

# WINTER 2024

# Honeoye Lake Watershed Task Force Newsletter



HONEOYE LAKE WATERSHED TASK FORCE

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## European Frogbit: A Newly Discovered Invasive Aquatic Plant in Honeoye Lake

By Bruce Gilman, Professor Emeritus & Curator of Finger Lakes Herbarium, Finger Lakes Community College

First introduced to North America as an ornamental pond plant in Ottawa, Canada around 1932, the European frogbit (*Hydrocharis morsus-ranae*) has quickly invaded numerous aquatic habitats in northeastern North America. It can become so prolific in calm waters, like sheltered coves and inlets, that it impedes boat traffic. It is also known to alter aquatic food webs when its floating leaves reduce sunlight penetration into surface waters. When the plant dies in the fall, aquatic microbes break down the plant's remains, therefore reducing dissolved oxygen, which is essential to other aquatic organisms. **The threat to our lake is real.** A single plant can produce 100-150 overwintering vegetative buds known as turions. Plant fragments stuck to boats can establish new populations throughout the summer. Every



European frogbit sample  
Photo Credit: Bruce Gilman



European frogbit in the Honeoye Inlet mixed with native free-floating plants  
Photo Credit: Linda Vanderbeck

effort should be taken to reduce the threat. The Honeoye Lake Watershed Task Force (HLWTF) is asking for the public's help to identify regions of the lake where the plant occurs. It is a free-floating annual aquatic plant with small, clustered heart-shaped leathery leaves and small white flowers with three petals. The leaves resemble a miniature water lily. Plants produce elongated stems called runners with plantlets at their tip that intertwine to form a dense mat. European frogbit is currently known at the mouth of the Honeoye Inlet stream where it was first discovered by educators from the Muller Field Station this past summer. Please report any other European frogbit locations you find to the Honeoye Lake Watershed Task Force by sending an e-mail to [watershedtaskforce@gmail.com](mailto:watershedtaskforce@gmail.com). Please include closeup pictures for confirming plant identification and location details, like nearby shoreline address or GPS coordinates. We appreciate your assistance. Volunteer hand-pulling events will be organized for the upcoming year so *stay tuned*.

# Honeoye Lake Watershed Task Force (HLWTF) Chairman's 2023 Project Update: Terry Gronwall

*Projects to improve water quality in Honeoye Lake and its watershed*

The Honeoye Lake Watershed Management Plan, the New York State (NYS) Department of Environmental Conservation's (DEC) Harmful Algal Bloom (HAB) Action Plan, and DEC's Total Maximum Daily Load (TMDL) Plan all have a common focus to implement Best Management Practices (BMPs) to reduce nutrient loading (both internal and external) and sediment reaching Honeoye Lake.

**HLWTF Web Site:** Please check out our comprehensive HLWTF website. It has regularly updated Honeoye Lake background data, summary of HLWTF completed water quality projects, information on upcoming projects, Honeoye Lake water quality planning documents, past HLWTF newsletters, and guides that lake residents can follow that will help to reduce nutrient run-off into the lake. The new website also contains a weekly summer water quality blog: [www.honeoyelakewatershed.org](http://www.honeoyelakewatershed.org)

**NYS DEC Water Quality Improvement Project (WQIP) Round 16 Grant application for Honeoye Lake Aeration System Engineering Planning Project:**

Ontario County Planning Department and the HLWTF engaged a lake management consultant in 2022 to complete a grant funded detailed aeration system engineering design study required for a potential future permit application and implementation grant. A decision on whether to pursue grant funding and implementation of an aeration system will be made after the DEC completes their Alum Treatment Pilot evaluation. Information on this potential project is available on the HLWTF website:

[www.honeoyelakewatershed.org/aeration](http://www.honeoyelakewatershed.org/aeration)

**DEC WQIP Grant Ditch Stabilization project:** Ontario County Soil & Water Conservation District (SWCD) and the Town of Canadice Highway Department completed a ditch stabilization project using Flexamat material on Jersey Hill and Canadice Hill Roads in 2023 (see page 7).

**East Lake Road Drainage Stabilization & Hemlock Woolly Adelgid (HWA) Projects:** Ontario County SWCD and the Town of Richmond completed an East Lake Road drainage stabilization project (see page 6). Ontario County SWCD also completed a grant-funded HWA mitigation project (see page 8).

**DEC Honeoye Lake Nutrient Inactivant Pilot Project:** DEC Alum Treatment was completed in November 2022. We did not see the expected phosphorus reduction, algae reduction, and water clarity increase last summer. DEC is evaluating first year results. [Honeoye Lake Nutrient Inactivant Pilot Study](#)

**2023 HLWTF Newsletter:** Our 2023 HLWTF Winter newsletter was published in February 2023. This newsletter contained information on all recent HLWTF projects and lake related educational articles. Available at: [www.honeoyelakewatershed.org](http://www.honeoyelakewatershed.org)

**Blue-Green Algae Monitoring Project:** At the request of NYS DEC, the lake surface was visually examined for blue-green algae blooms at 10 locations once a week from June through mid-October 2023. Results were shared on the DEC HABs alert web site as well as posted weekly on the HLWTF website water quality blog. [www.honeoyelakewatershed.org](http://www.honeoyelakewatershed.org)

**2023 Collected Lake Water Quality Data June-Sept.:** HLWTF collected weekly water column temperature and dissolved oxygen profiles and water clarity data. Water samples were collected twice a month (June-September) for lab testing for phosphorus and nitrogen. Honeoye Valley Association (HVA) citizen Secchi Disk volunteer program collected near shore water clarity and temperature data (see page 3).

*These projects result from a partnership among NYS DEC, Ontario County Planning Department, Ontario County SWCD, Finger Lakes Community College, Finger Lakes Institute, Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM), Cornell University, Honeoye Valley Association, the Towns of Richmond, Canadice, Bristol, South Bristol, and Naples; and lake residents and users. For more information, please contact Terry Gronwall, HLWTF Chairman, at [watershedtaskforce@gmail.com](mailto:watershedtaskforce@gmail.com)*

