

# TWO SYMPATRIC SPECIES OF *AXIUS* FROM THE NORTH-WEST ATLANTIC (DECAPODA, THALASSINIDEA, AXIIDAE)

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## ABSTRACT

*Axius serratus* Stimpson, 1852, is redescribed and illustrated, and its distribution based on 54 records of 68 specimens is recorded. The sympatric, and rarely recorded *Axius armatus* Smith, 1881, is redescribed and illustrated for the first time, based on six female specimens from five separate records. These two species are compared with the eastern Atlantic *Axius stirhynchus* Leach, 1815. The three species can be separated on the basis of the uropodal transverse suture, telsonic and pereopodal spination, and pereopod 4 sternite structure.

## RÉSUMÉ

*Axius serratus* Stimpson, 1852 est redécrit et illustré et sa répartition géographique est donnée, à partir de 54 signalements de 68 spécimens. L'espèce sympatrique *Axius armatus* Smith, 1881, rarement rencontrée, est redécrite et illustrée pour la première fois, à partir de six individus femelles provenant de cinq stations séparées. Ces deux espèces sont comparées avec *Axius stirhynchus* Leach, 1815, de l'Atlantique orientale. Les trois espèces peuvent être différenciées par la suture transversale de l'uropode, les épines du telson et des péréiopodes et enfin la structure du sternite du péréiopode 4.

## INTRODUCTION

The geminate species *Axius serratus* Stimpson, 1852, in the north-western Atlantic, and *Axius stirhynchus* Leach, 1815, in the north-eastern Atlantic, are both long-established, fairly frequently recorded species. That a third species of *Axius* occurs in the western North Atlantic is often overlooked. In fact, *Axius armatus* Smith, 1881, has only been mentioned three times in the literature since its description, and has never been illustrated. The last mention (Sakai & De Saint Laurent, 1989) questioned its position in the genus *Axius*. Six specimens

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(all females) of this species have been deposited in the collections of the National Museum of Natural History, including one of Smith's syntypes. It was thought useful to fill this gap in the knowledge of the east coast U.S. shelf fauna, and to describe and illustrate the two western North Atlantic species, and document their distribution. The holdings of *A. serratus* in the Smithsonian Institution, as well as those of the Museum of Comparative Zoology, Harvard (most of which were collected by various NOAA National Marine Fisheries Service programs) were examined, on the off-chance that specimens of the apparently rare *A. armatus* had been misidentified. Unfortunately, no further specimens were found.

Abbreviations: cl, carapace length (posterior orbital margin to posterior carapace margin); MCZ, Museum of Comparative Zoology, Harvard University; NOAA, National Oceanic and Atmospheric Agency; USNM, United States National Museum, Smithsonian Institution; VIMS, Virginia Institute of Marine Sciences.

#### SYSTEMATICS

### *Axius armatus* Smith, 1881 (figs. 1, 2, 4)

*Axius armatus* Smith, 1881: 433; De Man, 1925: 3, 9, 11.

?*Calocaride* Sakai & De Saint Laurent, 1989: 101.

Material examined. — Syntype, USNM 35391, ♀ cl 13.2 mm (eggs present in ovaries), R/V "Fish Hawk" sta. 878, off Martha's Vineyard, Massachusetts, 39°55'N 70°54'15"W, 260 m, 13 September 1880. — USNM 174450, ovigerous ♀ cl 8.1 mm (damaged), off South Carolina, 32°30'N 78°29'W, 218 m, coll. K. Shaw, 6 June 1978. — USNM 174451, ♀ cl 6.2 mm, off South Carolina, 32°30'N 78°29'W, 218 m, coll. K. Shaw, 6 June 1978. — USNM 243489, 2 ♀♀ cl 5.6 mm, 6.9 mm, R/V "Fish Hawk" sta. 949, off Martha's Vineyard, Massachusetts, 40°03'N 70°31'W, 183 m, 23 August 1881. — USNM 306381, ♀ cl 7.0 mm, George's Bank, 40°22'12"N 68°30'12"W, 108 m, R/V "Oceanus" cruise M10, sta. 12, 13 November 1983.

Description. — Female syntype. Carapace (figs. 1A, B, 2A) with rostrum reaching to distal edge of antennular peduncle article 2, armed with 3 to 6 teeth (4 in 3 specimens), posteriormost in supraocular position, but not enlarged, rostral margin produced posteriorly as fine lateral carina; submedian carina a fine ridge anteriorly recurved, lacking teeth; median carina bearing 2 or 3 teeth (3 in one specimen), unarmed posterior to tubercle. Sternal plate between bases of pereopods 4 (fig. 2C) with lateral flange rounded. Abdominal pleura (fig. 1C) ventrally broadly rounded, that of abdominal somite 2 broadest. Telson (fig. 1D) about 1.5 times longer than basal width; lateral margins with 4 serrations, posterior margin convex, with small spine at midpoint; dorsal surface with 3 spines on left half, 2 on right.

