

THE GENUS *AXIANASSA*
(CRUSTACEA: DECAPODA: THALASSINIDEA)
IN THE AMERICAS

Brian Kensley and Richard Heard

Abstract.—The genus *Axianassa* Schmitt is redefined, based on external morphological characters. Descriptions and figures of the two previously described species *A. intermedia* Schmitt from Curaçao and Puerto Rico, and *A. mineri* Boone from the Pacific Bay of Panama, and three new species, *A. arenaria* from the Gulf of Mexico, *A. jamaicensis* from Jamaica, and *A. canalis* from the Panama Canal, are provided. The species are distinguished primarily on differences in the structure of the antennal acicle, abdominal pleura, and first pereopods. An overview of the family Laomediidae (= senior synonym of Axianassidae) is presented.

Schmitt (1924) described the genus and species *Axianassa intermedia* for which he established the monotypic family Axianassidae. Since that time only one other species, *A. mineri* Boone, 1931, from the Pacific coast of Panama has been described. Until the present study a total of five specimens was known for the genus, which has been alternately placed in the families Axianassidae or the Laomediidae (see references in synonymies for these families under Systematics). Three more species of *Axianassa* are now described from the Gulf of Mexico, Jamaica, and the Panama Canal, but the total number of specimens is still only nine, suggesting that the species are nowhere particularly abundant, that their microhabitats are not often sampled, or that their populations are not readily accessible to conventional collecting methods.

Systematics

Family Laomediidae Borradaile, 1903

Laomediidae Borradaile, 1903:540.—De Man, 1928:15.—Gurney, 1938:332 [larval stages], 343 [key].—Chace, 1939:529.—Balss, 1957:1578, 1580.—Wear & Yaldwyn, 1966:2, 3.—Yaldwyn & Wear,

1970:384; 1972:127.—Le Loeuff & Intes, 1974:20.—Poore & Griffin, 1979:224.—Goy & Provenzano, 1979:351.—Ngoc-Ho, 1981:247 [larval stages].—Williams, 1984:189.—Konishi, 1989:15 [larval stages].

Axianassidae Schmitt, 1924:76.—De Man, 1928:15.—Gurney, 1938:343 [key].—Balss, 1957:1580.—Wear & Yaldwyn, 1966:2.—Yaldwyn & Wear, 1972:127.—Le Loeuff & Intes, 1974:20.

Diagnosis.—Carapace with linea thalassinica present; cervical groove distinct. Several elongate cleaning setae present on posterior margin of scaphognathite of maxilla 2. Epipod of maxilliped 3 with serrate margin (reduced in *Axianassa*). Epipods present on pereopods 1–4. Pleopod 1 ♀ uniramous; pleopod 1 ♂ absent; appendix interna absent from pleopods.

Axianassa Schmitt, 1924

Axianassa Schmitt, 1924:76.—Balss, 1957:1580.

Type species.—By monotypy, *Axianassa intermedia* Schmitt, 1924:77, pl. 8, figs. 4, 5, text fig. 7. Gender: feminine.

Diagnosis.—Body poorly calcified, integument thin. Rostrum short, anteriorly rounded, weakly to moderately developed. Eyestalks short, cornea poorly defined, eyes poorly pigmented, generally not, or barely reaching anteriorly beyond rostral apex. Antennules with article 3 of peduncle elongate, slender; superior flagellum longer than inferior. Antennal scale usually well developed and dagger-like; article 4 of peduncle elongate, slender. Mandible with palp of 3 articles, two basal articles incompletely fused; incisor area having several cusps; molar moderately developed, with several tubercles. Maxilla 1 with strongly setose endite. Maxilla 2, scaphognathite bearing 5 elongate setae extending posteriorly into branchial chamber. Exopods present on maxillipeds 1 and 2. Epipods present on maxillipeds 1–3 and pereopods 1–4. Single podobranch present on maxillipeds 2 and 3 (rudimentary on maxilliped 1) and pereopods 1–3; single rudimentary arthrobranch on maxilliped 1, 2 arthrobranches on maxillipeds 2 and 3, and pereopods 1–4. Pereopod 1, chelae of similar size but dissimilar in chela-palm proportions and dentition of cutting edges of dactylus and propodal finger. Dactyli of pereopods 3–5 flexed, with posterior margin becoming dorsal in position. Pereopod 5 base not covered by carapace, lacking branchiae. Pleopods 2–5 biramous, rami narrowly lanceolate; lacking appendices internae. Uropodal rami lacking sutures, outer ramus with variable weak spination. Telson lacking spination.

Distribution.—The genus is known only from the tropical and subtropical waters of the northeastern Pacific (Panama) and the northwestern Atlantic (Gulf of Mexico and Caribbean).

Axianassa intermedia Schmitt, 1924

Figs. 1, 2, 3

Axianassa intermedia Schmitt, 1924:77, pl. 8, figs. 4, 5, text fig. 7.—De Man, 1928:17, pl. 1, fig. 2.—Gurney, 1938:332.—Goy & Provenzano, 1979:351.

Material.—Syntypes, National Museum of Natural History, Smithsonian Institution, USNM 57512, 2 ♀ cl. 6.8 mm, 7.8 mm, ♂ cl. 6.1 mm, from muddy creek, Spanish Harbor, Curaçao.—USNM 110451, 1 ♂, cl. 5.5 mm, Punta Arenas, Puerto Rico.

Description.—Carapace strongly rounded dorsally but unarmed, with linea thalassinica somewhat grooved; cervical groove clearly defined; rostrum anteriorly rounded, barely surpassing cornea of eyes. Abdomen thin-walled, tergites bearing scattered setae; somite 1 narrowing ventrally, pleuron poorly defined, rounded, lacking any ventral extension; somites 2 and 3 subequal in mid-dorsal length; somites 4–6 decreasing in length. Telson with greatest width slightly more than middorsal length, bearing marginal plumose setae, lateral and posterior margins not clearly separated.

Cornea weakly pigmented, with tiny tubercle distally. Antennular peduncle, articles 1 and 2 together about $\frac{5}{8}$ length of article 3; latter slender, elongate-cylindrical; inferior flagellum of about 14 articles, reaching to distal end of antennal peduncle article 5; superior flagellum of about 28 articles, almost twice length of inferior flagellum. Antennal acicle slender, dagger-like, with small tooth on mesial margin; peduncle article 4 slender, elongate-cylindrical, almost reaching distal margin of merus of pereopod 1; flagellum about 3 times carapace length.

