 and 13, respectively; *d-e* from Myers, 1977b, Figures 134 and 149, respectively.

Figure 320a modified from Myers, 1981, Figure 13; *b* from Myers, 1977a, Figure 129.

Figure 321a modified from Myers, 1981, Figure 17; *b-c* from Myers, 1977b, Figure 144.

Figure 322a-b modified from Myers, 1981, Figures 10 and 13, respectively; *c-d* from Myers, 1977b, Figure 133.

Figure 323a-b modified from Myers, 1981, Figure 10; *c-d* from Myers, 1977b (*c* from Figure 151; *d* modified from Figure 151).

Figure 324a modified from Myers, 1981, Figure 13; *b-d* from Myers, 1977b (*b-c* from Figures 133 and 136, respectively; *d* modified from Figure 136).

Figure 325a-b from Myers, 1981 (*a* from Figure 13; *b* modified from Figure 13).

Figure 326a-b from Myers, 1981 (*a* from Figure 12; *b* modified from Figure 12).

Figure 327a-c from Myers, 1977a (*a, c* from Figures 127 and 125, respectively; *b* modified from Figure 127).

Figure 328a, c from Myers, 1981 (*a* from Figure 9; *c* modified from Figure 9); *b, d* from LeCroy, unpublished drawings.

Figure 329a modified from Myers, 1981, Figure 19; *b-c* modified from Myers, 1979a, Figure 184.

Figure 330a modified from Myers, 1981, Figure 8; *b-c* from Myers, 1979a (*b* from Figure 179; *c* modified from Figure 179).

Figure 331a-c, f from Myers, 1981 (*a, f* modified from Figure 22; *b* from Figure 23; *c* modified from Figure 23); *d-e* from LeCroy, unpublished drawings.

Figure 332a-e from Myers, 1983 (*a-b, d* from Figures 220, 221 and 222, respectively; *c, e* modified from Figures 221 and 222, respectively).

Figure 333a-f from Myers, 1979b (*a, e* from Figure 193; *b* from Figure 194; *c-d* modified from Figure 194; *f* modified from Figure 193); *g* modified from Bousfield, 1973, Plate L 2.

Figure 334a-f from LeCroy, unpublished drawings.

Figure 335a-b from LeCroy, unpublished drawings; *c-g* from Myers, 1981 (*c, g* modified from Figure 30; *d-e* from Figure 31; *f* from Figure 30).

Figure 336a-b, h-j from Bousfield, 1973 (*a* from Plate LII 2; *b, h, j* modified from Plate LII 2; *i* modified from Plate LII 1); *c-g* from Shoemaker, 1945b (*c* modified from Figure 9; *d* modified from Figure 8; *e-f* from Figure 9; *g* from Figure 8).

Figure 337a-b, e, g from Bousfield, 1973 (*a, g* from Plate LII 1; *b, e* modified from Plate LII 1); *c-d, f* from Shoemaker 1945b (*c, f* modified from Figure 8; *d* from Figure 8).

Figure 338a-b, e, g from Bousfield, 1973 (*a, g* from Plate LII 2; *b, e* modified from Plate LII 2); *c-d, f* from Shoemaker, 1945b (*c* modified from Figure 9; *d, f* from Figure 9).

Figure 339a-c from Bousfield, 1965 (*a-b* from Figure 4; *c* from Figure 31).

Figure 340a-c from Bousfield, 1965, Figure 4.

Figure 341a-c from Foster & LeCroy, 1991 (*a* from Figure 3; *b* modified from Figure 3; *c* from Figure 2); *d* from Bousfield 1965, Figure 4.

Figure 342a, c, e-h from Bousfield, 1965 (*a* from Figure 24; *c* modified from Figure 24; *e, h* from Figure 25; *f, g* from Figures 31 and 4, respectively); *b, d* modified from Bousfield, 1973, Plate XXX 1.

Figure 343a-b from Bousfield, 1965 (*a* modified from Figure 24; *b* from Figure 25); *c, g* from Thomas & Barnard, 1984, Figures 3 and 9, respectively; *d-f* from LeCroy, unpublished drawings.

Figure 344a modified from Bousfield, 1973, Plate XXX 1; *b-c* from Bousfield, 1965, Figures 31 and 30, respectively); *d-f* from LeCroy, unpublished drawings.

Figure 345a-d from Bousfield, 1965 (*a-b* from Figure 19; *c-d* from Figure 18).

Figure 346a-b, d-e from Bousfield, 1965 (*a, d* from Figure 12; *b, e* from Figure 9); *c, f* from Robertson & Shelton, 1980, Figures 12 and 14, respectively.

Figure 347a-e from Robertson & Shelton, 1980 (*a* modified from Figure 5; *b-e* from Figures 20, 21, 21A and 14, respectively).

Figure 348a-b, d-h from Bousfield, 1965 (*a, b, g, h* from Figures 7, 13, 9 and 12, respectively; *d, f* modified from Figure 12; *e* modified from Figure 8); *c* modified from Robertson & Shelton, 1978, Figure 5.

Figure 349a, c-g, i from Bousfield, 1965 (*a, f, g* modified from Figures 6-8, respectively; *c, e* from Figure 7; *d, i* from Figures 9 and 4, respectively); *b* from Bousfield, 1973, Figure 3; *h* modified from Robertson & Shelton, 1978, Figure 2.

