

USACE Natural Resource Management Freshwater Mussels



Northern Riffleshell & Tan Riffleshell

Northern Riffleshell (*Epioblasma torulosa rangiana*): This is a small to medium sized mussel that can grow up to 3 inches long. The exterior shell is brownish yellow to yellowish green and has fine green rays. The interior of the shell is usually white. Males are irregularly ovate and have a wide, shallow sulcus just anterior to the posterior ridge. Females are ovate in outline and are notably expanded post ventrally. This expansion results in shell growth around the expanded marsupial region. (USFWS)

Status: Endangered, listed 1993

NatureServe: Critically Imperiled

Tan Riffleshell (*Epioblasma walkeri*): This is a medium sized mussel. The outer shell is dull and may be brownish-green or yellowish green in color. The outer shell has many, faint green rays which are evenly distributed across the valve surface. The valves of this species are inequilateral and subinflated. The inner shell is a bluish white color. In males, the posterior ridge appears faintly doubled and the umbo is full and elevated. The female has a pronounced marsupial swelling posteriorly and is often serrated along the ventral margin. (USFWS)

Status: Endangered, listed 1977

NatureServe: Critically Imperiled

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Genus: *Epioblasma* is a genus of freshwater mussels in the family Unionidae. The entire genus is imperiled and 15 species or subspecies are thought to be extinct. Many of the species and subspecies within the genus are federally listed. (Missouri State University)

Photos L to R: PIT tagged northern riffleshell mussels (USFWS), northern riffleshell in stream (USFWS), tan riffleshell (USFWS), live tan riffleshells (Dick Biggins)

Management and Protection:

- Once a widespread species, the USFWS's 1994 recovery plan noted that the northern riffleshell had only 8-10 small, isolated populations remaining at the time of publication.
- The northern riffleshell has been negatively impacted by dams and reservoirs which have flooded its habitat and impacted the distribution of fish hosts. These impoundments may also act as barriers which isolate populations.
- The primary conservation strategy for the northern riffleshell is to protect, conserve, improve, and/or restore known or historical habitat. (USFWS)
- Intensive agricultural and industrial development in the Cumberland and Tennessee River Valleys has had significant negative impacts on mussel species, including the tan riffleshell. (USFWS)
- The tan riffleshell has been negatively impacted by increased erosion from practices such as strip mining, road construction, and poor forestry management. This erosion increases siltation and sometimes pollution, both of which have negative impacts on mussels.
 - Recovery efforts for the tan riffleshell include in vitro propagation, infesting host fish with mussel larvae, and releasing various ages/sizes of the mussel into freshwater ecosystems. (USFWS)



USACE ROLE: According to the Engineering Research and Development Center's Threatened and Endangered Species Team Cost Estimates, the USACE has expended over \$465,000 on efforts related to the northern riffleshell and the tan riffleshell. These funds were expended by multiple USACE business lines including Water Supply, Regulatory, Planning and Program Management, Navigation, Hydropower, and Environmental Stewardship. Expense types include Coordination and Determination, Site Visits and Inspections, and Inventorying, Surveying, and Monitoring.



Northern Riffleshell= \$409,157 (2006)



Tan Riffleshell= \$55,966 (2005)

In the 2019 NRM Assessment, the northern riffleshell was noted to have the potential to occur at nine projects within the Great Lakes and Ohio River division. Additionally, one project, Nolin Lake, noted that the species was known to have rare occurrences at the project.

In the 2019 NRM Assessment, the tan riffleshell was noted as having the potential to occur at two projects within the Great Lakes and Ohio River Division. Both projects are located within the Nashville district.