Mouthparts as illustrated. Mandible with cutting edge of 7 cusps; raised molar area on mesial face bearing 4 rounded tubercles; palp of 3 articles, articles 1 and 2 partially fused, article 3 bearing numerous stiff setae on outer surface. Maxilla 2, scaphognathite bearing 5 elongate setae on posterior margin. Maxilliped 1, endopod unsegmented, paddle-shaped, distally broadly rounded; exopod bipartite, longer proximal part widening distally, flagellar part about half length of proximal half, bearing plumose setae. Maxilliped 2, endopod pediform, of 5 articles, distal article inserted obliquely on

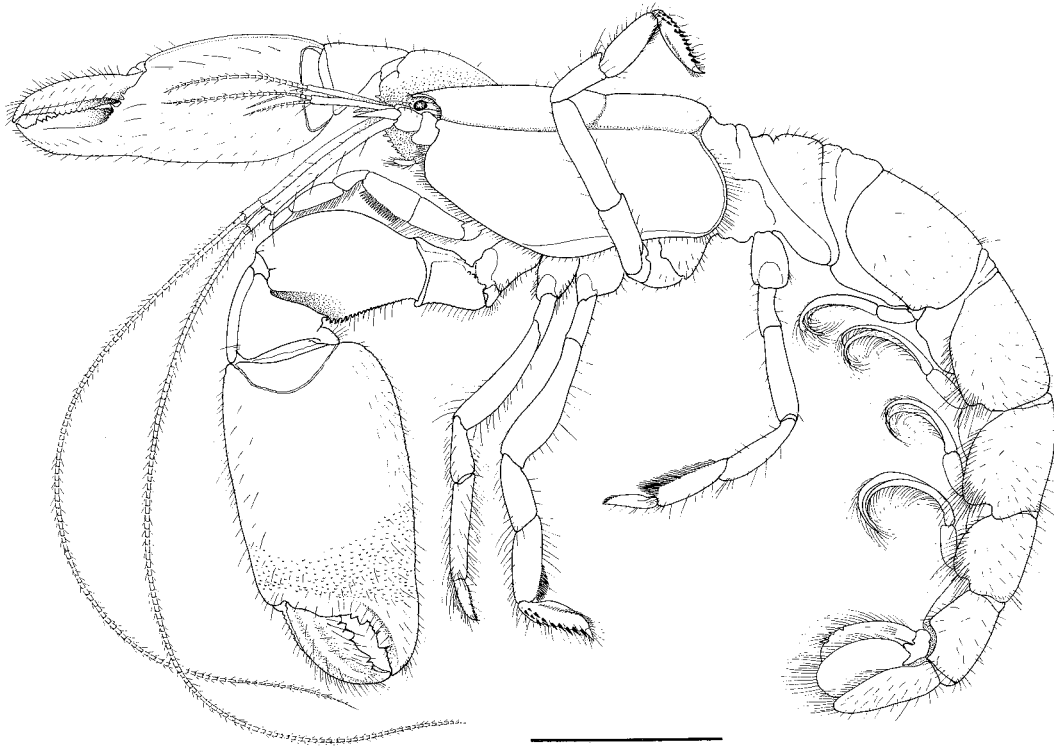


Fig. 1. *Axianassa intermedia*, syntype ♂ in lateral view. scale = 5 mm.

penultimate article; exopod bipartite, proximal part distally broadened, flagellar part more than half length of proximal, bearing plumose setae. Maxilliped 3, endopodal articles strongly setose on mesial margins; basis with single tooth on lateral surface; ischium having dentate crest on mesial surface bearing 15 teeth; merus with band of dense short mesiodistal fusiform setae.

Pereopods 1 asymmetrical; ventral margin of ischium obscurely toothed or tuberculate; merus distally expanded, ventral margin toothed, teeth becoming larger distally, suture along dorsal margin; carpus with longitudinal suture on dorsal surface, small tooth ventrodistally; both chelae carinate along dorsal margin of propodus; larger chela broader, and fingers relatively shorter, than smaller chela, outer surface of propodus at base of finger finely granulate, fixed finger with 2 or 3 large teeth on cutting edge, dactylus strongly curved, with rounded ridge

on outer surface, about 5 strong teeth on cutting edge; smaller chela lacking granulations on outer surface, row of small teeth on propodus at base of dactylus on both mesial and lateral surface, cutting edges of fingers more evenly serrate than in larger chela.

Pereopod 2, merus, carpus, and propodus bearing elongate setae on posterior margins; dactylus with posterior margin bearing row of fine spinules. Pereopod 3, propodus with posterodistal band of dense stiff setae; dactylus flexed, with row of about 17 stout corneous spines on posterior surface, sinuous row of fine short spinules on anterior margin. Pereopod 4 similar to pereopod 3, but with merus relatively shorter. Pereopod 5 flexed anteriorly, propodus bearing broad 'pad' of fine setae, those along posterior margin becoming more elongate distally, posterodistal margin bearing several small teeth; dactylus with posterior margin sin-