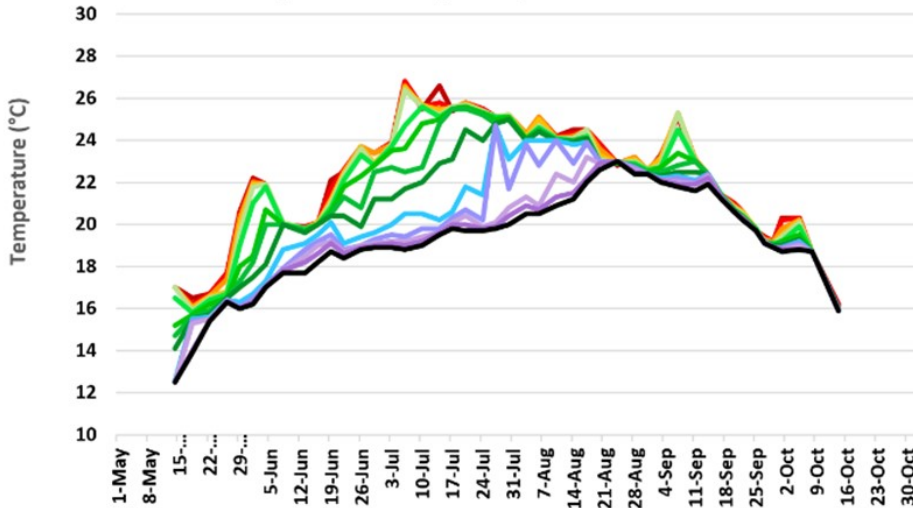


*Photo Credit: Terry Gronwall*

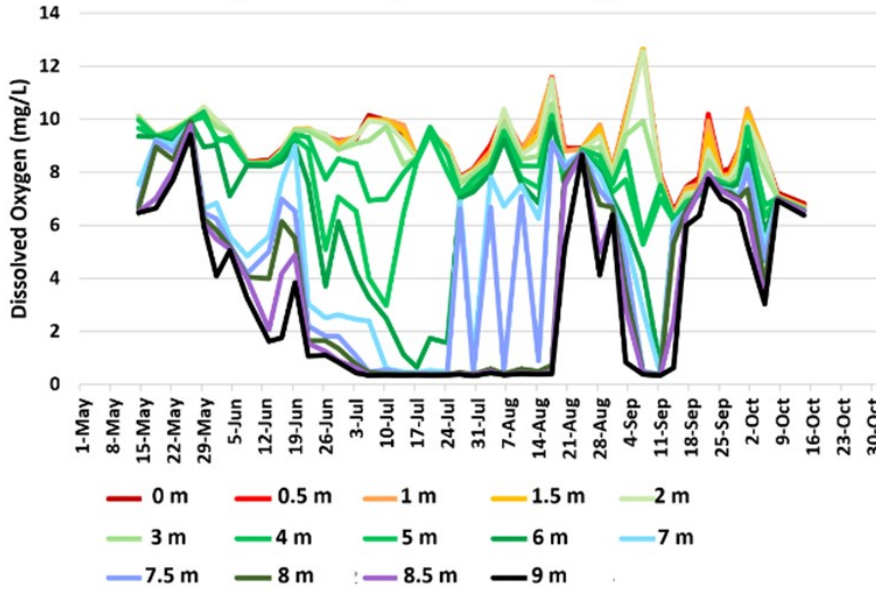
# 2023 State of the Lake

By Terry Gronwall, HLWTF

### Honeoye Lake Deep Temperature 2023

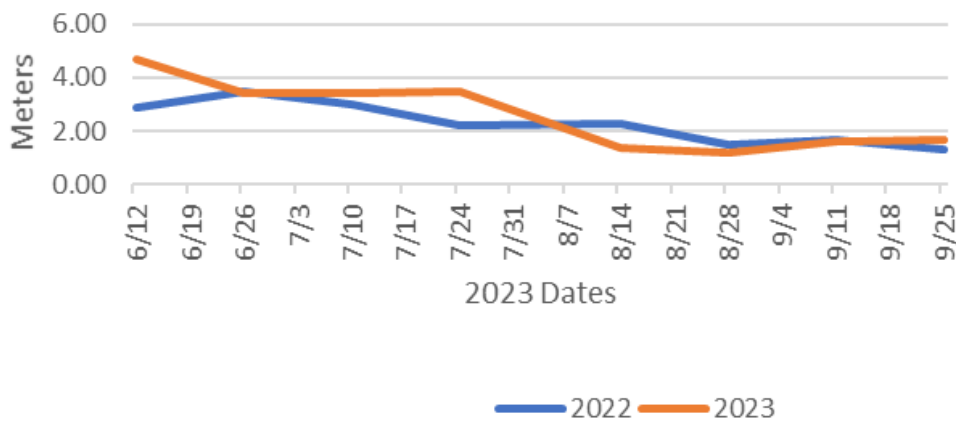


### Honeoye Lake Deep Dissolved Oxygen 2023



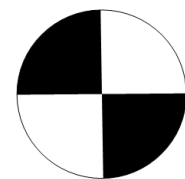
Following an unusual winter with little ice cover, Honeoye Lake returned to a near normal seasonal temperature profile, reaching a peak of 27 degrees Celsius (~80 F) at the surface in early July. Heat gained at the surface was transferred downward by an unusual amount of seiche activity (internal waves), seen from late July through late August in the charts to the left. Notice the volatility of the 7 meter (23 feet deep) blue lines. The lake also had two complete summer mixing events: the first during the third week of August and the second in mid-September. Complete mixing events are depicted in the charts where the black line (30 feet deep) converges with all other depth lines, indicating the lake depths are uniform in both temperature and dissolved oxygen. Each partial or complete mixing event will bring phosphorus released from deep sediment when the lake was stratified and the bottom anoxic, into the water column and potentially to the surface fueling our blue-green algal blooms.

### 2022-2023 Secchi Disk (Water Clarity) Readings



The Lake's secchi disk readings (water clarity) in 2023 were very similar to 2022. Water clarity is affected by turbidity and the density of algae in the water column. See chart on the left.

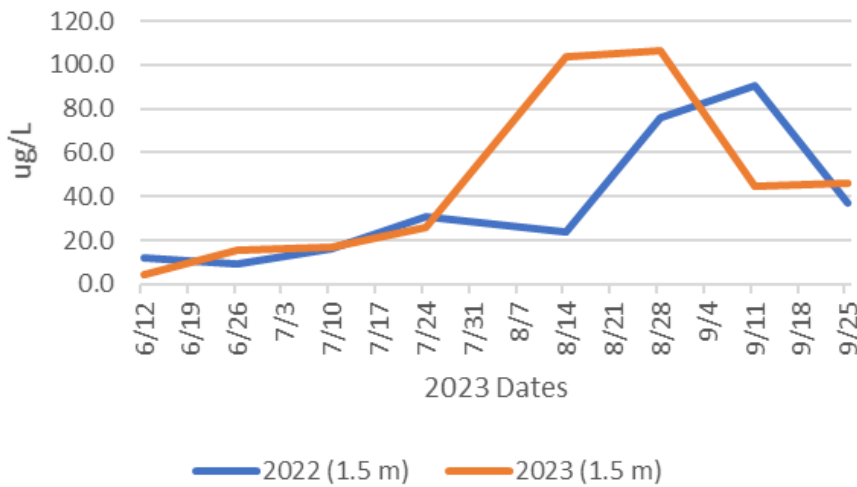
\*1 meter = 3.3 feet



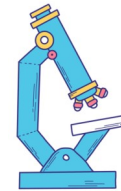


# 2023 State of the Lake Continued...

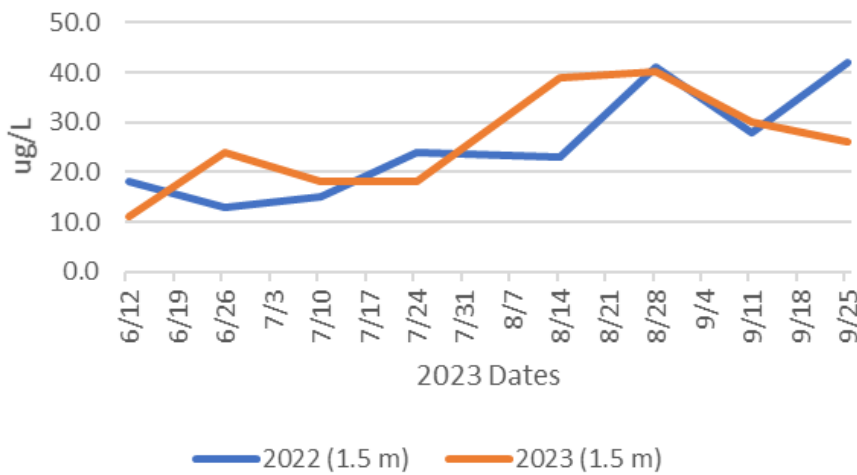
### 2022-2023 Chl-a (Algae)