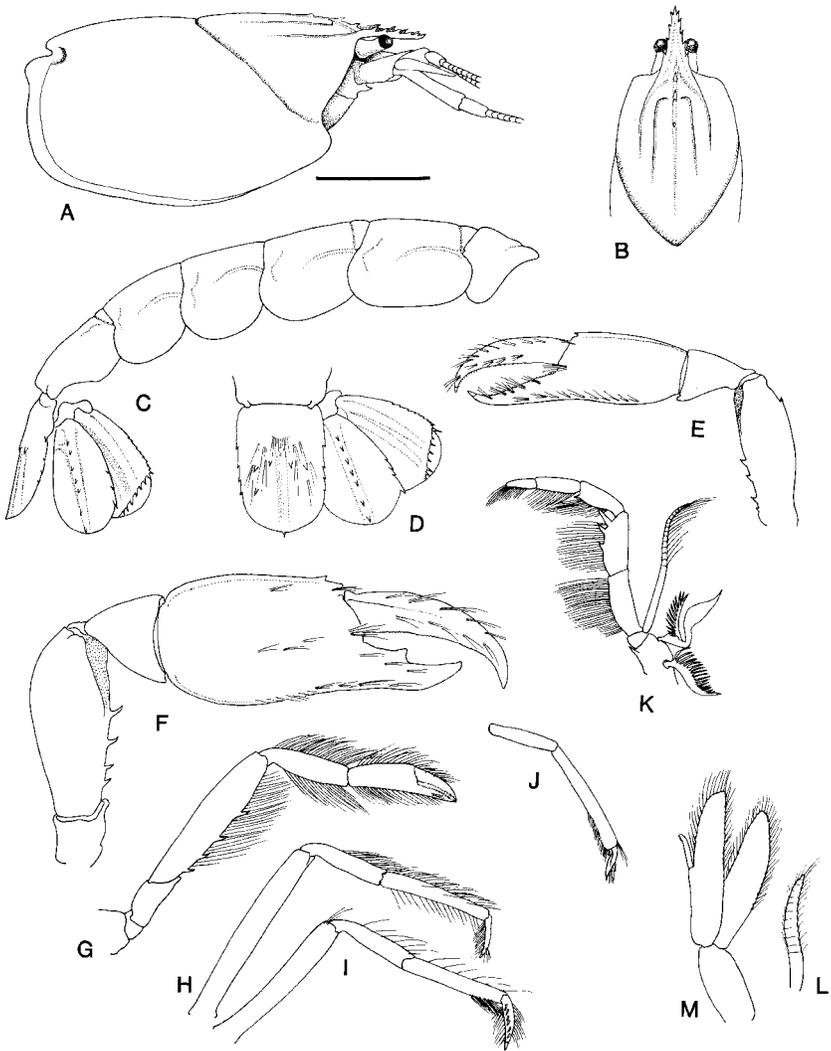


Fig. 1. *Axius armatus* Smith, 1881, syntype USNM 35391. A, carapace in lateral view, scale = 5 mm; B, anterior carapace in dorsal view; C, abdomen, telson and right uropod in lateral view; D, telson and right uropod in dorsal view; E, pereopod 1 smaller cheliped; F, pereopod 1 larger cheliped; G, pereopod 2; H, pereopod 3; I, pereopod 4; J, pereopod 5; K, maxilliped 3; L, pleopod 1; M, pleopod 2.

Antennular peduncle reaching to midlength of antennal peduncle article 4; flagella subequal to length of carapace. Antennal peduncle (fig. 1A) article 3 with strong distal spine on upper margin, small distal spine on ventral; acicle slender, dagger-shaped, reaching two-thirds along article 4; article 5 about one-third length of article 4; flagellum about twice carapace length. Maxilliped 3 (fig. 1K), ischium, merus, carpus, propodus, and dactylus bearing dense band of setae

