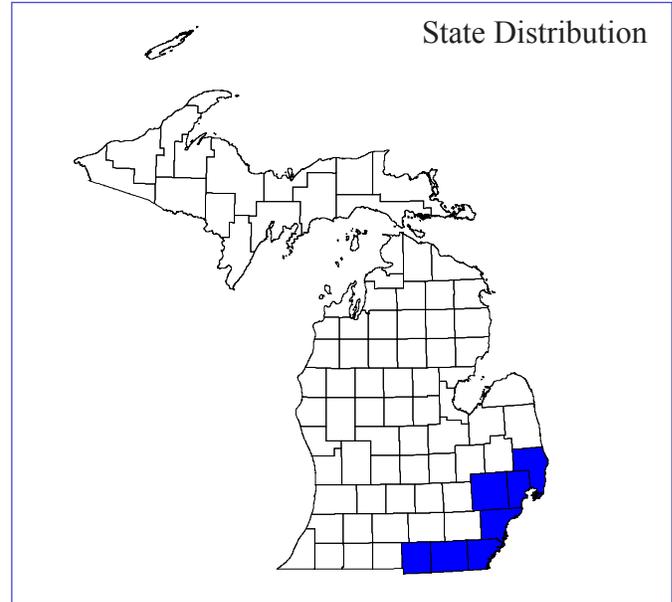


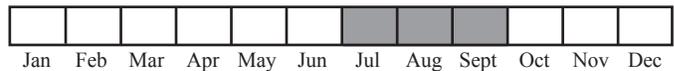


Male (top); Female (bottom)

Photo courtesy of Kevin S. Cummins,
Illinois Natural History Survey



Best Survey Period



Status: Federal and State Endangered

Global and State Rank: G1G2/S1

Family: Unionidae (Pearly Mussels)

Total Range: The rayed bean mussel is sporadically distributed in the St. Lawrence, Ohio and Tennessee drainages. While it was historically found frequently from Ontario to Alabama and Illinois to New York, only a few populations are currently known to exist. It is presumed to be extirpated throughout much of its former range, including Alabama, Illinois, and Virginia. It is now only confirmed in the lower Tippecanoe River in Indiana, Fish Creek, the Blanchard River, Scioto Brush Creek and the Stillwater River in Ohio, and the Pine and Clinton Rivers in Michigan (NatureServe).

State Distribution: Historically, the rayed bean mussel was found in many rivers in southeastern Michigan. It was reported from the Clinton River in Oakland County, the Belle and Pine Rivers in St. Clair County, the lower Huron River in Monroe County, and the Raisin River in Lenawee County. Spent shells have also been found in the St. Joseph River in Hillsdale County, Lake St. Clair in Wayne County, and Lake Erie in Monroe County. In the past 20 years, however, live mussels have only been found in the Pine and Clinton Rivers.

Recognition: The rayed bean is a small mussel, usually under 1.5 inches in length. The shell is elliptical in shape, and varies in degree of inflation. The shell is usually solid, with heavy hinge teeth. The exterior is light to dark green or olive, with heavy wavy rays. The nacre is white to whitish-blue, often iridescent posteriorly (Burch 1994, Cummings and Mayer 1992).

Best Survey Time: The rayed bean mussel is typically found buried deep in the sediment, making it difficult to detect during surveys. It is present in this habitat throughout the year, but it is easiest to find these mussels July through September when water levels are typically low.

Habitat: The rayed bean mussel occurs in small, shallow rivers, in and near riffles, where it is buried deep in sand and/or gravel, often near aquatic vegetation (Ortmann, 1919). The rayed bean mussel is also found in slow flowing rivers, and along the shallow, wave-swept shores of lakes (La Rocque, 1967).

Biology: The exact breeding season of the rayed bean mussel is not known, although females bearing eggs have been found in May (Ortmann 1919). Females are reported to hold glochidia (the parasitic larval stage of mussels) internally over the winter for release in the spring (Ortmann 1909). The fish host of the glochidia



is unknown at this time. After completing the parasitic stage, the rayed bean mussel remains relatively sessile on the river bottom. The lifespan of the rayed bean mussel is not known. Like all mussels, the rayed bean is a filter feeder.

Conservation/Management: Conservation of the riffles and shoal areas that the rayed bean mussel inhabits is essential for its protection. Like most mussels, the rayed bean is sensitive to river impoundment, siltation and disturbance. Pollution from point (industrial and residential discharge) and non-point (siltation, herbicide and surface run-off) sources is also a great threat to mussels and should be limited. Because the fish host is unknown, it is imperative to protect the entire fish fauna occupying the rayed bean habitats.

Research Needs: In order to better protect and manage current populations, life history data needs to be compiled on the rayed bean mussel. It is essential to determine the fish hosts, as well as the breeding season. More detailed habitat requirements, including water chemistry preferences, will also aid in conservation and management of populations. Finally, a thorough survey needs to be completed to determine the current distribution of this species in Michigan and throughout its range.

Selected References:

- Burch, J.B. 1994. Mollusk: Species Accounts. Pages 395-410 in D.C. Evers, ed. Endangered and Threatened Wildlife of Michigan. University of Michigan Press, Ann Arbor, MI.
- Cummings, K.S. and C.A. Mayer. 1992. Field Guide to Freshwater Mussels of the Midwest. Illinois Natural History Survey. Manual 5. 194 pp.
- La Rocque, A.C. 1966-1970. Pleistocene mollusca of Ohio. Ohio Div. Geol. Surv. Bull. Volume 62, Parts 1-4.
- NatureServe: An online encyclopedia of life [web application]. 2001. Version 1.3 Arlington, Virginia, USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>. (Accessed: April 17, 2001).
- Ortmann, A.E. 1909. The breeding season of Unionidae in Pennsylvania. Nautilus 22:91-95, 99-103.
- Ortmann, A.E. 1919. Monograph of the naiades of Pennsylvania. Part III. Systematic account of the genera of the naiades. Annals Carnegie Museum 8:222-365.

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