



## Zebra Mussels: Frequently Asked Questions

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### What are zebra mussels?

Zebra Mussels (*Dreissena polymorpha*) are invasive freshwater mussels. The shells are triangular, smooth or shallowly ridged, and can vary in color from solid light to dark brown, or have alternating dark and light stripes. At various stages of life, mussels range in size from microscopic larvae that can be transported in water in boats up to about 1.5 inches. Adult zebra mussels attach to hard surfaces using 'byssal threads' and tend to seek out dark crevices when they attach. Quagga mussels (*Dreissena bugensis*) are a closely related species that is found in the Great Lakes as well as in some western states, but has not yet been found in Texas. Quagga Mussels are more adaptable than zebra mussels, and can live at greater depths and in colder water.

### Where are zebra mussels native, and where were they first found in the U.S.?

Zebra mussels are native to the Black and Caspian Sea drainages in Eurasia. They spread throughout Europe as manmade canals were built. In 1988, zebra mussels were first discovered in the Great Lakes. In 1989, quagga mussels were also discovered in the Great Lakes. It is believed they were brought to the United States in the ballast water and/or on the anchors of trans-oceanic ships. Within a few years, they had spread throughout the Mississippi River Basin via transport on barges/ships and then began to move overland by hitchhiking on boats.

### What are the environmental impacts of zebra mussels?

Zebra mussels are filter feeders that can consume large quantities of plankton, the microscopic plants and animals on which other species depend. As a result the ecological balance of an entire waterbody can be disturbed, displacing native species and sport fish. Zebra mussels can increase water clarity—which sounds like a good thing—but this encourages invasive plant infestations, allowing them to grow at greater depths. Zebra mussels attach to and smother native mussels—and many of Texas' mussel species are imperiled.

### What are the economic impacts of the zebra mussels?

Zebra mussels pose an economic threat to Texas' infrastructure and recreation industries. They clog pipes and intakes, impeding distribution of municipal water supplies, agricultural irrigation, and power plant operation. Zebra mussels can also impact recreation by limiting recreational opportunities, encrusting docks and beaches, and colonizing recreational equipment including watercraft hulls, engines, and steering components.

### How are zebra mussels spread?

In addition to moving downstream with the flow of water, zebra mussels are spread by humans, who move objects (primarily boats) on which mussels are attached from one waterbody to another. Adult zebra mussels can survive out of water for a week or longer (up to a month under ideal conditions), and the microscopic larvae can be transported in water in bilges, ballasts, live wells, or any equipment that holds water. It is suspected that zebra mussels were brought to Texas on the hull of a recreational boat. Studies show the risk of birds transporting zebra mussels is extremely low. Catfish often eat them, and zebra mussels can pass through their digestive tracts unharmed, and so catfish could transport them.

## When and where have zebra mussels been found in Texas?

Zebra mussels were first discovered in 2009 in Lake Texoma in the Red River Basin. They have since continued to spread downstream as well as to other river basins by overland transport on boats.

**For the most up-to-date listing of confirmed zebra mussel finds, go to <http://tpwd.texas.gov/huntwild/wild/species/exotic/zebramusselmap.phtml>**

As of October 30<sup>th</sup>, 2017, eleven Texas lakes in five river basins can be classified as fully infested with zebra mussels, meaning the water body has an established, reproducing population: Belton, Bridgeport, Canyon, Dean Gilbert (a 45-acre Community Fishing Lake in Sherman), Eagle Mountain, Lewisville, Randell (local Denison access only), Ray Roberts, Stillhouse Hollow, Texoma, and Travis.

Seven other lakes are classified as “positive”—meaning zebra mussels or their larvae have been detected on *more than one occasion*—lakes Austin, Lavon, Livingston, Richland Chambers, Waco, Worth, and Fishing Hole Lake (a small lake connected to the Trinity River below Lake Lewisville). So far there is no evidence of a reproducing population in these lakes. Rivers downstream of infested lakes, including the Red, Leon, Lampasas, and the Trinity, are also “positive” for zebra mussels, but it is uncertain whether these populations would be self-sustaining without an upstream source of zebra mussel larvae.

Zebra mussels or their larvae have been found once in recent years in Lake Fork and Lake Ray Hubbard. These water bodies are classified as "suspect."