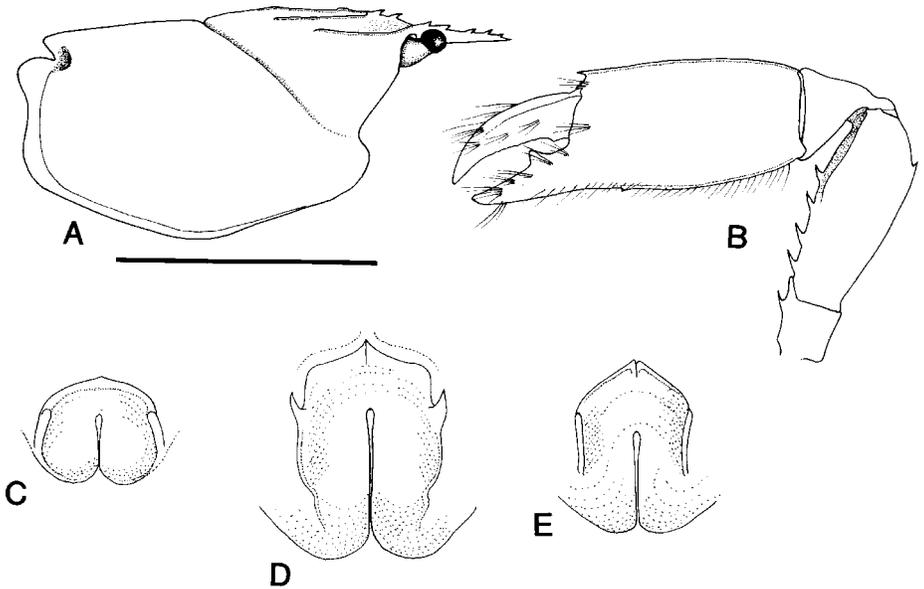


Fig. 2. *Axius armatus* Smith, 1881, USNM 306381. A, carapace in lateral view, scale = 5 mm; B, pereopod 1 larger cheliped; C, sternite between pereopod 4 bases; D, *Axius serratus* Stimpson, 1852, USNM 20864, sternite between pereopod 4 bases; E, *Axius stirhynchus* Leach, 1815, USNM 252600, sternite between pereopod 4 bases.

on lower margin; merus with 3 teeth on ventral margin increasing in length distally; carpus with tooth at posterodistal angle; crista dentata of ischium having 20 teeth. Pereopod 1, larger cheliped (figs. 1F, 2B), ischium lacking armament; merus with upper margin strongly carinate, lower margin bearing 4 teeth in proximal half; propodus with upper and lower margins strongly carinate, upper margin ending distally in single small tooth, fixed finger shorter than dactylus, probably regenerating, with single strong triangular cusp on cutting edge. Pereopod 1, smaller cheliped (fig. 1E), merus with single tooth on carinate upper margin, 4 proximal teeth on lower margin; upper and lower margins of propodus strongly carinate, upper margin with single distal tooth; cutting edge of fixed finger with tiny proximal serrations, fine corneous stiff spine-like setae distally; cutting edge of dactylus with fine corneous setae. Pereopod 2 (fig. 1G), merus with 4 teeth and numerous elongate setae on lower margin; carpus and propodus with numerous setae along upper and lower margins; cutting edges of chela fingers bearing short spine-like setae. Pereopod 3 (fig. 1H), carpus and propodus bearing elongate setae along upper and lower margins; dactylus with fine setae along lower margin. Pereopod 4 (fig. 1I), propodus with distal dense oblique clump of cleaning setae; dactylus bearing row of about 7 corneous spine-like setae on lateral surface. Pereopod 5 (fig. 1J), propodus with numerous setae on lower distal margin;

dactylus twisted, with setae along upper margin. Pleopod 1 (fig. 1L) consisting of single slender setose ramus. Pleopods 2-5 (fig. 1M) with appendix interna at midpoint of mesial margin of endopod. Uropodal lateral ramus (fig. 1D), lateral margin with about 9 serrations distally, slender articulating spine at angle of transverse suture, 7 spines along transverse suture; uropodal mesial ramus with 3 serrations distally on lateral margin, strong spine at distal angle, 7 spines along middorsal ridge.

Branchial formula:

Maxilliped 1	—	—	epipodite	—	—
Maxilliped 2	—	podobranch +	epipodite, 1	arthrobranchs	—
Maxilliped 3	setobranch,	podobranch +	epipodite, 2	arthrobranchs	—
Pereopod 1	setobranch,	podobranch +	epipodite, 2	arthrobranchs	—
Pereopod 2	setobranch,	podobranch +	epipodite, 2	arthrobranchs, 1	pleurobranch
Pereopod 3	setobranch,	podobranch +	epipodite, 2	arthrobranchs, 1	pleurobranch
Pereopod 4	setobranch,		epipodite, 2	arthrobranchs, 1	pleurobranch
Pereopod 5	—	—	—	—	—

Variation. — The lateral rostral teeth for the three undamaged additional specimens available vary: 4/3, 4/4, 5/6 (syntype 4/5), but all specimens have two teeth on the median carina anterior to the tubercle. The larger cheliped of pereopod 1 in the USNM 306381 female, has a small tooth on the lower margin of the propodus, and a strong tooth on the lower margin of the ischium, neither of which are present in the syntypic female.

Distribution. — Massachusetts to South Carolina, depth range 108-260 m.