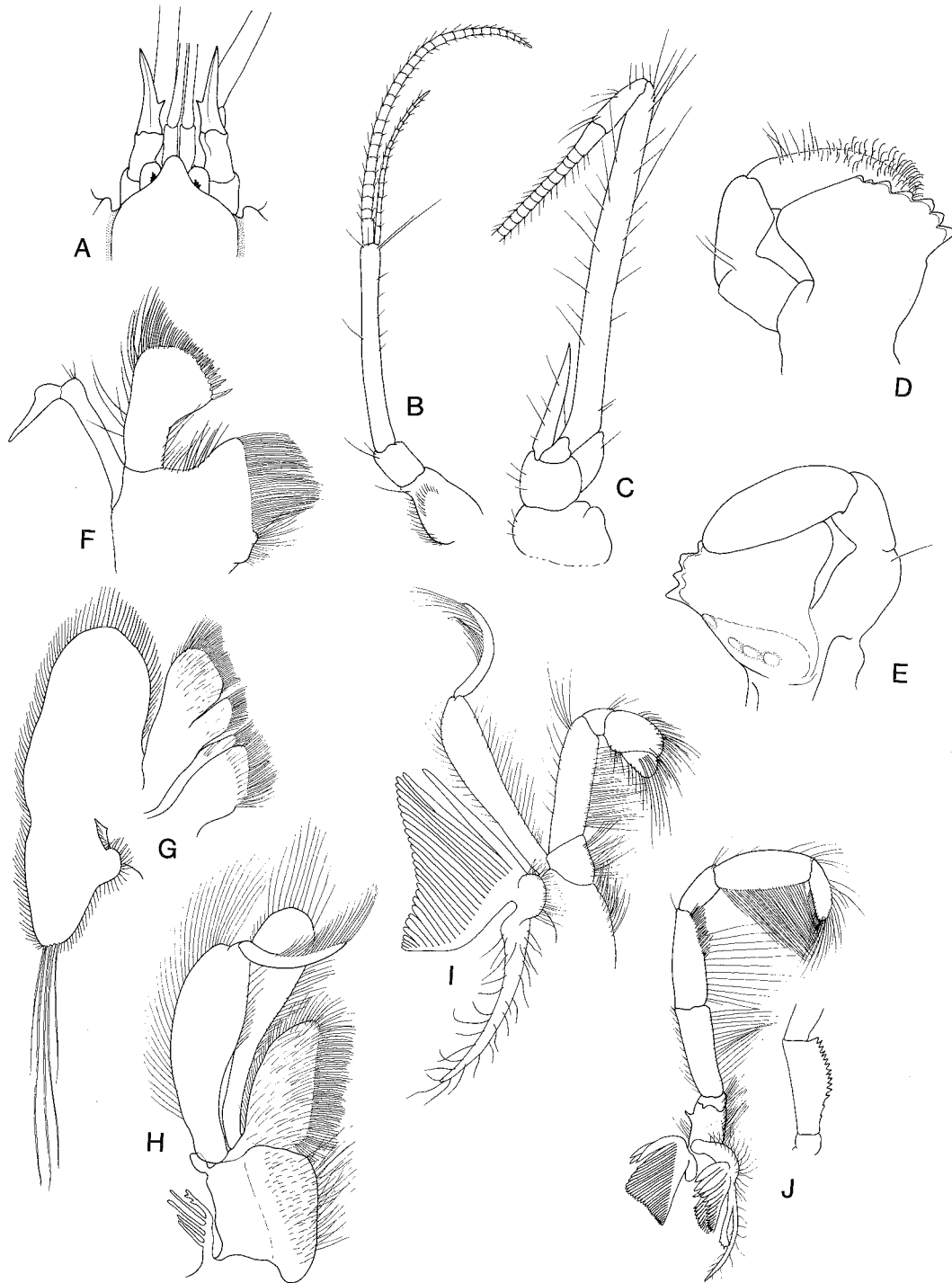


Fig. 2. *Axianassa intermedia*, syntype ♀: A, anterior carapace in dorsal view; B, antennule; C, antenna; D, E, mandible, outer and inner view; F, maxilla 1; G, maxilla 2; H, maxilliped 1; I, maxilliped 2; J, maxilliped 3, with ischial crest shown separately.

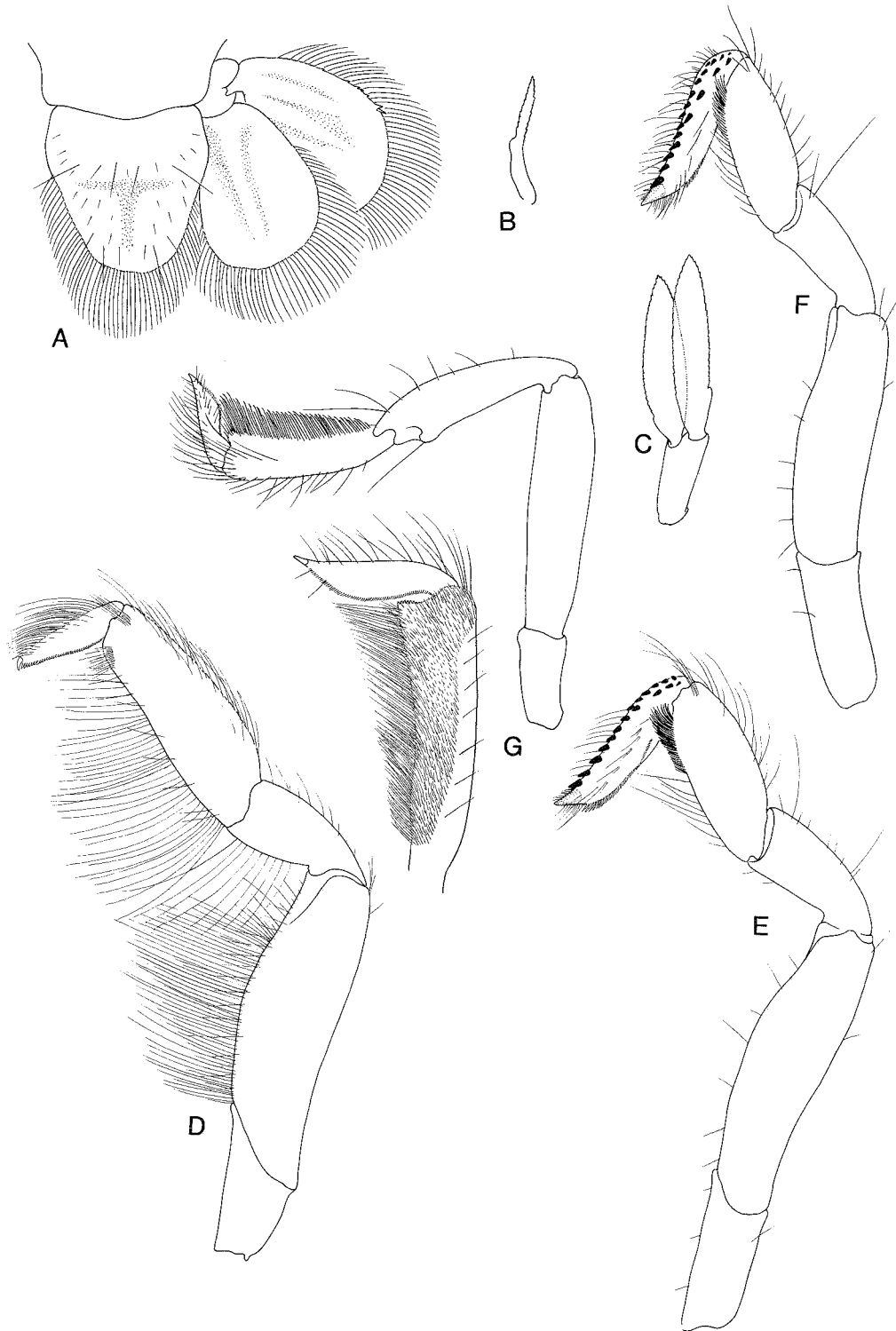


Fig. 3. *Axianassa intermedia*, syntype ♀: A, telson and right uropod in dorsal view; B, pleopod 1; C, pleopod 2; D, pereopod 2; E, pereopod 3; F, pereopod 4; G, pereopod 5, with propodus and dactylus enlarged.

uous, lined with row of tiny spinules. Lateral uropodal ramus ovate, lacking suture, lateral margin bearing 3–5 small fixed teeth, distalmost largest and having mobile spine internal to it.

