ONTARIO COUNTY
Planning Department

Thomas P. Harvey, Director

HONEOYE LAKE AQUATIC VEGETATION MANAGEMENT PROGRAM
2017 ACTIVITY REPORT

Background

Honeoye Lake is a shallow (16 feet mean depth), nutrient-enriched lake with abundant rooted aquatic plants (or macrophytes) that impair recreational uses like swimming and boating during the summer months. This plant community includes both native and invasive non-native species. Ontario County operates a mechanical harvesting and shoreline pickup program during the summer months in cooperation with the Towns of Richmond and Canadice, with cost-sharing from New York State through the Finger Lakes – Lake Ontario Watershed Protection Alliance (FLLOWPA). This program has two primary goals:

- To enhance recreational access for lake users during the peak season.
- To remove plant biomass and associated nutrients from the lake ecosystem.

Mechanical harvesting cuts and removes the top layer of the aquatic vegetation. Aquatic plants remain at lake bottom and provide food and habitat structure for wildlife. Aquatic plants play an important role in lake ecology. They take up nutrients from lake sediments, absorb energy from wave action thereby reducing erosion, help bind lake sediments, and provide nursery areas and food for many species. Excessive plant growth can be a nuisance to lake users, impairing swimming and boating. Once introduced into a lake, invasive species can outcompete and choke out native plant species if not controlled, impacting both recreational and habitat values.

Mechanical harvesting is the recommended management practice to control nuisance aquatic vegetation per the Honeoye Lake Macrophyte Management Plan (Final, April 30, 2008) available at: http://www.co.ontario.ny.us/DocumentCenter/View/1308.

Shoreline Management Introduced

Late in the 2016 season, a shoreline work barge was introduced as an additional tool for removal of nuisance aquatic vegetation accumulated near shore. Based on a similar approach used at Chautauqua Lake, this steel work boat visits docks and shoreline areas at the request of residents, or groups of neighbors. Residents rake plant fragments into piles or rows, and this material is loaded onto the work barge, transported to the NYS Boat Launch, and transported with harvested vegetation to area farms for use as compost. The shoreline service was started to address concerns about plant fragments piling up shore. While the harvester captures the vast majority of what it cuts, some floating fragments may be blown to shore following a harvester cut. Recreational boats as well as wind and wave action cut plants that blow to shore, whether harvesting occurs or not. The New York State regulated wetland extending into Honeoye Lake at the inlet is a steady source of weed fragments at shoreline downwind. Regardless of the source of

plant fragments washing on shore, the shoreline collection program helps to mitigate aesthetic problems and the recycling of nutrients back into the lake from decaying plants.

New York State grant funds were used to purchase a trailer for the work barge in 2017, making transport and storage of the barge much easier. The work barge can be used for research or other uses on multiple lakes. The Ontario County Sheriff's Department Dive Team trained for search and rescue operations on the barge in May 2017.

Photo 1. Honeoye Lake's north shore receives a significant amount of windblown aquatic plants from southerly winds. Neighbors work with the AVMP team to clear the shoreline.

Photo 2. The Ontario County Dive Team prepares for search and rescue training from the barge in May, 2017.

2017 Operations Summary

AVMP operations began on July 3. Harvesting concluded on September 14, 2017. Shoreline pickup continued until October 12. A two-person crew executed all field operations, including waterline marking, harvesting, shoreline collection, off-loading and transportation of plant material. The crew worked with park staff at Sandy Bottom Beach (Town of Richmond) to keep the beach clear of debris. Operations were staged at the State Boat Launch. New York State Office of Parks, Recreation and Historic Preservation dedicated space at no cost to the program.

Adaptive Management

The AVMP strives to use an adaptive management approach to target operations where and when needed. A vegetation mapping tool is used to get a picture of the extent and density of plant growth around the lake perimeter. Volunteers collect data using a specialized Sonar device, from which vegetation maps are produced by a mapping vendor. **Red areas indicate aquatic plants occupy 90 to 100% of the water column.** This is where harvesting is focused, excepting where overriding circumstances control (e.g., no harvesting occurs in the regulated wetland, public swimming beach, where there are hazards or insufficient depth, or where property owners decline services). Plant growth can vary year to year, and was more robust in 2017 than 2016.

