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ZEBRA MUSSELS -

A Florida Perspective

HISTORY

The zebra mussel probably arrived in North America when the ballast water of oceangoing vessels was released into the Great Lakes. Since their arrival, zebra mussels have rapidly expanded their range in the United States, from the Great Lakes to northeastern freshwater lakes and rivers all the way to New Orleans, northern Alabama, and Arkansas. As of this writing, zebra mussels have not yet been detected in Florida. However, if you boat or fish in waters which are infested with this prolific mollusk (including the Mississippi, Tennessee, Arkansas, and Ohio rivers, and freshwater lakes and rivers of the Northeast or the Great Lakes), you could be responsible for bringing zebra mussels to Florida.

WHAT ARE THEY?

Zebra mussels are small thumbnail-sized mussels with characteristic dark stripes, hence the name -- zebra mussel. A freshwater native of eastern Europe, their first appearance in North America occurred in the Great Lakes in 1988.

Zebra mussels are notorious biofoulers. This means they get inside and clog water intake pipes and submerged machinery, which interferes with normal operations. Zebra mussels have the ability to attach themselves to any surface, preferably a hard surface, by a sticky substance which they secrete.

Source: National Zebra Mussel and Aquatic Nuisance Species Clearinghouse.

WHY ARE THEY A PROBLEM?

Unfortunately, Florida's rivers, lakes, and springs may provide a hospitable environment if zebra mussels make their way here. They prefer water temperatures from 39 to 81 degrees Fahrenheit and will reproduce when the water reaches about 54 degrees Fahrenheit. Each female

can produce hundreds of thousands of eggs in a reproductive season. After the microscopic eggs hatch, the larvae (known as veligers) float for several weeks in the water column before settling to the bottom and anchoring themselves. It is their ability to attach themselves to moving objects such as barges and boats that has allowed zebra mussels to spread in almost all of the large navigable rivers in the Mississippi River system.

Recreational boating and fishing may also be playing a role in spreading zebra mussels over large areas. Because the mussel's larvae are virtually undetectable, anglers and boaters can carry them unknowingly to new areas in bait buckets, live wells, and other gear.

