

USACE Natural Resource Management

Freshwater Mussels



Heavy Pigtoe, Flat Pigtoe, Rough Pigtoe, and Oval Pigtoe

Heavy Pigtoe (*Pleurobema taitianum*): The heavy pigtoe has an obliquely triangular shell that is brown to brownish black in color with a shallow but distinct furrow.

Status: Endangered, listed 1987

NatureServe: Critically Imperiled



Flat Pigtoe (*Pleurobema marshalli*): Also known as Marshall's mussel, this species has an oval or obliquely elliptical shell that measures approximately 2.4 inches in length. Older shells are a dark brown with irregular black growth lines.

Status: Endangered, listed 1987

NatureServe: Presumed Extinct



Rough Pigtoe (*Pleurobema plenum*): With a shell color ranging from dark to yellowish brown, this species of mussel is considered to be medium sized. Shell length is approximately 3 to 4 inches. Light green rays may be present on the shell of younger individuals.

Status: Endangered, listed 1987

Nature Serve: Critically Imperiled



Oval Pigtoe (*Pleurobema pyriforme*): The oval pigtoe is a small freshwater mussel that rarely exceeds 2.4 inches in length. The flattened oval-shaped shell has yellowish-brown exterior.

Status: Endangered, listed 1998

NatureServe: Imperiled



Genus: *Pleurobema* genus of mussels consists of 32 species which are often difficult to distinguish because of shell similarities and shapes that may vary with age and ecological conditions. (USGS) Over recent years, molecular tools have proven to be useful supplement to traditional, morphology-based taxonomic methods. (USGS)




Photos L to R: Rough Pigtoe (*Illinois State Museum*) Rough Pigtoe (*USFWS*), Oval Pigtoe Shell Exterior and Interior (*Georgia DNR*)

Management and Protection: Like many freshwater mussels, this group of species within the genus *Pleurobema* are sensitive to changes within their habitat.

- The heavy pigtoe had a notable range throughout Mississippi and Alabama. For a period of time, it was thought to be a possibly extinct species until a small population was found in Alabama. This isolated population is extremely vulnerable to random accidents and naturally catastrophic event such as droughts and floods. In the last 5 year review by the USFWS in 2015 surveys indicated continuing recruitment failure.
- The flat pigtoe has not been collected alive since the completion of the Tennessee-Tombigbee River Waterway in 1984. While suitable habitat still exists below the Gainsville Dam in Alabama, no specimens have been found historically or recently. (NatureServe) All historical habitat has been impounded or modified by impoundment. USFWS during the last 5 year assessment recommended delisting due to extinction.
- The rough pigtoe is endemic to the Ohio River system where stable substrates composed of a mixture of relatively firm and clean gravel, sand, and silt are found. Critical habitat has not been established.
 - As documented by surveys from the USFWS, the oval pigtoe has been extirpated from approximately 2/3 of its historical range.



USACE ROLE: According to the Engineering Research and Development Center's Threatened and Endangered Species Team Cost Estimates, the USACE has expended over \$420,000 since 2005 on efforts related to the heavy pigtoe, oval pigtoe, rough pigtoe, and flat pigtoe. The USACE Planning, Regulatory, Navigation, Hydropower, Environmental Stewardship, and Flood Risk Management programs have all incurred costs associated with inventory, survey, monitoring, and coordination efforts.

-  **Heavy Pigtoe = \$126,000**
-  **Oval Pigtoe = \$118,554**
-  **Rough Pigtoe = \$169,879**
-  **Flat Pigtoe = \$4,944**

