

Dwarf wedgemussel

Alasmodonta heterodon



Dwarf wedgemussel, USFWS

Status: Endangered

Description: The dwarf wedgemussel is relatively small, rarely exceeding 1.5 inches in length. The shell's outer surface (periostracum) is usually brown or yellowish brown in color, with faint green rays that are most noticeable in young specimens. Unlike some mussel species, the male and female shells differ slightly, with the female being wider to allow greater space for egg development. A distinguishing characteristic of this mussel is its dentition pattern: the right valve possesses two lateral teeth, while the left valve has only one.

The reproductive cycle of the species is similar to other native mussels. Males release sperm into the water, and the eggs are fertilized when the sperm are taken in by the females through their siphons during feeding and respiration. Females retain the fertilized eggs in their gills until the larvae (glochidia) fully develop. This mussel is considered to be a long-term brooder, with females retaining larvae through the winter. The glochidia are released into the water and must attach to the gills or fins of the appropriate fish species. They remain attached to their "fish host" for several weeks, drawing nourishment from the fish while they develop into juvenile mussels. They do not hurt their "fish host." The juvenile mussels then detach from the fish host and drop to the bottom of the stream where they continue to develop, provided they land in a suitable place

with good water conditions. This dependence on a certain species of fish increases the mussel's vulnerability to habitat disturbances. If the fish host is driven off or eliminated because of habitat or water quality problems, the mussels can't reproduce and will eventually die out.

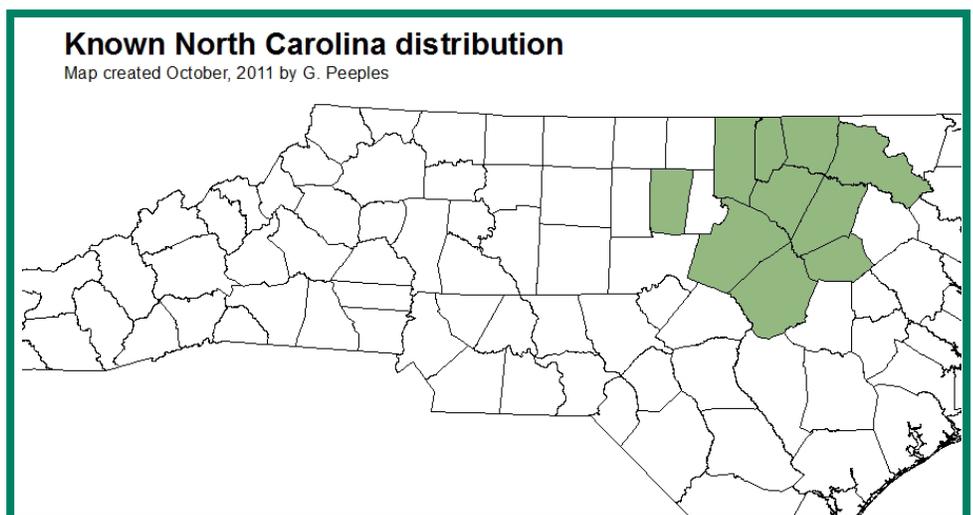
Habitat: The dwarf wedgemussel inhabits creek and river areas with a slow to moderate current and a sand, gravel, or muddy bottom.

Range: The dwarf wedgemussel occurs in at least 25 stream reaches along the Atlantic Coast from New Brunswick, Canada, to North Carolina. Documented populations in North Carolina are located in the following drainages and streams: Neuse River drainage - Little River (Wake and Johnston County); Swift Creek (Wake and Johnston County); Middle and Buffalo Creek (Johnston County); Turkey Creek (Nash and Wilson County); Stony Creek (Nash); and Moccasin Creek (Nash, Wilson, and Johnston Counties); Tar River drainage - Tar River and Shelton Creek (Granville County); Ruin, Little Ruin, and Tabbs Creek (Vance County); Cedar, Crooked, Fox, Shocco, and Little Shocco Creeks (Franklin County); and Shocco Creek (Warren County)