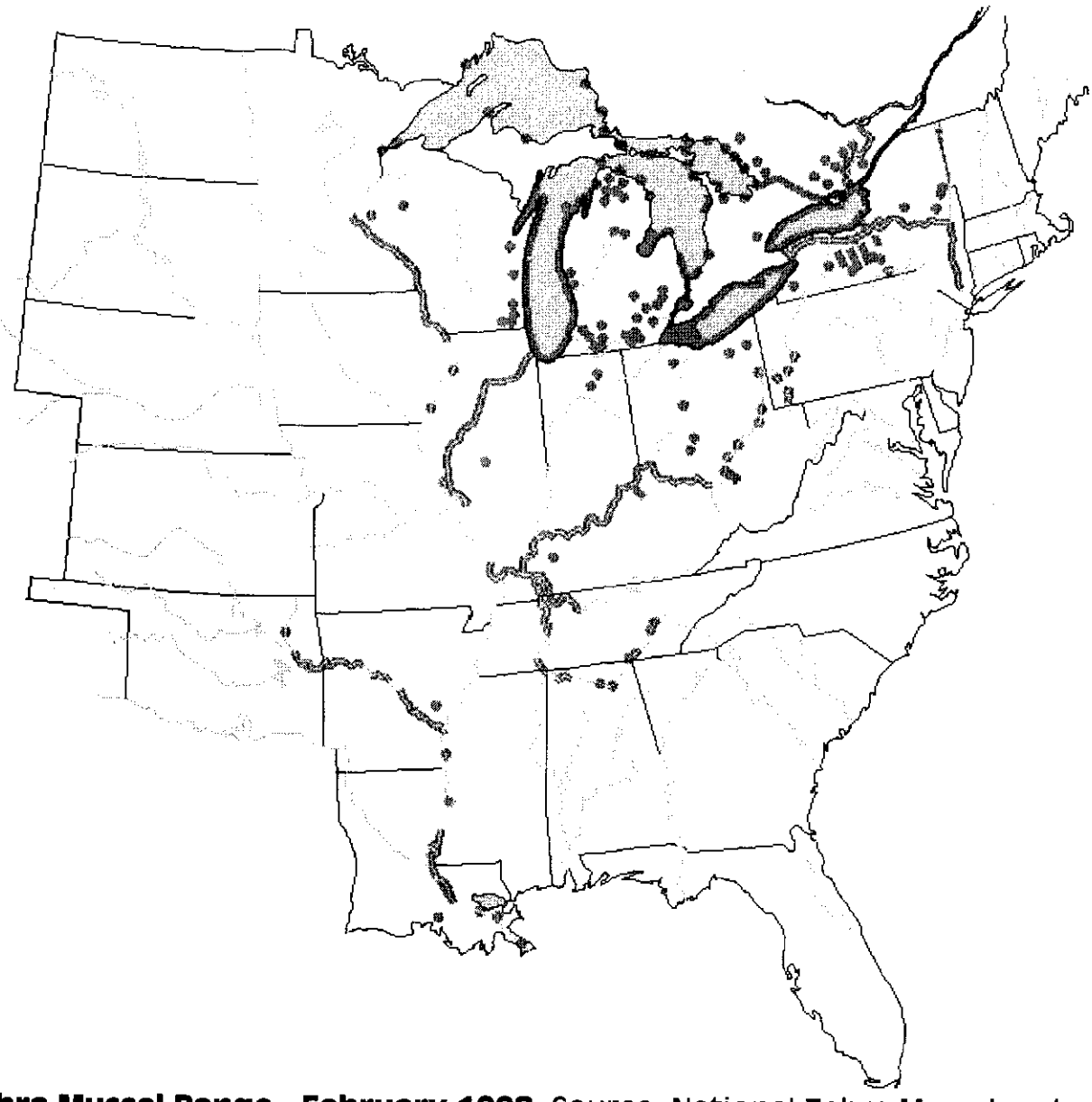
Typical facilities at risk are ones that use underwater intake pipes drawing from surface waters. This can affect power generating plants, water treatment plants, and other industrial plants. Also at risk are services and facilities like fire fighting equipment, irrigation systems, canals, dam structures, sportfish hatcheries, tropical fish farms, motorboats, etc., -- virtually anything pumping water through it. Zebra mussel colonies have become so dense inside of pipes that they completely constricted the flow of water. This could be a very dangerous situation if it were to happen at a nuclear power plant. The prevention and treatment of zebra mussels has increased industries' costs of providing electricity, drinking water, and other services. As a result, consumers (you and I) have had to pay higher prices for these services. The total cost of the prevention of and treatment for zebra mussels in the Great Lakes region is expected to approach $5 billion by the year 2000.

Because the zebra mussel feeds by filtering algae out of the water, they are capable of affecting a waterbody in several ways. The most obvious is that they eat the food that native organisms depend upon. This could interrupt the food chain. Another effect seen in the Great Lakes is that zebra mussels filter out so much algae that they increased water quality significantly. It may look nice, but it allows more sunlight to reach the bottom and can stimulate the growth of unwanted plants. Untangling and removing aquatic weeds from your boat and fishing gear makes the experience of boating and fishing less enjoyable. Even swimming is much less enjoyable or often impossible in lakes overgrown with vegetation.

Additionally, beach recreation in the Great Lakes has been hindered in some locations by large numbers of zebra mussels washing ashore, dying and rotting -- leaving a foul odor and razor-sharp shells. Some recreational lakes and reservoirs have been closed to visitors and tourists in fear of a possible infestation of zebra mussels. Other reservoirs previously open to public recreation have had restrictions placed on them. Zebra mussels can survive on the hull of a boat as it is trailered overland to its next destination.

