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A new species of the axiid shrimp genus *Acanthaxius* from the Caribbean (Crustacea: Decapoda: Thalassinidea)

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Abstract.—*Acanthaxius kirkmilleri* is described from slope depths (420–440 m) in the Caribbean Sea off Anguilla, and is the first unambiguous record of the genus in the Atlantic. The species is characterized by a slender rostrum longer than the eyestalks, highly spinose and relatively slender chelipeds of pereopod 1, and seven spines on the suture of the lateral uropodal ramus.

A single female specimen of a distinctive axiid shrimp was collected by the R/V *John Elliott Pillsbury* in 1969, off Anguilla. The specimen is described here, as part of a series of papers documenting the diversity of the Axiidae in the western Atlantic, and is deposited in the collections of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

Family Axiidae
Genus *Acanthaxius*
Sakai & de Saint Laurent, 1989

Acanthaxius Sakai & de Saint Laurent, 1989:4, 12, 14, 66.—Poore, 1994:98 [key].—Sakai, 1994:192.

Type species.—By original designation, *Axiopsis* (*Axiopsis*) *pilocheira* Sakai, 1987. Type locality: off Honshu Island, Japan, 360 m. Gender: Masculine.

Diagnosis.—Gonochoristic. Rostrum at same level as anterior carapace, narrow, lateral margins dentate; carapace glabrous to faintly rugose; with median, submedian and lateral carinae dentate; post-cervical carina absent. Eye with cornea pigmented; eyestalk relatively elongate. Antennal scaphocerite (acicle) just reaching distal margin of peduncle article 4, slightly arcuate. Maxilliped 3, exopod not clearly bent; ischial crest well developed. Pereopod 1, chelipeds asymmetrical, with spines on anterior (upper) margin of propodal palm and dactylus. See Table 1 for branchial formula. Pleopodal rami slender; pleopod 1 in female uniramous; pleopods 2–5 with appendix interna. Lateral uropodal ramus with transverse suture. Telson longer than wide, with dorsal submedian fixed spines (Table 1).

Remarks.—The definition of this genus contains some uncertainties, as the type species, *A. pilocheira* Sakai, 1987, is known only from the holotypic female. Important characters of pleopods 1 and 2 of the male are is thus unknown, although the absence of pleopod 1 was deduced from other species placed in the genus. Three of the species assigned to this genus by Sakai & de Saint Laurent (1989) and Sakai (1994), *A. caespitosa* (Squires, 1979), *A. hirsutimana* (Boesch & Smalley, 1972), and *A. spinosissimus* (Rathbun, 1906), do not fit the generic definition, in that all three have pleopod 1 of the male present, and the carapace is covered with granules, both features more characteristic of *Oxyrhynchaxius* Parisi, 1917. The species *A. spinulicauda* (Rathbun, 1902), also included in *Acanthaxius* Sakai & de Saint Laurent, 1989, is clearly a species of *Calocarides* Wollebaek, 1908. The use of the post-cervical carina, present in some species, absent in others, also needs reassessment as a diagnostic character.

The advanced characters of the genus

Table 1.—Branchial formula for *Acanthaxius pilocheira*. r = reduced.

	Maxillipeds			Pereopods				
	1	2	3	1	2	3	4	5
Exopod	1	1	1	—	—	—	—	—
Epipod	1	1	1	1	1	1	1	—
Podobranch	—	r	r	r	r	r	—	—
Arthrobranch	—	—	2	2	2	2	2	—
Pleurobranch	—	—	—	—	—	—	—	—
Setobranch	—	—	1	1	1	1	1	1

would appear to be the relatively slender and dentate rostrum, with its basal pair of spines in a supraorbital position; the form of the chelipeds of pereopod 1, and especially that of the smaller chela with the slender dentate fingers being 1.5–2.0 times longer than the propodal palm; the presence of spines on the upper margins of the dactylus and propodus of pereopod 1 chelae; the absence of pleurobranchs; and the presence of epipods on pereopods 1–4.

Species:

Acanthaxius amakusana (Miyake & Sakai, 1967). Amakusa Island, Kyushu, Japan, 20–40 m.