Variation.—Pereopod 1, spination on ventral margin of merus: USNM 110451: ♂ cl 5.5 mm—strong row of spines on both chelipeds. USNM 57512: ♀ cl 7.8 mm—spines strong on larger chela, almost obsolete on smaller chela. ♀ cl 6.8 mm—spines fairly strong on larger chela, smaller chela missing. ♂ cl 6.1 mm—spines strong on both chelae.

Axianassa mineri Boone, 1931

Fig. 4

Axianassa mineri Boone, 1931:157, fig. 10.—Goy & Provenzano, 1979:351.

Material.—Holotype, American Museum of Natural History, AMNH 8-III-1926-6403, ♀ cl 6.1 mm, Pacheca Island, Pearl Islands, Bay of Panama (Pacific coast), under intertidal stones on rocky and gravelly beach.

Description.—Carapace with linea thalassinica somewhat grooved; cervical groove clearly defined; rostrum barely defined, anterior margin of carapace broadly rounded, not reaching beyond cornea of eyes. Abdomen thin-walled, bearing few setae on posteroventral region of pleura; somite 1 half length of 2, pleuron ventrally indistinct, rounded; somites 2–4 subequal in length, somites 5 and 6 decreasing in length. Telson about $\frac{1}{8}$ longer than greatest width, posteriorly broadly rounded.

Cornea subterminal, faintly demarcated from eyestalk, pigmentation lost after prolonged preservation, with tiny tubercle distally. Antennular peduncle articles 1 and 2 about $\frac{1}{3}$ length of article 3, latter slender, elongate-cylindrical; inferior flagellum of about 14 articles, just reaching beyond antennal peduncle article 5; superior flagellum of about 25 articles, about $\frac{1}{3}$ longer than inferior flagellum. Antennal acicle short, apically bifid; peduncle article 4 slender,

elongate-cylindrical, slightly longer than distance between rostral apex and cervical groove of carapace; flagellum $\frac{1}{4}$ longer than carapace.

Mouthparts typical of genus. Maxilliped 3, articles strongly setose on posterior margins; ischium with mesial crest bearing about 14 teeth, crest continuing on proximal merus bearing 3 teeth; merus with one marginal tooth in proximal half and 2 teeth in distal half of posterior margin; carpus with single distal tooth on posterior margin.

Pereopod 1, left chela missing; right leg with ischium finely denticulate on posterior margin; merus inflated, with 3 small teeth proximally and single small tooth distally on posterior margin; carpus with distal rounded process on posterior margin; chela with dactylus equal in length of propodal palm, outer surface of palm smooth except for faint patch of low granulations at base of fixed finger, inner surface somewhat more granulate at base of fixed finger; latter with 4 triangular proximal teeth on cutting edge, followed by several low rounded teeth distally almost to apex; dactylus with cutting edge bearing even row of rounded teeth. Pereopod 2, dactylus with row of fine spinules on posterior margin. Pereopod 3, propodus with pad of short stiff setae distally; dactylus with 37 corneous spines arranged roughly in 3 rows on flexed posterior surface, anteriorly with sinuous row of fine short spinules. Pereopod 4 similar to pereopod 3 but with merus relatively shorter. Pereopod 5, both legs missing.

Lateral uropodal ramus ovate, with single submarginal tooth laterally, 3 marginal teeth and 1 mobile spine on rounded distolateral margin, 1 marginal and 1 submarginal tooth distally; inner ramus with single small tooth on dorsal surface, single tooth on distal margin.

Axianassa arenaria, new species

Fig. 5

Material.—Holotype, USNM 211490, ♂ cl 6.2 mm, Gulf of Mexico, MAFLA (Mis-

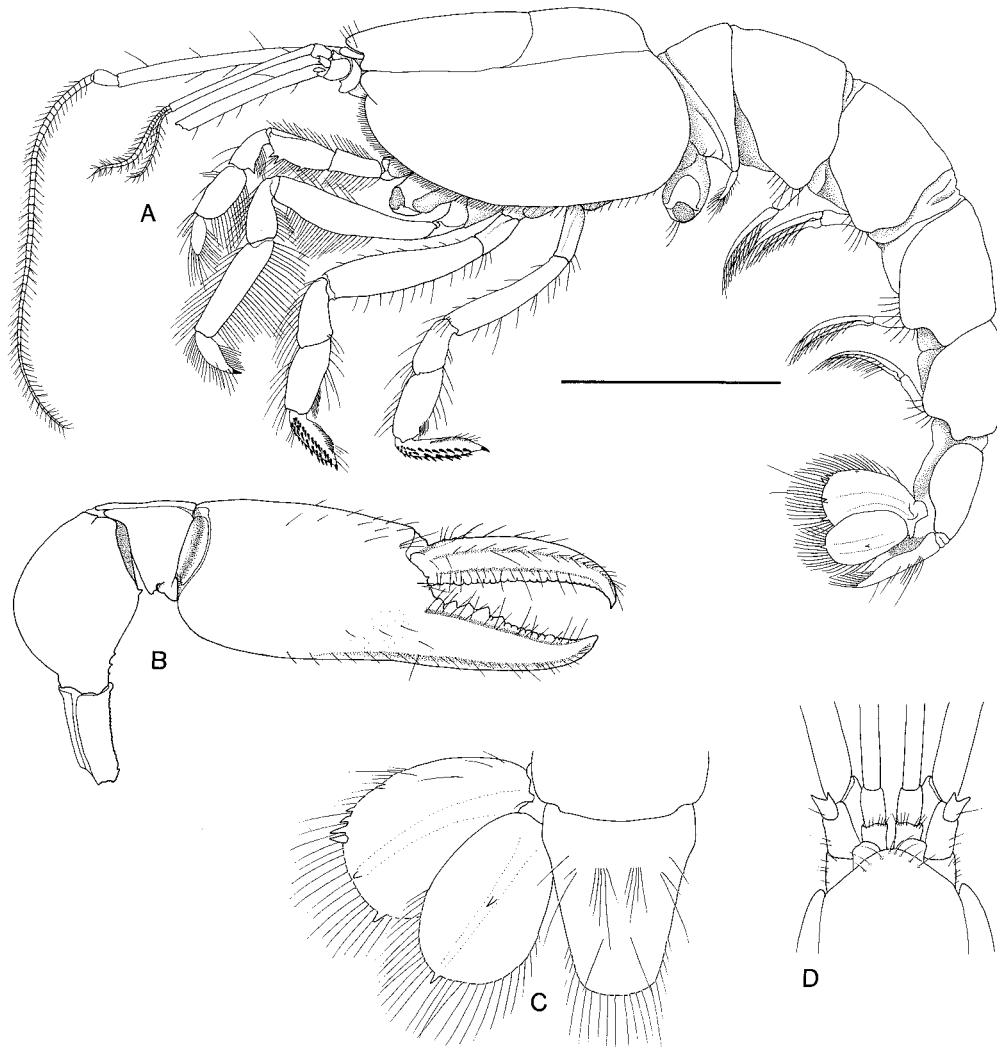


Fig. 4. *Axianassa mineri*, holotype ♂: A, lateral view, scale = 5 mm; B, right pereopod 1; C, telson and left uropod; D, anterior carapace in dorsal view.