Remarks. — The following features place this species in the genus *Axius*: uropodal lateral ramus with transverse suture; pereopodal epipods present; rostrum not spike-like, longer than eyes, dentate; maxilliped 3 exopod not clearly bent; pleopods 2-5 with appendix interna; antenna 2 acicle (scaphocerite) simple; pleurobranchs present; supraocular spines absent (see Poore, 1994: 97). In addition, the three species mentioned here all have an unarmed submedian carina of the carapace, with the anterior end characteristically flexed towards the midline.

Smith (1881) mentions “an imperfect male specimen...” along with the description of the female. This male syntype has not been located in the USNM collections.

***Axius serratus* Stimpson, 1852 (figs. 3, 4)**

*Axius serratus* Stimpson, 1852: 222; Smith, 1879: 55, pl. 10 figs. 4, 4a; 1881: 435; Rathbun, 1929: 25, fig. 32; Williams, 1974: 17, fig. 46A, B; Pemberton et al., 1976: 790; Williams & Wigley, 1977: 3, 4, 5, 8, 16; Williams, 1984: 185, 187, fig. 130.

Type locality. — Scituate, Massachusetts Bay, 20 fathoms (36.6 m). Smith (1879) mentions Stimpson's dried type specimen in the Peabody Academy of Science, Salem, Massachusetts.