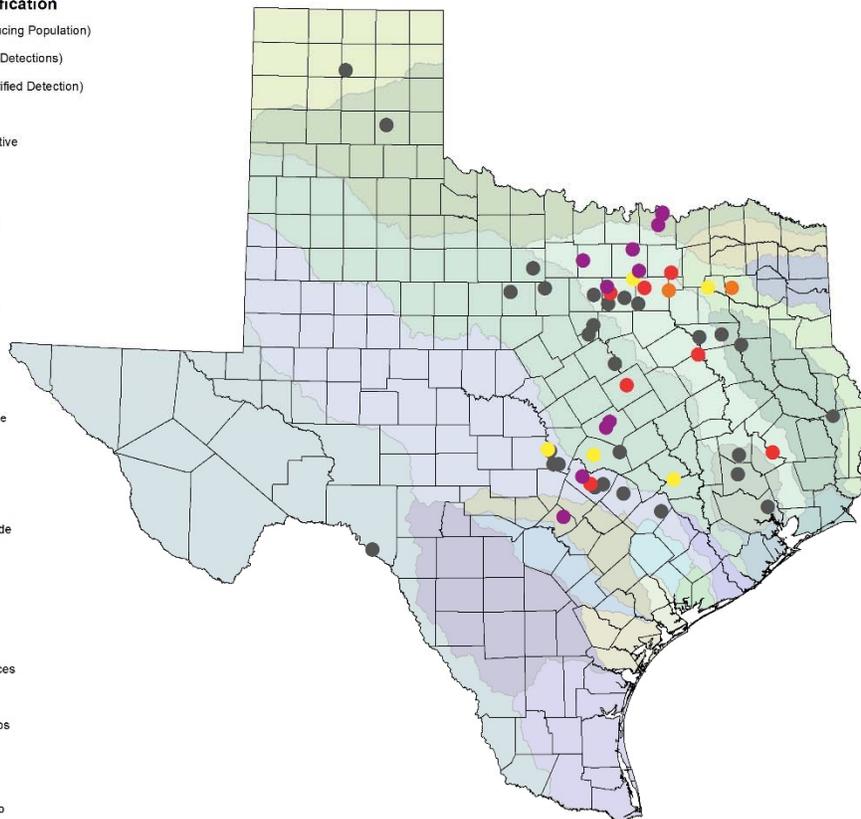
### Zebra Mussel Status - Oct 2017

#### Water Body Classification

- Infested (Reproducing Population)
- Positive (Multiple Detections)
- Suspect (One Verified Detection)
- Inconclusive
- Undetected/Negative

#### River Basin

- Brazos
- Brazos-Colorado
- Canadian
- Colorado
- Colorado-Lavaca
- Cypress
- Guadalupe
- Lavaca
- Lavaca-Guadalupe
- Neches
- Neches-Trinity
- Nueces
- Nueces-Rio Grande
- Red
- Rio Grande
- Sabine
- San Antonio
- San Antonio-Nueces
- San Jacinto
- San Jacinto-Brazos
- Sulphur
- Trinity
- Trinity-San Jacinto



**Infested Lakes (11):** Belton, Bridgeport, Canyon, Dean Gilbert, Eagle Mountain, Lewisville, Randell, Ray Roberts, Stillhouse Hollow, Texoma, Travis  
**Positive Lakes (7):** Austin, Fishing Hole, Lavon, Livingston, Richland Chambers, Waco, Worth  
**Suspect Lakes (2):** Fork, Ray Hubbard

## **How can we get rid of them?**

Eradication of zebra mussels is virtually impossible, although in certain cases where localized, low-density infestations were present, Texas and local agencies have taken steps to try to prevent them from becoming fully established. Preventing spread is the best course of action. However, since their larvae are free drifting, preventing their spread downstream from known infestations may not be possible. In North America, zebra mussels have few natural predators. Several species of fish (for example, catfish, green sunfish, freshwater drum) and ducks have been known to eat them, but these species are not an effective control.

## **What is being done in response to zebra mussels?**

A coalition of partners funds a public awareness campaign to inform boaters about the pathways and consequences of transporting zebra mussels and Clean, Drain, Dry methods for preventing their spread. These and other partners, including local, state, and federal agencies, are also monitoring for early detection of new infestations. Seasonal, roving inspectors help to conduct outreach to boaters and marinas to reduce the risk of spread.

## **Why isn't recreational access restricted for waterbodies with zebra mussels?**

Closure of infested waters could have devastating economic impacts upon a community. TPWD works with the authority in charge of each infested water to implement signage to let boaters know zebra mussels are present and that boats must be "Clean, Drained, and Dried."

## **Do all watercraft, including kayaks, inflatables, and fishing gear need to be cleaned between waterbodies?**

Yes. CLEAN, DRAIN, and DRY all surfaces that come into contact with water after every use.

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