Shinyrayed pocketbook (*Hamiota subangulata*) 48 mm (1 inch). Spring Creek, Decatur Co. Georgia. Photo by Jason Wisniewski, GA DNR.

Common Name: SHINYRAYED POCKETBOOK

Scientific Name: *Hamiota subangulata* Lea

Other Commonly Used Names: none

Previously Used Scientific Names: *Lampsilis subangulata*

Family: Unionidae

Rarity Ranks: G2/S2

State Legal Status: Endangered

Federal Legal Status: Endangered

Description: Shell profile is subelliptical with a maximum length of approximately 85 mm (3⅜ inches). The umbo is positioned anteriorly of middle of valves and is elevated above the hingeline. Rounded anteriorly and broadly rounded to pointed posteriorly. Posterior ridge prominent dorsally but broadly rounded posterioventrally. Ventral margin typically broadly rounded and terminating near midline of shell. The periostracum is glossy and yellow to dark brown often with prominent dark rays radiating from the umbo to the margin of the shell. Left valve with two triangular, slightly compressed pseudocardinal teeth and two long, straight lateral teeth. Right valve with one stout pseudocardinal tooth. Nacre typically white or salmon-colored.

Similar Species: Florida sandshell (*Lampsilis floridensis*) and southern rainbow (*Villosa vibex*). The shinyrayed pocketbook can be distinguished from the Florida sandshell by the raying pattern, which tends to only appear posteriorly in the Florida sandshell whereas the shinyrayed pocketbook tends to have more prominent rays located on both the anterior and posterior portions of the shell. The shinyrayed pocketbook tends to have a relatively heavier shell than that of southern rainbow and heavier pseudocardinal teeth. The southern rainbow also tends to have a bluish-white periostracum as opposed to the white to salmon periostracum observed in the shinyrayed pocketbook.

Habitat: Typically occupies medium sized streams to large rivers in sandy to muddy substrates with slight to moderate current.

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 though pedal feeding and then developing the ability to filter feed during adulthood.

Life History: Females are known to brood glochidia over winter and release superconglutinates in the late spring and through the summer. Gravid females have been collected from May through late August and superconglutinates have been observed during this same period. The superconglutinate is comprised of a long gelatinous string with several glochidial packages attached. The superconglutinate floats in water currents in order to resemble a small fish. Females also exhibit a display in which they flutter their mantle while positioned with their posterior margin exposed. This display may be used alone or in conjunction with the superconglutinate and may be an evolutionary strategy that this species uses to attract host fishes during periods of extreme drought. The purpose of this display and the superconglutinate is to attract predatory glochidial host fishes. Glochidia of this mussel have successfully transformed on largemouth bass (*Micropterus salmoides*) and spotted bass (*M. punctatus*).

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: This species is endemic to the eastern Gulf Slope of Alabama, Florida, and Georgia, and was historically known from the Apalachicola and the Ochlockonee river basins. In Georgia, this species occurred in the Chattahoochee River Basin up to Atlanta and to the headwaters of the Flint River, as well as the Ochlockonee River. Currently, the Chattahoochee population appears to be restricted to Sawhatchee and Kirkland creeks while the species appears to occur widely throughout the Flint River and its tributaries. There have also been several recent collections this species from the Ochlockonee River.

Threats: Habitat fragmentation may isolate populations and prevent fish movement, limiting the distribution of host fishes carrying glochidia. Additionally, construction of impoundments

may further fragment populations and inundate suitable habitat. Excessive water withdrawals in the Lower Flint River Basin coupled with severe drought could cause this species to become extirpated from Georgia. Excess sedimentation due to inadequate riparian buffer zones also covers suitable habitat and potentially suffocate individuals.

Georgia Conservation Status: The shinyrayed pocketbook is known from Chickasawhatchee Creek in the vicinity of Chickasawhatchee and Elmodel Wildlife Management Areas in Georgia. However, 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: Design of a sampling protocol to assess the status of rare species in the Apalachicola, Chattahoochee, and Flint River basin was identified as a high management priority in the 2005 Georgia Wildlife Action Plan. Furthermore, technical team members also recommended that a population viability analysis be done for the shinyrayed pocketbook. Suitable but unoccupied habitats appear to be relatively abundant in the basin, which may provide an opportunity to recover this species using re-introduction/ augmentation techniques. However, prior to the initiation of any reintroduction/augmentation activities, studies of the effective population size should be completed to ensure that the genetic integrity of the species is not compromised by this management activity.