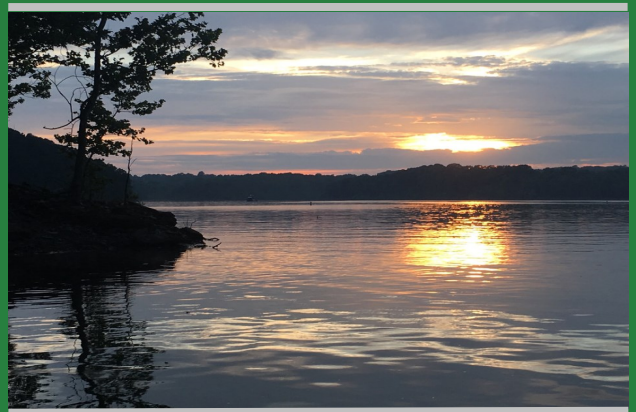
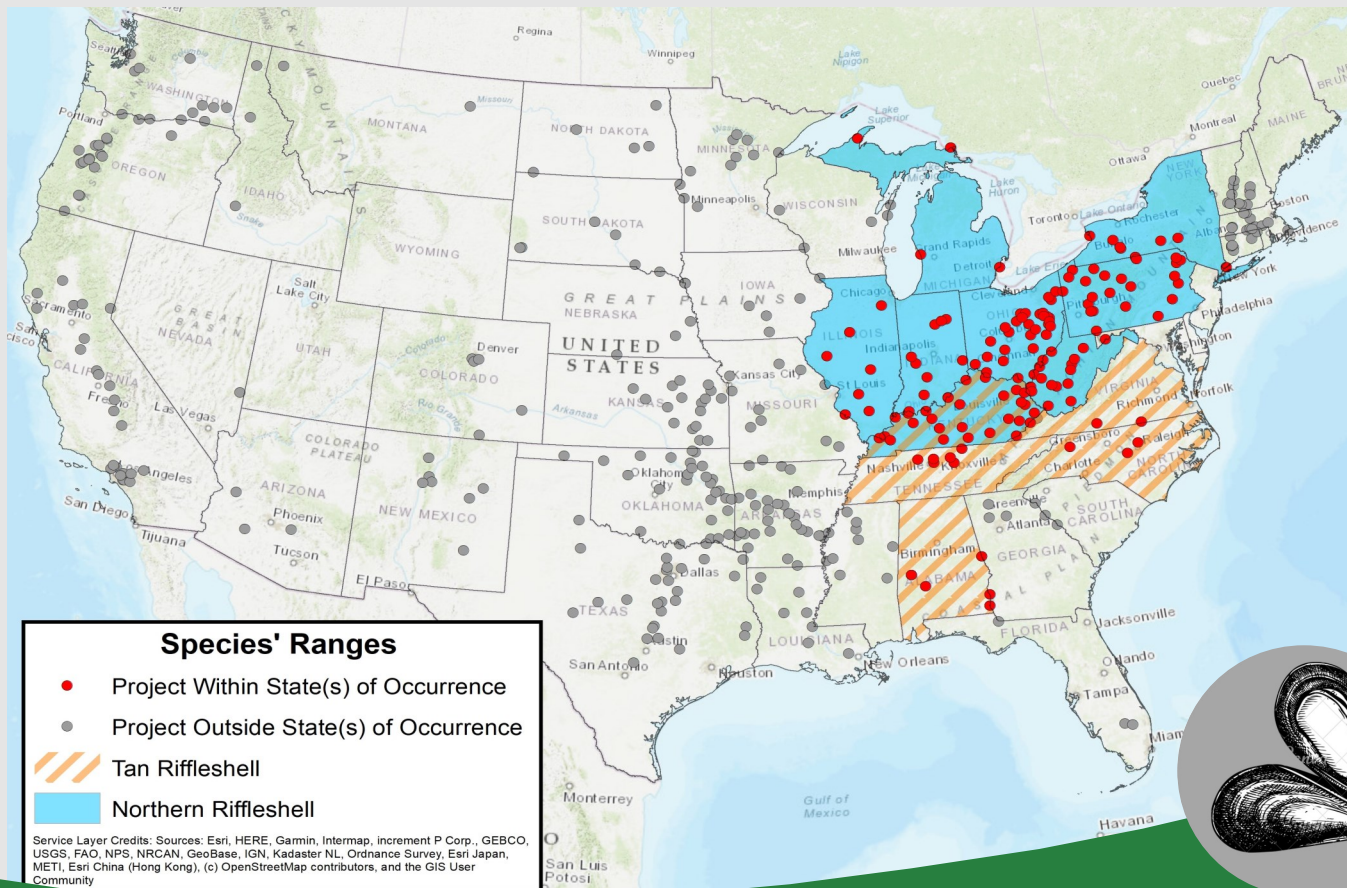


Photo: Sunset over Nolin Lake of Louisville District. This project is known to have rare occurrences of the northern riffleshell.

This fact sheet has been prepared as an unofficial publication of the U.S. Army Corps of Engineers (USACE). This online publication is produced to provide its readers information about best management practices related to special status species. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.



Species' Ranges

- Project Within State(s) of Occurrence
- Project Outside State(s) of Occurrence
- ▨ Tan Riffleshell
- ▨ Northern Riffleshell

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Source: Map provided by Ashleigh Boss, ORISE Fellowship, Institute for Water Resources



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