WINTER 2022

Honeoye Lake Watershed Task Force Newsletter

HONEOYE LAKE WATERSHED TASK FORCE

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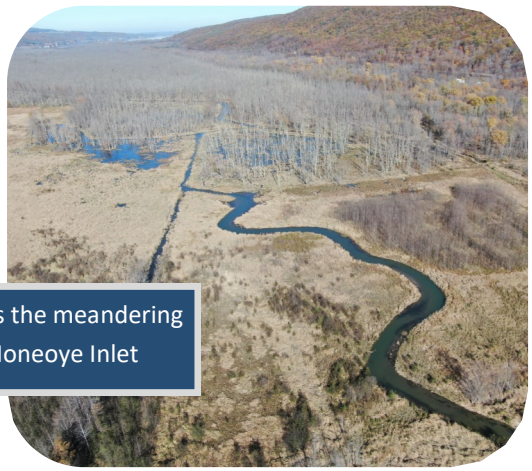
A Different Point of View

By Ontario County SWCD

The Ontario County Soil & Water Conservation District (SWCD) is in the sky! The recent purchase of a drone allows the SWCD to view projects from a new perspective. Hard to reach sites such as stream channels or agricultural lands with crops will now be easier to monitor. Megan Webster and Katie Lafler went through an extensive training program to become FAA UAS certified pilots. Now, they are able to use drone technology in a variety of ways such as capturing footage of streams blocked by woody debris to plan clean-up projects or inspect newly planted grass waterways to see if seeding is established. By taking photos and videos from the sky, it helps to show the magnitude of these projects that can be challenging to capture from the ground with a typical camera. We look forward to sharing more aerial adventures with you in the future. Below are a few photos of the Honeoye Inlet where the restoration project took place several years ago.



Looking north across the meandering channel of the Honeoye Inlet

Photo Credit: Ontario County SWCD

The floodplain in action!

View of the cross-vane that helps reduce bank erosion

Honeoye Lake Watershed Task Force (HLWTF) Chairman's 2021 Project Update: Terry Gronwall

HLWTF projects to improve water quality in Honeoye Lake and its watershed

The common focus of the projects based on the Honeoye Lake Watershed Management Plan, the Department of Environmental Conservation (DEC) Harmful Algal Blooms (HABs) Action Plan, and the DEC Total Maximum Daily Load (TMDL) Plan is to implement Best Management Practices (BMPs) to reduce external and internal sources of nutrients and sediments reaching Honeoye Lake.

New HLWTF Web Site: Please check out our new comprehensive HLWTF web site. It has Honeoye Lake background data, summary of HLWTF implemented water quality projects, information on new projects being planned, Honeoye Lake water quality planning documents, past HLWTF newsletters, and guides for lake residents to use in reducing nutrient run-off into the lake. The new web site also contains a weekly summer water quality blog: www.honeoyelakewatershed.org

NYSDEC WQIP Round 16 Grant application for Honeoye Lake Aeriation System Engineering Planning Project: Ontario County Planning Department and the HLWTF was awarded a $30,000 NYS DEC WQIP grant to engage a lake management consultant to do detailed aeration system engineering design work required for a potential future permit application and implementation grant funding. Princeton Hydro Inc. was selected for this project. We expect to have a completed design and assessment of feasibility and costs in early 2022.

NYSDEC WQIP Round 15 Custom conveyor for shoreline weed pick-up barge project: Ontario County Planning Department and the Towns of Richmond & Canadice received grant funding to have a custom conveyor built for our shoreline weed pick-up barge to increase productivity and efficiency. Conveyor was installed on barge in July 2021 for use last summer. It is currently back at the vendor getting a few minor design adjustments.

Honeoye Lake Watershed Stormwater Toolkit: Link: https://fd57d705-f86c-4662-90ab-7627c560e9d2.filesusr.com/ugd/e6fc30_5299c36614ab4b3b995b53aeec724bfa.pdf

2021 HLWTF Newsletter: Our 2021 HLWTF Winter newsletter was published in February 2021. This newsletter contained information on all recent HLWTF projects and lake related educational articles. A copy is available on the HLWTF Web Site: www.honeoyelakewatershed.org/resources

Blue-Green Algae Monitoring Project: At the request of New York State (NYS) DEC, the lake was monitored visually for blue-green algae blooms at 10 locations twice a week from June through mid-October 2020. Results were posted on the DEC HABs alert web site. The DEC HABs alert website link is available on the HLWTF web site. Also, HABs monitoring results were posted weekly on the HLWTF web site water quality blog during the summer. www.honeoyelakewatershed.org

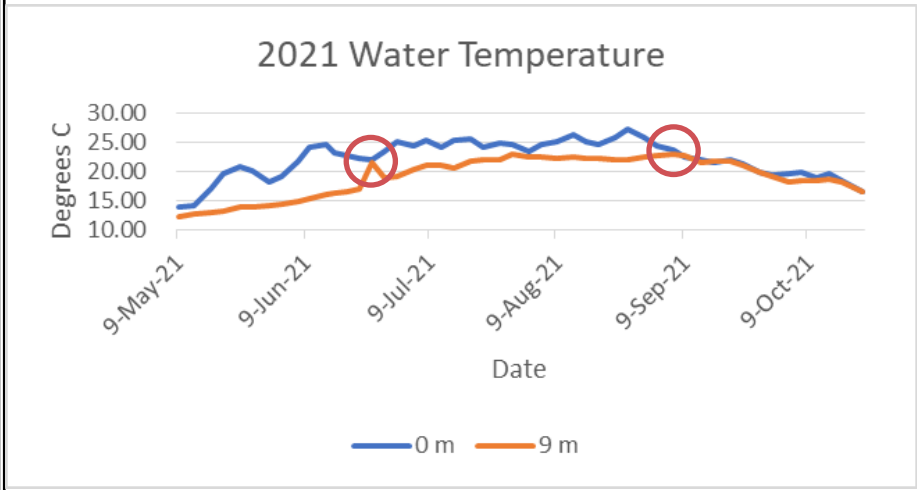
Collected lake water quality data June-September: HLWTF collected weekly water column temperature, dissolved oxygen profiles, and water clarity data. Water samples were collected twice a month (June-Septmber) for lab testing for phosphorus and nitrogen. HVA citizen Secchi Disk volunteer program collected near shore water clarity and temperature data.

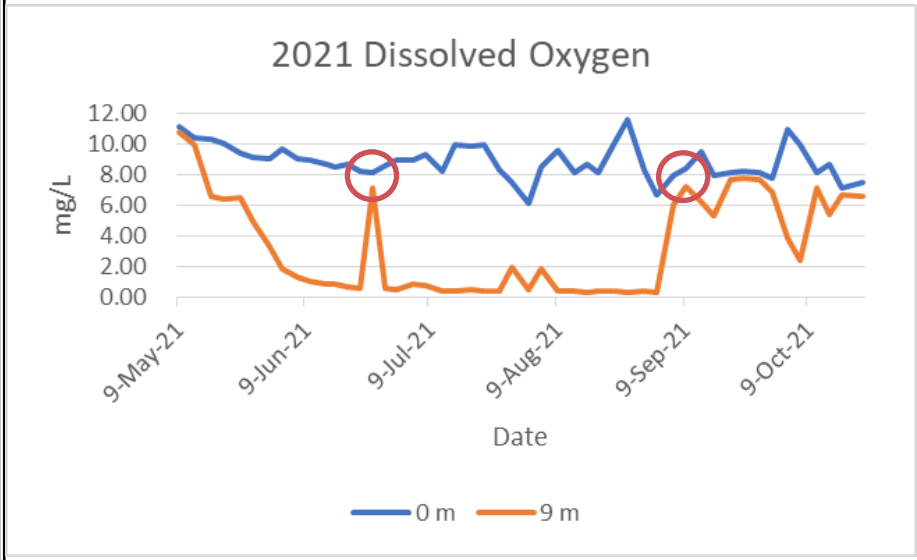
Electronic Macrophyte Mapping Service: HLWTF provided two (early July and early August) macrophyte maps for the mechanical harvesting team to help them focus on the areas of greatest macrophyte density.