Mississippi-Alabama-Florida BLM program) sta 2315, 28°33'59"N, 84°20'09"W, 38 m, fine silty sand bottom.—Paratype, USNM 211491, ♂ cl 7.0 mm (pleon somite 6 and telson missing), Gulf of Mexico, MAFLA sta 2209, 27°52'30"N, 83°33'59"W, 34 m, clayey and sandy silt bottom.

Description.—Carapace with linea thalassinica grooved; cervical groove clearly defined; rostrum narrowing to rounded anterior margin with tiny papilla at midpoint,

reaching well beyond cornea of eyes. Abdominal somite 1 about half middorsal length of somite 2, pleuron tapering ventrally to somewhat calcified spiniform process. Somites 2 and 3 subequal in length, somites 4, 5, and 6 shorter, subequal; pleura of somites 2–5 with acute posteroventral tooth. Telson middorsal length almost 1.5 times greatest width; tapering to broadly rounded posterior margin.

Cornea not clearly demarked, moderately

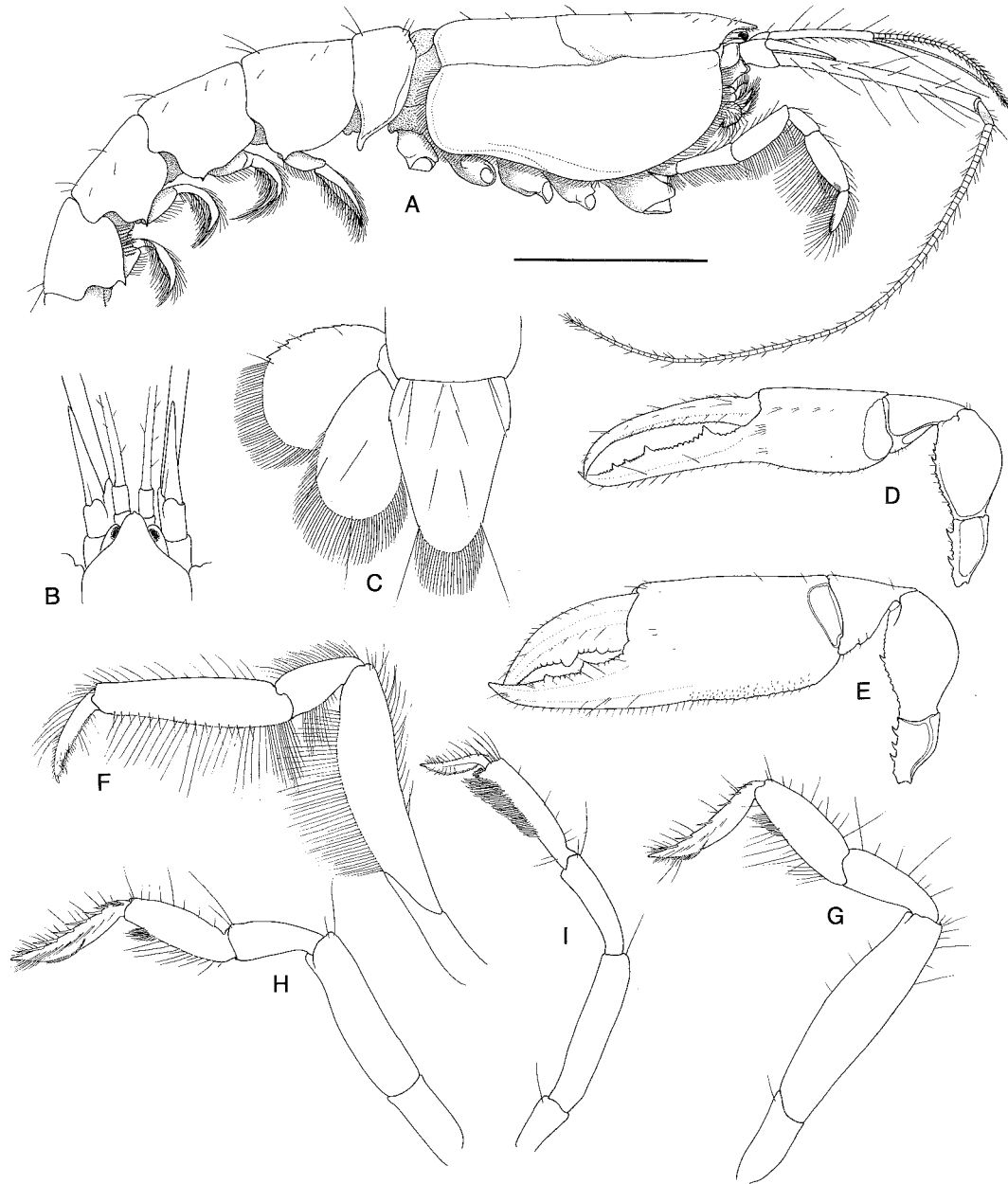


Fig. 5. *Axianassa arenaria*: A, paratype ♂ in lateral view, scale = 5 mm; B, anterior carapace in dorsal view; C, telson and left uropod in dorsal view; D, right pereopod 1, inner view; E, left pereopod 1, outer view; F, pereopod 2; G, pereopod 3; H, pereopod 4; I, pereopod 5.

pigmented. Antennular peduncle articles 1 and 2 together slightly less than half length of article 3; latter slender, elongate-cylindrical; inferior flagellum of 18 articles, $\frac{2}{3}$

length of superior flagellum; latter of about 30 articles. Antennal acicle narrowly triangular, lacking tooth on mesial margin; peduncle article 4 slender, elongate-cylindri-

cal, equal in length to distance from rostral tip to cervical groove of carapace; flagellum $1\frac{2}{3}$ carapace length including rostrum.

Mouthparts typical of genus. Maxilliped 3, basis with strong mesiodistal tooth; ischium with mesial crest bearing about 17 teeth; 5 distal articles heavily setose on posterior margins.