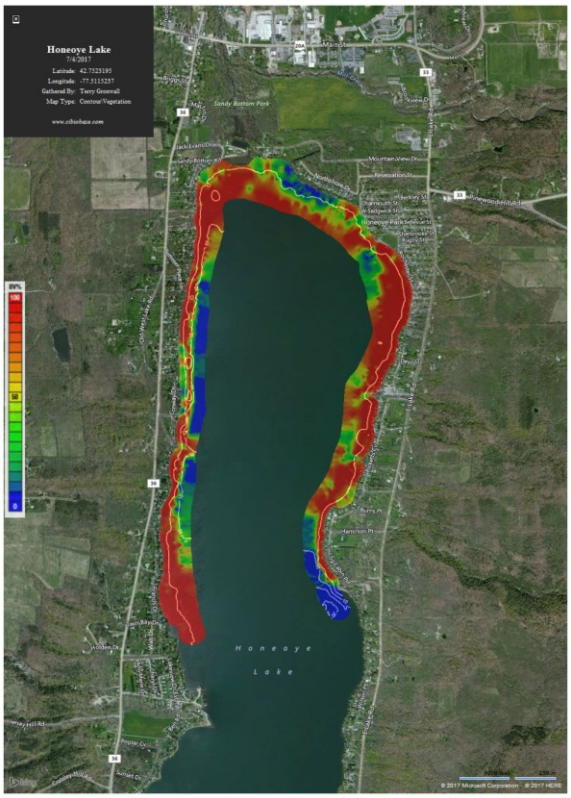

Photo 3: Vegetation mapping of northern Honeoye Lake, July 4, 2017.

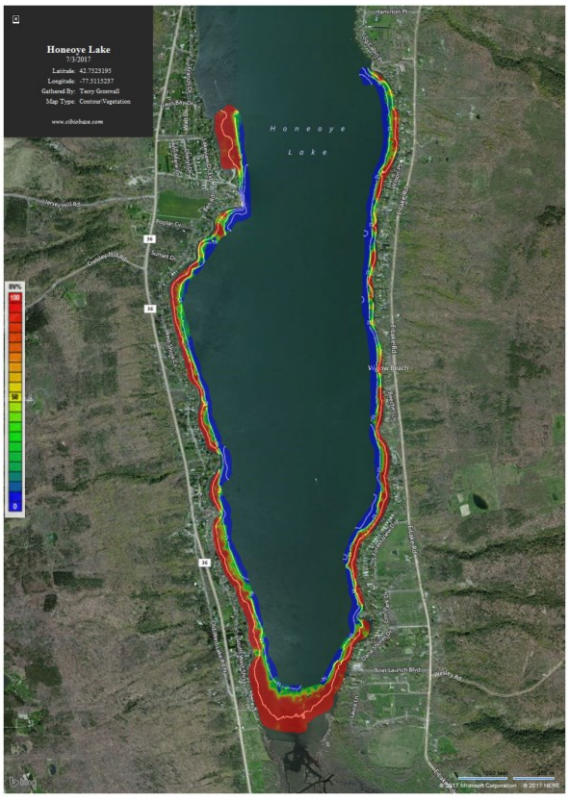

Photo 4. Vegetation mapping of southern Honeoye Lake, July 3, 2017.

Effort and Results

In 2017 **72 loads** of aquatic vegetation, or an estimated **360 wet tons**, were removed from Honeoye Lake. The crew spent 178 hours harvesting. An additional 126 hours were spent in shoreline collection and 10 were dedicated to Sandy Bottom Beach assisting park staff. Even with significant emphasis on the shoreline collection effort - a highly labor intensive activity - the amount of plant material removed in 2017 exceeded that removed in 2016 by 100 wet tons. This can be attributed to abundant aquatic plant growth in 2017 compared to 2016. Assistance from residents participating in shoreline collection also helps to make that work more efficient.

Breakdown of AVMP Effort	# of Hours	Percentage of Effort
Harvesting	178	54%
Shoreline Collection	126	38%
Assistance at Sandy Bottom Beach	10	3%
Mechanical Down Time/Maintenance	15	4%
Weather Related Downtime	3	<1%

Additional Notes from the Field

Eurasian milfoil, an invasive species, was particularly vigorous in early July and the dominant species harvested. A long-time AVMP operator noted this was the most Eurasian milfoil harvested in the past decade. A study of plant species dominance in Honeoye Lake over 30 years showed Eurasian milfoil was the dominant plant inventoried in 1994, followed by significant population decline in 2004 and 2014 (see yellow line in Figure 1). The status of this invasive species should be watched carefully in future years.