The pigment chlorophyll-a is a measure of algal abundance. The greatest amounts of algae this year occurred from late July through late August. This was also the time when weekly lake mixing events and one complete lake mixing event occurred. In 2022 the highest amount of algae occurred late August through mid-September. The 2023 peak algae level was ~100 ug/L versus a 2022 peak of ~90 ug/L.



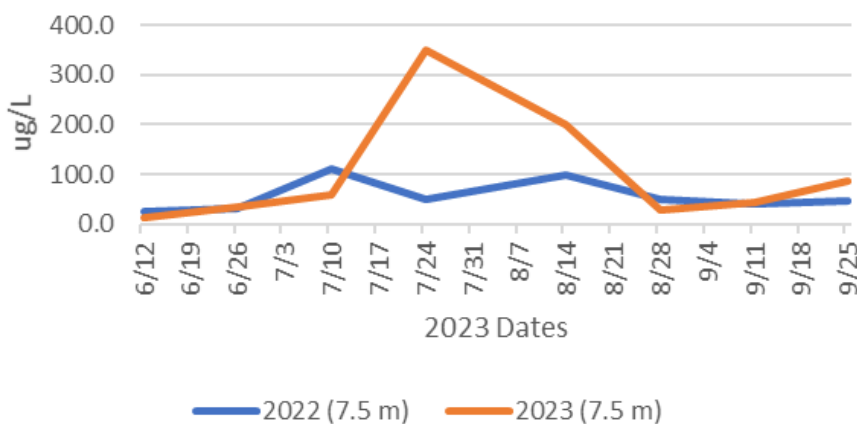
### 2022-2023 Surface Total Phosphorus



The highest amounts of phosphorus in the surface water in 2023 occurred from late July through late August. This was also the time of weekly lake mixing events and one complete mixing event. In 2022 the highest amount of surface phosphorus occurred briefly in late August and late September. The 2023 and 2022 peak surface phosphorus levels were both ~40 ug/L.



### 2022-2023 Deep Total Phosphorus



In 2023 the lake was stratified for all of July. This accounts for the spike in Total Phosphorus at the bottom in 9m (~30 feet) of depth in late July 2023 when weekly seiche generated partial mixing events started occurring. In 2022 the first mixing event happened in early July and the second mixing event did not happen until mid-August. The 2023 peak deep phosphorus level was ~350 ug/L and in 2022 the peak deep phosphorus level was ~100 ug/L. However, we have seen deep phosphorus levels as high as ~350 ug/L in previous years.



# 2023 Update on the Honeoye Lake Aeration Engineering Planning Project and the NYS DEC Honeoye Lake Nutrient Inactivant Pilot Study

By Terry Gronwall (HLWTF) & Betsy Landre (Ontario County Planning Department)

As reported previously, the first phase of the Honeoye Lake Aeration Engineering Planning Project was completed in 2022. The Final Aeration Engineering Planning Report, Webex presentation, and Webex recording are available at:

[www.honeoyelakewatershed.org/aeration](http://www.honeoyelakewatershed.org/aeration)

In September 2022, NYS Department of Environmental Conservation (DEC) announced plans for a Nutrient Inactivant (Alum Treatment) Pilot Study in Honeoye Lake. In recent years, DEC conducted alum treatments on two small lakes in the Lower Hudson Valley to assess impacts of alum treatments on phosphorus levels and lake ecosystems. The Honeoye Lake Alum Treatment was positioned as DEC's first large-lake pilot study. DEC has been conducting these pilot studies as the agency evaluates a potential permitting process for the use of Alum Treatments since they are not currently allowed in New York State. The Honeoye Lake Alum Treatment was completed in November 2022.

Both DEC's Nutrient Inactivant (Alum Treatment) Study and the Aeration Planning Project are intended to address the same source of legacy phosphorus contributing to algae blooms in Honeoye Lake: Legacy phosphorus released from deep-water lake bottom sediments during periods of lake stratification, when oxygen becomes depleted in the lake's bottom layer.

DEC intends to assess the effectiveness of the Pilot Honeoye Lake Alum Treatment over the next few years. HLWTF will also collect data useful for evaluating the effectiveness of the Alum Treatment in conjunction with its annual Honeoye Lake monitoring program. In the summer of 2023, the HLWTF water quality monitoring effort did not see the phosphorus reduction, algae reduction, and water clarity increase expected following the Alum Treatment. See the State of the Lake article in this newsletter for more detail. More information on DEC's Alum Treatment Project is available at: [Honeoye Lake Nutrient Inactivant Pilot Study \(arcgis.com\)](http://arcgis.com). Continued data collection will help determine if periodic alum treatments and/or aeration are the best strategy for managing legacy phosphorus in Honeoye Lake.

While the Alum Treatment is evaluated, the Aeration project committee will continue to review the effectiveness and reliability of existing aeration systems in use in North America. Practical, first-hand knowledge from managers of aeration systems, along with the findings of the Honeoye Lake Aeration Engineering Planning Project, will assist local decision-making regarding use of aeration as a tool to control legacy phosphorus in Honeoye Lake.

The Honeoye Lake Aeration Engineering Planning Project was completed with support from the NYS Environmental Protection Fund as administered by DEC, Honeoye Lake Watershed Task Force, and Ontario County Water Resources Council.



Alum Barge, November 2022  
Photo Credit: Terry Gronwall



Photo Credit: Terry Gronwall



# Drainage Stabilization Benefiting Honeoye Lake

By Ontario County Soil & Water Conservation District (SWCD)

The Ontario County SWCD provided technical assistance to the Town of Richmond and funding through the Finger Lakes-Lake Ontario Watershed Protection Alliance (FLOWPA) for a road ditch stabilization project in the Town of Richmond along East Lake Road. This road ditch had become unstable and was leading to severe erosion resulting in sediment and nutrient loss from the site. The Town of Richmond Highway Department replaced the existing driveway culvert pipe and installed two grade control structures utilizing large rock to help provide stabilization. This stabilization will reduce erosion and sediment loss from the area therefore decreasing the amount of sediment and nutrients entering Honeoye Lake.



