

# The Mighty Mussels: Blind, Deaf, Mute Superheroes

By Susan Jewell

They can't see, hear, or even make noise. They barely even move during their entire lives. They are so small and nondescript that most people don't see them even when they are looking at them. Yet mussels are the superheroes of the water. In rivers and oceans, mussels keep our water clean. But these superheroes need our help.

Mussels are bivalve mollusks, similar to clams and oysters. They live in gently moving water, such as rivers and ocean tidal zones, so that different water is always flowing by them. In this way, mussels have a constant source of food passing by. They feed by filtering water through a siphon, gleaning microscopic plants and animals. Water-borne pollutants are also filtered, so the released water is cleaner. The pollutants either stay in the mussel's body or are excreted onto the stream or ocean bottom. The filtering also keeps algal blooms under control. A small, healthy mussel filters about one gallon per hour.

The United States is blessed with more species of freshwater mussels than anywhere else in the world. We have about 300 of the world's 1,000 species. Most are in the East, where abundant rivers and streams have dependable flows all year. Unfortunately, these same rivers are laden with pollutants and silt. Although mussels can filter these out, eventually the little animals will sicken and die.

The demise of mussels is so extreme that many species have gone extinct and many others are in peril.

People have eaten mussels throughout history. The shells were the primary material for buttons until plastic was invented. Mussels are also used to culture pearls. Freshwater mussels are about two inches long and so nondescript that scientists have named them for any tiny feature they can find. Hence, mussels bear such names as pimpleback, monkeyface, pigtoe and sheepnose.

Dr. Richard Neves, a fisheries professor at Virginia Polytechnic Institute and State University (Virginia Tech) in Blacksburg and the leader of the Virginia Cooperative Fish and Wildlife Research Unit, has been studying freshwater mussels for about 30 years and has seen the tragic decline in populations. Virginia once had 85 species. Five species no longer exist in Virginia. Neves was studying the green-blossom pearly mussel in the Clinch River in 1984 when it apparently went extinct. About 20 species are federally endangered in Virginia. Neves notes that the development of new housing areas, shopping malls and other construction projects is creating greater runoff of water from these areas, scouring streamsides and depositing sediment in the streams. Petroleum products from parking lots, sediment, trash and so on are polluting the streams and degrading water quality.

Neves' work takes him all over the state. He finds mussels in every major river and larger tributary that has not had serious water pollution, such as the Potomac, Rappahannock, and Shenandoah. He is quick to note that one river—the Broad Run watershed in southern Prince William County—seems to have escaped the water quality degradation common in other areas, and that mussels there are thriving.

“Kudos to the county government and developers for their environmental conscience and model for well-planned

development,” Neves says. “The implementation of wetland protection measures, in conjunction with controlled urban development, appears to be highly effective in controlling sedimentation and surges of water runoff.”

We can all do our part to keep streams clean and mussels healthy. Here are some ways: Keep a buffer of native vegetation along stream banks. Never dump grass clippings or excess leaves near streams. Keep trash out of the water. Don’t dump anything down storm drains, especially oil, antifreeze, or other toxic substances. Use lawn chemicals sparingly, if at all.

Among the eye-opening facts Neves likes to share is that mussels live longer than any other invertebrate. He collected some in southwest Virginia that were nearly 80 years old and some from Russia that were 150 years old. They can be “aged” like trees, because they add growth rings on their shells every year.

For something so small, quiet and plain, mussels are indispensable. But it’s a two- way street—we have to keep the water clean enough to keep mussels alive so that they can clean it the rest of the way.

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