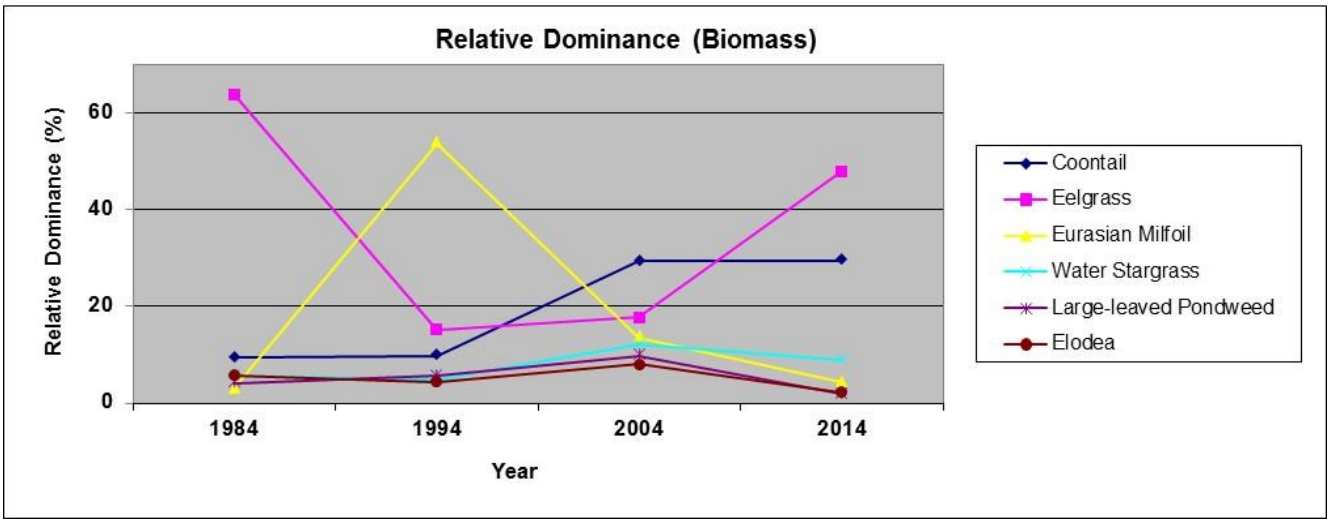

Figure 1. The relative dominance of plant species commonly found in Honeoye Lake, as measured in the fall in ten year increments (1984-2014). Source: Thirty Years Monitoring the Fall Standing Crop Biomass of Macrophyte Communities in Honeoye Lake (Gilman, et al 2015)

Public Communication

The AVMP was again featured at Honeoye Valley Association's 2017 annual symposium. Updates on harvesting activities were posted during the season to AVMP's web page on Ontario County's web site (http://www.co.ontario.ny.us/452/Aquatic-Vegetation-Management-Program). This web page is linked to Richmond and Canadice town web sites. The Honeoye Valley Association receives AVMP updates and forwards the information by e-blast to its membership. Reports on the program are given at quarterly meetings of the Honeoye Lake Watershed Task Force and the Ontario County Planning and Environmental Quality Committee. Perhaps the most important vehicle for public communication comes in the form of AVMP staff talking with residents around the lake, helping to fine-tune the program to better fit needs.

Research

Some residents attest harvesting activity promotes blue green algae in Honeoye Lake. Blue green algae (or cyanobacteria) present a significant public health and water quality concern locally, across the Finger Lakes region, New York State, the nation and, indeed, the globe. The factors that influence algae growth are many and dynamic, as they can interact in multiple ways to influence the location and duration of an algae bloom. Microcystis, the cyanobacteria species responsible for some of the blooms in Honeoye Lake, is a resilient and opportunistic species, as demonstrated by blooms in recent years in neighboring Canandaigua Lake, a much deeper, colder and nutrient-poor lake relative to Honeoye. Algae dynamics in Honeoye Lake is the subject of research by scientists at Cornell University, FLCC, Wright State University and Finger Lakes Institute at Hobart and William Smith Colleges. As these and other studies are concluded, insight into what is changing to exacerbate algae blooms and, more importantly, what are the options for mitigating blooms should be revealed. Residents are encouraged to learn more about these projects through the Honeoye Lake Watershed Task Force and Honeoye Valley Association as well as attend meetings where this research is presented.

In response to anecdotal information from residents that algae blooms occur approximately three days subsequent to harvesting, the AVMP is conducting sampling over two seasons to investigate nutrient levels and chlorophyll *a* before and after harvesting, and in comparison sites where no harvesting occurs. Ontario County Water Resources Council grant funding is supporting the analysis fees at a NYS certified lab.

Additional information:

- Honeoye Lake Watershed Task Force (The newsletters have good summaries of ongoing lake projects): https://www.canadice.org/honeoye-lake-watershed-task-force.html.

- Honeoye Lake Watershed Management Plan: http://www.co.ontario.ny.us/DocumentCenter/View/1276

- Ontario County Honeoye Lake Aquatic Vegetation Management Program:
- http://www.co.ontario.ny.us/index.aspx?nid=452

- NYS Department of Environmental Conservation blue green algae bloom notices:
- http://www.dec.ny.gov/chemical/83310.html

- NYS Department of Environmental Conservation TMDLs and Nine Key Element Watershed Plans:
- http://www.dec.ny.gov/chemical/23835.html

For more information on this report, contact Betsy Landre, Sr. Planner, Ontario County Planning Department, 20 Ontario Street, Canandaigua, NY 14424 Tel: (585) 396-4458; email: betsy.landre@co.ontario.ny.us