**BEFORE**



**AFTER**



**BEFORE**



**AFTER**

*Photo Credits: Ontario County SWCD*



# Roadside Stabilization in the Town of Canadice

By Ontario County Soil & Water Conservation District (SWCD)



Ontario County SWCD partnered with the Town of Canadice Highway Department to stabilize several ditches experiencing severe erosion along Cratsley Hill Road, Jersey Hill Road and Canadice Hill Road. Erosion from steep roadside ditches, such as these, has a direct effect on the water quality in Honeoye Lake. Nutrients are bound to sediments and when erosion occurs and washes these sediments downslope they accumulate in our waterbodies and can help fuel the occurrence of Harmful Algal Blooms (HABs). These particular sites were stabilized using a material called Flexamat, a permeable mat made of woven material overlaid with concrete blocks in a grid pattern. This provides the stabilization needed to withstand flows from stormwater during major rain events while also leaving space between the blocks for vegetation to establish. This vegetation helps to further stabilize the road ditch while also filtering and slowing water. Funding for this project was made possible through the New York State Department of Environmental Conservation Water Quality Improvement Program with match funding coming from the Town of Canadice in the form of labor and equipment. This project is part of a larger, ongoing effort in the Honeoye Lake Watershed to reduce sediment and nutrient loss from roadside ditches. Thank you to the Town of Canadice Highway Department for their expertise in completing these projects and the Ontario County Highway Department for hydroseeding!

[Here is a new video that explains the process of Flexamat installation!](#)



Photo Credits: Ontario County SWCD



# Hemlock Woolly Adelgid Treatment & Outreach

By Ontario County Soil & Water Conservation District (SWCD)

2023 brought the continuation of our Hemlock Woolly Adelgid (HWA) treatment program. Funding provided through the Great Lakes Restoration Initiative (GLRI) allowed us to treat almost 30 acres along Briggs Gully, a major tributary to Honeoye Lake. The Briggs Gully parcel provided a unique opportunity for treatment as it is bordered by New York State (NYS) Department of Environmental Conservation (DEC) lands, as part of the Honeoye Inlet Wildlife Management Area, as well as the Wesley Hill Preserve owned by the Finger Lakes Land Trust. Each of these partners strategically treated trees on their respective parcels leading to an even larger regional effort to protect hemlock trees in this important watershed.

Hemlocks help protect our steep sloped areas, but it can make access to trees difficult. These critical areas require the use of ropes, a lot of courage and advanced repelling skills! Trees were treated with a basal bark application of two different chemicals, one that is fast acting and will provide immediate protection and one that is longer lasting to ensure that our hemlocks stay protected for up to 7 years.

In the spring, our local hemlock trees got a little extra help from the release of around 450

silver flies, *Leucotaraxis argenticollis*. These tiny flies will lay eggs only on the woolly protective coating produced by the adelgid and silver fly larva that hatch will then eat the adelgid eggs. NYS Hemlock Initiative, a part of Cornell University's Department of Natural Resources and the Environment, coordinates the collection, rearing and release of this tiny predatory fly that will hopefully help control the invasive adelgid pests that threaten native hemlocks. Students from Rochester Museum & Science Center (RMSC) Cumming Nature Center's Field Studies program helped with the

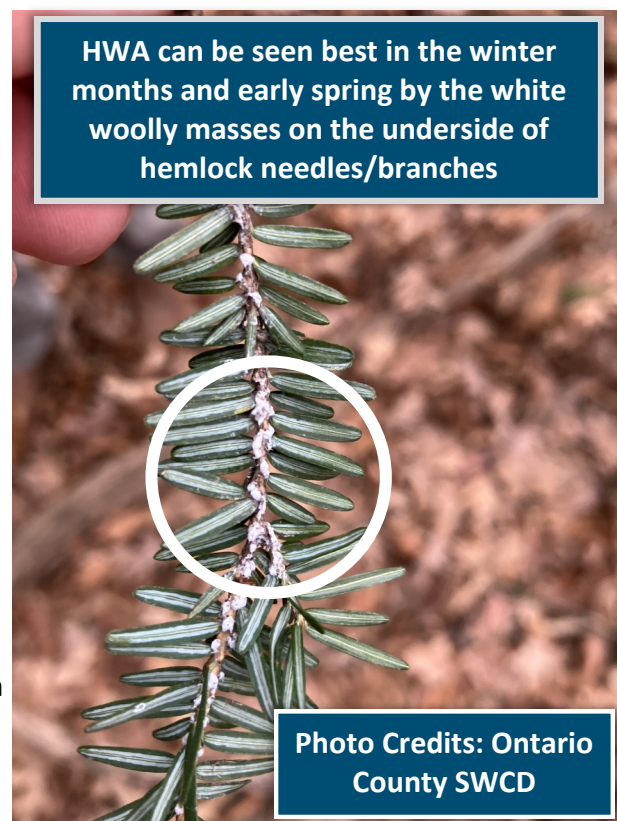
release. This massive effort leads to a long list of partners focusing on treatment as well as training volunteers and landowners how to identify and report adelgid. Partners such as Finger Lakes Land Trust, NYS DEC, Ontario County SWCD, Canandaigua Lake Watershed Association, Finger Lakes PRISM, and RMSC Cumming Nature Center have been focusing on surveying, mapping and chemically treating the invasive adelgid in this area as a short-term management strategy while the long-term bio-controls become established. We hope to receive more funding in the future to continue this mitigation effort!



Hemlocks can grow on steep slopes, helping to prevent erosion, making them such an important tree to preserve. The steep slopes make treatment a bit more challenging!



Container of silver flies before being released



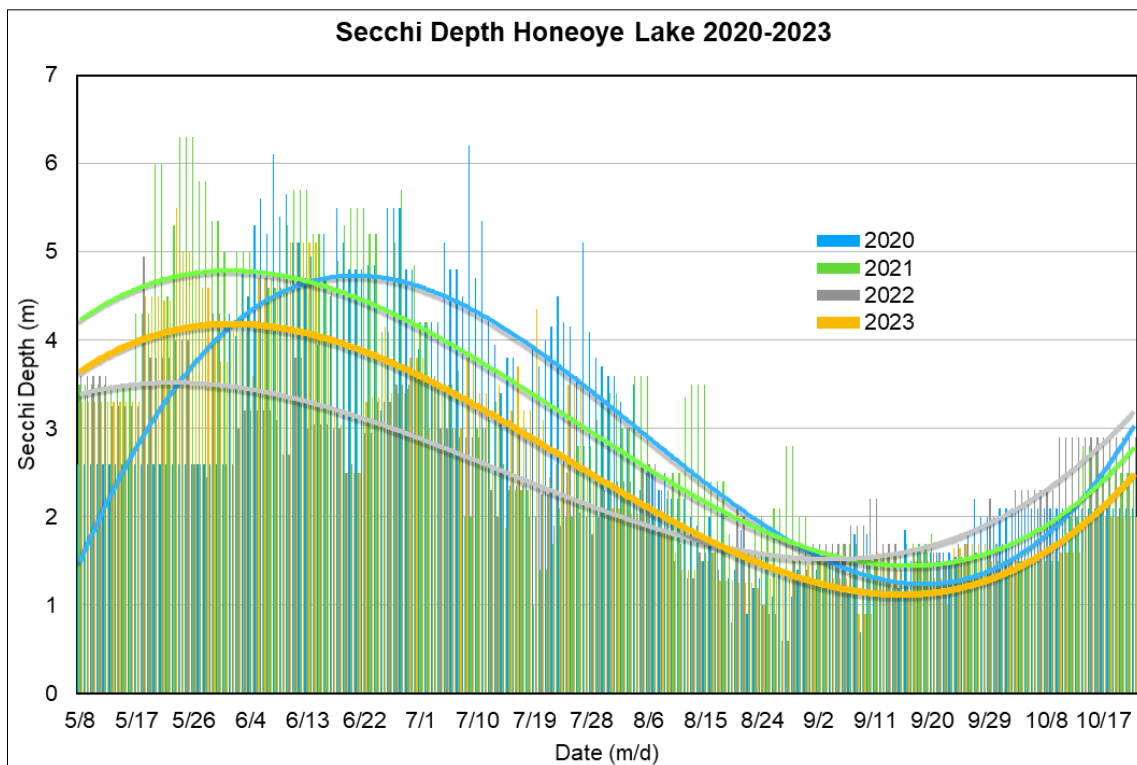
HWA can be seen best in the winter months and early spring by the white woolly masses on the underside of hemlock needles/branches