As of this writing, the closest zebra mussels to Florida are in the Tennessee River in northern Alabama and the Mississippi River in Louisiana. Because zebra mussels can survive in low salinities, it may be possible for them to arrive by way of the Intracoastal Waterway from Louisiana. But the greatest threat of the zebra mussels's introduction comes from recreational boaters.

In Florida, water-related activities play a major part in our leisure time. Residents and tourists spend large amounts of time both in and around the water. If you have visited other states where zebra mussels occur, you must be extra careful to protect our limited natural resources by not bringing the zebra mussel into Florida. A list of potential carriers of zebra mussels include: aquatic plants and animals, any water, snorkeling and scuba gear, fishing gear and bait buckets, boats, trailers, jet-skis, and related materials. It is illegal to knowingly bring live zebra mussels into the state of Florida.



Zebra Mussel Range - February 1998. Source: National Zebra Mussel and Aquatic Nuisance Speices Clearinghouse.

WHAT CAN YOU DO?

- Learn to identify zebra mussels and know what waters are currently infested. They do have a brackish water cousin, *Mytilopsis leucophaeta*, the dark false mussel. This native mussel looks very similar and has already been mistaken for the zebra mussel in Florida.
- Be on the lookout for zebra mussels or suspect mussels at boat launches and docks. Pay particular attention to out-of-state boats and trailers.

There are simple and easy steps to take if you suspect you have been in zebra mussel infested waters of other states.

- ❖ Inspect your boat, trailer, fishing gear, scuba gear, etc., carefully. Clean all mud and plant material from your boat, trailer, propeller, live well, and anchors before leaving the landing.
- ❖ Drain live wells, bait buckets, and bilge areas. Clean your fishing tackle, scuba gear or anything else that has been in the water.
- ❖ Flush the engine cooling system, live wells, and bilge with hot water. If hot water is not available, use tap water. Water hotter than 110 degrees Fahrenheit will kill veligers, and 140 degrees Fahrenheit will kill adults. If your boat or equipment feels gritty, then young microscopic mussels may be attached. Any mussels scraped off should be bagged and thrown in the trash.
- ❖ Do not reuse bait if exposed to infested waters.
- ❖ Let your boat and trailer dry in the sun for at least 3-4 days before using it again, especially if you are going to a lake or river that is not infested. Adult zebra mussels can survive for several days out of water in damp, cool conditions in or on your boat.
- ❖ It also helps to run your boat at high speeds. This can dislodge attached mussels on the hull and heat the engine. The biggest threat to boating equipment is the possible blockage of internal engine-cooling water passages. The larvae can be drawn into engine passages where they can attach and develop into adult mussels, especially in cooler sections of the intake system where heat cannot destroy them. Small fragments can also be drawn into the engine and damage the water pump impeller. Accumulation of settled zebra mussels on the motor can cause increased friction and damage to moving parts, and on the hull will increase drag resulting in reduced speed and fuel efficiency.
- ❖ Silicone or copper-based paints for your boat hull can help to repel zebra mussels.

If you suspect that you have observed a zebra mussel, save a sample by freezing them and call your local Sea Grant or county extension agent. Never throw any suspected mussels back into the water.

For more information on zebra mussels or other aquatic nuisance species, contact the Florida Sea Grant Program at 352-392-1837 or the U.S. Geological Survey at 352-378-8181.

This information is provided by the Florida Sea Grant College Program and the Florida Caribbean Science Center - US Geological Survey - Department of the Interior. For more information call Florida Sea Grant at 352-392-5870, or write to us at: PO Box 110400 - Building 803 McCarty Drive - Gainesville, FL 32611-0400. To reach the Florida Caribbean Science Center, call, 352-378-8181, or write to them at: 7920 NW 71 Street, Gainesville, FL 32653. Be sure to check out the Florida Sea Grant web site at: http://gnv.ifas.ufl.edu/~seaweb/homepage/fsg.htm.

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