Listing: Endangered, March 14, 1990. 55 FR 9447 9451

Critical habitat: None designated

Threats: Poor water quality and habitat conditions have led to the decline and loss of populations of the dwarf wedgemussel and threaten the remaining populations. Studies have shown that freshwater mussels, especially in their early life stages, are extremely sensitive to many of the pollutants (chlorine, ammonia, heavy metals, etc.) commonly found in municipal and industrial wastewater releases. Impoundments (dams), channelization projects, and in-stream dredging operations directly eliminate habitat. These activities also alter the quality and stability of remaining stream reaches by affecting water flow, temperature, and chemistry. Agriculture (both crop and livestock) and forestry operations, roads, residential areas, golf courses, and other construction activities that do not adequately control soil erosion and water run-off contribute excessive amounts of silt, pesticides, fertilizers, heavy metals, and other pollutants that suffocate and poison freshwater mussels. The alteration of floodplains or the removal of forested stream buffers can be especially detrimental. Flood



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plains and forested stream buffers help maintain water quality and stream stability by absorbing, filtering, and slowly releasing rainwater. This also helps recharge groundwater levels and maintain flows during dry months.

Why should we be concerned about the loss of species? Extinction is a natural process that has been occurring since long before the appearance of humans. Normally, new species develop through a process known as speciation, at about the same rate other species become extinct. However, because of air and water pollution, forest clearing, loss of wetlands, and other man-induced environmental changes, extinctions are now occurring at a rate that far exceeds the speciation rate.

All creatures, including humans, are interconnected. Native mussels rely on certain fish species in order to reproduce. In turn, these mussels provide numerous benefits to fish and other aquatic organisms. Mussels continuously filter the water for food and oxygen; as they do so, they are cleaning the water of pollutants and large quantities of organic particles, much like a tiny water purifying system. They play an important role in the aquatic food chain as a food source for wildlife, including river otters, muskrats, great blue herons, and numerous species of fish and turtles. Their shells provide cover and nesting habitat for aquatic insects, crayfish, and bottom-dwelling fish species like darters, sculpins, and madtoms (major prey items for man game fish species).

Endangered species are indicators of the health of our environment. The loss of these plants and animals is a sign that the quality of our environment – air, land, and water – is declining. Gradual freshwater mussel die-offs, such as the declining Appalachian elktoe, and sudden mussel kills are reliable indicators of water pollution problems. Stable, diverse mussel populations generally indicate clean water and a healthy aquatic environment. While poor environmental quality may first manifest itself in the health of our plant and animal populations, if untreated, it eventually affects humans directly, as we breathe polluted air, lose valuable topsoil to erosion, or get sick from swimming in contaminated water.

We depend on the diversity of plant and animal life for our recreation, nourishment, many of our lifesaving medicines, and the ecological functions they provide. One-quarter of all the prescriptions written in the United States today contain chemicals that were originally discovered in plants and animals. Industry and agriculture are increasingly making use of wild plants, seeking out the remaining wild strain of many common crops, such as wheat and corn, to produce new hybrids that are more resistant to disease, pests, and marginal climatic conditions. Our food crops depend on insects and other animals for pollination. Healthy forests clean the air and provide oxygen for us to breathe. Wetlands clean water and help minimize the impacts of floods. These services are the foundation of life and depend on a diversity of plants and animals working in concert. Each time a species disappears, we lose not only those benefits we know it provided but other benefits that we have yet to realize.

What you can do to help

Establish and maintain forested stream-side buffers. Several federal, state, and private programs are available to assist landowners, both technically and financially, with restoring and protecting stream-side buffers and eroding streams.

Implement and maintain measures for controlling erosion and storm water during and after land-clearing and disturbance activities. Excess soil in our streams from erosion is one of the greatest water pollution problems we have today.

Be careful with the use and disposal of fertilizers, pesticides, and other chemicals. Remember, what you put on your land or dump down the drain may eventually wind up in nearby water.

Support local, state and national clean water legislation.

Report illegal dumping activities, erosion, and sedimentation problems. These activities affect the quality of our water, for drinking, fishing, and swimming.

Participate in the protection of our remaining wild lands and the restoration of damaged ecosystems.

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December, 2011