Photo Credits: Ontario County SWCD

# 2023 Honeoye Lake Secchi Disc Program

By Linda Vanderbeck, Honeoye Valley Association

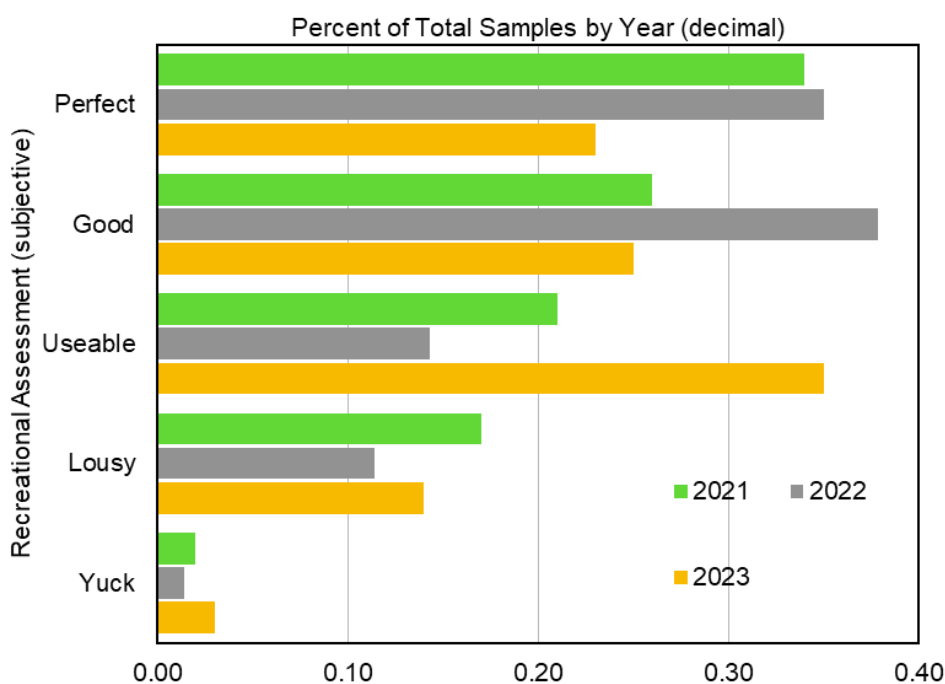
2023 marked the 7<sup>th</sup> year of the Honeoye Lake Secchi Disc Program. Volunteers collected 132 samples over a 5-month period beginning May 14, 2023 and ending October 14, 2023. The Secchi disc is used to measure water clarity which is affected by turbidity, primarily from runoff, or algae. For Honeoye Lake, algae is the dominant factor affecting water clarity. Water clarity in 2023 followed a pattern similar to the pattern seen in previous years. Water clarity is high in spring and early summer, gradually decreasing as water temperatures rise and dissolved oxygen is depleted, whereby creating an environment conducive to algae growth. Spring of 2023 showed slightly more clarity than spring of 2022, but not quite as much as in 2021 or 2020. Water clarity reaches its lowest around mid-September then slowly improves as fall approaches.



Volunteers also collect their subjective assessment of the lake’s recreational quality. In 2023 their assessments shifted somewhat from “perfect” or “good” to “usable”, probably due to the slight increase in detected surface scum (10% of samples in 2023 vs. 7% average in 2020 -2022). The good news is that 83% of the samples were reported as “perfect”, “good” or “usable” for recreational enjoyment. The New York State Department of Environmental Conservation will continue to monitor the outcome of their alum treatment project at Honeoye Lake. The Secchi disc data is extremely useful information in order to evaluate the results.

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## Volunteers’ Lake Recreational Enjoyment Assessment



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# Watercraft Stewards on Honeoye Lake, 2023

By Devin Prine, Finger Lakes Institute, Watercraft Steward Program Coordinator

Preventative measures like watercraft inspections can help combat the spread and harmful impacts of aquatic invasive species (AIS), which often spread through human vectors like boating and other recreational activities. At Honeoye Lake State Marine Park (HLSMP), watercraft stewards inspected boats coming into and leaving the water from May 27<sup>th</sup> through October 29<sup>th</sup>, 2023. Watercraft Inspection Steward Programs (WISP) from both Finger Lakes Institute (FLI) and State University of New York (SUNY) College of Environmental Science and Forestry (ESF)/New York Office of Parks Recreation and Historic Preservation (OPRHP) operated at the launch in 2023. Steward coverage at the launch was coordinated between both programs to ensure comprehensive and complimentary steward coverage throughout the season.

**Table 1. Results of FLI and OPRHP watercraft steward coverage at Honeoye Lake State Marine Park from 2020 to 2023, and percentage change from the previous year. Total watercraft inspected excludes watercraft that did not agree to inspection.**

	2020	2021		2022		2023	
Days Covered	66	64	-3%	80	+25%	69.6	-13%
Total Watercraft Inspected	3797	3157	-17%	2601	-18%	2718	+4.5%
Average Inspections/Day	58	49	-16%	33	-34%	40.2	+18%
Total people reached	9063	6770	-25%	5477	-19%	5676	+3.5%

While the number of days covered by stewards in 2023 decreased from the previous season, all other measures of traffic increased at the launch (Table 1). Of the total watercraft inspected by stewards in 2023, 38% (n=1044) had organisms attached. Of those 1,044 watercraft, stewards found 1,107 AIS during inspections.



