

USACE Natural Resource Management

Freshwater Mussels



Southern Combshell & Cumberlandian Combshell

Southern Combshell (*Epioblasma penita*): Adults grow to be approximately 2.2 inches long, 1.6 inches high, and 1.4 inches wide. This mussel's shell is yellowish, yellow-green, or tawny and sometimes has spots of darker color. The shape is square with irregular growth lines and a radially sculpted posterior. The posterior ridge is flattened and broad. The inner shell is white and iridescent. This species is sexually dimorphic with females having an expanded posterior shell. (USFWS)

Status: Endangered, listed 1987

NatureServe: Critically Imperiled

Cumberlandian Combshell (*Epioblasma brevidens*): This mussel has a thick and solid shell with a smooth to clothlike outer coating. The outer shell color ranges from yellow to tawny brown. It has broken rays which are narrow and green in color. The shells of females are inflated and have teethlike structures along a portion of the shell margin. These structures are serrated. (USFWS)

Status: Endangered, listed 1997

NatureServe: Critically Imperiled

G1

Critically
Imperiled

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)

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Critically
Imperiled

Photos L to R:
Southern Combshell (USFWS), Cumberlandian Combshell (USFWS), Microlure (USFWS), Cumberland Combshell (USFWS)

Management and Protection: Like many freshwater mussel species, conservation challenges stem from industrial and agricultural developments which result in environmental changes.

- Construction of dams can isolate populations, block host fish migration routes, and cause changes in water temperature which alter mussels' natural biological timers.
- Activities such as logging and mining can increase siltation in flowing river systems which may bury mussels and eventually lead to suffocation.
- Water pollution stemming from agricultural runoff and/or industrial pollution can result in the death of mussels. These pollutants can also contribute to algal blooms which negatively impact mussels by usurping oxygen and preventing water flow. (USFWS)
- Recent recovery efforts for the southern combshell have focused on host fish determination, artificial propagation, a reintroduction effort, and development of a captive brood stock lineage. (USFWS)
- Impoundments on the Cumberland River have inundated over 125 miles of potential riverine habitat for the Cumberlandian combshell. (USFWS)
 - The Cumberlandian combshell has been extirpated from over 80% of its historical range. (NatureServe)



USACE ROLE: According to the Engineering Research and Development Center's Threatened and Endangered Species Team Cost Estimates, the USACE has expended over \$227,000 on efforts related to the southern combshell and the Cumberlandian combshell. These funds have been expended by multiple USACE business lines including Water Supply, Regulatory, Planning and Program Management, Environmental Stewardship, and Flood Risk Management.



Southern Combshell = \$10,572



Cumberlandian Combshell = \$217,012

The Cumberlandian combshell has a range which intersects multiple USACE's divisions including the Great Lakes and Ohio River, South Atlantic, and Mississippi Valley division. The southern combshell has a smaller range which is predominantly contained in the South Atlantic division. Across the species' ranges, the USACE works closely with U.S. Fish and Wildlife Service and other natural resource management agencies to ensure that or current or proposed work will have negative impacts on the mussels.



Photo: A USFWS biologist displays recently dead mussels (including *E. brevidens*) from the Clinch River in Tennessee. (USFWS)

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.