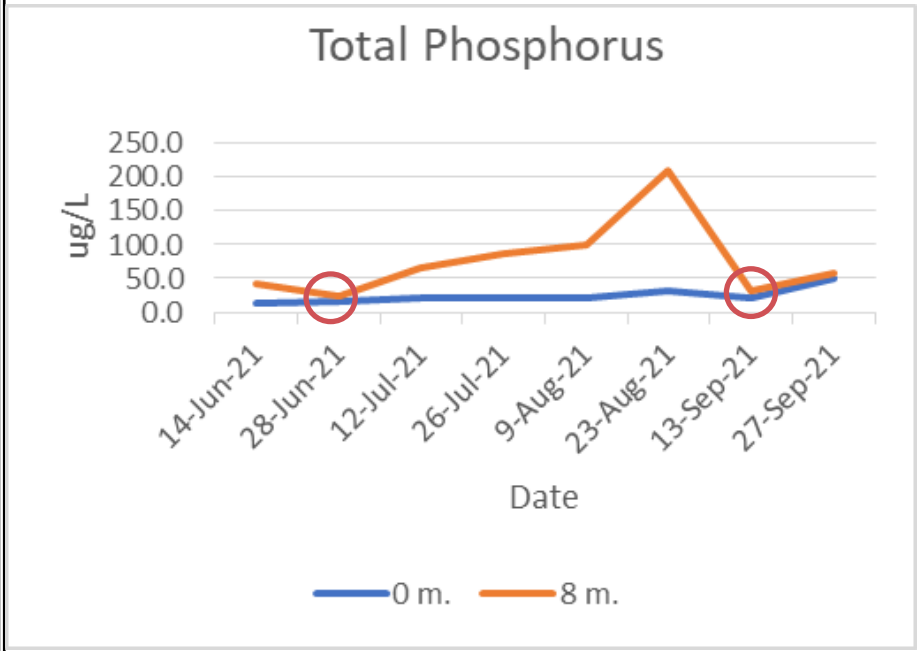
These efforts to improve Honeoye Lake and watershed water quality are a true partnership between The Nature Conservancy, NYS DEC, Ontario County Planning Department, Ontario County SWCD, Finger Lakes Community College, Finger Lakes Institute, Cornell University, Honeoye Valley Association, the Towns of Richmond, Canadice, Bristol, South Bristol and Naples; and all lake residents and users. We appreciate everyone's support. For more information, please contact Terry Gronwall, HLWTF Chairman at watershedtaskforce@gmail.com

State of the Lake: Honeoye Lake 2021 Mixing Events

By Terry Gronwall, HLWTF







When a lake warms at the surface during the early summer it will stratify and form a thermocline indicated by a temperature difference of several degrees centigrade between the surface and bottom water. When a lake mixing event occurs the water temperature becomes uniform from the surface to the bottom. Mixing events in Honeoye Lake are usually driven by strong wind energy across the lake surface.

When a lake is stratified the microbial decay of organic matter (e.g., dead lake algae and macrophytes, washed in leaves and organic debris) on the lake bottom consumes and reduces dissolved oxygen (DO) in the water below the thermocline. When the DO has been completely consumed the chemical bond between phosphorus and iron in the bottom sediments weakens releasing phosphorus into the water. This phosphorus is held below the thermocline until a mixing event occurs.

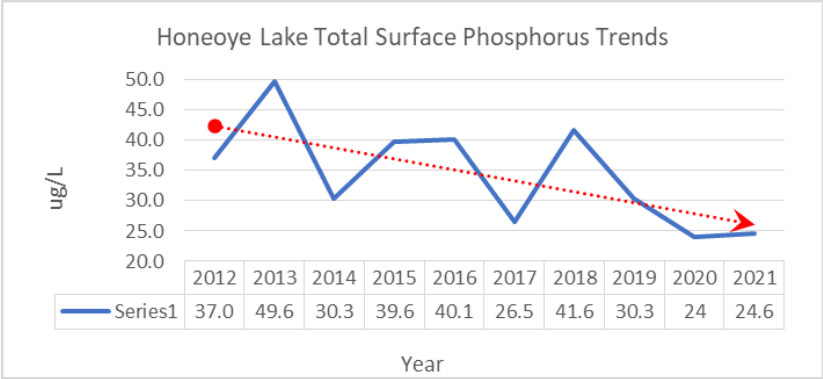
After a lake mixing event occurs, dissolved oxygen becomes almost uniform from surface to lake bottom. The phosphorus which was held below the thermocline is also mixed throughout the whole water column. Honeoye Lake had two lake mixing events in 2021 (**red circles**); one on June 25th and one on September 5th. The phosphorus concentration at the surface and bottom blend together, significantly increasing the amount of phosphorus in the surface water that may fuel a blue-green algae bloom.

Harmful Algal Bloom, Terry Gronwall

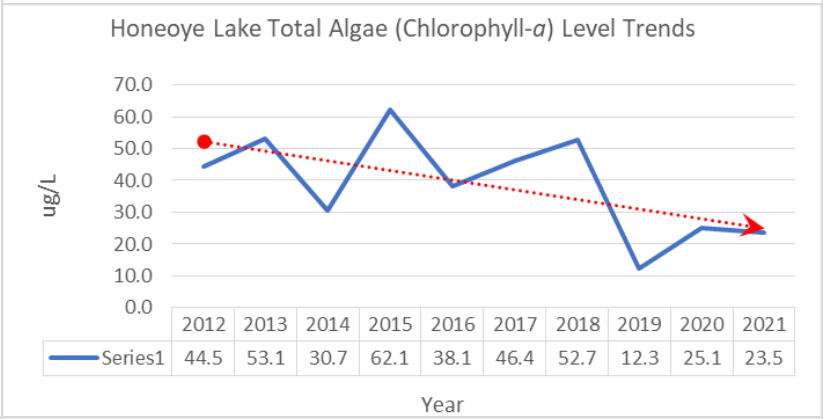
State of the Lake: Honeoye Lake Long Term Water Quality Trends

By Terry Gronwall, HLWTF

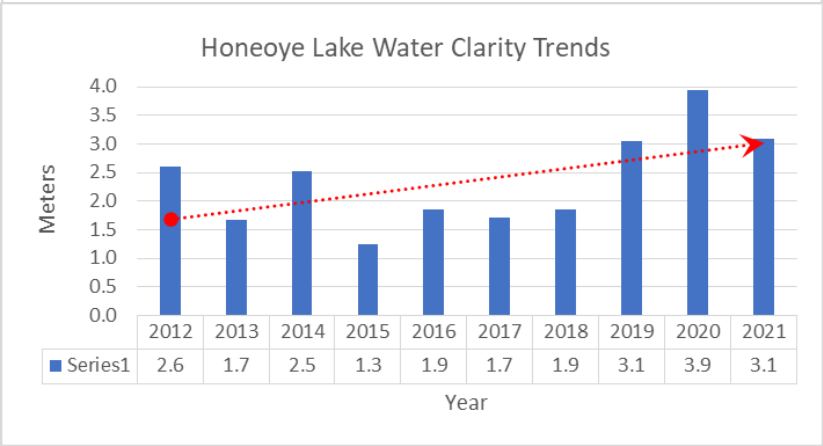
Based on eight summer water quality samples each year, Honeoye Lake's water quality appears to have steadily improved over the last ten years. This may be due to several factors including storm water mitigation projects that the Honeoye Lake Watershed Task Force and Ontario County Soil & Water Conservation District have completed in the Honeoye Lake watershed such as the Inlet Restoration Project. Other relevant factors would include fewer lake mixing events that circulate nutrients throughout the water column due to fewer strong summer wind events, and reduced watershed runoff due to fewer strong summer storm events.



From 2012–2018 yearly, summer (June-Sept.) total phosphorus averaged 37.8 ug/L. From 2019-2021 summer total phosphorus averaged 26.3 ug/L. This is a summer total phosphorus reduction of ~30.4% over the last three years. In the above graph, actual annual mean summer phosphorus data is represented by the solid blue line, while the dotted red line is the decade long trend line.



