



Five Central Texas Mussel Species



Texas fatmucket
Female, 58 mm sl, Guadalupe R., TX



Golden orb
50 mm sl, Guadalupe R., TX



Smooth pimpleback
50 mm sl, Colorado R., TX



Texas pimpleback
63 mm sl, Concho R., TX



Texas fawnsfoot
37 mm sl, Brazos R., TX

All photos by R.G. Howells.
Used with permission.

They make no sound. They cannot see. Some may live for decades, but seldom move from a secure spot. Yet, freshwater mussels are causing a stir—making us ponder their future as we make plans for our own.

No other country in the world equals the United States in freshwater mussel variety. The U.S. has nearly 300 mussel species, while Europe has only 12 species.

Unfortunately, our mussels are in trouble. It's estimated that 70% of U.S. freshwater mussels are extinct, endangered, or in need of special protection. Many of their problems stem from how they live and the changes that have occurred to their river habitats.

Texas is home to approximately 52 mussel species. Of these, one is already federally protected under the Endangered Species Act (Act); one is listed as a candidate for Federal protection; and 15 are listed as State Threatened by Texas Parks and Wildlife Department.

The U.S. Fish and Wildlife Service recently found that five mussels (of the 15 State Threatened) also warrant protection under the Act. They are now considered candidates for future listing as threatened or endangered.

Why are freshwater mussels so imperiled?

Our native freshwater mussels face greater problems today than they did just a few years ago. Mussels in Texas are primarily threatened from changes to their habitat including the construction and operation of dams and reservoirs on Texas rivers. And although water quality has improved in some areas, pollution, especially non-point source pollution, is an ongoing threat to native mussels. Sedimentation in streams continues to take a serious toll. Habitat losses from dewatering due to droughts and water use and sand and gravel mining are also problems. Concerns also exist about the future releases on nonnative species, such as the zebra mussel.

Freshwater Mussel Facts

Common and scientific names:

Texas fatmucket (*Lampsilis bracteata*), Golden orb (*Quadrula aurea*), Smooth pimpleback (*Q. houstonensis*), Texas pimpleback (*Q. petrina*), and Texas fawnsfoot (*Truncilla macrodon*).

Status: These mussels were State-listed as Threatened on January 17, 2010, and added as Federal candidates on October 6, 2011.

Description: Mussels are bivalve mollusks, which means they have two valves (shells) surrounding a soft fleshy body. Freshwater mussels are related to snails, oysters, clams and squids.

Habitat: Mussels live in a mixture of mud, sand, and gravel on the bottoms of streams and rivers. They require good water quality, stable stream channels and flowing water.

Diet: Mussels filter their food out of the water. They eat algae, other small plants and animals, and bacteria.

Life history: The larvae (glochidia) of these mussels are parasites on the gills and fins of freshwater fishes, including darters, minnows, catfish, and bass. The larvae use the host fish for dispersal and cause them little to no harm. Many mussels use lures that mimic minnows, worms, leeches or aquatic insects to attract a suitable fish host.

Natural predators: Some species of fishes and turtles, as well as birds, muskrats, raccoons, and otters feed on mussels.

Threats to survival: Habitat modification through manmade structures like dams and channel alterations has destroyed free flowing water habitats. These habitat changes restrict mussels and fish from dispersing, which results in small, isolated populations. In addition to habitat modifications, mussel populations are exposed to point source pollution and nonpoint source pollution such as toxic runoff containing fertilizers, herbicides and pesticides from land-use practices.

Life Down Under

Most freshwater mussels live burrowed in mixed mud, sand, and gravel at the bottom of rivers and streams. Some are adapted to the quiet water and muddy depths of lakes, ponds, and reservoirs.

Unlike most animals, which must travel in search of food, their food—mainly tiny plants and animals called plankton suspended in the water—drifts to the mussels. By drawing water inside their shells through a siphon, their gills filter out food and take in oxygen.

Mussels usually don't move much, but a muscular "foot" helps them burrow and allows limited travel if disturbed by floods or drought. The foot also helps anchor them against strong currents and may prevent a hungry muskrat from tugging them out for its dinner! A mussel's shell, however, provides its main protection from predators.

Their hard, calcium-based shells consist of two halves joined by a hinge. Unique names like "Texas fatmucket," "Texas fawnsfoot," and "Golden orb" refer to the wide range of shell size, color, shape, and texture found in Texas mussels.

Although their lives appear boring, their reproductive strategies are quite fascinating. Fertilized eggs develop and are released into the water to begin a parasitic stage. With little time to waste, these youngsters, called glochidia, must attach themselves to a host fish or perish. For some mussels, the host is limited to only a few fish species. This harmless parasitic stage lasts a matter of weeks before the larvae transform into young mussels and are ready to drop off the fish and begin a life on the stream bottom.

Why should we care about mussels?

- **Monitors of aquatic health**
The presence of diverse and reproducing populations of mussels indicate a healthy aquatic system which means good fishing, good water quality for waterfowl and other wildlife species, as well as insurance that our water is safe for our use. Conversely, when mussel populations are at risk, it indicates problems for other fish and wildlife species, and people, too.
- **Ecological value**
Mussels are natural filters, feeding on algae and plankton that help clean the water. Mussels are also an important food source for many species of wildlife including otters, raccoon, muskrat, herons, egrets, and some fish.
- **Education and aesthetic value**
The study of mussels, their natural history, and habitat requirements provides important lessons on the interconnectedness of the aquatic system and how species adapt to their ecosystem.
- **Cultural value**
Mussels played an important role in the cultural history of prehistoric and recent native peoples of Texas. They were used as food and the shells were used for ornamentation, tools, and as a commodity for trade. Indian shell middens (the piles of shells that native Americans left behind) extend for miles along sites of old villages and encampments along rivers.
- **Biodiversity**
Mussels play an important role in our aquatic ecosystems. Considering that less than 20 mussel species are found in most other countries of the world, our North American rivers and streams are truly "rich" with close to 300 species!

What is being done?

There is still much more to learn about the biology and conservation issues facing Texas mussels. Thanks to grants from the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department researchers are now making new discoveries about the locations and abundance of rare mussel population in Texas rivers. This information, along with efforts to understand specific biological traits like identifying fish hosts, will allow for better conservation actions to ensure the continue survival of these rare and interesting animals.

How can you help?

Individuals can do a number of things to help protect mussels including::

- Get involved in the Texas Mussel Watch program. This program enables volunteers "citizen scientists" to survey mussel populations throughout the State. These efforts not only provide up-to-date mussel distribution and status data, but it also yields insight into water quality and other environmental conditions in Texas. (http://www.tpwd.state.tx.us/learning/texas_nature_trackers/mussel/)
- Conserve water use to allow more water to remain in streams.
- Use pesticides responsibly, especially around streams and lakes, to prevent runoff into mussel habitats. Consider using Integrated Pest Management strategies to reduce pesticide use.
- Help control soil erosion by planting trees and plants to avoid runoff of sediments into freshwater areas.
- Support and follow zebra mussel quarantine, inspection, and decontamination programs to prevent the spread of zebra mussels.

For more information, contact the U.S. Fish and Wildlife Service:

Online at http://www.fws.gov/southwest/es/AustinTexas/ESA_sp_mussels.html

Lesli Gray, Public Affairs Specialist, 972-569-8588; Houston, Texas, Clear Lake Field Office at 281-286-8282; Corpus Christi, Texas, Field Office at 361-994-9005; or Austin, Texas, Field Office at 512-490-0057.