



Onondaga Lake: Progress Report 2007

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Onondaga County Ambient Monitoring Program

Onondaga Lake is on the road to recovery.

After more than a century of pollution from municipal and industrial waste, Onondaga Lake is responding to the large investment of funds in wastewater treatment with cleaner water. Pollution levels are down, and the conditions for aquatic life, especially fish, have improved.

The Onondaga County Ambient Monitoring Program has been documenting conditions in the lake and its watershed for more than 30 years. The extensive monitoring program provides a scientific basis for answering important questions regarding the lake clean-up effort.

- How have the improvements to the wastewater collection and treatment system affected the lake?
- Is the lake suitable for recreational uses?
- Does the lake support a healthy aquatic community?

This progress report describes conditions measured in 2007 and compares recent data with historical data to track improvements to this valuable community resource.

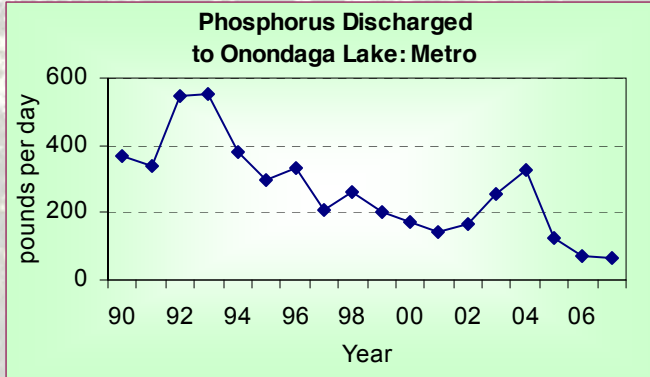


Measures of Progress

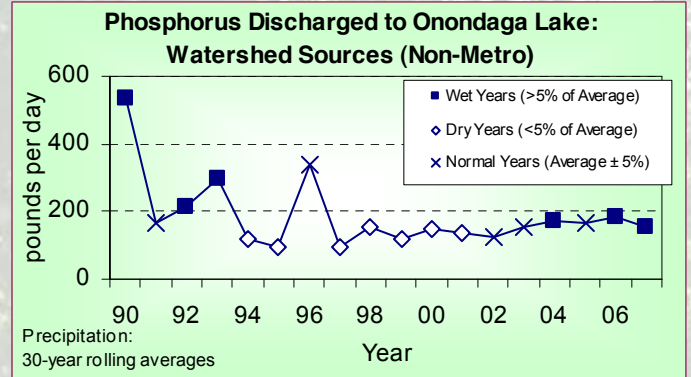
Recent improvements at the Metropolitan Syracuse Wastewater Treatment Plant (Metro) have brought about welcome changes in Onondaga Lake. The Metro plant is just one source of pollutants to Onondaga Lake. Major projects are also underway throughout the 285-square mile watershed that will reduce runoff from urban areas and farmlands. Perhaps most importantly, the effects of past industrial discharges of mercury and other contaminants are being addressed by Honeywell and the DEC. Graphs on the following pages display the effectiveness of improved wastewater and trends in Onondaga Lake water quality.

How have improvements in wastewater collection and treatment affected phosphorus, algal blooms, and dissolved oxygen levels in Onondaga Lake?

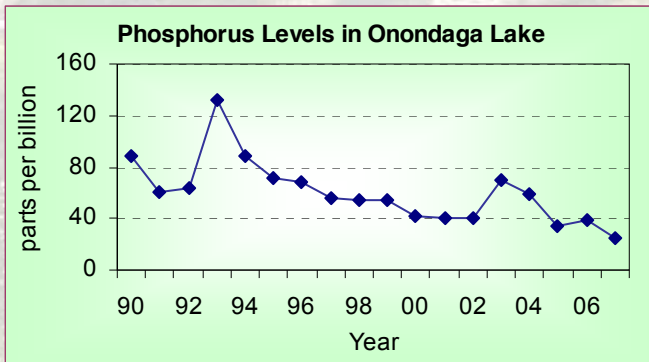
Phosphorus is the key nutrient supporting algal growth. Excessive algal growth will turn the lake water green and cloudy and contribute to low oxygen levels.



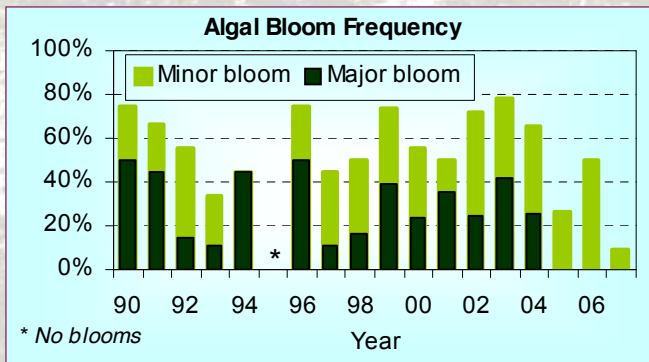
Improvements at the Metro plant have reduced phosphorus discharges to the lake from the treatment plant by more than 80%.