Figure 350a, c-h from Bousfield, 1965 (*a, c, h* from Figures 12, 13 and 4, respectively; *d, e* from Figure 11; *f, g* modified from Figures 11 and 10, respectively); *b* from Bousfield 1973, Figure 3.

Figure 351a-b modified from Thomas & Barnard, 1984, Figure 9; *c* from Frame, 1980, Figure 1.

Figure 352a-b, d-e from LeCroy, unpublished drawings; *c, f* from Bousfield, 1965 (*c* from Figure 29; *f* modified from Figure 29).

Figure 353a from Bousfield, 1965, Figure 4.

Figure 354a from Bousfield, 1965, Figure 4; *b* from Bousfield, 1973, Plate XXXIII.

Figure 355a-b from LeCroy, unpublished drawings.

Figure 356a, c from LeCroy, unpublished drawings; *b, d* from Bousfield, 1965 (*b* from Figure 29; *d* modified from Figure 29).

Figure 357a-c from Bousfield, 1965 (*a* from Figure 29; *b-c* modified from Figure 29).

Figure 358a,d from LeCroy, unpublished drawings; *b, e-f* from Thomas & Barnard, 1984 (*b* from Figure 5; *e-f* modified from Figure 5); *c* modified from Bousfield, 1965, Figure 22.

Figure 359a, d, f from LeCroy, unpublished drawings; *b, c, e* from Thomas and Barnard, 1984 (*b, e* modified from Figures 3 and 5, respectively; *c* from Figure 5).

Figure 360a-b, d from LeCroy, unpublished drawings; *c, e* modified from Frame, 1980, Figure 4.

Figure 361a-d from LeCroy, unpublished drawings.

Figure 362a-d from Thomas & Barnard, 1984 (*a-b* modified from Figure 3; *c* modified from Figure 5; *d* from Figure 5).

Figure 363a-c modified from Frame, 1980, Figure 4.

Figure 364a, c, e from LeCroy, unpublished drawings; *b, d* modified from Bousfield, 1965, Figure 22.

Figure 365a-d from Bousfield, 1965 (*a* from Figure 22; *b, d* modified from Figure 22; *c* from Figure 4); *e* modified from Bousfield, 1973, Plate XXVII 1.

Figure 366a-d from LeCroy, unpublished drawings.

Figure 367a modified from Bousfield, 1973, Plate XXXI; *b-c* from LeCroy, unpublished drawings.

Figure 368a, c-d from Bousfield, 1973 (*a* from Plate XXXI; *c-d* modified from Plate XXVI 1); *b* from LeCroy, unpublished drawings; *e* modified from Foster & LeCroy, 1991, Figure 1.

Figure 369a from LeCroy, unpublished drawings; *b-e* from Foster & LeCroy, 1991 (*b-c* modified from Figure 1; *d* from Figure 4; *e* from Figure 1).

Figure 370a-c, e from Bousfield, 1973 (*a* from Plate XXXI; *b-c* modified from Plate XXVI 1; *e* from Plate XXVI 1); *d* modified from Bousfield, 1965, Figure 5.

Figure 371a-g from Grant & Lazo-Wasem, 1982 (*a-b, g* modified from Figure 1; *c* from Figure 3; *d* modified from Figure 3; *e-f* from Figure 2).

Figure 372a-f from Robertson & Shelton, 1980 (*a, c-f* from Figures 2, 21, 21A, 22 and 14, respectively; *b* modified from Figure 2).

Figure 373a-c modified from Bousfield, 1965, Figure 12.

Figure 374a-b, d from Robertson & Shelton, 1980 (*a, d* modified from Figure 5; *b* from Figure 5); *c, e* from Bousfield, 1965 (*c* from Figure 10; *e* modified from Figure 10).

Figure 375a from LeCroy, unpublished drawing; *b-e* from Bousfield, 1965 (*b, d-e* modified from Figure 10; *c* from Figure 10); *f* modified from Bousfield, 1973, Plate XXV 1.

Figure 376a-e from Robertson & Shelton, 1980 (*a, e* modified from Figure 5; *b, d* modified from Figure 4; *c* from Figure 4).

Figure 377a-c from Bousfield, 1965 (*a-b* modified from Figure 6; *c* modified from Figure 7).

Figure 378a-c from LeCroy, unpublished drawings; *d-e* modified from Bousfield, 1965, Figures 8 and 9, respectively; *f* modified from Robertson & Shelton, 1980, Figure 1.

Figure 379a, c from Robertson & Shelton, 1980 (*a* from Figure 1; *c* modified from Figure 2); *b* from LeCroy, unpublished drawing.

Figure 380a, c modified from Bousfield, 1965, Figures 9 and 8, respectively; *b* from LeCroy, unpublished drawing; *d* from Bousfield, 1973, Plate XXIV 1.

Figure 381a-d from LeCroy, unpublished drawings.

Figure 382a, c, f from LeCroy, unpublished drawings; *b, d-e* from Bousfield, 1965 (*b, d* modified from Figures 30 and 31, respectively; *e* from Figure 31).

Figure 383a-c from LeCroy, unpublished drawings.

Figure 384a from LeCroy, unpublished drawing; *b-c* from Bousfield, 1965 (*b* modified from Figure 31; *c* from Figure 31); *d* from Bousfield, 1973, Plate XXX 1.