

THE THREAT OF AVIAN BOTULISM

2011 UPDATE



Avian Botulism claims thousands of lives of fish and waterfowl on Great Lakes

For over 20 years there were no cases of avian botulism in Northern Lake Michigan (1983-2005), but since 2006 botulism type E has taken a heavy toll on migrating waterfowl, killing thousands upon thousands. The mechanisms behind this latest trend have yet to be fully explained, but scientists theorize that invasive populations of mussels and round gobies - which arrived in ballast tanks in the 1980s and 1990s - have dramatically altered the food chain.

Disruptions in the food chain are thought to have led to a proliferation of algae in Great Lakes' shoreline areas. Low oxygen levels resulting from the decomposition of algae create the environmental conditions necessary for bacteria to produce the botulism toxin. The primary suspects, zebra and quagga mussels, filter the botulism toxin from the water and accumulate it in their tissue. Gobies and other fish eat the mussels, and birds, in turn, eat the contaminated fish or mussels.

What is it and what are the symptoms?

Botulism is a paralytic condition brought on by the ingestion of a naturally occurring toxin produced by the bacterium *Clostridium botulinum*. Botulism is an intoxication, and not an infectious disease.

**In 2007,
an estimated
8,000 birds died
from Type E
botulism**

Birds in the early stages can often walk, but not fly – their wings may hang low and they continually try to raise them into position. Some birds may lose the use of their legs first. They can fly, but are unable to land on their feet. They fly from and land in a sitting position. In more severe cases a bird might be totally paralyzed – only able to breathe and weakly move its head. Water birds often can't hold their heads up and thus they drown and then wash ashore.

Fish usually die out in the lake and are rarely found alive at shore. Any fish or waterfowl that seem sick should not be harvested or eaten.

Can I get Type E Botulism?

No Type E botulism illnesses have been associated with swimming along the lakeshore where fish and bird die-offs

have occurred. However, pets and humans can become sick if they ingest the botulism toxin by eating contaminated birds or fish.

Anyone on the Lake Michigan shoreline who comes across dead waterfowl should take precautions, such as making sure pets do not come in contact with bird carcasses. It may be necessary to have pets on leashes in areas where fish and bird die-offs are occurring.

ONE OF THOUSANDS of birds that were lost to avian botulism.



What the Watershed Council doing and what you can do to help.

Due to our Watershed Protection Teams' initiative, Tip of the Mitt Watershed Council was appointed the regional coordinator for avian botulism monitoring efforts. We are currently working to disseminate information regarding botulism outbreaks and coordinating volunteer monitoring to track the problem.

Our Watershed Protection Team has also teamed up with the Emmet County Lake Association (ECLA) to provide training and materials to volunteers monitoring our lakeshores. Avian botulism cleanup materials to report and safely dispose of bird carcasses are available through the Watershed Council and ECLA. To obtain cleanup materials, please contact the Tip of the Mitt Watershed Council's office.

Volunteer to help with monitoring and disposal.

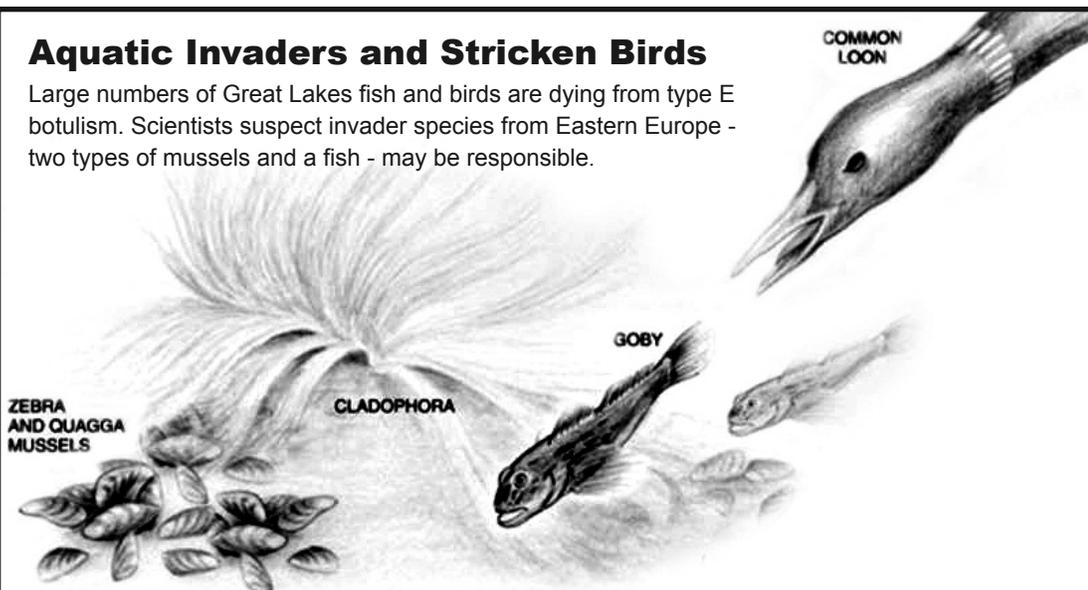
Monitoring avian botulism will help protect the fish and fowl that are being effected. If you are interested in monitoring avian botulism, please contact Kevin Cronk at 231-347-1181 or by e-mail at kevin@watershedcouncil.org

Instructions for Safe Disposal and Reporting of Shoreline Bird Carcasses

- Bird carcasses should not be handled with bare hands. Wear gloves or use a garbage bag over your hand to collect bird carcasses.
 - Bird carcasses should be placed in garbage bags. The number of birds per bag will depend on the size of the birds and the quality of the garbage bags.
 - Use a small piece of duct tape to wrap the bird's sharp bill. This will prevent the bag from tearing open once it's placed inside.
 - Carcasses can be disposed of either by including them with your household trash or by burying them. If you bury carcasses, do so as far as possible from the shoreline. Remove them from the garbage bag(s) and bury them at least two feet deep. Burying them to this depth will discourage other animals from unearthing them. Do not place them in compost.
 - Once you finish handling the carcasses, you should dispose of your gloves in a garbage bag and place them in trash that is going to a landfill.
 - You can remove and bury animal carcasses on private property only if you receive permission from the property owners to remove and/or bury carcasses from their land.
 - Please report your findings to Kevin Cronk, Monitoring and Research Coordinator for Tip of the Mitt Watershed Council, and include the following information:
 - Your name and contact information
 - Location of the bird carcass
 - Species of the bird or photo if unable to identify
 - Number of birds that you found
 - Method of disposal: buried or put in trash
 - If there is a band on the bird's leg, record the band color, which leg it was on, and the number. If possible remove the band and bring to Tip of the Mitt Watershed Council for appropriate follow up.
- If you have any questions regarding this process or about avian botulism in general, please contact Kevin Cronk at 231-347-1181 or by at e-mail kevin@watershedcouncil.org

Aquatic Invaders and Stricken Birds

Large numbers of Great Lakes fish and birds are dying from type E botulism. Scientists suspect invader species from Eastern Europe - two types of mussels and a fish - may be responsible.



A Changed Ecosystem

Zebra and quagga mussels filter algae from the water, making the lake clearer. More sunlight reaches the lake bed prompting plant growth.

Bacteria Produce Toxins

Decaying plants create an oxygen-deprived environment that stimulates formation of the botulism toxin. As they filter the water, mussels concentrate the toxin.

Up Through the Food Chain

Bottom-feeding gobies eat mussels and ingest the botulism toxin, concentrating it further. Then the birds feed on the fish.



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