From 2012–2018 yearly, summer total algae (Chlorophyll -*a*) levels averaged 46.8 ug/L. From 2019-2021 summer total algae (Chlorophyll-*a*) levels averaged 20.3 ug/L. This is a summer algae reduction of ~56.6% over the last three years. In the above graph, actual annual mean summer phosphorus data is represented by the solid blue line, while the dotted red line is the decade long trend line.



From 2012–2018 yearly, summer water clarity averaged 1.9 meters (6.3 Feet). From 2019-2021 summer water clarity averaged 3.4 meters (11.2 Feet). This is a water clarity improvement of ~78.9% over the last three years. In the above graph, actual annual mean summer water clarity data is represented by the solid blue bars, while the dotted red line is the decade long trend line.

In summary by comparing the first seven years of record (2012-2018) with the last three years of record (2019-2021), a summer mean annual reduction in total phosphorus of ~30.4% likely contributed to a reduction in summer mean annual total algal abundance of ~56.6% which resulted in a mean summer water clarity improvement of ~78%. These water quality improvements over the last three years occurred with weed harvesting operating in 2020-2021.

Honeoye Lake water quality will always be affected by weather events beyond our control. If 2022 has an above average amount of rainfall, storm water run-off containing sediment and nutrients will increase the amount of phosphorus in the water. If 2022 is a year of strong winds aligning with the long axis of the lake (north winds, south winds), there will be more lake mixing (turn over) events circulating legacy phosphorus released from the lake's anoxic bottom sediments throughout the whole water column. Both of these weather-related factors can increase algae in the water column and reduce water clarity. **Remember improving a lake's water quality is a journey not a destination!** The HLWTF is working with its partners Ontario County Soil & Water Conservation District to identify and address additional storm water mitigation projects, and with Ontario County Planning Department to evaluate the potential benefits of using an aeration system to reduce the release of legacy phosphorus from the lake's bottoms sediments. See articles about our aeration system evaluation project elsewhere in the newsletter.

Note: The ten-year water quality data used in this article was collected by the HLWTF. Funding for the lab analysis of this data was provided by the five towns in the Honeoye Lake watershed.

Rare Natural Community Discovered in the Honeoye Lake Watershed

By Bruce Gilman, Professor Emeritus
& Finger Lakes Herbarium Curator

Although recently retired from Finger Lakes Community College (FLCC), I continue to study and learn about the natural communities of our wondrous Finger Lakes region. This fall I visited one such area in the Honeoye Lake watershed. This site had always intrigued me because of the unusual presence of northern white cedar, a tree of alkaline soils, growing in an otherwise acidic landscape. It was quite a surprise to find what else was growing there, but I'm getting ahead of my story.

Natural communities in New York State have been ecologically classified and described by the New York Natural Heritage Program (www.nynhp.org). Communities are organized first into one of seven systems, with each system further divided into subsystems. The Honeoye discovery falls into the palustrine system, then the open peatland subsystem. It is specifically named a **rich sloping fen**. So it is an unusual type of natural wetland community. The Heritage Program also ranks each natural community type for its rarity. A rich sloping fen, based on the information available to the Heritage Program, is ranked S1S2, meaning there are less than 20 documented occurrences across New York State, making it especially unique and vulnerable.

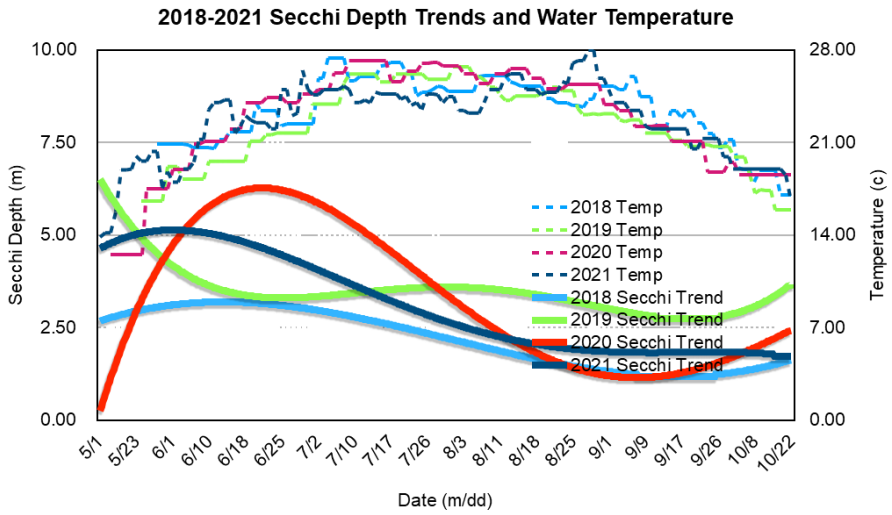
So what characterizes a rich sloping fen? They are small natural communities that occur in shallow depressions on gentle slopes composed of calcareous glacial deposits. Rich sloping fens are minerotrophic wetlands fed by small springs. So far, the Honeoye Valley has one known location with this unique set of conditions. The high hills surrounding the Honeoye Valley serve as aquifer recharge areas, creating just the right conditions for artesian springs along the valley floor. Groundwater upwelling through calcareous glacial deposits becomes mineral rich and has a high pH. The water is cold and constantly flowing through the fen in tiny rivulets. Rich sloping fens are usually surrounded by upland forests and transition downslope into shrub swamps and shallow emergent marshes. Biodiversity is very high, with scattered trees and shrubs, and a nearly continuous layer of herbaceous plants and mosses. Shrubs of the Honeoye rich sloping fen include arrowwood, red osier dogwood, mountain holly, gray dogwood, alder-leaf buckthorn and several species of willow. Virgin's bower is the characteristic vine. Herbaceous plants include field horsetail, marsh fern, cinnamon fern, spotted Joe Pye weed, spreading goldenrod, various sedges (especially *Carex flava* and *C. hystericina*), purple-stem aster, cat-tails, purple avens, tall meadowrue, mannagrass, water-horehound, tall coneflower, golden ragwort and the insectivorous sundew. The sundews, named because their glandular hairs glisten like dew in the sun, are tiny plants that grow on mossy hummocks in the Honeoye rich sloping fen. The hairs are stalked glands that produce digestive juices. These juices increase in production once insect prey has been captured on the sticky leaf. Research in England estimated that six million insects were caught annually in a 2 acre fen!

Round-leaved sundew image is used with permission from the New York Flora Atlas (https://newyork.plantatlas.usf.edu/) and was taken by Jacqueline Donnelly.

2021 Honeoye Lake Secchi Disc Program

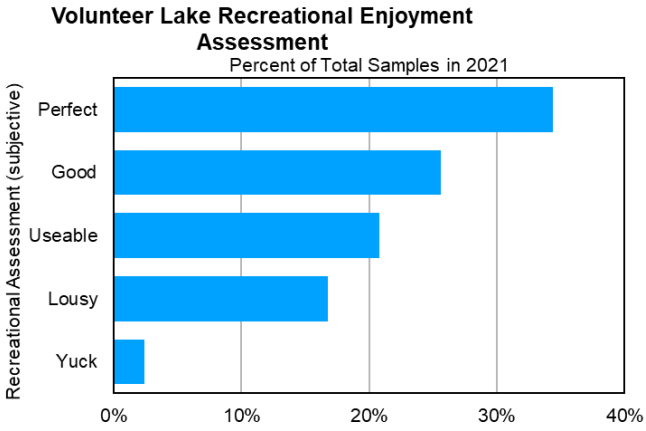
By Linda Vanderbeck, Honeoye Valley Association

The 2021 Honeoye Lake Secchi Disc Program extended from May 9th to October 22nd and included 125 Secchi disc measurements from multiple locations around the lake taken by six lake-resident volunteers. The Secchi disc originated with Pietro Angelo Secchi, an astrophysicist and scientific advisor to the Pope when in 1864, the head of the Papal Navy requested that Secchi measure the transparency of the Mediterranean Sea. To accomplish this task, Secchi devised the use of a white disc that he lowered into the water until no longer visible - today, we refer to this as the Secchi depth. Because of its simplicity the Secchi disc is the most commonly used tool to measure the clarity of lakes and other bodies of water. Secchi discs used at Honeoye Lake are not exactly like the ones Secchi used, but instead are 8-inches in diameter with alternating black and white quadrants. Secchi measurements are approximate, and little can be concluded from a single, isolated Secchi measurement. However, the real value of Secchi measurements comes when measurements from the same lake can be compared week to week, month to month and year to year. This is exactly what is being done at Honeoye Lake. 2021 marks the 4th consecutive year of Secchi data collection. Patterns and trends are beginning to emerge. In 2021, a trending function was used to better analyze 4 years of data. This function mathematically calculates a continuous curved line that represents the discrete Secchi measurements. As a result, patterns and trends can be more easily recognized from the curves than from hundreds of data points on a graph.