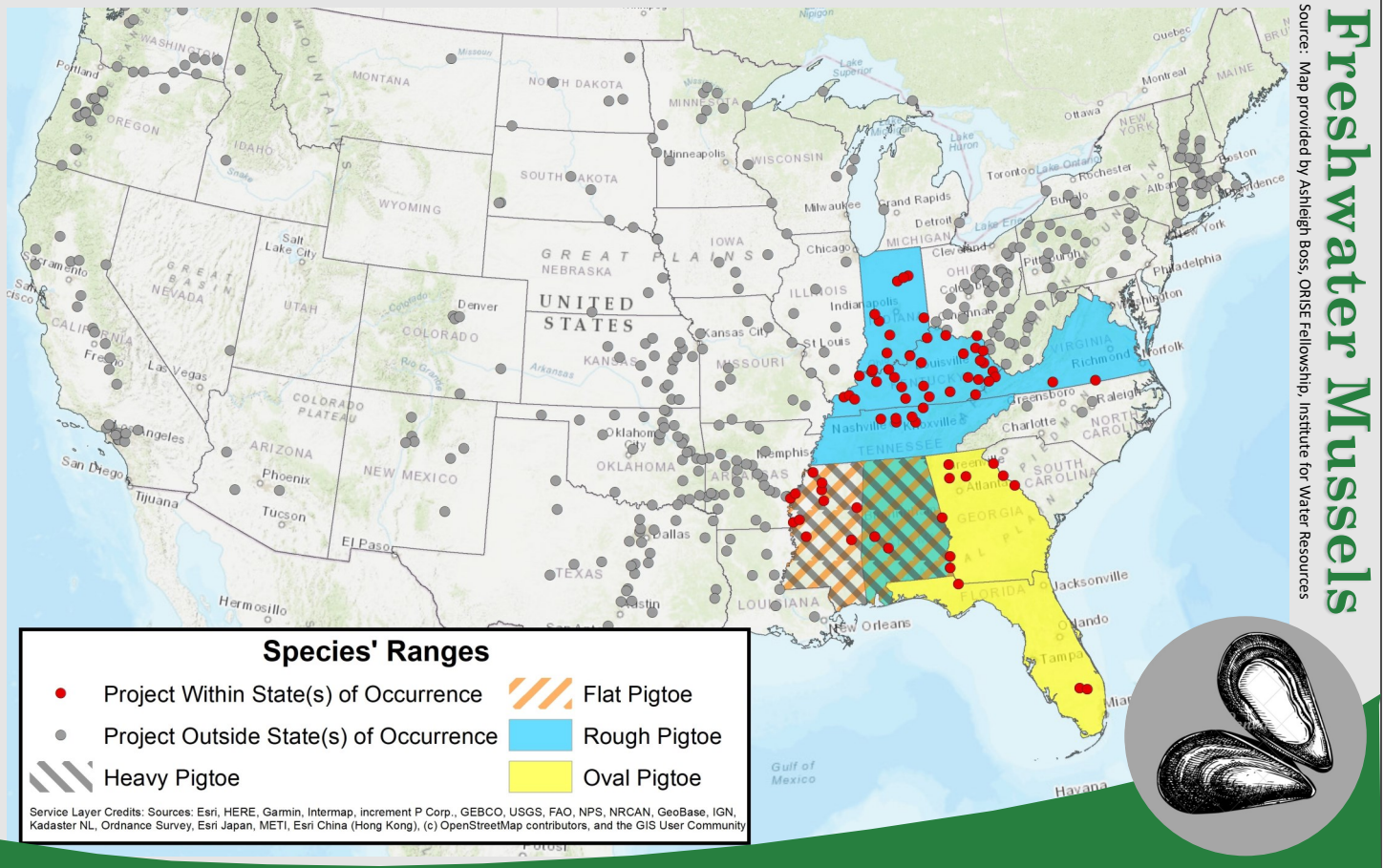
NRM Program implements many best management practices to support the protection of mussel species. Specifically for the rough pigtoe, the NRM program:

- Utilizes pesticides responsibly, especially around bodies of water to minimize and prevent runoff.
- Plants trees and other vegetation to reduce soil erosion into freshwater areas.
- Utilizes best management practices for construction and maintenance of paved, rural dirt and gravel roads to minimize soil loss into lakes and streams.
- Works to minimize the introduction of invasive species such as zebra mussels that can alter potential habitat.



Projects such as the Falls of the Ohio National Wildlife Conservation Area, pictured above, note the potential for the occurrence of the rough pigtoe mussel.

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.



Freshwater Mussels