Selected References:

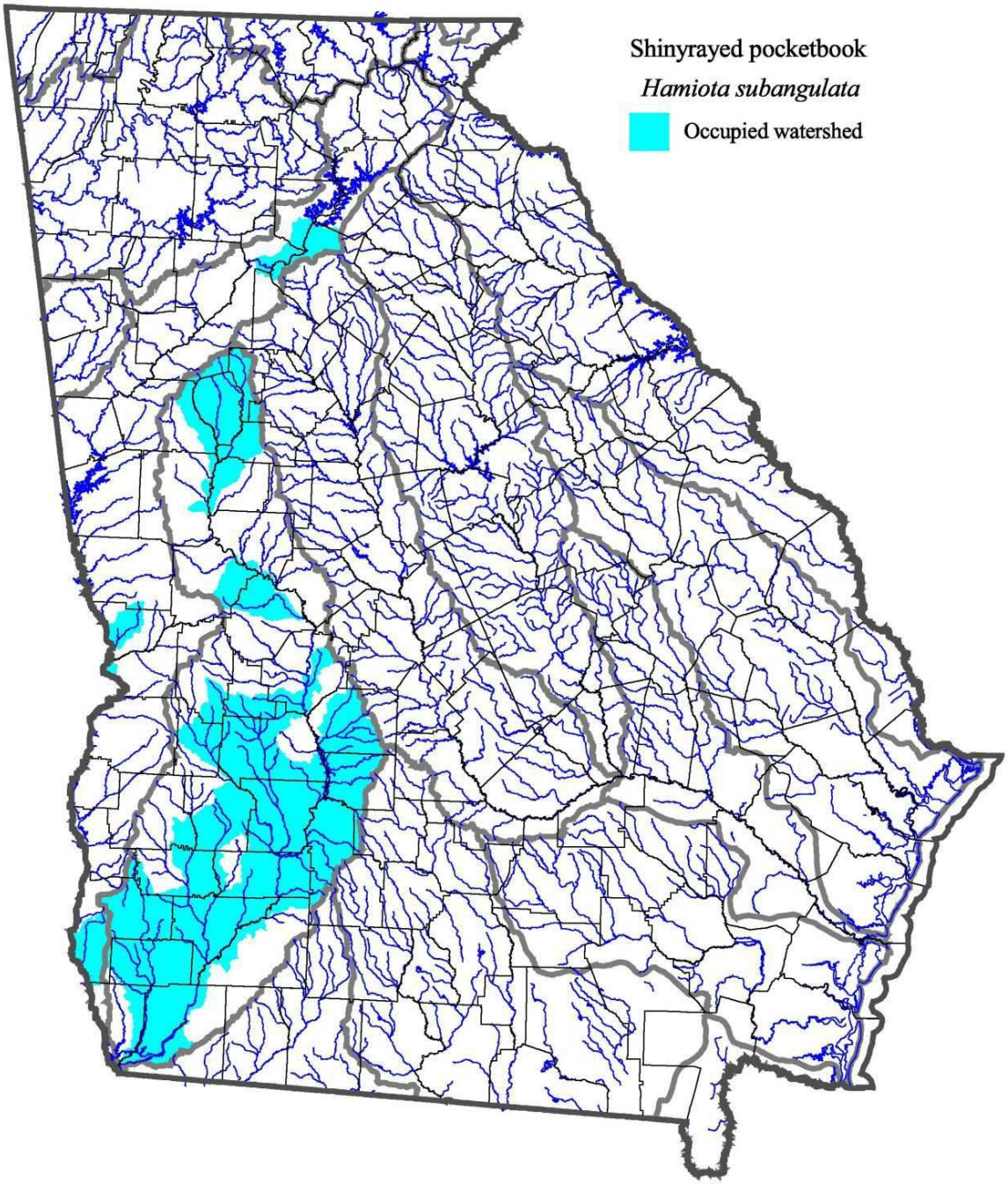
O'Brien, C.A., J. Brim Box, and A. Daniels. 1995. Host fish attraction strategy and host fish identification for *Lampsilis subangulata*. Poster presented to the Conservation and Management of Freshwater Mussels Conference II: Initiatives for the Future, October 16-18, 1995. St. Louis, Missouri.

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

Williams, J.D., A.E. Bogan, and J.T. Garner. 2008. Freshwater mussels of Alabama and the Mobile Basin in Georgia, Mississippi, and Tennessee. The University of Alabama Press, Tuscaloosa.

Author of Species Account: Jason Wisniewski

Date Compiled or Updated: September 2008



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.