Acanthaxius kirkmilleri, new species. Off Anguilla, 421–439 m.

Acanthaxius miyazakiensis (Yokoya, 1933). Southern Miyazaki-ken, Japan, 137 m; Philippines, 136–210 m.

Acanthaxius pilocheira (Sakai, 1987). Off Honshu Island, Japan, 360 m.

Acanthaxius polyacantha (Miyake & Sakai, 1967). East China Sea, 118 m.

Acanthaxius polychaetes Sakai, 1994. Off Great Barrier Reef, Australia, 260 m.

Acanthaxius kirkmilleri, new species
Figs. 1, 2

Material examined.—Holotype, USNM 243492, ♀ carapace length 12.0 mm, R/V, *John Elliott Pillsbury* sta P-984, off Anguilla, 18°26.4′N, 63°12.6′W, 421–439 m, brown mud bottom, 22 Jul 1969.

Diagnosis.—Female: Carapace glabrous; rostrum slender, with 2 pairs of strong dorsal teeth (apex missing); median carina starting at rostral base, with 2 teeth anterior to tubercle, 1 posterior; submedian carina with 4 teeth; lateral carina with single strong tooth posterior to basal rostral tooth; postcervical carina poorly defined, most marked anteriorly. Abdominal pleuron 1 ventrally narrowed; pleuron 2 broad, ventrally truncate; pleura 3–5 with tiny denticle on anterior margin, anteroventrally rounded, posteroventrally slightly angled. Telson with lateral margin having single anterior tooth, 2 mobile posterolateral spines, posterior margin convex, with median tooth; dorsal surface with 2 pairs of teeth (posteriormost tooth on right side doubled).

Antennal scaphocerite (acicle) slender, acute, reaching to distal margin of peduncle article 4. Maxilliped 3, ischium with 3 teeth on posterior margin; merus with 5 teeth increasing in length distally on posterior margin. Pereopod 1, larger chela, ischium with 4 teeth on posterior margin; merus with 7 teeth and several smaller denticles on posterior margin, 5 strong distal teeth on anterior margin; carpus with 3 strong teeth on anterior margin, several smaller denticles on lateral surface, including strong submarginal tooth; fingers subequal in length to propodal palm, propodus strongly setose on upper and lower surfaces, with 4 strong teeth on anterior margin, row of 12 submarginal teeth on ventrolateral surface, lateral surface of palm with many small acute denticles; fixed finger with cutting edge bearing numerous small rounded teeth; dactylus bearing 5 strong teeth on upper margin, cutting edge bearing numerous small rounded teeth. Smaller chela, ischium, merus, and carpus as in larger chela; fingers about ⅓ longer than propodal palm, latter setose, with 4 strong teeth on upper margin, row of about 10 submarginal teeth ventrally, lateral surface with several small acute denticles, fixed finger with cutting edge straight, bearing numerous small serrations; dactyl bearing 4 strong teeth on upper margin, cutting edge straight, bearing numerous