Trends: Surface water temperature during all 4 years followed a very similar pattern with similar values. Beginning in early May, temperatures gradually warmed from about 15°C/59°F until the end of July when they peaked at around 26°C/79°F. During August, September and October there was gradual cooling that ended in mid-October at about 18°C/64°F. Secchi depth showed that water clarity is relatively high during spring and early summer but starts to decline in mid-July—at about the same time that water temperature is reaching its warmest— and is least clear around the first week in September. Although this is the general pattern, the values vary from year to year, especially during spring. Spring 2018 was the least clear with the 3 following years being clearer, especially during 2020 and 2021.

Results: For Honeoye Lake water clarity is primarily influenced by the amount of algae suspended in the water column. Clearer water indicates less algae whereas murky water signals more algae. Water clarity at Honeoye Lake followed the typical yearly pattern of highest water clarity in spring and early summer, then increases in opacity as surface water warmed and algae populations grew. Spring water clarity for 2021 was notably higher than in 2018 and 2019 but did not reach the astonishing levels of 2020. All six sampling locations showed similar patterns which suggests that although near-shore algae density may vary around the lake, depths of about 15 feet or more are similar. Two lake mixing events on 6/25 and 9/05 that released legacy phosphorous from the lake bottom resulted in an increase in algae followed by slight improvements. In addition to collecting Secchi depth, water temperature, and other quantitative weather data, volunteers also provide their subjective assessment of Lake Recreational Enjoyment. Nearly 35% of all samples taken assessed the lake as "perfect" with only 19% as "lousy" or "yuck" clustering around the time algae population was at its highest. The good news is that 81% of the time lake users are able to enjoy the many recreational activities on Honeoye Lake. Some objectives of the Secchi Disc Program for 2022 are to recruit volunteers in the Northern Basin and more closely observe and analyze the effects that mixing events have on Secchi depth. If you are interested in participating in the Honeoye Lake Secchi Disc Program or have any questions or comments, please contact the HLWTF at:watershedtaskforce@gmail.com.



Update on the Honeoye Lake Aeration Engineering Planning Project

By Betsy Landre, Ontario County Planning Department
& Terry Gronwall, Chairman, HLWTF

It has been nearly a year since a team of professional lake managers and engineers led by Princeton Hydro started work on the design of an aeration system for phosphorus control in Honeoye Lake, with the end goal of reducing the frequency and intensity of Harmful Algal Blooms (HABs). Aeration is one of the key strategies recommended by NYS Department of Environmental Conservation (DEC) to manage HABs in Honeoye Lake. For more information on aeration, phosphorus and HABs, see Linda Vanderbeck's article on page **13** of this issue.

The consultant team reviewed multiple years of data for Honeoye Lake to understand its characteristics (physical, chemical, and biological) and patterns in nutrient concentrations and HABs occurrences. With a detailed understanding of the lake, the team assessed various methods of aeration or oxygen injection to prevent anoxia (absence of oxygen) in the deepest part of the lake (25-30 feet). Keeping deep waters oxygenated at the sediment interface is key to preventing nutrient release from bottom sediments during warm months after the lake thermally stratifies. Deep and cooler bottom waters have more density than the warmer surface water above. The thermal stratification that sets up every summer prevents the deep waters from mixing with surface waters and being reoxygenated by interaction with the atmosphere. This deep-water zone – the hypolimnion – is where artificial oxygenation is needed to interrupt the typical summer pattern: warm weather leading to thermal stratification of the lake, leading to deep water anoxia and phosphorus release, and fueling HABs, particularly upon a lake mixing event driven by weather.

The consultant team includes engineers who have designed and implemented various types of aeration systems in the United States. The team reviewed several approaches, including aeration destratification and a side stream super-saturation system (SSS). While either approach is suitable for Honeoye Lake, their analysis leads the consultants to recommend a side-stream super-saturation system as most appropriate among the current options for Honeoye Lake.

A side stream super-saturation system operates during the time that anoxia occurs in the bottom sediments. Deep water from the hypolimnion is withdrawn from the lake (at a rate of 500,000 gallons per day) to a shoreline pumphouse where it is injected with oxygen in a mixing chamber and returned to the hypolimnion via perforated tubing anchored above the lake bottom. The artificially oxygenated water diffuses along a cool water density gradient, blanketing the bottom sediments of the hypolimnion. Low velocity, screens, and the anchoring system help prevent sediment resuspension and entrainment (trapping) of fish larvae and zooplankton. Oxygen used in this system is produced on site via an O_2 generator in the pumphouse.

Why this approach? According to the consultants' side-by-side comparison of alternatives, a side-stream super-saturation system requires much less equipment and hardware anchored to the bottom, thereby reducing risk of snagging and damage. The compressed air and power requirements for the side-stream super-saturation system are less than those required for an aeration destratification system, reducing operating costs. A side-stream super-saturation system can be calibrated during the operating season to adjust oxygen concentrations in bottom waters. For example, fish habitat can be benefited by the maintenance of an oxygen concentration above 4-5 mg/l (O_2 concentrations at the bottom typically go to <1 mg/l during prolonged thermal stratification).

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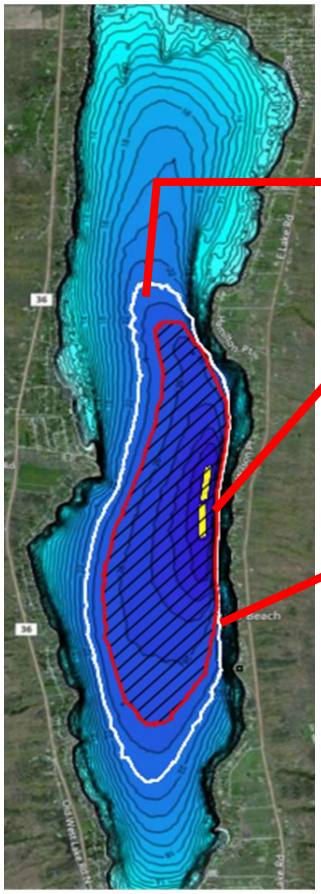
Update on the Honeoye Lake Aeration Engineering Planning Project Continued…

Maintaining consistent oxygen concentrations at the bottom can increase the biological activity in the sediment, accelerating decomposition of organic matter and potentially, over time, reducing the amount of oxygen needed to be injected at the pump house to maintain an oxygenated hypolimnion. The side stream super-saturation system also has somewhat lower capital and annual operating costs compared to aeration destratification systems.



Project costs can be reduced by siting the pump house as close as possible to the intake and outlet, to be located in the deepest part of the lake. Ideally, the pump house would be located on public land and a reasonable distance from residences. Candidate sites were reviewed as part of this planning project, but before an agreement with a landowner (public or private) is completed, the community will need to decide if an aeration system is indeed desirable. This includes support for a future application for grant funding (which may cover up to 75% of eligible project expenses) and the required 25% local match (based on current grant programs available).

What does a side stream super-saturation system cost? Princeton Hydro has estimated that the total capital cost would be ~$1,200,000. Some efficiencies may be realized in categories like permitting and bidding with in-kind assistance from local agencies. Annual operating costs are estimated to be $35,000-50,000 for utilities, maintenance, and annual inspection.

Certainly, this is a big project for the communities of Richmond and Canadice. The public will be invited to learn about aeration and the recommendations in the final project document directly from the consultants via a webinar, to be announced early in 2022. Questions are welcome any time. Send them to HLWTF at watershedtaskforce@gmail.com.