Pereopod 1, ischium with 2 or 3 strong teeth on posterior margin; merus inflated, with posterior margin bearing single strong tooth in distal half plus several small denticulations; carpus with 1 or 2 blunt tubercles on posterodistal margin; left and right chelae of equal length, left chela more robust than right; left chela, fingers $\frac{2}{3}$ length of propodal palm, latter with low granulations on proximoposterior surface, cutting edge of fixed finger with 2 strong triangular teeth and series of small rounded teeth reaching almost to apex; dactylus with strong proximal tooth, second strong tooth at about midlength, rest of cutting edge bearing low rounded teeth almost to apex; right chela, fingers about $\frac{1}{3}$ longer than propodal palm; propodal fixed finger with 2 strong triangular teeth, rest of cutting edge bearing row of small rounded teeth; dactylar cutting edge bearing uniform row of small rounded teeth; tapering and curved distally. Pereopod 2, 4 distal articles strongly setose on posterior margins; dactylus about $\frac{5}{8}$ length of propodus, with row of very small spinules on posterior margin. Pereopod 3, dactylus flexed, with row of 10 spines on posterior margin, spines becoming progressively more elongate distally; close-packed sinuous fringe of spinules on anterior margin. Pereopod 4 similar to pereopod 3, but merus relatively shorter. Pereopod 5, propodus with band of densely packed spinules, broadening distally, on posterior margin; dactylus flexed, with close-packed row of short spinules on anterior margin.

Outer ramus of uropod with several serrations on outer margin; inner ramus unarmed; both rami bearing dense row of plumose marginal setae.

Etymology.—The specific epithet 'are-

naria' meaning sandy, refers to the fine sandy habitat of this species.

Axianassa jamaicensis, new species

Fig. 6

Material.—Holotype, USNM 155732, ♂ cl 6.0 mm, St. James, Montego Bay, Jamaica, intertidal, taken from burrow in sandy bottom, coll. C. B. Wilson, 7 Feb 1910.

Description.—Carapace lightly calcified, dorsally strongly rounded, free margins of branchiostegite bearing row of setae; cervical groove clearly defined; linea thalassinica somewhat grooved; rostrum anteriorly rounded, surpassing cornea of eyes. Abdomen thin-walled, with scattered setae especially on posteroventral angles of pleura; somite 1 with pleuron narrowing ventrally, rounded and poorly defined, lacking any spine-like ventral extension; somite 2 longest, somites 3–5 subequal in length, somite 6 about $\frac{1}{6}$ longer than somite 5. Greatest telsonic width only slightly less than mid-dorsal length; posterior margin broadly rounded, bearing marginal plumose setae.

Cornea not clearly demarked from eye-stalk, weakly pigmented, with poorly defined mesiodistal tubercle. Antennular peduncle with articles 1 and 2 together half length of article 3; latter slender, elongate-cylindrical; inferior flagellum of about 11 articles, slightly less than half length of superior flagellum; latter of 24 articles. Antennal acicle narrowly triangular, with small tooth at about midlength of mesial margin; peduncle article 4 slender, elongate-cylindrical, about $\frac{2}{3}$ length of carapace plus rostrum; flagellum about 3 times carapace length.

Mouthparts, and disposition of exopods, epipods, and branchiae as in *A. intermedia*. Maxilliped 3, endopodal articles strongly setose on posterior margins; basis with single strong mesiodistal spine; mesial crest of ischium bearing 10 teeth.

Pereopod 1, chelae of similar size, dissimilar in proportions and armature; left leg,

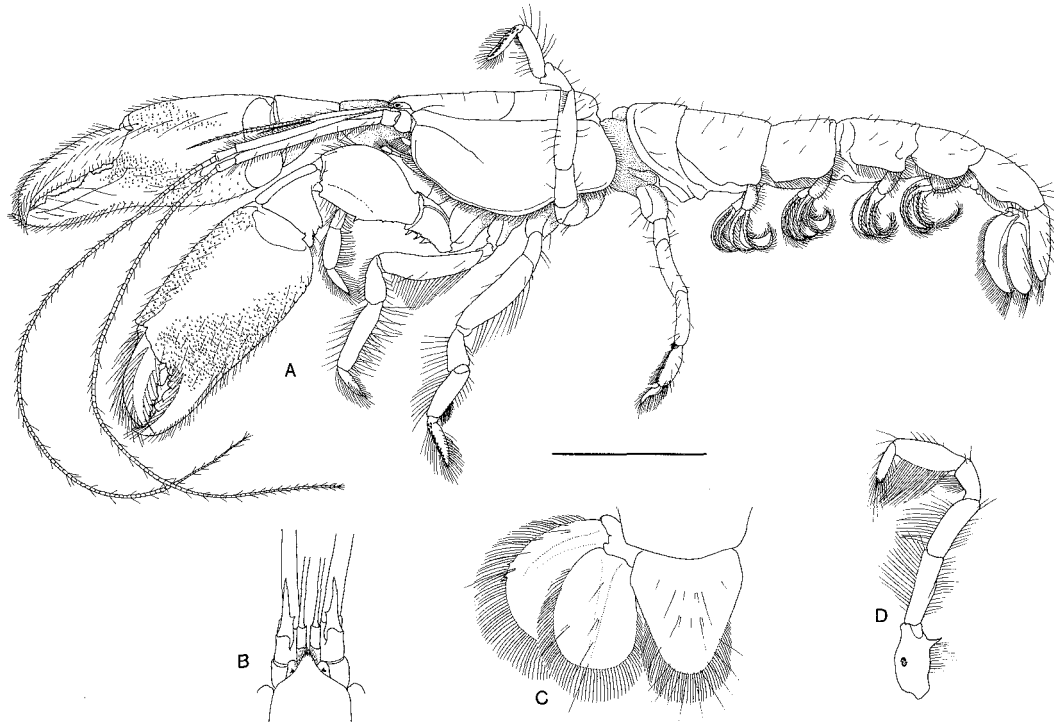


Fig. 6. *Axianassa jamaicensis*: A, holotype ♂ in lateral view, scale = 5 mm; B, anterior carapace in dorsal view; C, telson and left uropod in dorsal view; D, maxilliped 3.

ischium with 3 strong spines on posterior margin; merus inflated, with single spine at midlength of posterior margin and few proximal denticulations; carpus with blunt distal tubercle and shoulder on posterior margin; propodus with marked patches of granulations along anterior (upper) surface, at base of fixed finger and along posterior surface, fixed finger with 4 strong rounded teeth on cutting edge; dactylus slightly more than half length of propodal palm, with proximal molar-like process and distal row of low rounded teeth. Right leg, merus, ischium, and carpus as in left; granulations of propodus similar but not as extensive as in left, cutting edge with large triangular distal and proximal tooth, row of low rounded teeth between; dactylar cutting edge bearing even row of low rounded teeth. Pereopod 2, 4 distal articles bearing numerous marginal setae; dactylus with row of fine spinules on posterior margin. Pereopod 3, propodus with dense posterodistal band of setae;

dactylus flexed, with single row of about 16 corneous spines on posterior margin; row of fine spines in sinuous row on anterior margin. Pereopod 4 similar to pereopod 3, but merus relatively shorter; flexed dactylus bearing about 16 corneous spines in single row distally, double row proximally, on posterior margin. Pereopod 5, propodus bearing band of dense short setae; dactylus flexed, setose, lacking spines.