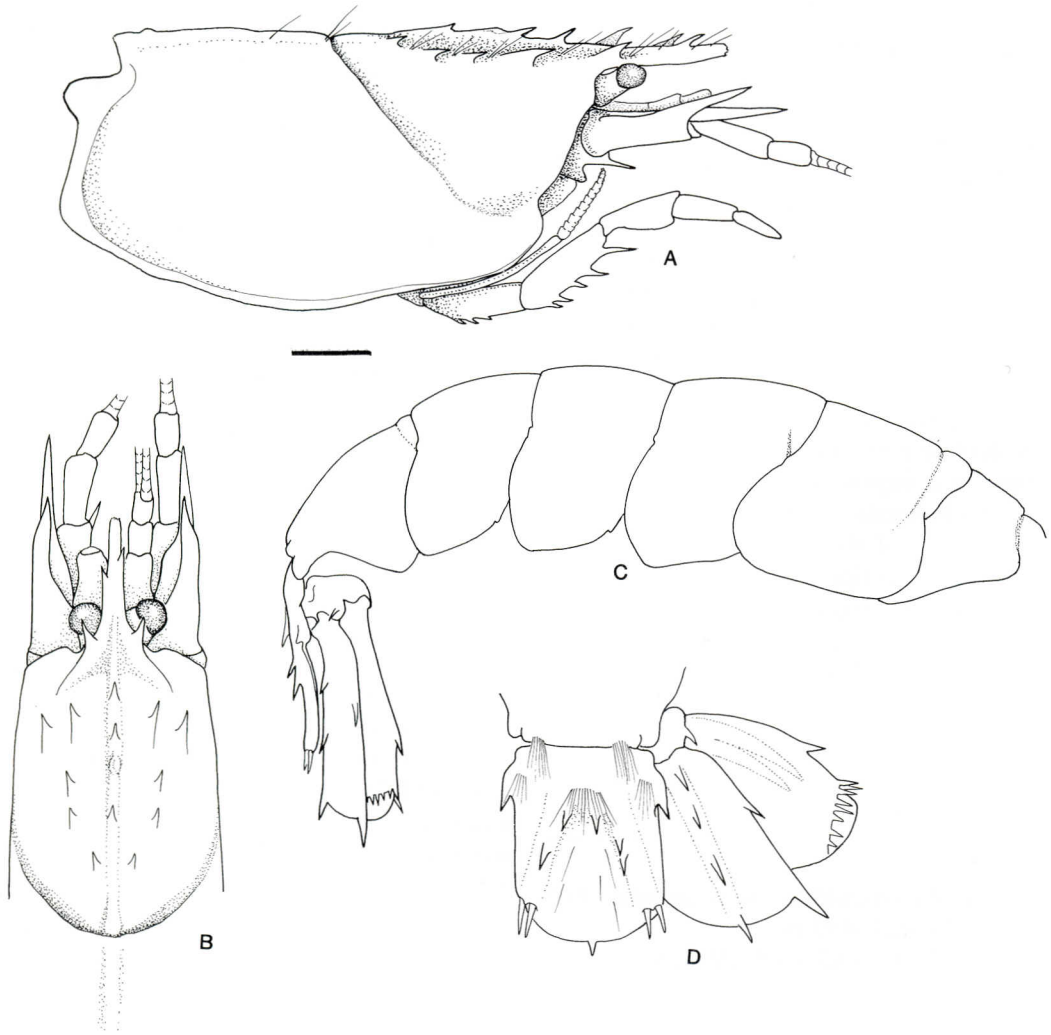

Fig. 1. *Acanthaxius kirkmilleri,* new species, holotype (USNM 243492). A, Carapace in lateral view; B, Anterior carapace in dorsal view; C, abdomen in lateral view; D, telson and right uropod in dorsal view. Scale = 2 mm.

small serrations. Pereopod 2, anterior and posterior margins of all articles setose; ischium with single strong posterodistal tooth; merus with 3 strong teeth on posterior margin; carpus with single strong tooth at midlength of anterior margin. Pereopod 3, merus with 3 teeth on posterior margin; propodus with 5 small clumps of short spines on posterior margin. Pereopod 4, merus with single small posterodistal tooth; dactylus setose; propodus with 4 small clumps of tiny spines on posterior margin. Pereopod 5, propodus with distolateral cluster of setae; dactylus setose. Pleopod 1 a single slender ramus, distally flagelliform. Pleopods 2–5 with slender appendix interna articulating at about proximal third of endopod. Uropod with lateral ramus having 2 teeth on lateral margin, mobile spine at angle of suture, 6 spines along suture; mesial ramus with 2 teeth on lateral margin, 4 teeth on dorsal ridge including distal marginal tooth.