Terry Gronwall (HLWTF and Town of Canadice) and Betsy Landre (Ontario County Planning Department) would like to thank local project committee members who have provided data, reviewed draft documents, and raised important questions throughout this project:
David Baker, Town of Richmond
Bruce Gilman, Professor Emeritus, Finger Lakes Community College
Nelson Hairston, Professor Emeritus, Cornell University
Linda Vanderbeck, Honeoye Valley Association

Staff from DEC Region 8 in Avon and in Albany are appreciated for their guidance. This planning project is funded by a Planning Grant from the NYS DEC Water Quality Implementation Grant program.

Get Out There: Four Recreation Areas in the Honeoye Valley

By Linda Vanderbeck, Honeoye Valley Association

Winter has arrived in the Honeoye Valley! During most mornings, the air is chilly and light layer of snow awaits you. You will need to bundle up to go outside. Boats and hoists have come out of the lake, summer visitors are have left to go back to the city, and ice fisherman are anxiously waiting for some drops in temperature. While you may be sad that swimming and boating are at a pause for a while, be sure you aren't missing out on the winter season in our beautiful Honeoye Valley.

Four recreation areas located right here in the Honeoye Valley offer a myriad of outdoor activities where you can admire the forests' fresh fallen snow, observe wildlife, bird watch, go hiking, go snowshoeing or simply find tranquility in the natural world. Some locations offer organized activities and guided hikes. You can also subscribe to newsletters (see websites) and keep current with conservation news and local initiatives. The following is a brief introduction to each recreation area along with a link to its website and trail map - ***get out there!***

Harriet Hollister Spencer State Recreation Area is located in Canadice, NY with nearly 23 miles of multi-use trails for hiking, biking, cross-country skiing, snowshoeing, and a snowmobile route. From the road leading into the park, you'll see the breathtaking panoramic view of Honeoye Lake pictured here. The park is beautiful, dense woodland and boasts the highest spot in Ontario County.

WEBSITE: https://parks.ny.gov/parks/164/details.aspx

TRAIL MAP: https://parks.ny.gov/documents/parks/HarrietHollisterTrailMap.pdf

Wesley Hill Nature Preserve can be accessed from either Gulick Road or Wesley Hill Road. Diverse stands of mature forest, a wide array of wildflowers, and sweeping views of the hills surrounding the south end of Honeoye Lake make this site truly special. The hiking trails are very well marked and while on them, you might hear Yellow-Throats, Bluebirds and Song Sparrows, and may even see a deer, fox, or woodchuck.

WEBSITE: https://www.fllt.org/preserves/wesley-hill-nature-preserve/

TRAIL MAP: https://www.fllt.org/wp-content/uploads/2015/02/Preserve-Brochure-Wesley-2.pdf

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Get Out There Continued…

Cummings Nature Center is on Gulick Road between Honeoye and Naples. You can discover something new each time you visit the Cumming Nature Center from exploring their exhibits to embarking on a nature trail adventure. There is an interpretive center at the site entrance and historical artifacts at Pioneer Cabin and Sugar Shack along the purple trail, and at the Sawmill on the blue trail. A small entrance fee is required.

WEBSITE: https://rmsc.org/cumming-nature-center/nature-center-programs-and-events

TRAIL MAP: https://rmsc.org/files/CNC_Summer_map_01.pdf

Terry Gronwall

Sandy Bottom Park is located at the north end of Honeoye Lake off of County Road 36 just south of Route 20A. This park has hiking trails, a picnic pavilion, boardwalk, playgrounds and softball field. Located right here in Honeoye, Sandy Bottom Park is somewhere you can visit often for a brisk walk, quiet nature hike or family outing.

WEBSITE: https://www.visitfingerlakes.com/listing/sandy-bottom-park/320/

TRAIL MAP: https://townrichmond.digitaltowpath.org:10135/content/Parks/View/1:field=documents;/content/Documents/File/1838.pdf


Terry Gronwall


Terry Gronwall

District II Merit Award

By Ontario County SWCD

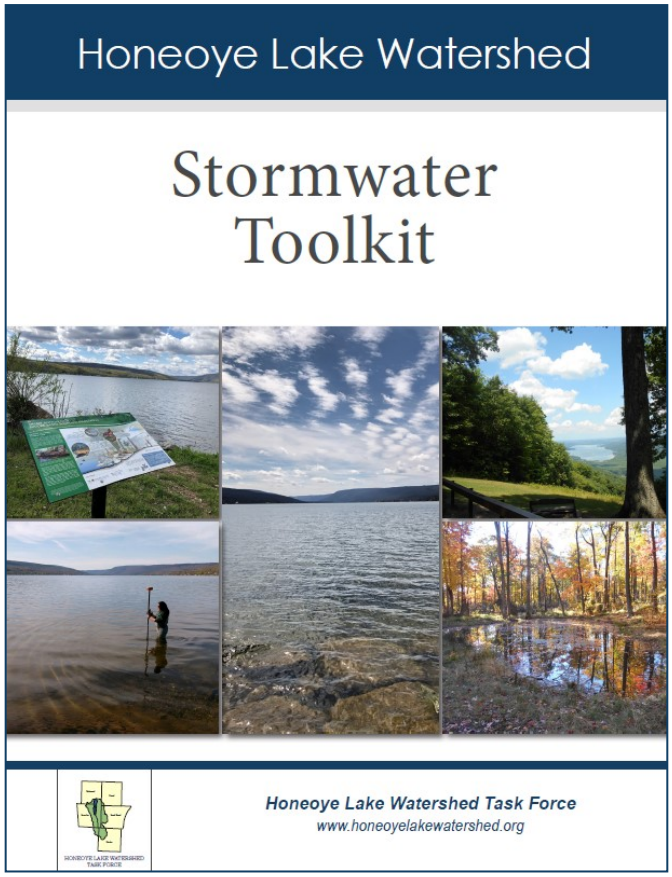
Congratulations to Alaina Robarge on receiving the NYS Conservation District Employees Association (CDEA) Division II Merit Award! This award recognizes current District employees who have shown outstanding effort in promoting the District and its activities. Alaina Robarge is the Conservation District Educator for Ontario County SWCD. Since Alaina's hiring, she has worked tirelessly to enhance our District's outreach and educational programs. She has vastly improved our on-line presence through a new visually appealing and user-friendly website and social media platforms (www.ontswcd.com). She has conducted countless outreach programs in schools and in the community reaching thousands of residents per year. Alaina represents the District with professionalism, enthusiasm and a deep knowledge and passion for conservation. She is endlessly looking for ways to educate herself and others on new environmental topics. Alaina not only creates material for our District, she also serves as an amazing resource for other Districts and watershed groups. She helps coordinate our regional Envirothon event and participates on the State Fair Committee. Alaina created and manages websites for the Honeoye Lake Watershed Task Force (www.honeoyelakewatershed.org) and the Ontario-Wayne Stormwater Coalition (www.owsc.org), covering two counties. She also is the editor for various newsletters for watershed groups such as the HLWTF and the Seneca-Keuka Watershed Partnership which covers 6 counties. With all of this work, Alaina met challenges with a positive attitude that serves to motivate our whole team. Anyone who has worked with Alaina will comment on her buoyant spirit and bright smile. We are so fortunate to have Alaina as a District employee, championing for conservation not only in our County, but in our State. Alaina received the award at this year's virtual NYSCDEA Annual Meeting.

New Stormwater Toolkit!

By Terry Gronwall, HLWTF

The Honeoye Lake Watershed Task Force created a Honeoye Lake Watershed Stormwater Toolkit in 2021. **Click here to see the new HLWTF Honeoye Lake Watershed Stormwater Toolkit** if you are planning any stormwater projects on your property.

You can also get a printed copy of the Stormwater Toolkit from the Code Enforcement Officer (CEO) or Planning Board Chairman of the five towns in the Honeoye Lake watershed; Richmond, Canadice, Bristol, South Bristol, and Naples. The Stormwater Toolkit was based on the Conesus Lake Watershed Stormwater Toolkit created by the Livingston County Planning Department.