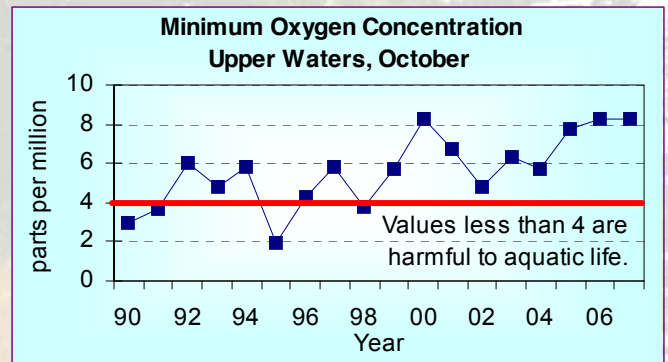
During wet years, more runoff flows to the lake from the large watershed. Note that with the recent improvements at the Metro plant, runoff from the watershed contributes the majority of phosphorus entering Onondaga Lake.



Reductions in phosphorus discharges from the Metro plant have resulted in substantially lower phosphorus concentrations in the lake water in recent years.



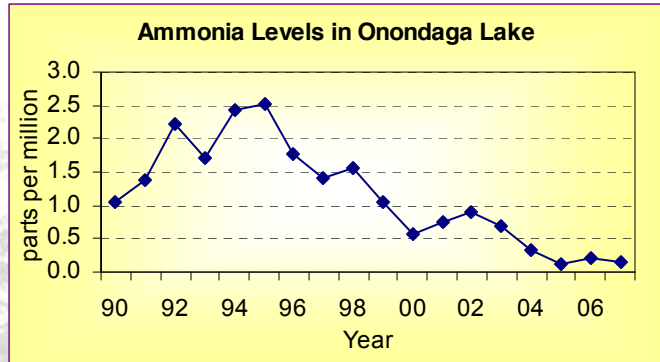
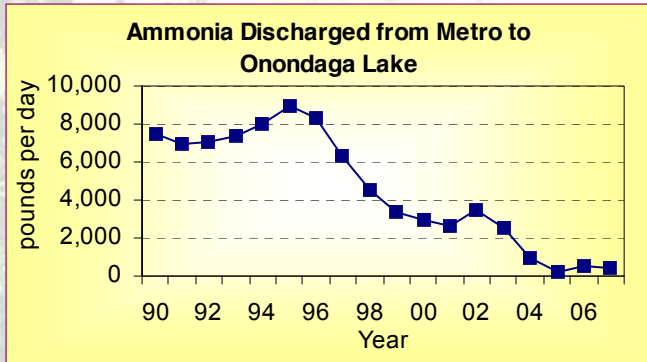
Less phosphorus in the lake has resulted in fewer and less severe algal blooms. Less algae also means clearer water and more oxygen for aquatic life. Oxygen is the most important factor affecting the type and distribution of aquatic life.



Oxygen levels in October, which historically have been very low, have improved in recent years. Until recently, low oxygen in October was one of the most significant water quality problems in Onondaga Lake. Improvements in oxygen mean better habitat for aquatic life.

How have improvements in wastewater collection and treatment affected ammonia levels in Onondaga Lake?

High concentrations of ammonia can be harmful to sensitive forms of aquatic life, such as young fish.

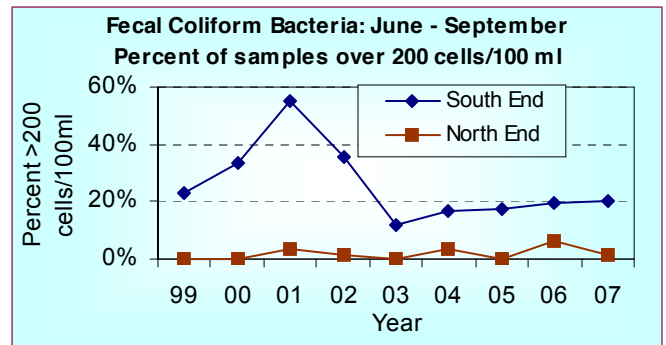
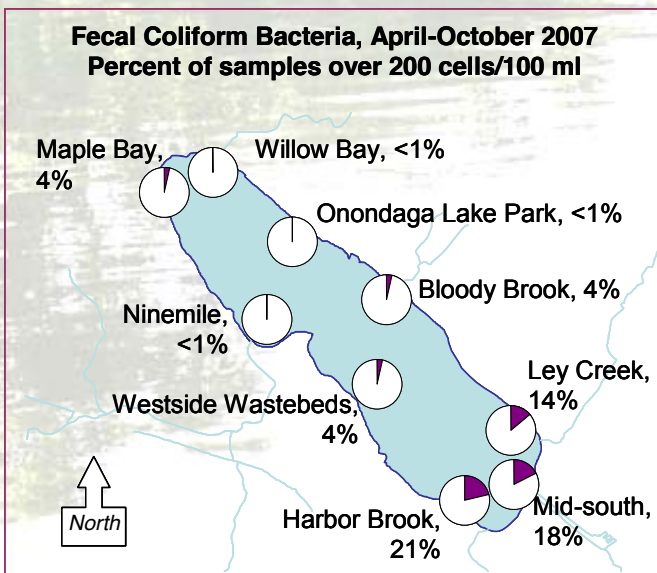


Onondaga County has completed major upgrades at the Metro plant that reduced the amount of ammonia discharged to the lake from the treatment plant.

