

## ZEBRA MUSSELS IN PAW PAW LAKE 2017 SUMMARY

Zebra mussels are a non-native freshwater mollusk. They are native to Eastern Europe and Western Russia and were brought to the United States and to the Great lakes area most likely in the ballast water of ships. The first reported discovery of zebra mussels was in lake Erie in 1988. The mussels were presumably introduced into Paw Paw Lake in boat bilge water or attached to boats or boat motors, the latter being a common mode of introduction into lakes with public boat launches.

The mussels are small, ranging in size from  $\frac{1}{4}$  inch to as large as a quarter. A female mussel can produce up to 1,000,000 eggs per year. Even though about 90% of the eggs do not survive, they can multiply very rapidly. Eggs are produced in the fall and are released and fertilized in the spring.

The young mussels drift with water currents for 3 – 4 weeks or so before attaching themselves to a hard substance in the lake. Zebra mussels colonize on hard surfaces, including pipes, docks, rocks, boat hulls, boat motors, shore stations, swim rafts, ladders and even to each other. They have a life span of between 3 and 9 years.

What do the mussels eat?

Zebra mussels feed mostly on phytoplankton, microscopic organisms that live in the water. Adults also eat larger particles such as algae and zooplankton. Zebra mussels do not eat vegetation in the lake.

What do mussels do to the lake?

Zebra mussels are what are known as filter feeders – that is they take in water( up to a liter aday) and filter out phytoplanktons, zooplanktons, algae and other particulate matter. Many lakes with zebra mussels have experienced a significant increase in water clarity.

However, the mussels also have negative impacts, including:

- clogging irrigation pipe intakes
- attaching to boat hulls and boat motors causing performance problems
- impacting the overall lake ecology through eating microscopic organisms that previously served as food to other organisms
- with very sharp edges to their shells, they can cut feet, fingers or skin that contacts them

What can be done about them?

Once zebra mussels are established in a lake eradication becomes very expensive and nearly impossible. It should be noted that, like most animals, the population of zebra mussels can vary substantially on an annual basis. Following are some methods that may be used to control mussel populations.

Natural enemies:

Natural enemies of zebra mussels include common carp, freshwater drum, channel catfish, sturgeon, diving ducks, crayfish and muskrats. However, mussels multiply so fast that these enemies cannot eradicate the mussels.

Chemicals Treatment.

A number of chemicals may kill zebra mussels, but most can be costly, only moderately successful and may have negative side effects to the lake.

Chlorination has been used with some success. It is relatively inexpensive, easy to apply and has been effective, especially in smaller lakes. However, chlorine forms carcinogenic byproducts.

Ozone has been used. It does not have the negative byproducts of chlorine, but is expensive and very difficult to maintain the concentration level needed to significantly reduce the mussel population

The Special Assessment Lake Project Committee will not support use of any chemicals in the lake that have not been approved for use and that we are not confident will do an effective job.

### Biological Treatment

Zequanox has recently been approved for open water use by the EPA. It can be applied easily in a short period of time. But it is not guaranteed to be fully effective in eradicating the mussels and it's very high cost makes large scale application, such as whole lake treatments, unreasonable at this time. It is currently being used mostly for large industrial applications.

Why haven't we had zebra mussels before now?

Given the potential variability in zebra mussel population, it is possible that zebra mussels have been in Paw Paw Lake for years. They were documented in southwest Michigan over 20 years ago and were first discovered in Little Paw Paw Lake in 1993. Zebra mussel sightings in small isolated numbers in Paw Paw Lake have been reported every year for the past several years.

We believe the introduction of zebra mussels into Paw Paw Lake is the result of the natural spread of this invasive throughout the Great Lakes region by the transportation of recreational boats..

What can I do to help?

Managing the spread of zebra mussels is very important. We can all help by doing the following:

- Scrape or power wash all foreign materials from boat hulls, propellers, motors, trailers, anchors, swim rafts, ladders, shore stations and other equipment that sits in the water
- Whenever possible keep boat and motors out of the water.

- Flush compartments where water is stored with hot water

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The Lake Project Committee will be working to find effective and cost-effective ways to control the zebra mussel population. Your help is also appreciated.

Thanks for your support.

The Special Assessment Lake Project Committee

Sources of information for this summary:

- State of Michigan's Status and Strategy for Zebra and Quagga Mussel Management – web link [www.michigan.gov/documents/dea/wrd-ais-dreissenids\\_499881\\_7.pdf](http://www.michigan.gov/documents/dea/wrd-ais-dreissenids_499881_7.pdf)
- Invasive Species Alert: Zebra and Quagga Mussel – web link – [www.michigan.gov/documents/dnr/InvasiveSpeciesAlert-ZebraQuaggaMussel\\_494224\\_7.pdf](http://www.michigan.gov/documents/dnr/InvasiveSpeciesAlert-ZebraQuaggaMussel_494224_7.pdf)

For more information about zebra mussels google “zebra mussels” on the internet and you will find a lot of information.