Material examined. — USNM 20864, 1 ♂ cl 25.0 mm, George's Bank, coll. Capt. J. Getchell, 1879. — USNM 20865, 1 ♂ cl 13.0 mm, 1 ♀ cl 15.6 mm, R/V "Fish Hawk" sta. 849, off Newport, Rhode Island, 1880. — USNM 31450, 1 ♂ cl 18.1 mm, R/V "Fish Hawk" sta. 1613, Long Island Sound, 19 m [damaged]. — USNM 31451, 1 ♂ cl 12.1 mm, R/V "Fish Hawk" sta. 1804, Long Island Sound, 28 m. — USNM 39960, 1 ovigerous ♀ cl 27.3 mm, George's Bank, coll. U.S. Fish Commission. — USNM 40509, 1 ♂ cl 22.9 mm, George's Bank, coll. Capt. J. Getchell, 1879 [damaged]. — USNM 61545, 3 ovigerous ♀♀ cl 25.2 mm, 2 damaged, from stomach of cod taken off Nantucket, Massachusetts, coll. February 1928. — USNM 80514, 1 ovigerous ♀ cl 28.5 mm, Sheepscot River, Barbers Island, Maine, coll. L. W. Scattergood, 24 October 1944. — USNM 80518, 1 ♂ cl 23.3 mm [dry specimen, damaged], off New Harbor, Muscongus Bay, Maine, 54 m, coll. L. W. Scattergood, 10 March 1944. — USNM 95937, 1 ♀ cl 12.5 mm, off Woods Hole, Massachusetts, 44°20'N 67°43'W, coll. 17 August 1953. — USNM 173737, 1 ♀ cl 10.4 mm, Seabrook, New Hampshire, coll. S. Grabe. — USNM 202189, 1 juvenile, damaged, off New Jersey, 39°19'24"N 73°10'18"W, 64 m, coll. VIMS 11 February 1977. — USNM 202190, 2 juveniles cl 3.8 mm, 4.0 mm, off New Jersey, 38°42'48"N 73°24'24"W, 77 m, coll. VIMS 9 February 1977. — USNM 202191, 1 juvenile cl 2.9 mm, off New Jersey, 38°43'00"N 73°24'24"W, 78 m, coll. VIMS 11 November 1976. — USNM 202192, 1 ♂ cl 6.7 mm, off New Jersey, 39°26'36"N 73°09'48"W, 58 m, coll. VIMS 15 November 1976. — USNM 202193, 1 juvenile cl 2.3 mm, off New Jersey, 39°21'24"N 73°11'00"W, 62 m, coll. VIMS 15 November 1976. — USNM 202194, 2 juveniles, damaged, off New Jersey, 38°42'36"N 73°24'18"W, 75 m, coll. VIMS 18 August 1976. — USNM 202195, 1 juvenile, damaged, off New Jersey, 38°44'12"N 73°25'36"W, 70 m, coll. VIMS 18 August 1976. — USNM 202196, 1 ♂ cl 4.9 mm, off New Jersey, 39°02'54"N 73°47'06"W, 51 m, coll. VIMS 17 June 1976. — USNM 202197, 1 juvenile cl 4.5 mm, off New Jersey, 39°02'54"N 73°47'06"W, 51 m, coll. VIMS 17 June 1976. — USNM 202198, 1 juvenile cl 3.9 mm, off New Jersey, 39°02'54"N 73°47'06"W, 51 m, coll. VIMS 17 June 1976. — USNM 202199, 1 juvenile cl 3.2 mm, off New Jersey, 39°02'54"N 73°47'12"W, 49 m, coll. VIMS 21 February 1976. — USNM 213543, 1 ♂ cl 8.4 mm, NOAA sta. OCS III-30A. — USNM 213544, 1 ♂ damaged, NOAA sta. LISI-27, Long Island Sound, coll. 15 August 1972. — USNM 213545, 1 ♂ cl 11.5 mm, NOAA sta. I-67, Baltimore Canyon, coll. 24 May 1974. — USNM 213546, 1 ovigerous ♀ cl 26.2 mm, Baltimore Canyon, coll. NOAA. — USNM 213547, 1 ♂ cl 24.5 mm, NOAA sta. AL 81-07 18 May 1981. — USNM 243488, 1 ♀ cl 14.2 mm, Ipswich Bay, Massachusetts, 19 December 1961. — USNM 258886, 1 ♂ cl 7.2 mm, BLM sta. 3-6e, Nantucket Shoal, George's Bank, 40°26'N 70°03'W, 75 m, 18 August 1977. — USNM 258887, 1 juvenile damaged, BLM sta. 3-19A, George's Bank, 40°34'N 67°45'W, 98 m, August 1977. — MCZ 29101, 1 ♂ cl 21.5 mm, 16-18 miles E of Eastern Point, Cape Ann, Massachusetts, 40-55 m, 18 October 1961. — MCZ 29102, 1 ovigerous ♀ cl 27.3 mm, "Delaware II" cruise 76-6, sta. 8, 37 m, 8 April 1976. — MCZ 29103, 1 ♂ cl 24.4 mm, 43°31'N 66°26'W, 86 m, 17 July 1965. — MCZ 29104, 1 ♀ cl 14.3 mm, 41°0'N 71°30'W, 55 m, 19 June 1962. — MCZ 29105, 1 ♂ cl 19.3 mm, 41°17'N 71°0'W, 37 m, 17 August 1965. — MCZ 29106, 1 ♀ cl 6.8 mm, 41°6'N 69°17'W, 7 December 1955. — MCZ 29107, 1 ♂ cl 8.8 mm, from haddock stomach. — MCZ 29108, 1 ♂ damaged, 42°15'N 70°0'W, 100 m, 11 December 1958. — MCZ 29110, 1 ♀ cl 7.0 mm, no data. — MCZ 29111, 1 ♂ 14.5 mm, 43°10'N 66°40'W, 114 m, 24 August 1965. — MCZ 29113, 1 ♂ cl 12.2 mm, 41°10'N 71°0'W, 33 m, 17 August 1965. — MCZ 29114, 1 ♀ cl 11.5 mm, 40°27'N 67°53'W, 128 m, 8 November 1966. — MCZ 29115, 1 ♂ cl 18.0 mm, 40°30'N 67°58'W, 115 m, 5 April 1965. — MCZ 29434, 1 ♀ cl 24.2 mm, 43°36'N 67°33'W, 220 m, 16 November 1964. — MCZ 29435, 1 ♂ cl 22.5 mm, 43°37'N 66°42'W, 122 m, 13 October 1965. — MCZ 29436, 1 ovigerous ♀ damaged, Plymouth, Massachusetts, January 1900. — MCZ 29437, 1 ♀ cl 17.0 mm, 41°6'N 70°15'W, 24 m, 4 November 1966. — MCZ 29439, 2 ♂ cl 14.5 mm, 15.3 mm, 44°28.3'N 67°15.2'E, 116 m, 11 August 1963. — MCZ 29440, 1 ♀ cl 24.7 mm, 44°40'N 66°16'W, 132 m, 13 October 1965. — MCZ 29441, 1 ovigerous ♀ cl 22.0 mm, 44°20'N 67°42'W, 68 m, 17 August 1953. — MCZ 29442, 1 ♀ cl 21.5 mm, 43°20.4'N 66°13'W, 61 m, 10 August 1963. —

