



Altamaha spiny mussel (*Elliptio spinosa*) 67 mm (2 $\frac{2}{3}$ inches). Altamaha River, Wayne Co., Georgia. Photo by Jason Wisniewski. GA DNR.

Common Name: ALTAMAHA SPINYMUSSEL

Scientific Name: *Elliptio spinosa* Lea

Other Commonly Used Names: none

Previously Used Scientific Names: *Canthyria spinosa*

Family: Unionidae

Rarity Ranks: G2/S2

State Legal Status: Endangered

Federal Legal Status: Endangered

Description: Shell sub-triangular in outline with rounded anterior margin and pointed posterior margin. Ventral margin broadly rounded. Posterior ridge sharply angular and umbos slightly elevated and positioned just anterior to the middle of the shell. Periostracum typically green to brown with faint green rays. Left valve with two pseudocardinal teeth and straight lateral teeth. Right valve with two pseudocardinal teeth, of which the anterior tooth is triangular and serrated. One lateral tooth present in right valve. Beak cavity moderately deep and nacre is typically purple. Often found with 1 - 4 spines located near the posterior ridge. Spines are typically eroded

or broken in larger individuals while younger individuals may have spines over 25 mm (1 inch) long.

Similar Species: Spineless Altamaha spiny mussels can look quite similar to the Georgia elephantear (*Elliptio dariensis*). However, the Altamaha spiny mussel typically has a rounded ventral margin whereas the Georgia elephantear tends to be straight. Occasionally, individuals may exhibit erosion of the periostracum and shell where spines were once present.

Habitat: Typically found buried in sandbars with swift water current. Altamaha spiny mussels are found most often in very coarse to fine sand. The Altamaha spiny mussel was found to have very restricted habitat preferences and might be most affected by siltation. The Altamaha spiny mussel is sometimes found in the sloughs that occasionally form between an exposed sandbar and the bank. Surveys completed during 2006 and 2007 suggest that this species often occupies fine, hard-packed sand with rather swift current near gently sloping, soft banks.

Diet: The diets of unionids are poorly understood but are believed to consist of algae and/or bacteria. Some studies suggest that diets may change throughout the life of a unionid with juveniles collecting organic materials from the substrate through pedal feeding and then developing the ability to filter feed during adulthood.

Life History: Life history information for Altamaha spiny mussel is lacking. Gravid individuals have been collected in early June. However, this is likely the extreme end of their brooding period.

Survey Recommendations: Surveyors should consider sampling during periods when female individuals are spawning or brooding as this species may have higher detection rates during this period. However, since basic life history information for many of Georgia's unionids is lacking, sampling during periods when closely related species are spawning or brooding may increase probability of detection.

Range: The Altamaha spiny mussel is endemic to the Altamaha River basin. The upstream extent of its range is near the confluence of House Creek with the Ocmulgee River, Ben Hill County. In addition, the Altamaha spiny mussel has been found at several sites in the lower Ochopee River. In 1964, H.D. Athearn collected 18 whole shells from the Oconee River near Mt. Vernon, GA, which appears to be the upstream extent of its known distribution in the Oconee River. Despite intensive survey efforts since 2000, few Altamaha spiny mussels have been found at very few locations. As a result, it appears that this species is declining rapidly throughout the basin and may be extirpated from the Oconee River. The main stem of the upper Altamaha, lower Ocmulgee and Ochopee Rivers in Appling, Ben Hill, Coffee, Jeff Davis, Long, Montgomery, Tattnall, Telfair, Toombs, Wayne, and Wheeler Counties was designated as critical habitat for the species under the U.S. Endangered Species Act.

Threats: Excess sedimentation due to inadequate riparian buffer zones covers suitable habitat and could potentially suffocate mussels. Due to destabilization of the sand in some parts of the Altamaha River system, mussels that spend most of their time in the sand are being impacted.

negatively. This appears to be particularly true in the Oohoopee River. Direct and indirect competition by the introduced flathead catfish may be reducing native mussel populations through direct consumption of mussels and their host fishes. The glochidial host fish(es) for this species is unknown. All terrain vehicles may also impact this species within the Oohoopee River.

Georgia Conservation Status: The Altamaha spinymussel is not known from any state or federal lands in Georgia. Unlike terrestrial species, the occurrence of an aquatic species on state or federal lands may not eliminate habitat degradation due to the influences of upstream and downstream disturbances.

Conservation and Management Recommendations: Examination of the basic life history was identified as a top research priority needed for the conservation of this species during the 2005 Georgia Wildlife Action Plan. Understanding the basic life history of this species will provide the foundation upon which all other research and conservation actions should be built. Riparian buffers should be protected to avoid unnecessary bank erosion as this species often is found in shallow areas near the water's edge. Minimizing impacts of all terrain vehicles near waterways will also prevent crushing individuals of this species and other mollusks occupying edge water habitats.

Selected References:

Johnson, R.I. 1970. The systematics and zoogeography of the Unionidae (Mollusca: Bivalvia) of the southern Atlantic Slope region. *Bulletin of the Museum of Comparative Zoology* 140: 263-449.

Johnson, P.D., S.F. Novak, and A.E. Bogan. 2008. Electronic database of the Museum of Fluvial Mollusks. Submitted to the U.S. Fish and Wildlife Service, Cookeville, Tennessee. 16 pp.

Keferl, Eugene P. 1981. A survey of the naiads of the Oohoopee River, Georgia. *The Bulletin of the American Malacological Union*, Inc. 11-15.