Ammonia concentrations in the lake have declined as a direct result of the treatment plant improvements. Now, levels are protective of even the most sensitive forms of aquatic life.

How have improvements in wastewater collection and treatment affected bacteria levels in the lake?

Areas of Syracuse are served by combined sewer systems (CSOs) which carry both sewage and storm water. These pipes can overflow during periods of heavy rain and snowmelt, allowing a mixture of stormwater and raw sewage to flow into creeks and ultimately reach Onondaga Lake. Bacteria are introduced from both sewage and runoff from streets and fields. Onondaga County is working on multiple projects to control storm runoff and combined sewers. Many projects have been completed, while others are in the design and construction phases. Once completed, these projects will help reduce bacteria levels in Onondaga Lake.

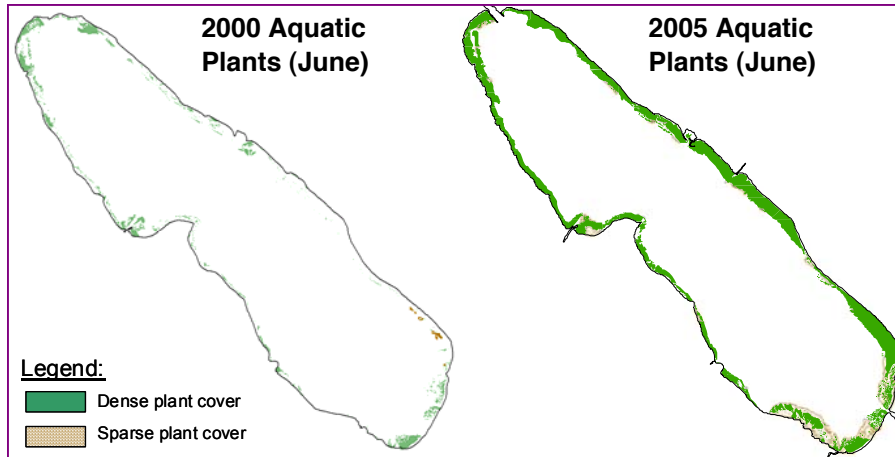


Bacteria levels during 2007 were elevated at the southern end of the lake more often than at the northern end. This is because the streams affected by combined sewer overflows enter the lake at its southern end.

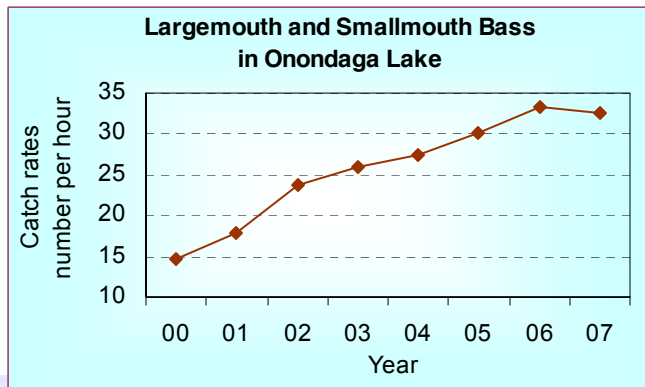
The pattern of higher bacteria levels at the southern end of the lake has been seen for many years. The good news is that bacteria levels at the northern stations are almost always very low. The value 200 cells per 100 ml of lake water is used by DEC and the Health Department to indicate suitability for water contact recreation, the limit is calculated as a monthly average. These graphs compare each individual result to the monthly average standard, which is a conservative (protective) way to interpret the data. Summer measurements, when recreational use is important, are displayed.

How has aquatic life in Onondaga Lake changed over time?

Aquatic plants provide vital spawning and nursery habitat for lake fish, as well as food and cover to a variety of other aquatic animals. The shallow areas of the lake are increasingly covered with aquatic plants as water quality improves, and a thriving warmwater fish community is one positive result. A 345% increase in plant cover was documented from 2000—2005.



Onondaga Lake supports a diverse warm-water fish community; there are many species present, and game species such as bass are increasingly abundant. This is a result of improved habitat and better water quality. The Bassmasters' Memorial Tournament 2007 on Onondaga Lake was a huge success. The tournament was broadcast nationally on ESPN.



Summary and a Look Ahead

Real progress is being made in Onondaga Lake. The water is clearer, there is less algae, and water quality conditions support a thriving warm water aquatic community.

The Onondaga County Ambient Monitoring Program will continue to track key indicators in response to reductions in wastewater inputs, urban runoff, agricultural runoff, and industrial pollution.

Visit our Web site:
www.ongov.net

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