**FLI Watercraft Steward educating the public about invasive species, spread prevention measures, and other FLI programming at a regional partner meeting**  
*Photo Credit: Finger Lakes Institute*

Continued



# Watercraft Stewards on Honeoye Lakes Continued...



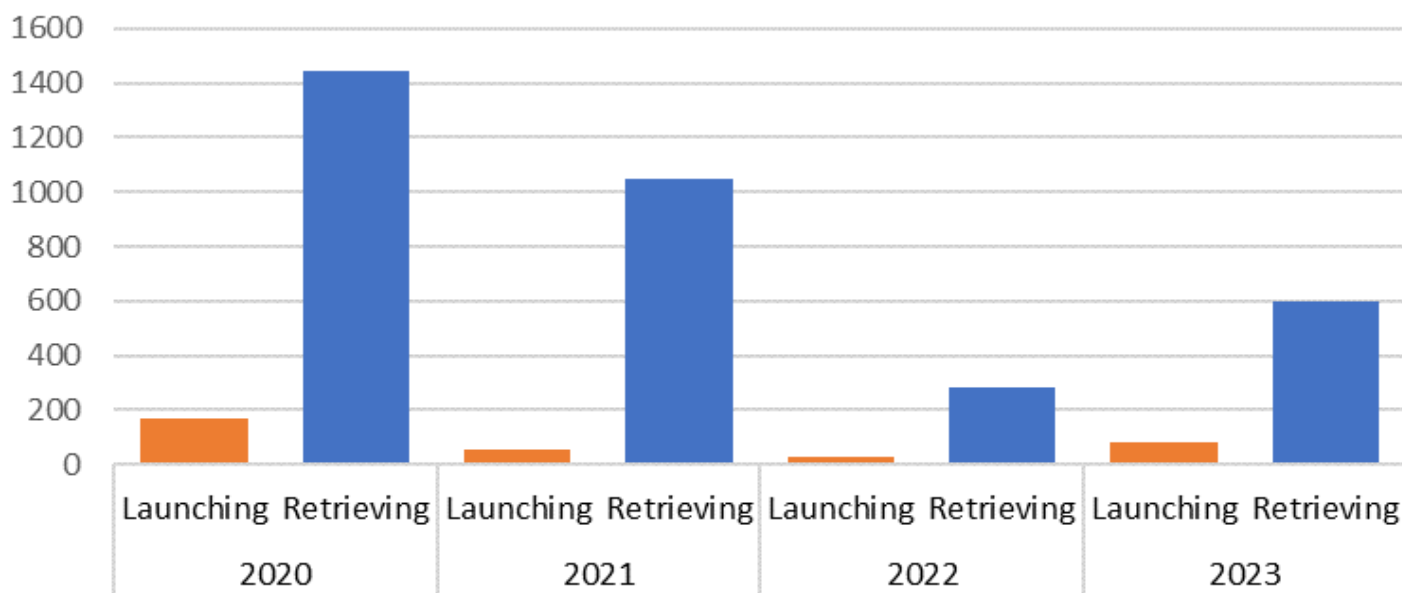
**FLI Watercraft Steward inspecting the motor and trailer of a retrieving watercraft**  
*Photo Credit: Finger Lakes Institute*

Multiple species, both native and invasive, are often found on the same watercraft. The most common AIS found during inspections are Eurasian watermilfoil, curly-leaf pondweed, and zebra mussel (Figure 1). These species are commonly encountered in other Finger Lakes as well.

Each year watercraft stewards interact with thousands of boaters and intercept hundreds of AIS entering and leaving Honeoye Lake. Between the active interceptions of AIS and the information shared with boaters and community members, stewards are preventing the spread of AIS to Honeoye Lake and beyond. The continued prevalence of invasive species detections and the apparent changes in traffic trends at HLSMP underscore the importance of continuing steward coverage in future years. The Finger Lakes Institute looks forward to building and fostering valuable partnerships with OPRHP, the Honeoye Valley Association and the Honeoye Lake Watershed Task Force to help conserve this gem in the Finger Lakes.

### Total Detections of the 3 Most Common Invasive Species on Inspected Watercrafts

Honeoye Lake State Marine Park



**Figure 1: Total Detections of the top three most common invasive species (Eurasian watermilfoil, curly-leaf pondweed, and zebra mussel) separated by launching and retrieving watercraft over the past four years. Stewards are more likely to detect AIS on retrieving watercraft.**

# Boat Decontamination Station Coming to Honeoye Lake

By Betsy Landre, Ontario County Planning Department

Late last year Ontario County Planning Department received word of a grant award in the amount of \$39,985 from New York State Department of Environmental Conservation (NYS DEC) for a boat decontamination unit for installation at the Honeoye Lake State Marine Boat Launch on East Lake Road. The Towns of Canadice and Richmond will collectively contribute \$6,952 in local match. The boat decontamination or “wash” unit will allow lake users to quickly and easily clean their boats (or jet skis, etc.) before entering or upon leaving Honeoye Lake via the public boat launch. Boat wash units are increasingly used at public launches as a means to stop the spread of invasive aquatic species that can hitchhike from one lake to another by catching rides (i.e., getting stuck) on boat propellers or other parts of watercraft and trailers.

Known as Aquatic Invasive Species (AIS), non-native species have potential to wreak ecological and economic havoc once established in a waterbody. Aquatic invasive species like zebra mussels, Eurasian watermilfoil and curly leaf pondweed have already found their way to Honeoye Lake. Other species such as the highly invasive plant hydrilla and starry stonewort have not been found in Honeoye Lake, but have been detected in other waterbodies in the Finger Lakes Region. AIS can spread via multiple means (e.g., waterfowl, aquarium dumping, and ballast water discharge), but recreational watercraft traveling between lakes are a key vector for the unintentional introduction of new invasive species.

The CD3 Systems cleaning facility to be employed at Honeoye Lake is a self-service, solar powered unit with a combination of tools including compressed air and a vacuum to help boaters voluntarily do their part to help stop the spread of aquatic invasive species. There will be no cost to use the wash unit and a public outreach effort will include multiple partners to help get the word out and encourage boaters coming and going to Honeoye Lake to clean their watercraft. One target audience for this outreach effort is fishing derby organizers and participants. The wash unit will also complement the work of the watercraft stewards who are stationed at the launch on a part-time basis through the summer providing in-person education and boat inspection for AIS. The wash unit will add a resource available to boaters, especially when stewards are not on duty.

Funding for the grant award is provided by NYS DEC’s Finger Lakes Watershed Hub through the New York State Environmental Protection Fund.