Keep an Eye Out for Spotted Lanternfly

By Matthew Gallo, Finger Lakes PRISM, Terrestrial Invasive Species Outreach Coordinator

Photo Credit: Lawrence Barringer, Pennsylvania Department of Agriculture

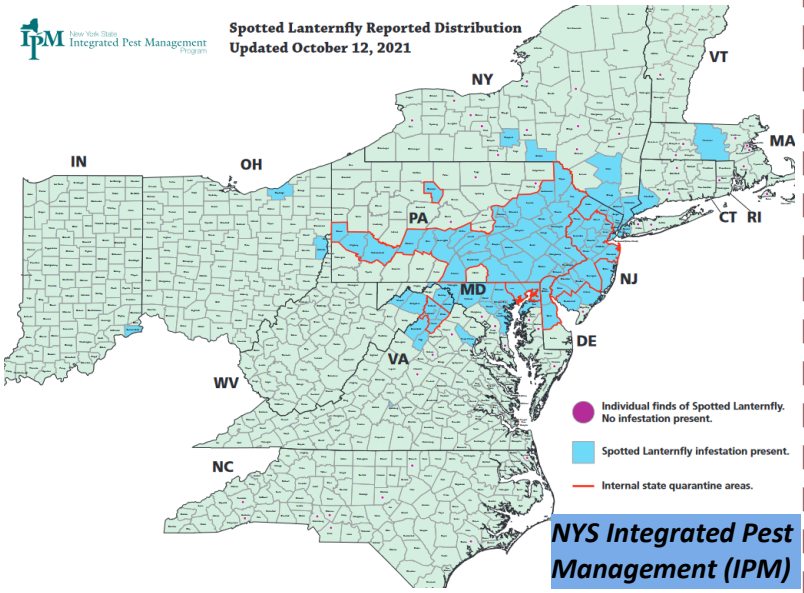
Spotted Lanternfly is a new invasive insect species that is of growing concern to the Finger Lakes. This insect feeds on many of the key agricultural crops that define the Finger Lakes, namely grape vines and apple trees (and to a lesser extent, sugar maples, black walnuts, and other plants). The voracious feeding of Spotted Lanternfly threatens an estimated $6 billion in economic activity in our region, as well as the loss of our extraordinary vineyards and apple orchards. What makes Spotted Lanternfly so concerning is its ability to spread quickly. Spotted Lanternflies lay eggs in the fall, and frequently eggs are found laid on cars making the task of stopping Spotted Lanternfly particularly challenging as a new population can emerge virtually anywhere that people can drive. As of October 2021, populations of Spotted Lanternfly have spread northwards from Pennsylvania and have been detected in New York City, Long Island, the Hudson Valley, and most notably for our region – Broome and Tompkins counties.

Photo Credit: Emelie Swackhamer, Penn State

Photo Credit: Erica Smyers, Penn State

What can you do to help stop the spread of Spotted Lanternfly? For one, if you are travelling to an area with a known infestation, check your vehicle before you leave. Further, if you believe you've seen this insect, take a picture and send the picture and location to **SpottedLanternfly@agriculture.ny.gov**, or you can report it using **the online reporting form**. Many of the Spotted Lanternfly populations found in NY so far were reported by everyday citizens who were on the lookout. **You can make an impact!**

The Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM) *is a collaborative program designed to address the threat of invasive species. Housed within the Hobart and William Smith Colleges Finger Lakes Institute (FLI), the program is one of eight across New York that focuses on managing invasive species, developing detection programs, employing response efforts, providing education programs and outreach, and working with communities.*



NYS Integrated Pest Management (IPM)

How Does an Aeration System Reduce the Impact of HABs? *By Linda Vanderbeck , HVA*


The Nature Conservancy

Harmful Algal Blooms (HABs) are obnoxious, unwelcome events that occur every year during the late summer and early fall around the world. HABs are a part of nature's life-cycle so unfortunately, we will never be fully rid of them. We can however fight back and win battles that limit their frequency, weaken their intensity, and shorten their duration. Fuel for HABs comes from both external sources like stormwater runoff and drainage, and from internal sources like legacy phosphorus found in the lake bottom. Based on New York State Department of Environmental Conservation (NYS DEC) recommendations, the Honeoye Lake Watershed Task Force (HLWTF) together with Ontario County Soil & Water Conservation District (OCSWCD) have implemented a number of projects over the years to curtail storm water runoff into the lake. A few of these projects include: the Honeoye Inlet Restoration Project (pictured above), Debris Guards in Cratsley Gully, Briggs Gully Streambank Erosion Project, and Road Drainage and Stream Crossing Improvement. (For a full project list and details see https://www.honeoyelakewatershed.org/projects).

In Honeoye Lake, 93% of HAB fuel - phosphorus - comes from lake bottom sediments[1] so HLWTF and Ontario County Planning Department (OCPD) are now looking at ways to best curtail these sources. Phosphorus is mostly stored in the "muck" at the bottom of the lake. As long as there is plenty of oxygen in the water, the phosphorus stays in the muck. As summer goes on, the oxygen gets used up and phosphorus leaves the muck but stays in the colder water near the bottom of the lake. Because Honeoye Lake is shallow, strong winds and storms can cause mixing, sometimes called "lake turnover." When this happens, the phosphorus in the colder deep water at the bottom raises to the surface where blue-green algae live; the sun shines and now there's a HAB. This HAB-causing process is well understood and accepted throughout the professional and scientific community. Many formal studies have been conducted and peer reviewed that document how phosphorus leaves the muck when oxygen is used up and how this causes HABs. Specifically, research has confirmed that this is the condition that causes Honeoye Lake's seasonal HABs.


Terry Gronwall

[1]NYS DEC Total Maximum Daily Load for Total Phosphorus, page 12 and Harmful Algal Bloom Action Plan Honeoye Lake, page 50

Continued

Aeration System Continued…

Keeping oxygen in the water and therefore keeping phosphorus in the muck is what aeration systems can do. Two NYS DEC reports, *Total Maximum Daily Load for Total Phosphorus* and *Harmful Algal Bloom Action Plan Honeoye Lake,* as well as the HLWTF *Honeoye Lake Watershed Management Plan Executive Summary* all recommend an aeration system as a way to manage internal phosphorus loading for fighting HABs in Honeoye Lake. Aeration systems add oxygen into the water via a variety of methods and have been successfully deployed for many years in lakes, farm and fish ponds, water supply, fishery reservoirs, and waste water treatment facilities. Lake scientists and engineers have developed mathematical formulas that are applied to quantitative lake data to calculate the amount of oxygen a lake requires to mitigate phosphorus loading. From such analysis, aeration system engineers are able to design aeration systems specific to any given body of water.


Terry Gronwall

No decisions have been made to install an aeration system at Honeoye Lake yet. However, HLWTF and Ontario County Planning Department are currently working with a lake management consultant Princeton Hydro to look at the feasibility of an aeration system. The effort is a planning exercise at this point. There are many additional steps necessary for an aeration system to become a reality including: buy-in from Richmond and Canadice, funding, grant proposals, request for proposals (RFPs), engineering, logistics, training, budgets, and more. Still, an aeration system may never happen. Keep in mind, that not even an aeration system will prevent HABs. Some phosphorus will always find its way into the lake from runoff during heavy rainfalls.

In the coming months more information about the planning effort will become available as well as opportunities for public input. The war on HABs has been waging for many years and we have won a lot of the battles. Now we are strategizing an attack on the mother lode - internal legacy phosphorus. If we win this battle, it just might be our greatest victory yet!

