

## 2004 Workshop Overview

The workshop brought positive and negative news regarding botulism die-offs in the lower Great Lakes. The positive note was that there were fewer die-offs of fish and waterfowl in the summer and fall of 2003 in Lake Erie. On the negative side, there has been an increase of die-offs in Lake Ontario. This leaves scientists wondering if Lake Ontario will see the same ecological impacts of botulism that has been witnessed in Lake Erie over the past five years.

Botulism is a disease caused by the bacterium *Clostridium botulinum*. Although type C has caused the die-off of thousands of waterfowl (especially ducks) across the western United States, type E has been somewhat restricted to fish-eating birds in the Great Lakes. Type E toxin has also been known to affect fish and the toxin is suspected in recent fish die-offs in the lower Great Lakes.

In order to bring researchers, agency staff members and concerned stakeholders together to exchange data and ideas, New York Sea Grant again joined forces with Pennsylvania and Ohio Sea Grant to hold a binational workshop on the botulism issue. The fourth annual workshop on botulism was held on Thursday, March 25, 2004, at the Stull Nature Center in Erie, Pennsylvania.

Approximately 40 participants gathered to hear reports from New York, Ohio, Pennsylvania, and Ontario. The reports from the various state and provincial agencies provided information on the fish and waterfowl die-offs from 2003. Ken Roblee of the New York Department of Environmental Conservation reported that waterfowl die-offs decreased from over 17,000 in 2002 to approximately 3000 in 2003. Roblee, a wildlife biologist, also reported that 22 dead lake sturgeon were collected along the Niagara County shoreline of Lake Ontario, a significant mortality for these threatened fish. These mortalities concern biologists since the Niagara River is an established spawning area for lake sturgeon and these slow-reproducing fish could be impacted by the loss of reproductive-age fish.

After the reports on bird and fish die-offs were finished, participants heard from researchers representing Cornell University, Penn State University, Wadsworth Center- New York State Department of Health and the University of Guelph – Health Canada. The research at Cornell and the Wadsworth Center are efforts that were funded through New York Sea Grant.

The NYSG funded research at Cornell is being carried out by Dr. Paul Bowser and Dr. Rod Getchell. Through this work, the Cornell team has developed a faster, safer and more affordable way to detect botulism using a molecular assay to screen samples. Their research will also focus on testing sediments, quagga mussels and other invertebrates in the future. This will help to validate the hypothesis that botulism is being moved from the sediments up into the food chain by filter-feeding quagga mussels.

As a true binational effort, participants heard from researchers in Ontario. Dr. Rich Moccia, Dr. Ian Barker and graduate student, Adam Yule, from the University at Guelph, presented their findings on interspecies toxicity of Type E botulism in fish. This research demonstrated that fish such as round gobies, walleye, yellow perch and rainbow trout show different sensitivities to the

botulism toxin. Not only was there a difference in mortality for different species of fish, some species like the round goby seemed to show pigment changes and others like trout showed marked behavioral changes. These changes in behaviors, such as erratic swimming or “breaching” (where the fish swims head-first upwards in water), may actually help to “lure” bird predators to the affected fish. This may increase the likelihood for fish-eating birds to prey on fish that contain the toxin, resulting in illness or death for birds like loons and mergansers.

Evaluation results from the workshop indicated that 98% of the participants will share the information and data from this workshop with others. Participants have shared information from previous workshops with colleagues, students, administrators, general public, media, sportfishing groups and the Commissioners from the International Joint Commission.

When asked if they plan to take some action as a result of the information learned at this year’s workshop, nearly all of the participants indicated that they would. These actions ranged from initiating research projects, working on bird or fish surveys, making observations, collecting samples, and writing articles, to making oral and written briefings for agency colleagues.

Conference organizers were pleased by the positive responses concerning interest in the continuation of annual workshops. Participants overwhelmingly indicated that there is a need to keep the flow of information and data ongoing.