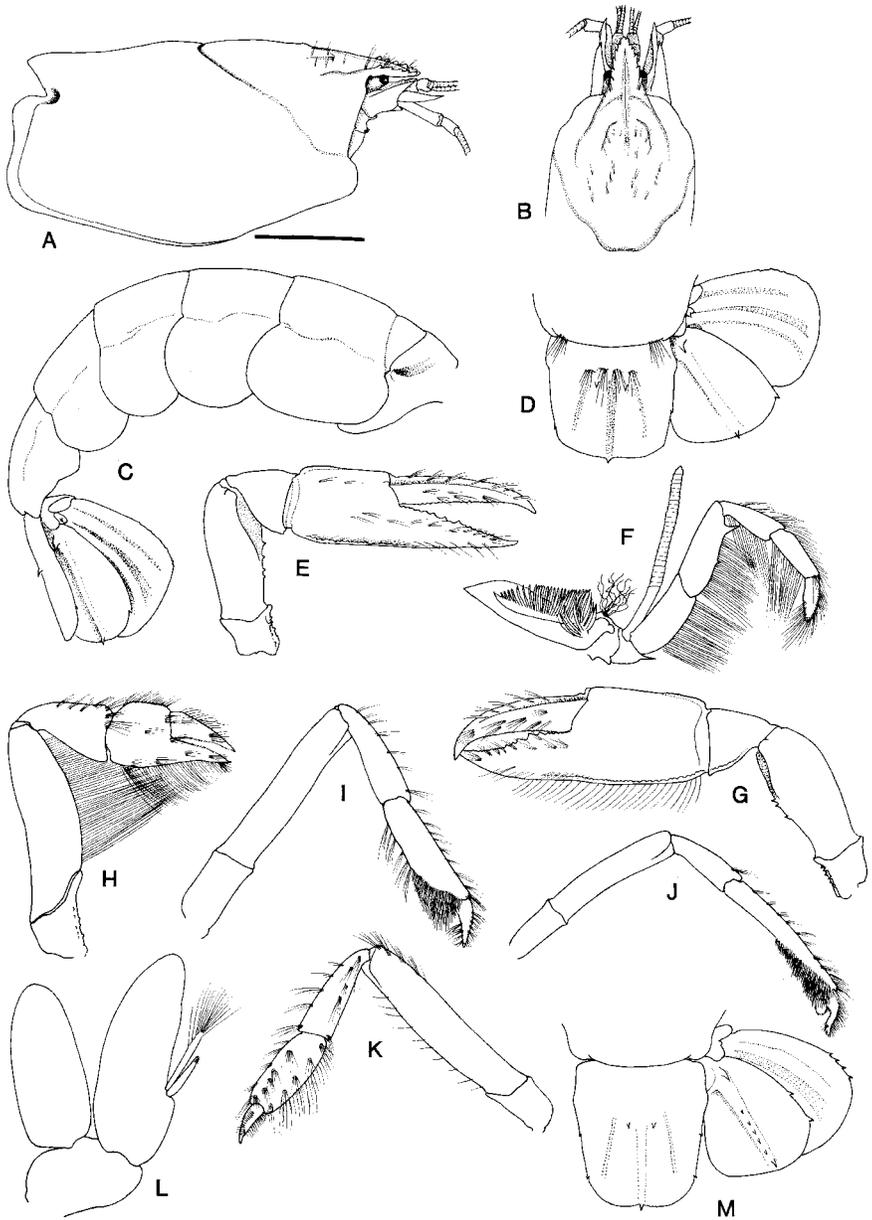


Fig. 3. *Axius serratus* Stimpson, 1852, USNM 80514. A, carapace in lateral view, scale = 10 mm; B, anterior carapace in dorsal view; C, abdomen, telson and right uropod in lateral view; D, telson and right uropod in dorsal view; E, pereopod 1 smaller cheliped; F, maxilliped 3; G, pereopod 1 larger cheliped; H, pereopod 2; I, pereopod 4; J, pereopod 5; K, pereopod 3; L, USNM 20864, male pleopod 2; M, USNM 20865, telson and right uropod in dorsal view.

MCZ 29443, 1 ♂ cl 16.2 mm, "Albatross IV" cruise 74-4, sta. 217. — MCZ 29444, 1 ♂ cl 18.0 mm, 44°3'N 63°23'W, 198 m, 28 April 1971. — MCZ 29445, 1 ♂ cl 25.5 mm, 6 ovigerous ♀♀ cl 24.0 mm, 25.2 mm, 25.3 mm, 25.7 mm, 26.9 mm, 27.5 mm, 3 ♀♀ cl 18.3 mm, 23.8 mm, 27.0 mm, Block Is. Sound, 42 m, coll. 10 February 1959.

Description. — Carapace (fig. 3A, B), rostrum reaching anteriorly to antennular peduncle article 3, with 4-6 lateral teeth; rostral margins produced posteriorly as unarmed carinate lateral carinae; medial carina well defined, sharp, reaching from anterior rostrum to submedian carinae; latter poorly defined, unarmed, with anterior flex towards midline. Small tooth on anterior margin of carapace in antennal region. Sternal plate between bases of pereopods 4 (fig. 2D), lateral flange spinose. Abdominal pleura (fig. 3C) ventrally rounded, pleuron of abdominal somite 2 broadest. Telson (fig. 3D, M), basal width slightly greater than midlength, posterior margin convex with small tooth at midpoint; 1 pair of small spines submedially on dorsal surface.