To understand the strategy for fighting HABs in Honeoye Lake, see:

Total Maximum Daily Load for Total Phosphorus:
https://fd57d705-f86c-4662-90ab-7627c560e9d2.filesusr.com/ugd/e6fc30_788060142f244ccc9eb44e3a2b0ae4b5.pdf

Harmful Algal Bloom Action Plan Honeoye Lake
https://fd57d705-f86c-4662-90ab-7627c560e9d2.filesusr.com/ugd/e6fc30_7ba726f0386c41c5ad5f410a6d31b884.pdf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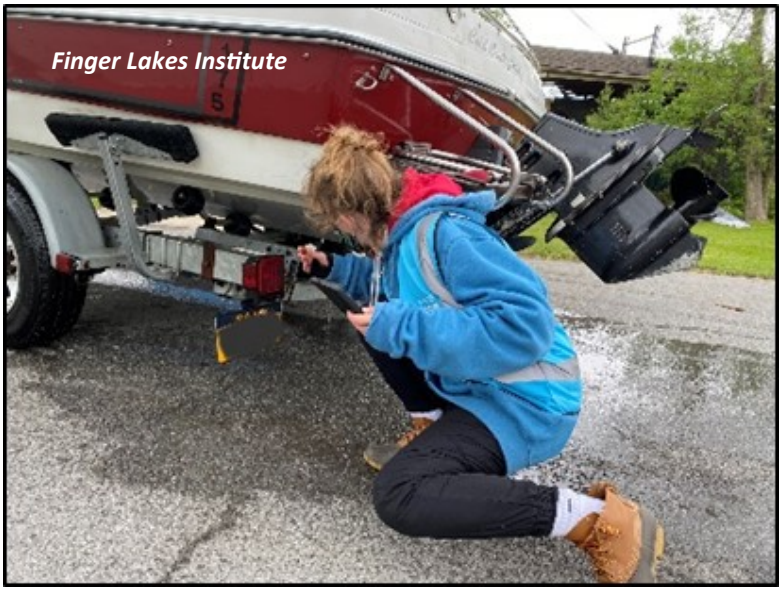
Watercraft Stewards on Honeoye Lake 2021

By Morgan Crouch, Watercraft Steward Program Coordinator, Finger Lakes Institute at Hobart and William Smith Colleges



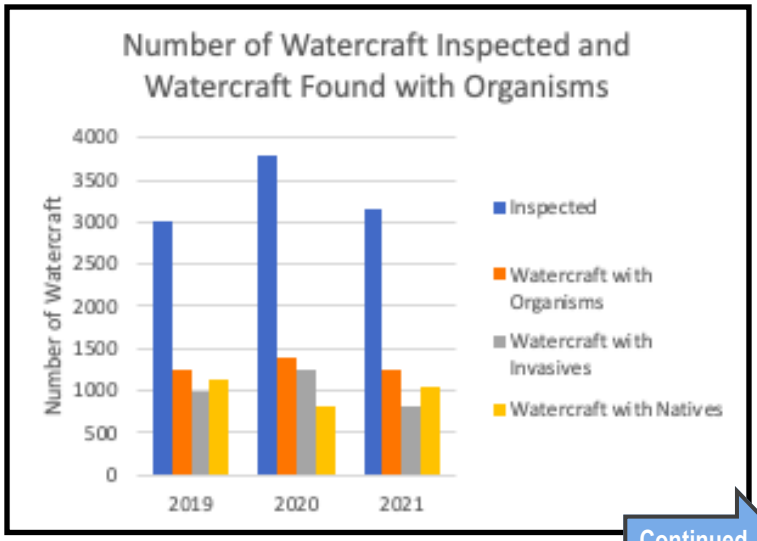
Preventative measures like watercraft inspections help fight the harm and negative impact of aquatic invasive species (AIS) spread through boating and recreation. At Honeoye Lake State Marine Park (HLSMP), watercraft stewards inspected boats coming into and leaving the water from May 29th through August 27th. These stewards were part of the Finger Lakes Institute (FLI) and SUNY ESF/NY Office of Parks, Recreation and Historic Preservation (OPRHP) programs which shared coverage throughout the season.

Compared to 2019, there was a 51% increase in daily inspections seen in 2020 when people across the state flocked to outdoor activities. The 2021 season, however, saw a decrease from 2020 daily traffic (-14%), though, total watercraft inspections, daily inspections, and people reached were still up from pre-COVID rates (Table 1.) Due to increased inspections/day, we were able to reach more people.

Table 1. Results of FLI and OPRHP watercraft steward coverage at Honeoye Lake State Marine Park from 2019, 2020, 2021, and percentage change from previous year. Total watercraft inspected excludes watercraft that did not agree to inspection.

	2019	2020*		2021	
Days Covered	79	66	-16%	64	-3%
Total Watercraft Inspected	3002	3797	+26%	3157	-17%
Average Inspections/Day	38	58	+51%	49	-14%
Total people reached	6438	9063	+45%	6770	-25%

Of the total watercraft inspected by stewards in 2021, 39% (n=1,247) had organisms attached. Of those 1,247 watercraft, stewards found 1,013 native species and 797 AIS during inspections. Both native and invasive species are often found on the same watercraft (Figure 1).



The most common AIS found during inspections are one of three species: Eurasian watermilfoil, curly-leaf pondweed, or zebra mussel (Table 2). Many other Finger Lakes share the same most common AIS found during inspections. To ensure that our species reports are accurate, the FLI hired a biology coordinator who helped confirm any AIS encountered, thus preventing any

Continued

Watercraft Stewards on Honeoye Lake 2021 Continued...

misidentifications from stewards and thus false reports. The coordinator also allowed for real-time quality assurance of AIS reports submitted by stewards. While AIS reports from boats retrieved from Honeoye primarily indicate known AIS populations, they can also help to monitor AIS populations in Honeoye Lake. It is also important to note the impact interceptions from retrieving boats can have on waterbodies throughout the region and state when these boats travel to other potentially un-infested lakes.

Each year, watercraft stewards interact with thousands of people and intercept hundreds of AIS entering and leaving Honeoye Lake. Similar coverage is expected in future years from the Finger Lakes Institute and we hope to continue the great work completed by the stewards and the Honeoye Valley Association.

Table 2. Most common invasive species found on launching (entering Honeoye Lake) and retrieving (exiting Honeoye Lake) watercraft for 2019-2021.

Species	2019	2020	2021
Eurasian watermilfoil	Launching-24 Retrieving-377	Launching-98 Retrieving-801	Launching-37 Retrieving-431
Curly-leaf pondweed	Launching-37 Retrieving-693	Launching-43 Retrieving-492	Launching-21 Retrieving- 438
Zebra mussel	Launching-5 Retrieving-505	Launching-27 Retrieving-154	Launching-6 Retrieving- 177

*In collating data for this article, we noticed discrepancies with many of our results published in our 2020 article (Honeoye Lake Watershed Task Force, Winter Newsletter, 2020). The numbers used in this report are accurate and up to date.


Finger Lakes Institute


Terry Gronwall

Watch Out for these Aquatic Invasive Species

By Linda Vanderbeck, Honeoye Valley Association

The word "invasion" conjures up the image of an enemy infiltration with the intent to overrun; an intrusion, an assault, an onslaught, and is precisely what happens when invasive species breach an environment where they don't belong. The harm caused by invasive species is monumental. An estimated 42% of the species currently on the federal Endangered Species Act list are imperiled at least in part because of harm caused by invasive species which have also singlehandedly caused 20% of species extinctions across the planet since the year 1600. Invasive species like Dutch elm disease and chestnut blight have already re-shaped North American forest ecosystems. Invasive species cause $127 billion of damage annually to the American economy, with attacks on agricultural crops, livestock, pastures and forests. Recreational activities are degraded by invasive species by damaging habitat for game, clogging waterways used for boating, fishing and swimming, and outcompeting game fish. Most concerning is the impact invasive species have on human health by bringing meningitis, parasites, drownings and hospitalizations.[1]

So, what exactly is an invasive species? Invasive species are species not native to our region that can cause harm to the environment, the economy or human health. They come from all around the world and can be any living organism - plants, mammals, birds, insects, fish, aquatic plants or microbes. Invasive species come here primarily by their #1 dispersal agent - humans! We transport them from foreign places for food, visual beauty, or simply by accident. In fact, many species arrive without us knowing it – hidden in soil, shipping material or ballast water. Hundreds of invasive species are already established in the United States with many right here in the Finger Lakes Region. Zebra mussels, hemlock woolly adelgid, emerald ash borer, and giant hogweed are examples of invasive species. (You can find a full list here: http://fingerlakesinvasives.org/invasive_species/)

Three species of invasive aquatic plants on a watch list for Honeoye Lake and are of particular concern include: starry stonewort, hydrilla and water chestnut. Each of these species has the potential to form large, dense vegetative mats that outcompete native aquatic plant species whereby threatening the native aquatic habitat. When this happens, native fish populations are often altered or destroyed, water flow can be impeded, and a lake's suitability for boating and swimming is typically impaired. The good news is that none of these species have yet invaded Honeoye Lake; the bad news is, all have been detected in other neighboring and regional lakes.