Support for this project also comes from Ontario County Planning, HLWTF, Town of Richmond, Town of Canadice, NYS Office of Parks Recreation and Historic Preservation, Finger Lakes Partnership for Regional Invasive Species Management (PRISM ), and Honeoye Valley Association (HVA). Before the CD3 System boat wash station can be ordered and the project commenced, a contract with New York State must be executed. *Stay tuned for project updates.*

**CD3 Systems Mobile Unit**  
*Photo Credit: CD3 systems website*  
[www.cd3systems.com](http://www.cd3systems.com)





# New Insight on Land Use/Land Cover Information for the Town of Canadice and its Importance to the Management of Honeoye Lake

By Bruce Gilman (*Finger Lakes Community College*) and Kyle Ritts (*Ontario County Planning Department*)

A major focus of Honeoye Lake research studies has been lake water quality, lake bottom sediment and tributary stream chemistry, attempting to link these through sophisticated computer models that also take into account local topography, soils and weather data. The outcome has been a lake nutrient budget that can be utilized by resource managers for prioritizing decisions about where to implement best management practices that might reduce watershed nutrient loading. To validate these models, however, requires knowledge of the land use and land cover surrounding each tributary stream and direct drainage sub-basin of the lake watershed. Existing information, like real property code classifications are insufficient and inaccurate to use for this purpose. Also, interpretation of aerial imagery alone can be prone to human error. We combined interpretation of recent Pictometry® aerial images and LiDAR data regarding surface topography with extensive ground surveys to create an updated “truth image” for the Town of Canadice portion of the Honeoye Lake watershed. Data files were attributed using the hierarchical classification system of the New York Natural Heritage Program, a widely used and accepted method of ecological community classification in New York State. The latest edition is available online at their website, [www.nynhp.org](http://www.nynhp.org). Although time-consuming, our research provides superbly detailed and comprehensive land use/land cover data that we believe is critical to the success of holistic management for Honeoye Lake. All data is managed by the geographic information system staff at Ontario County.



Southeastern edge of Hemlock Lake (oligotrophic dimictic lake) with Finger Lakes aquatic bed  
Photo Credit: Bruce Gilman

Appalachian oak-hickory forest with vernal pool  
Photo Credit: Bruce Gilman



The Town of Canadice has a diverse mosaic of cultural land uses and natural land covers that continue to change in response to altered human activities and natural successional processes. Whether cultural or natural, these plant community cover types are identifiable by their characteristic botanical assemblages and they provide critical habitat for local wildlife species. Plant communities in the western section of the town were first researched by Patricia Martin, a consultant from The Nature Conservancy inventorying the Canadice and Hemlock Lake watersheds in the late 1990s. A few years later, land use and land cover in the southern Honeoye Valley was studied by Bruce Gilman as part of a biodiversity project at the Muller Field Station. By 2006, complete data had been collected for the entire Honeoye Lake watershed.

So, it has been years since the Town of Canadice was first examined for its land use and land cover. Over that time period, the New York Natural Heritage Program classification system has been modified and changes in human activities in the Town have undoubtedly occurred. **It was time for an update!** The most recent aerial imagery was used to create digital polygons of plant community cover types. Nearly 3,000

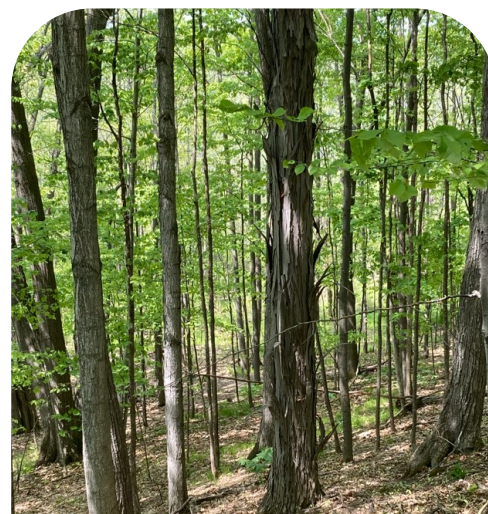
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## New Insight on Land Use/Land Cover Continued...

cover type polygons were created, representing about **21,000 acres**. Extremely small point features were not mapped, as well as linear features like narrow streams, roadways and hedgerows.

Land use and land cover types in the Town of Canadice belong to **four major systems**: riverine, lacustrine (lake), palustrine (wetland) and terrestrial. These contained **ten subsystems**: riverine cultural, natural lakes and ponds, lacustrine cultural, open mineral soil wetlands, open peatlands, forested mineral soil wetlands, open uplands, barrens and woodlands, forested uplands, and terrestrial cultural. We detected and mapped **39 plant community cover types** and **11 combined cover types**. Plant community cover types included large aquatic areas like oligotrophic dimictic lake (Canadice Lake and the eastern sliver of Hemlock Lake falling within the Town) and winter-stratified polymictic lake (the southwestern portion of Honeoye Lake located within the Town). Combined plant community cover types were distinguished where the original plant community was thought to be in the process of changing into another plant community (e.g., an old conifer plantation reverting back to a natural forest), or sites with naturally high interspersions (e.g., open patches of shrub swamp dispersed within a floodplain forest). Our updated map of land use/land cover is on the next page. Natural plant community cover types account for 77% of



Successional northern hardwood forest  
Photo Credit: Bruce Gilman

Plant Community Cover Type	Acreage	Percentage
Successional Northern Hardwoods	8048.2	38.7
Appalachian Oak-Hickory Forest	2148.5	10.3
Conifer Plantation//Successional Northern Hardwoods	1446.8	7.0
Conifer Plantation	1232.7	5.9
Mowed Lawn	1122.7	5.4
Oligotrophic Dimictic Lake	953.5	4.6
Cropland	878.4	4.2
Successional Old Field	772.5	3.7
Silver Maple-Ash Swamp	631.8	3.0
Hemlock-Northern Hardwood Forest	592.3	2.8
Winter-Stratified Polymictic Lake	576.4	2.8
Successional Shrubland//Successional Northern Hardwoods	562.3	2.7
Successional Shrubland	522.6	2.5
Successional Old Field//Successional Shrubland	215.4	1.0
Shallow Emergent Marsh	172.8	0.8
Shrub Swamp	110.7	0.5
Farm Pond/Artificial Pond	92.5	0.4
Finger Lakes Aquatic Bed	89.6	0.4
Appalachian Oak-Pine Forest	82.3	0.4
Successional Old Field//Conifer Plantation	81.8	0.4

the Town of Canadice's terrestrial landscape. It truly is a "rural" town in every sense of the word. The twenty most common plant community cover types based on acreage are identified in rank order in the table to the left.