Remarks.—The major differences be-

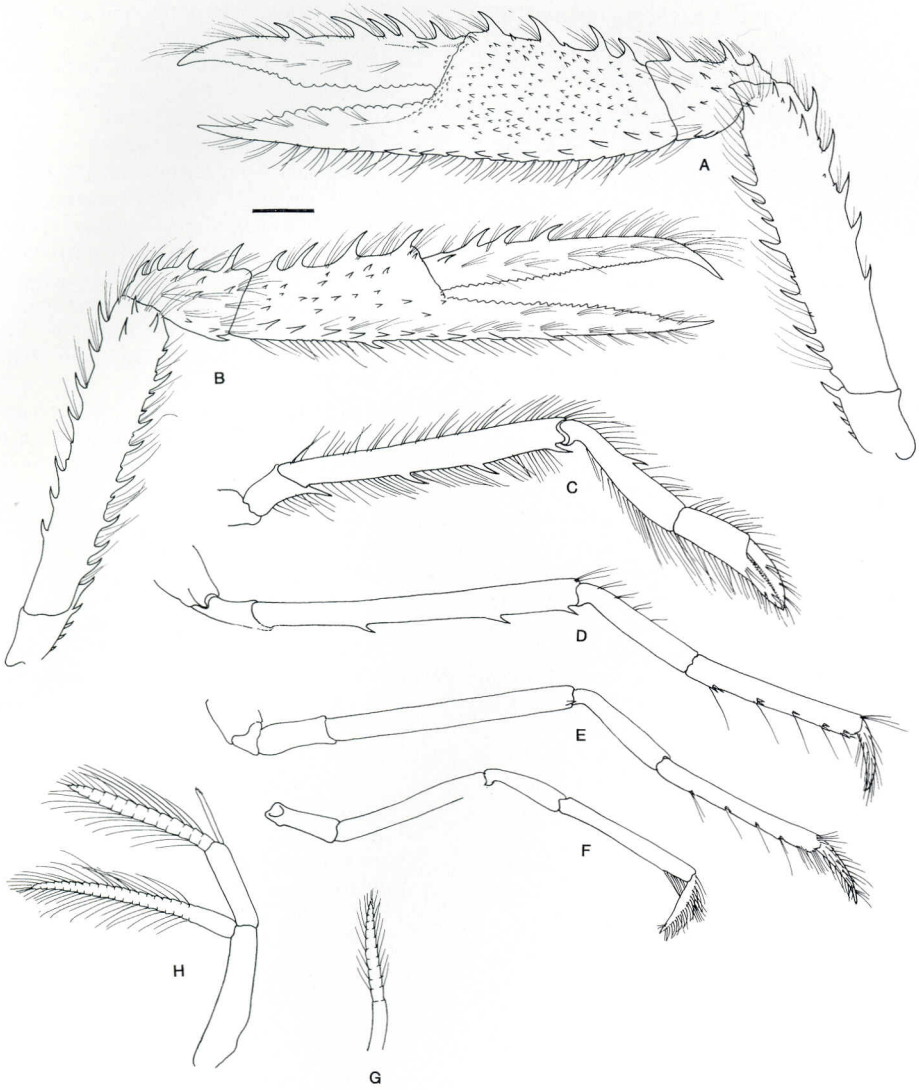

Fig. 2. *Acanthaxius kirkmilleri,* new species, holotype (USNM 243492). A, Pereopod 1, larger cheliped; B, Pereopod 1, smaller cheliped; C, Pereopod 2; D, Pereopod 3; E, Pereopod 4; F, Pereopod 5; G, Pleopod 1; H, Pleopod 2. Scale (A–F) = 2 mm.

tween this western Atlantic species and the holotype of *A. pilocheira* (USNM 231418) lie in the lateral ramus of the uropod (lateral margin more spinose than *A. kirkmilleri*), the generally more spinose and slightly more robust chelipeds of pereopod 1 in *A. pilocheira,* and the more elongate telson (1.5 times longer than basal width) in *A. kirkmilleri* (1.25 times longer than basal width in *A. pilocheira*).

The differences between the present species and the other Japanese congeners are easily discerned: *A. miyazakiensis* is a far more setose species, especially on the chelipeds and carapace; *A. polyacantha* possesses a markedly tuberculate carapace, and relatively more robust chelipeds; *A. amakusana* has a rostrum shorter than the eyestalks, and a relatively broader telson. The Australian species *A. polychaetes* is more

setose, especially on the carapace and abdomen, and possesses squatter and more setose chelipeds of pereopod 1

Etymology.—The species is named for Dr. Kirk D. Miller, longtime friend and companion.

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