Antennular flagella subequal, about two-thirds carapace length. Antennal peduncle (fig. 3A) article 3 with strong dorsodistal tapering acute lobe, small acute spine ventrodistally; acicle reaching beyond distal margin of article 4, acute, mesial margin sinuate; article 5 short, just less than half length of article 4. Maxilliped 3 (fig. 3F), basis with strong ventrodistal spine; lower margins of ischium, merus, carpus, and propodus bearing dense band of elongate setae, setae also present along dorsal margin of carpus, propodus, and dactylus; merus with strong ventrodistal spine, and smaller spine at about midpoint of lower margin; exopod reaching just beyond distal margin of merus. Pereopod 1, larger cheliped (fig. 3G), ischium with 2 rows of irregular tubercles on lower surface; ischium with 3 teeth on lower margin; carpus with submarginal crenulate ridge near lower margin; propodal palm slightly longer than fingers, with submarginal crenulate ridge along lower margin, cutting edge of fixed finger with several small and 2-3 larger triangular tubercles; dactylus with strong submarginal ridge dorsally, cutting edge finely crenulate. Pereopod 1, smaller cheliped (fig. 3E), ischium with 2 rows of irregular tubercles on lower surface; ischium with 4 teeth along lower margin; propodal palm about one-fourth shorter than fingers, with crenulate submarginal ridge near lower margin, cutting edge of fixed finger with several irregular low tubercles; dactylus with ridge on lateral surface near dorsal margin, cutting edge finely crenulate. Pereopod 2 (fig. 3H), ischium with few irregular tubercles on lower surface; merus with band of elongate setae on lower margin; carpus widening distally; propodus broad, flattened, with band of elongate setae on lower margin; cutting edges of fingers with fine short spine-like setae; dactylus somewhat flattened. Pereopod 3 (fig. 3K), propods ovate, flattened, bearing numerous clumps of elongate setae; dactylus with numerous clusters of short setae. Pereopod 4 (fig. 3I), propodus with dense pad of stiff grooming setae distoventrally. Pereopod 5 (fig. 3J), propodus with distoventral

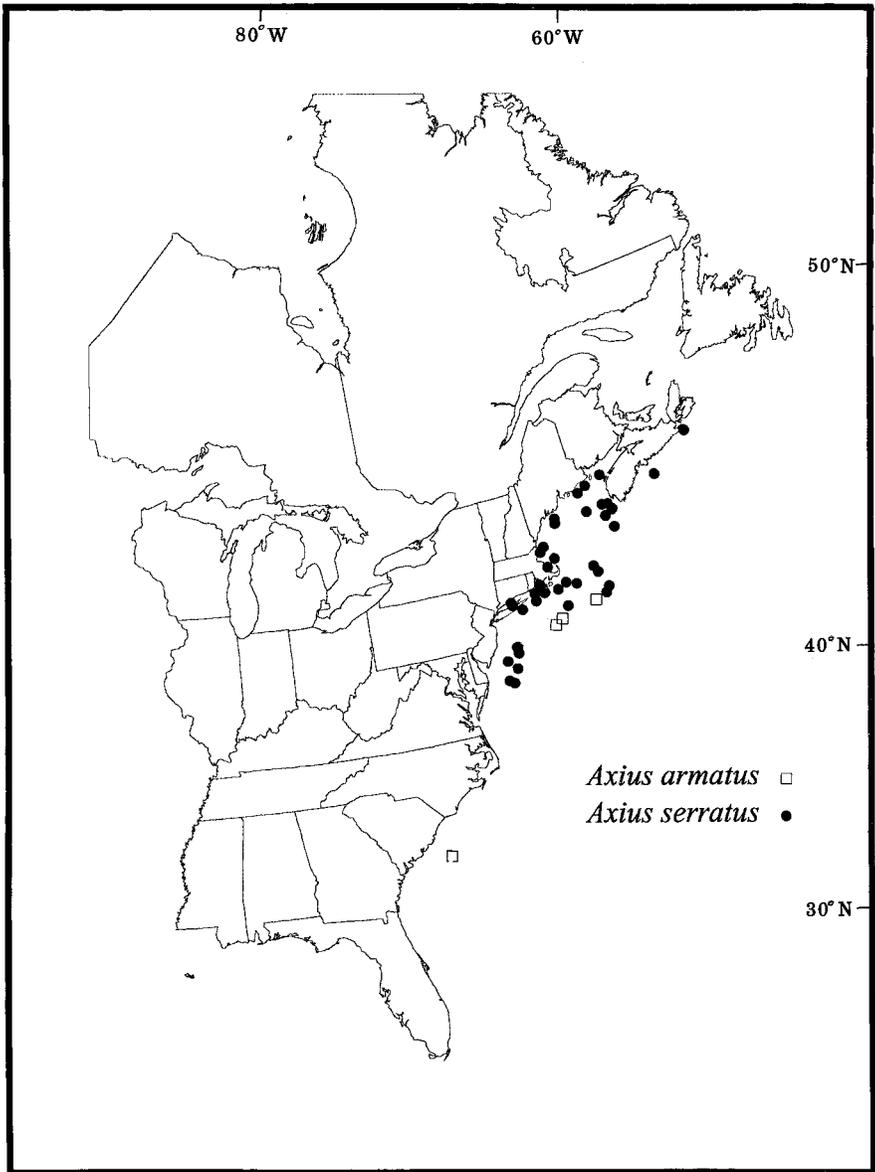


Fig. 4. Distribution of *Axius armatus* Smith, 1881 and *Axius serratus* Stimpson, 1852 in the north-west Atlantic.