Keferl, Eugene P. 1993. The status of freshwater mussels in some Georgia, South Carolina and North Carolina waters. *In* K.J. Hatcher (ed.), *Proceedings of the Georgia Water Resources Conference*, Institute of Ecology, The University of Georgia, Athens.

Sickel, James B. 1980. Correlation of Unionid mussels with bottom sediment composition in the Altamaha River, Georgia. *The Bulletin of the American Malacological Union*, Inc. 10-13.

Stringfellow, C., and P. Gagnon. 2001. Final report of the Altamaha spinymussel survey in the lower Oohoopee River. U.S. Fish and Wildlife Service. 10 pp.

Vaughn C.C. and C.C. Hakenkamp. 2001. The functional role of burrowing bivalves in freshwater ecosystems. *Freshwater Biology* 46: 1431-1446.

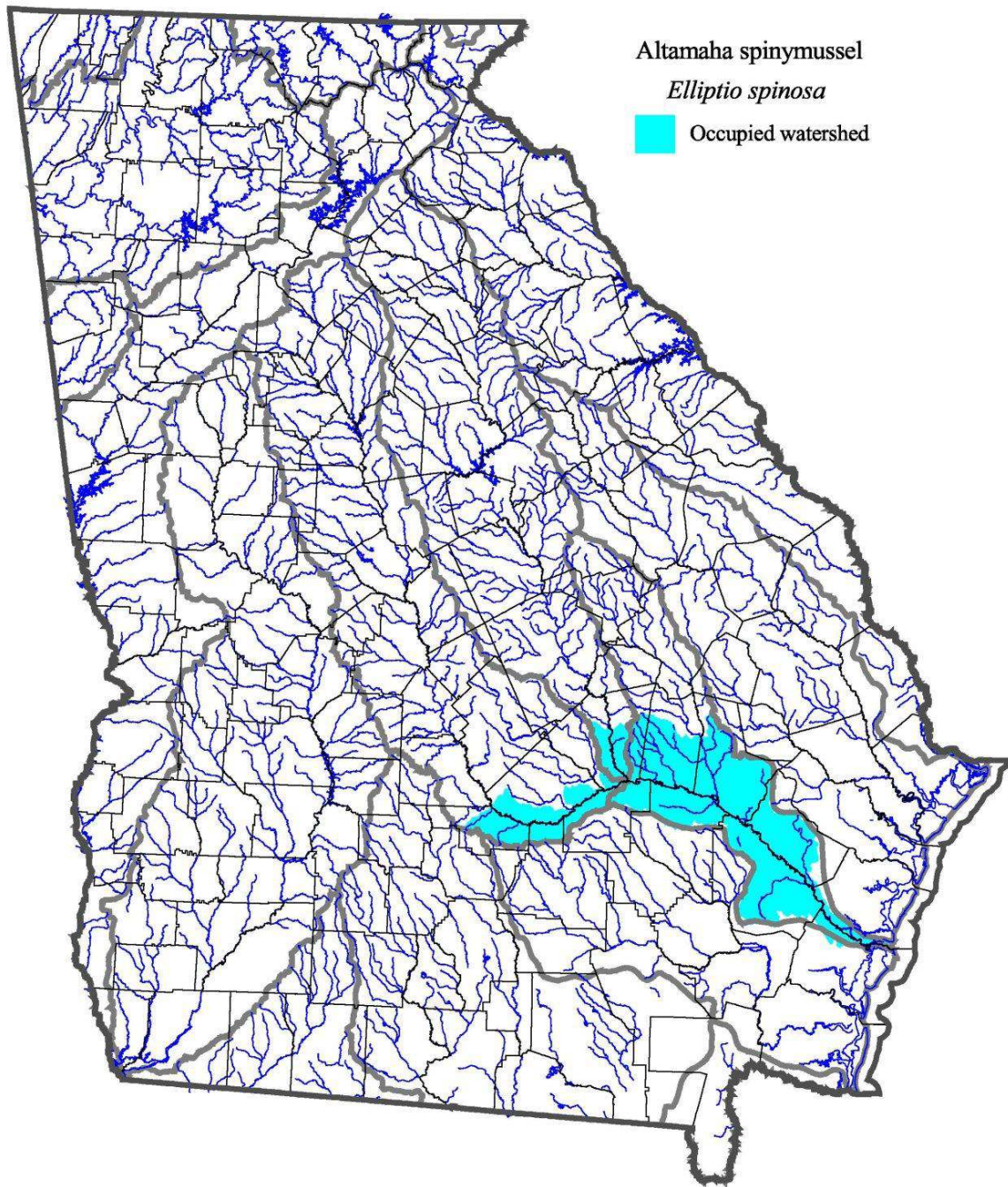
Wisniewski, J.M., B. Albanese, and G. Krakow. 2005. Current status of endemic mussels in the lower Ocmulgee and Altamaha Rivers. *In* K.J. Hatcher (ed.), Proceedings of the Georgia Water Resources Conference, Institute of Ecology, The University of Georgia, Athens.

Author of Species Account: Jason Wisniewski

Date Compiled or Updated:

J. Wisniewski, September 2008: original account

B. Albanese, October 2011: changed federal status to endangered and listed critical habitat in range section.



Watersheds (Huc 10) with known occurrences. Streams, county lines, and major river basin boundaries are also shown. Map generated from GADNR (Nongame Conservation Section) data on January 2009.