Starry Stonewort is a macro-algae with a plant-like structure that can grow up to ~6.5 feet in length. This plant is green with star shaped bulbils that form from late fall though winter. An invasion of starry stonewort can form a mat on the lake, outcompeting other native species and destroying habitats. They also provide substrate for zebra mussel attachment.

See fact sheet at: *https://www.dec.ny.gov/docs/lands_forests_pdf/aisstarrysfs.pdf*

[1]**Reduce Risks from Invasive Species Coalition website https://www.rrisc.org/why-are-invasives-bad/**

Continued

Watch Out for these Aquatic Invasive Species Continued…

Hydrilla is a submerged perennial that looks similar to American waterweed (aka elodea), a common native aquatic plant. Hydrilla has visibly toothed leaves that grow in whorls of 3-8 (see photo to the right). Undersides may have one spine, or more, and the midrib of each leaf is often reddish. Hydrilla spreads rapidly and can completely clog waterways and restrict water flow, posing significant threats to aquatic ecosystems and recreational resources.

See fact sheet at: *https://www.dec.ny.gov/docs/lands_forests_pdf/hydrillafs.pdf*

Water chestnut is a fast-growing, floating annual that can grow to 16 feet. It has feathery, submersed leaves and glossy triangular, toothed, floating leaves. Flowers with four white petals normally bloom in July. The most distinctive trait of this plant is its thorny nutlets which accumulate annually on the lake bottom remaining viable for up to 12 years. Impenetrable mats of water chestnut can cover large expanses of water, altering water quality and clarity, eliminating native aquatic plants, and making boating, fishing, and swimming hazardous.

See fact sheet at: *https://www.dec.ny.gov/docs/lands_forests_pdf/aiswatercfs.pdf*

Prevention starts with **you** and is the most effective method for dealing with invasive species. If they are never introduced, they never become established. So, be sure to always:

- ***Clean, drain, and dry your watercraft, trailer, and equipment before and after each use.***
- ***Dispose of all debris in trash cans or above the waterline on dry land.***
- ***Dump bait bucket water and other lake water where it came from or on land.***
- ***Do not dispose of unwanted aquarium plants in waterbodies, ditches, or canals.***
- ***Learn how to identify starry stonewort, hydrilla and water chestnut.***

If you see any of these invasive species in Honeoye Lake, note your location or if you have a smart phone, record the coordinates using the mapping app. Take a picture if you can and notify the Finger Lakes-PRSIM (mosher@hws.edu), the Honeoye Lake Watershed Task Force (watershedtaskforce@gmail.com), and report your invasive aquatic plant sighting using the smart phone "NY iMapInvasive" app as soon as possible.

Stop the invasion!! What you do makes a difference!!

To learn more about invasive species in and around Honeoye Lake see:

- Honeoye Valley Associations's Help Protect Honeoye Lake from Invasive Species
- NYS Department of Environmental Conservation invasive species website
- You can find out more on how invasive species are being managed in the Finger Lakes region on the Finger Lakes PRISM website

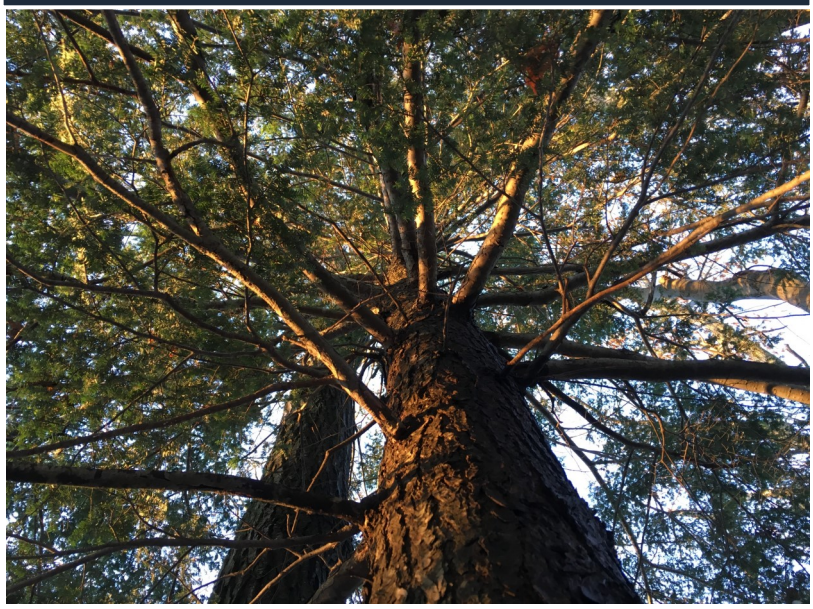
Hemlock Wooly Adelgid Treatment Project Funded

By Ontario County Soil & Water Conservation District

The Ontario County Soil & Water Conservation District was selected to receive $50,000 in funding for Hemlock Woolly Adelgid (HWA) treatment in Ontario County through the Forest Service Great Lakes Restoration Initiative (GLRI). Thank you to our partners for their support and hard work in getting this grant funding for Ontario County. The goal of this grant program is to work with a variety of partners to combat invasive species impacts, reduce non-point source pollution, and restore habitat to protect the physical, chemical, and biological integrity of the Great Lakes Basin. Threatened by Hemlock Woolly Adelgid (HWA), the potential loss of hemlock trees in our riparian corridors will have a devastating impact on water quality and forest resiliency. This project addresses concerns as a result of the loss of hemlock stands such as erosion leading to increased phosphorus deposition within lakes, increased water temperatures causing unfavorable conditions for aquatic species, and loss of native species and subsequent establishment of invasive species. Locations were selected which represent important tributary systems within both the Honeoye Lake and Canandaigua Lake watersheds which drain north into Lake Ontario. The focus will be on areas of known HWA infestation such as Harriett Hollister Spencer State Recreation Area (HHSSRA) and properties within Grimes Glen and Briggs Gully. This project will also focus on training volunteers and landowners to identify and report the HWA infestations to **iMapInvasives**. Stay tuned to learn more about what our partnership undertakes in 2022!

HWA found on an Eastern Hemlock in February; Photo Credit Ontario County SWCD

Healthy Eastern Hemlock; Photo Credit Ontario County SWCD



Muller Field Station's Speaking of Nature Series is hosting an upcoming Hemlock Woolly Adelgid presentation from Finger Lakes PRISM's Matt Gallo. It will be a virtual event on February 24, 2022 at 6pm. For more information, go to: https://www.facebook.com/Mullerfieldstation/

The Honeoye Lake Watershed Task Force was formed in 1998 by:

Town of Richmond

Town of Canadice

Town of Bristol

Town of Naples

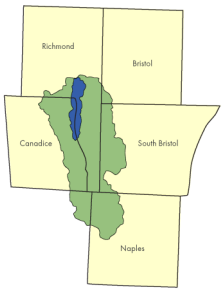
Town of South Bristol

Honeoye Valley Association

To Protect and Improve the Water Quality of Honeoye Lake.

Voting Members Include:

Terry Gronwall, Councilmember, Town of Canadice (Chairman)
Dave Baker, Councilmember, Town of Richmond
Lauren Bolonda, Councilmember, Town of Bristol
Ann Jacobs, Representative, Town of South Bristol
Mark Adams, Representative, Town of Naples
Linda Vanderbeck, Honeoye Valley Association



HONEOYE LAKE WATERSHED TASK FORCE

Permanent Professional Support is Provided by:

Megan Webster, Katie Lafler, Alaina Robarge, Ontario County Soil & Water Conservation District
Dr. Bruce Gilman, Professor Emeritus, Finger Lakes Community College
Tom Harvey and Betsy Landre, Ontario County Planning Department

Project Specific Professional Support is Provided by:

NYS Department of Environmental Conservation
Finger Lakes Community College
Cornell Cooperative Extension of Ontario County
Ontario County Water Resources Council
Princeton Hydro Consulting
Finger Lakes Institute
Cornell University
The Nature Conservancy
Finger Lakes Land Trust

Further Information may be obtained by contacting:

Chairman Terry Gronwall at
watershedtaskforce@gmail.com