

Our Native Freshwater Mussels

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North America is home to about 300 species of native freshwater mussels. The United States supports most of these species, with the highest diversity in the southeastern states, especially Tennessee and Alabama. In stark contrast, California has just 13 native species of freshwater mussels. The entire continent of Europe has just 12 or 13.

Our Mussels are Disappearing

Freshwater mussels are in serious decline in North America. Dam building, channelization, and lock construction have changed the flow characteristics of major rivers. The consequent habitat loss has contributed to the serious decline of aquatic life forms inclusive of mussels and nongame fish species found in the riffle zones.

Years ago, before the advent of plastic buttons, entire mussel beds were harvested for the pearly nacre. More recently, the cultured pearl industry has put so much pressure on harvesting mussels in Tennessee that poaching is taking place in Ohio. Mussels are killed for their shells, which are converted into pellets and implanted into American oysters. The oysters then develop pearls around these pellets.

Other contributing factors in the decline of freshwater mussels in North America are point and nonpoint pollution. Mussels are filter feeders that siphon microalgae, particulate matter, and bacteria from the water, which means they siphon everything else that's in the water too, including industrial chemicals, herbicides and pesticides from farm run-off, and mud from eroding stream banks. Although mussels can shut down their systems temporarily during adverse conditions, they cannot thrive in waters that are constantly bombarded with pollutants.

Because of their sensitivity and reliance on clean water, native freshwater bivalves play an important role as indicator species of water quality. Their failure to survive in a lake, river, or stream is an early warning sign that something is wrong with the water—the same water that we drink.

Hitching Rides on Fish

Freshwater mussels are sedentary creatures that live in the same spot for most of their lives. However, mussels can use their foot for locomotion and even move short distances during times of drought. Native freshwater mussels spread to new areas through reproduction. Here is where fish come in. North America's freshwater mussels need species-specific host fishes in order to complete their life cycles. The male mussel emits sperm, which the female siphons up. Fertilization takes place. Larval mussels in the form of cysts, or glochidia, are released, which attach to the gills or fins of a host fish. The cysts develop into immature clams, at which point they drop off and settle in the substrate. By hitching rides on fish, young mussels spread into new areas.

The Zebra Mussel: The New Kid on the Block

Another threat to North American mussels is a species of mussel from Europe. In the 1980s, the zebra mussel (*Dreissena polymorpha*) was introduced to the United States. Zebra mussels do not require a host fish to reproduce and spread. Instead, they colonize new areas through the distribution of free-swimming veligers, or little zebra mussels, which attach themselves to any hard object by way of byssal threads. (In contrast, only one species of native freshwater mussel has byssal threads.) Sometimes zebra mussels attach themselves

to living native mussels and completely cover their shells. When they do, they keep native mussels from feeding and can physically disable them from opening and closing their shells.

Zebra mussels are short-lived (about three years), but are prolific breeders that subsequently out-compete native mussels for food. With few enemies in American waters, they take over. In some waters, zebra mussel infestation is so bad that they clog water pipes, causing municipalities millions of dollars in damage and repairs. Zebra mussels even cause problems when they die; the decomposing bivalves of thousands of zebra mussels are an additional source of pollution.

What You Can Do, And What You Shouldn't Do, To Help Save Our Mussels

- Learn and obey local laws concerning the collection and possession of aquatic organisms.
- Learn as much as you can about freshwater ecosystems.
- Resist the temptation to keep freshwater mussels in home aquaria unless you are willing to invest the time and money to culture specific microalgae species in bins, provide a drip-feed system, and deal with other special husbandry issues.
- Observe how mussels in the wild are positioned in the substrate. If you pick one up to look at it, return it back to the original spot and position the animal properly. The bivalve needs to be able to anchor its foot in the substratum. There's a reason why it is found where it is, so please return it to where you found it.
- Do not use freshwater mussels as fish bait.
- Avoid eating freshwater mussels. They're nowhere near as tasty as their saltwater cousins.
- If you are an educator, develop a lesson plan for "Under Appreciated Animals."
- Do not buy pearls.
- Do not release baitfish into areas other than where they were collected since baitfish could be glochidia hosts.
- Clean boat hulls and equipment after leaving zebra mussel-infested waters. Zebra mussel larvae can survive for long periods in just a few ounces of water.
- If you're a property owner, preserve the integrity of riparian habitat.
- Learn more about these wonderful creatures and their unique adaptations.

Amazing mussel facts

One North American mussel species gets as big as a dinner plate.

Some mussel species can live for 100 years or more.

Mussels of the same species can look different from juvenile to adult, from male to female, from headwaters to pools, and even within the same mussel bed.

By the same token, different species can look alike and occur in the same mussel bed.

Where to Learn More About Freshwater Mussels

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