band of dense grooming setae, broadly rounded lobe projecting from ventrodiscal angle; dactylus twisted, with dense setae along upper margin. Pleopod 1 in both sexes consisting of single slender setose ramus. Pleopod 2 in male (fig. 3L) with slender rod-shaped appendix masculina bearing numerous fine setae distally; appendix interna about two-thirds length of appendix masculina. Uropodal lateral

ramus (fig. 3D), distolateral margin with few irregular serrations; no transverse suture present; mesial ramus with single tooth at distolateral angle, single tooth proximally on dorsal rounded ridge, single tooth at about midpoint of distal margin.

Branchial formula:

Maxilliped 1	—	—	epipodite	—	—
Maxilliped 2	—	podobranch +	epipodite	1 arthrobranch	—
Maxilliped 3	setobranch	podobranch +	epipodite	2 arthrobranches	—
Pereopod 1	setobranch	podobranch +	epipodite	2 arthrobranches	—
Pereopod 2	setobranch	podobranch +	epipodite	2 arthrobranches	—
Pereopod 3	setobranch	podobranch +	epipodite	2 arthrobranches	pleurobranch
Pereopod 4	setobranch	—	epipodite	2 arthrobranches	pleurobranch
Pereopod 5	—	—	—	—	pleurobranch

Variation. — Teeth on the lateral margins of the lateral and mesial uropodal rami and the dorsal ridge of the mesial ramus vary with age. Younger specimens (see fig. 3M) can have up to 6 teeth on the lateral margin of the lateral ramus, 2 or 3 teeth on the lateral margin of the mesial ramus, and up to 6 teeth on the dorsal ridge of the mesial ramus. These teeth are often worn down or lost in older, larger specimens. The lateral margin of the telson usually has one small tooth, but 2 are occasionally seen.

Remarks. — Table I compares the three North Atlantic species of *Axius*, separating them on five features. Just on similarity of appearance, *A. serratus* and *A. stirhynchus* would seem to be closely related, the carapace, rostrum, and pereopod 1 chelipeds being very similar. The two species also reach a similar size at maturity. *Axius armatus* is a much smaller species, with a somewhat different overall appearance; the two teeth on the median carina immediately separate it from *A. serratus* and *A. stirhynchus*. The loss of a transverse suture on the lateral ramus of the uropod (a widespread plesiomorphic feature in the Axiidae) in *A. serratus* suggests that this species is somewhat more advanced over the eastern Atlantic *A. stirhynchus*. *A. armatus*, with seven or eight spines on the transverse suture, and being somewhat more spinose generally, does not appear to be as closely related to either of the other species.

*Axius serratus* reaches population sizes (up to 9 per square meter) that can have a major impact on bottom sedimenturbation. Pemberton et al. (1976) found the shrimps burrowing to a depth of 3 m in the Strait of Canso off Nova Scotia. Their excavations resulted in the massive burying and recycling of bottom pollutants in the sediments.

*Axius serratus* would seem to be preyed on by bottom-feeding fish, as two records given above are of specimens from the gut of a cod and haddock, while

TABLE I  
Morphological features separating three North Atlantic species of *Axius*

	<i>A. armatus</i> Smith, 1881	<i>A. serratus</i> Stimpson, 1852	<i>A. stirhynchus</i> Leach, 1815
Lateral ramus of uropod	Transverse suture with 7-8 spines	Transverse suture lacking	Transverse suture with 3 spines
Telson dorsal spines	4	2	2
Median carina of carapace	2 spines	Unarmed	Unarmed
Pereopod 1 merus	1 dorsal spine	Unarmed	Unarmed
Pereopod 4 sternal plate, lateral flange	Rounded	Spinose	Acute
Ovigerous female, carapace length	8.1-13.2 mm	22.0-28.5 mm	24.1 mm

Smith (1879: 55) mentions a specimen from the gut of a flounder taken off Massachusetts.

Ovigerous females of *A. serratus* have been taken in January, February, April, August, and October, but with only six separate records, it is difficult to discern any seasonality in breeding cycle of the species.

Distribution. — Nova Scotia to Maryland, depth range 19-220 m. From the material listed above, of the 34 records for which depth is known, 25 are from less than 100 m.

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