Outer uropodal ramus ovate, with 2 teeth and single mobile spine on outer margin; inner and outer rami bearing dense fringe of plumose setae.

Etymology.—The specific epithet refers to Jamaica, the type locality of the species.

Axianassa canalis, new species

Fig. 7

Material.—Holotype, USNM 125897, ♂ cl 10.9 mm, Panama Canal, seaward of

Thatcher Ferry Bridge, from dredge flume, coll. H. O. Wright, 16 Mar 1967.

Description.—Carapace with linea thalassinica grooved; cervical groove clearly defined; rostrum tapering, anteriorly narrowly rounded, reaching well beyond cornea of eyes. Abdomen thin-walled, terga and pleura bearing fairly dense pile of very short setules; somite 1 somewhat more than half middorsal length of somite 2, pleuron produced ventrally into strong, calcified spiniform process, anteroventral margin bearing few short spinules; somite 2, pleuron ventrally broad, bearing few submarginal spinules; somites 3–6 subequal in length, pleura each bearing dense fringe of marginal and submarginal setae, and few spinules anteroventrally, ventral margins sinuous. Telson length subequal to greatest width, posteriorly broadly rounded, bearing numerous short scattered spinules dorsally.

Cornea not clearly demarked, moderately pigmented. Article 3 of antennular peduncle slender, elongate-cylindrical, twice length of articles 1 and 2 together; inferior flagellum of at least 14 articles, less than half length of superior flagellum; latter of about 44 articles. Antennal acicle narrowly triangular, with tooth on mesial margin; peduncle article 4 slender, elongate-cylindrical, bearing row of short spinules along ventral surface; flagellum missing.

Mouthparts typical of genus. Maxilliped 3, basis with strong mesiodistal tooth; ischium with band of fusiform setae on posterior margin, 9 slender teeth on mesial crest; posterior margins of 5 distal articles strongly setose.

Pereopod 1, both legs missing. Pereopod 2, both legs missing. Pereopod 3, propodus with dense band of setae on posterodistal margin; dactylus flexed, with row of 11 slender spines on posterior margin, becoming more slender distally; fringe of short spinules on anterior margin. Pereopod 4 similar to but shorter than pereopod 3, dactylus with row of 13 slender spines on posterior margin. Pereopod 5, both legs missing.

Outer uropodal ramus ovate, bearing single marginal tooth on lateral margin, outer half of dorsal surface bearing short scattered spinules; inner ramus ovate, with outer half of dorsal surface bearing short scattered spinules; both rami bearing marginal plumose setae.

Etymology.—The specific epithet “canalis” meaning a canal, refers to the type locality of this species.

Characters for the separation of the five known species of the genus *Axianassa* are presented in the following key. Since the combined number of specimens for all species in the genus is only nine, the following key cannot account for intraspecific variability. With more material, some features used in the key and diagnoses may prove to be of limited value in distinguishing the species.

Key to the species of *Axianassa*

1. Antennal acicle long, dagger-like, apically acute 2
 - Antennal acicle short, apically bifid *mineri*
2. Pleura of abdominal somites 2–5 having single posteroventral tooth; antennal acicle lacking tooth on mesial margin *arenaria*
 - Pleura of abdominal somites 2–5 unarmed; antennal acicle with tooth on mesial margin 3
3. Abdominal somite 1 produced ventrally into spiniform process ... *canalis*
 - Abdominal somite 1 ventrally rounded 4
4. Ischium of pereopod 1 armed with 3 strong teeth on posterior margin ...
 - *jamaicensis*
 - Ischium of pereopod 1 lacking strong teeth, posterior margin finely denticulate *intermedia*

