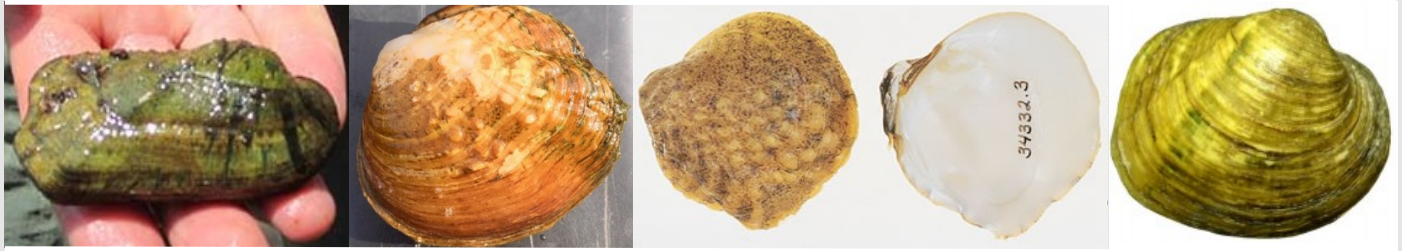


# USACE Natural Resource Management

## Freshwater Mussels



### Rabbitsfoot, Appalachian Monkeyface, Stirrupshell, & Texas Pimpleback

**Rabbitsfoot (*Quadrula cylindrica cylindrica*):** Grows up to 6 inches long and is elongated and rectangular in shape. The external shell is yellowish, greenish, or olive in color and darkens as the mussel ages.

**Status:** Threatened, listed 2013

**Nature Serve:** Vulnerable

**Appalachian Monkeyface (*Quadrula sparsa*):** Considered to be a medium sized species. Posterior ridge is slightly elevated, rounded, and usually lacks pustules, tubercules, or knobs. The outer shell is brownish or a yellow green color with small green, chevron like patterns.

**Status:** Endangered, listed 1976

**Nature Serve:** Critically Imperiled

**Stirrupshell (*Quadrula stapes*):** Can grow as large as 2.2 inches in length, 2 inches tall, and 1.4 inches wide. The shell of young mussels is a yellow-green color with green zigzag markings. As the stirrupshell ages, it becomes more brown. The shell shape is irregularly quadrate.

**Status:** Endangered, listed 1976

**Nature Serve:** Possibly Extinct

**Texas Pimpleback (*Quadrula petrina*):** Grows between 2.4-3.5 inches long. The shell is typically smooth and thick with the exception of growth lines. External color ranges from yellowish-tan to dark brown and is sometimes mottled or has dark green rays. The inside of the shell is white and posteriorly iridescent. (USFWS)

**Status:** Candidate, listed 2009

**Nature Serve:** Critically Imperiled

G3  
Vulnerable

G1  
Critically Imperiled

GH  
Possibly Extinct

G1  
Critically Imperiled

**Genus:** This is a genus of freshwater mussels in the Unionidae family. This genus has been plagued with a great deal of uncertainty regarding taxonomical classification. Molecular studies have been and continue to be done to clarify the taxonomy of these mussels. (Lopes-lima et. al, 2019)

Photos Left to Right:  
Rabbitsfoot (*Georgia Parham*), Appalachian monkeyface (*VDWR*), Stirrupshell (*USFWS*), & Texas Pimpleback (*USFWS*)

#### Management and Protection:

- The rabbitsfoot mussel has been extirpated from approximately 64% of its historical range. While 51 of the historical populations still exist, only 11 populations maintain viability. (USFWS)
- The rabbitsfoot faces a variety of threats ranging from lowered water quality, altered hydrology, riparian habitat fragmentation, and the degradation of instream habitat. (USFWS)
- The Appalachian monkeyface was once thought to be widespread in the Tennessee River drainage, but it was never abundant. The species has become even more rare as much of its range has been lost due to the construction of dams. (USFWS)
- Remaining Appalachian monkeyface populations are reproducing at a rate which cannot sustain the species in the future. Propagation efforts have been attempted in laboratory settings, but difficulty in finding brooding female specimens has made these efforts unsuccessful. (USFWS)
- The USFWS's 2015 5-Year Review indicated that there has been no evidence of the stirrupshell's continued existence for two decades. The species is presumed extinct.
  - The USFWS was petitioned to list the Texas pimpleback in 2008. In 2009 it was determined that listing may be warranted, but is precluded by higher priority actions. The species has remained in this status since then.



**USACE ROLE:** According to the Engineering Research and Development Center's Threatened and Endangered Species Team Cost Estimates, the USACE has expended over \$253,000 on tasks related to the rabbitsfoot, Appalachian monkeyface, and the stirrupshell mussel. The costs incurred have spanned across multiple business lines including Hydropower, Flood Risk Management, Regulatory, and Environmental Stewardship. Expense types included Coordination and Determination, Site Visits and Inspections, and Inventory, Survey, and Monitoring. The Texas pimpleback is not a listed species, and therefore not tracked in the Cost Estimates Database.



**Rabbitsfoot= \$245,074 (2011)**



**Appalachian Monkeyface= \$8,118 (2007)**



**Stirrupshell= \$160 (2005)**

The rabbitsfoot mussel has a wide range spanning across Southwestern, Mississippi Valley, and the Great Lakes and Ohio River divisions. In the 2019 NRM Assessment, 23 projects have the potential for this species to occur, 2 projects are known to have rare occurrences, and 2 projects are noted to have occasional occurrences of the rabbitsfoot mussel.

In the 2019 NRM Assessment, the Appalachian monkeyface, stirrupshell, and Texas pimpleback are listed as having the potential to occur at a single project within their respective ranges.



Photo: Montgomery Point Lock and Dam of Little Rock District is noted in 2019 NRM Assessment to have occasional occurrences of the rabbitsfoot 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.*