Discussion

Since 1924 when Schmitt created the family Axianassidae for his new genus and

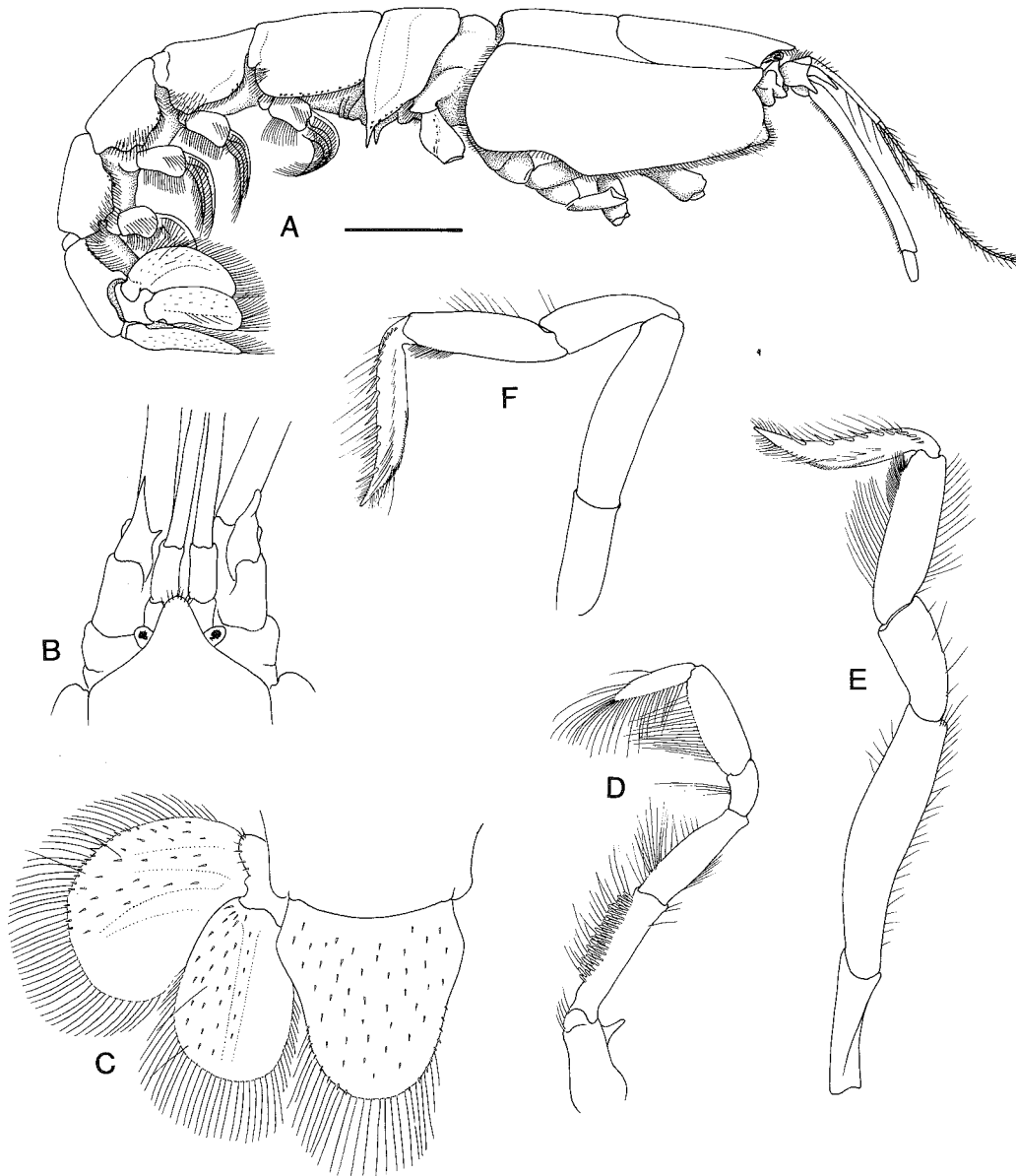


Fig. 7. *Axianassa canalis*: A, holotype δ in lateral view, scale = 5 mm; B, anterior carapace in dorsal view; C, telson and left uropod; D, maxilliped 3; E, pereopod 3; F, pereopod 4.

species *Axianassa intermedia*, the position and validity of the family Axianassidae have been questioned by several authors (De Man 1928, Balss 1957; Le Loeuff & Intes 1974, Ngoc-Ho 1981), who included the genus in the earlier family Laomeidiidae. Others have

retained the Axianassidae (Wear & Yaldwyn 1966, Poore & Griffin 1979), while Goy & Provenzano (1979:351) explicitly excluded *Axianassa* from the Laomeidiidae. Gurney (1938) retained the Axianassidae, based on his studies of larval forms. Chace (1939),

Table 1.—Comparison of the genera of the Laomeidiidae.

| Character | <i>Axianassa</i> | <i>Laomedea</i> | <i>Jaxea</i> | <i>Naushonia</i> | <i>Laurentiella</i> |
|-----------------------------|----------------------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------------------------|
| rostrum | unarmed | armed | armed | armed | ?unarmed |
| antennular ped. art. 3 | elongate | short | elongate | short | short |
| antennal acicle | spiciform (reduced) | reduced | reduced | well-dev. | spiciform |
| antennal ped. art. 4 | elongate | short | elongate | short | elongate |
| maxilla 2 elongate setae | 5 | 5 | 7 | 10 | 7 |
| maxilliped 3 exopod | absent | present | present | present | absent |
| exopods on pereopods | 0 | 2–5 (reduced) | 0 | 0 | 0 |
| pereopod 1 | chelate dissimilar | chelate dissimilar | chelate similar | subchelate similar | chelate dissimilar |
| pereopod 2 | simple | subchelate | subchelate | simple | simple |
| pereopods 3 & 4 dactyl | twisted band of spines | twisted band of spines | ?twisted no band of spines | unflexed no band of spines | twisted band of spines |
| pereopod 5 | corneous spines subchelate | no corneous spines subchelate | no corneous spines subchelate | no corneous spines simple | corneous spines subchelate |
| uropodal sutures | absent | on both rami | on both rami | on both rami | on outer ramus on |

in dealing with the species of *Naushonia*, divided the Laomeidiidae into the subfamilies Laomeidiinae and Naushoniinae, based on the structure of the uropods, antennal scale, and fifth pereopods, but did not refer to *Axianassa*. Le Loeuff & Intes (1974) added the new genus *Laurentiella* to the family Laomeidiidae. Five genera have now been included in this family: *Jaxea* Nardo, 1847, *Laomedea* De Haan, 1849, *Naushonia* Kingsley, 1897, *Axianassa* Schmitt, 1924, and *Laurentiella* Le Loeuff & Intes, 1974. Clearly, a critical reexamination of the relationships of these genera is necessary, along with their relationship to the rest of the thalassinidean families.

Table 1 has been compiled for comparison of some of the characters of the five laomeidiid genera. For each genus, the relevant column of character states may be regarded as its diagnosis.

Unfortunately, information on larval

morphology and development for laomeidiids is limited. The larval types for species in two genera, *Jaxea* and *Naushonia*, have been definitely identified and described by Wear & Yaldwyn (1966) and Goy & Provenzano (1979), respectively. There have been three published reports of laomeidiid larvae taken in plankton samples from the western Atlantic. In one of these reports based on plankton samples from the southwestern Gulf of Mexico, Ngoc-Ho (1981) tentatively identified the laomeidiid larvae present as "*Axianassa* sp." and discussed their similarity to the known larvae of the family Upogebiidae. Ngoc-Ho's material appears to be similar and possibly congeneric with the laomeidiid larvae reported by Gurney (1938) from Brazilian waters and by Truesdale & Andryszak (1983) from the northern Gulf of Mexico off Louisiana. However, until larvae hatched from eggs of *Axianassa* females can be examined and

critically compared with the larvae from these previous plankton studies, Ngoc-Ho's generic identification must be considered tentative. Sakai & Miyake (1964) reported on the first zoea of *Laomedea astacina*, and noted its greater similarity to larval stages of *Jaxea* and *Naushonia* than to those of *Laomedea*. Konishi (1989), in a compilation of the known information on thalassinidean larval development, concluded that the upogebiids are intermediate between the more primitive axiids and the more advanced laomediids, and that the earlier reported *Axianassa* zoea (Ngoc-Ho 1981) had more primitive characters than the typical laomediids. While larval features are undoubtedly of value in the question of thalassinidean phylogeny, conclusions about phylogeny based on such features alone should be avoided; rather, larval characters should be considered along with morphological, biological, ecological, and molecular evidence, to build a strong basis for phylogenetic inference.

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(BK) Department of Invertebrate Zoology, National Museum of Natural History, NHB-163, Smithsonian Institution, Washington, D.C. 20560; (RH) Gulf Coast Research Lab, P.O. Box 7000, Ocean Springs, Mississippi 39564–7000.