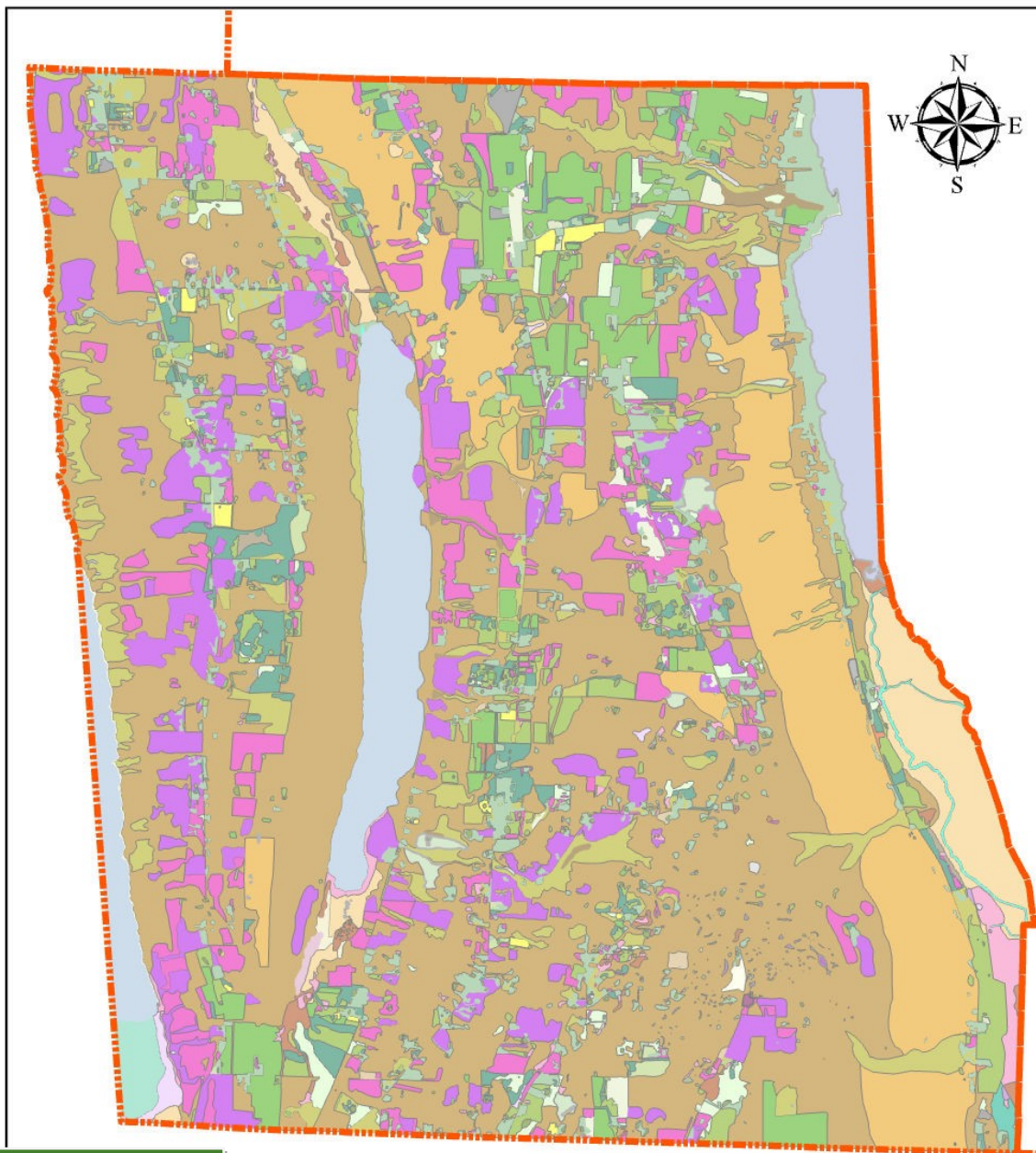
### What's next?

Aerial images from 1929 are being used to create an historic land use/land cover map for most of the Honeoye Lake watershed. The black and white images were taken when Honeoye Lake was being considered as an addition to the upland water supply for the City of Rochester. It is hoped that this analysis will reveal the extent of land use change that has occurred over nearly a century. *Stay tuned.*

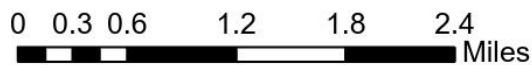
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# Town of Canadice Land Use/Land Cover Update 2023

Ontario County, NY  
Produced by the Ontario County Planning Department  
2023



**\*Please see page 16  
for the map's legend**



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Continued

# Town of Canadice Land Use/Land Cover Update 2023

Ontario County, NY  
 Produced by the Ontario County Planning Department  
 2023

## Legend

	Appalachian Oak-Hickory Forest		Rural Structure Exterior
	Appalachian Oak-Pine Forest		Sand Beach
	Cropland		Shallow Emergent Marsh (SEM)
	Canal		SEM // Highbush Blueberry Bog Thicket
	Construction / Road Maintenance Spoils		SEM // Successional Northern Hardwoods
	Conifer Plantation (CP)		SEM // Shrub Swamp
	CP // Successional Northern Hardwoods		Silver Maple-Ash Swamp
	Deep Emergent Marsh		Successional Northern Hardwoods
	Dwarf Shrub Bog		Successional Old Field (SOF)
	Eutrophic Pond		SOF // Conifer Plantation
	Flower / Herb Garden		SOF // Shallow Emergent Marsh
	Floodplain Forest		SOF // Successional Northern Hardwoods
	Finger Lakes Aquatic Bed		SOF // Successional Shrubland
	Farm Pond / Artificial Pond		Shrub Swamp
	Gravel Mine (Abandoned)		Shrub Swamp // Silver Maple-Ash Swamp
	Hemlock-Northern Hardwood Forest		Successional Southern Hardwoods
	Junkyard		Sewage Treatment Pond
	Maple-Basswood Rich Mesic Forest		Shale Talus Slope Woodland
	Mowed Lawn		Successional Shrubland (SUC.S)
	Mowed Lawn w/ Trees		SUC.S // Conifer Plantation
	Oligotrophic Dimictic Lake		SUC.S // Successional Northern Hardwoods
	Pastureland		Urban Structure Exterior
	Parking Area		Vineyard
	Perched Swamp White Oak Swamp		Vernal Pool
	Red Maple Hardwood Swamp		Winter-Stratified Polymictic Lake

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# FEMA Moving Forward with Update to Flood Insurance Rate Maps

By Linda Phillips (Ontario County Planning Department)

County, state and federal officials are working to reduce the effects of severe weather and natural disasters. On July 14, 2023, the Federal Emergency Management Agency (FEMA) released new preliminary Flood Insurance Rate Maps (FIRMs) for Ontario County for public comment. The new maps give updated information about communities' flood risk and are used to identify areas that may require flood insurance coverage. The current effective paper maps for Ontario County were developed in the 1970s, 1980s and 1990s. Some areas show significant flood hazard changes when the new preliminary FIRMs are compared to the current effective paper maps.



Photo Credit: Terry Gronwall

In November 2023, FEMA and state and county officials held two open houses to help residents and property owners learn if they were affected by the draft FIRMs. The Open Houses provided opportunities to learn more about flood risk, actions to protect against flood risk, and to get information on potential changes to flood insurance rates and requirements.

If you missed the Open Houses, you can see the new preliminary FIRMs compared to the old paper maps using the [comparison tool on the FEMA website](#). Residents and their site design professionals can also see more detailed information in the Flood Insurance Study (FIS) report and the preliminary versions of the FIRMs [here](#).

Flooding is the number one natural disaster in the United States and Ontario County. From 1996 to 2023 a national flood database listed 56 flood events in Ontario County resulting in over \$20 million in damage. Community members should know their current flood risk and use the available tools and programs to make their property and community safer. Here are some important considerations in relation to the new preliminary FIRMs:

- Approximately 200 structures in Ontario County may no longer be in the high-risk flood zone, known as the Special Flood Hazard Area (SFHA), and are proposed to be removed from the new FIRM. If the building will be outside the high-risk flood zone on the new FIRM, flood insurance is no longer federally required. However, flood insurance is still recommended for both homeowners and renters.
- Close to 3,000 properties may be included in the SFHA for the first time and are proposed to be added to the new FIRM. ***This may lead to those affected property owners being required to buy flood insurance.***
- Additionally, thousands of others will have either more of their properties included in the SFHA or have the flood elevation on their properties increase, most notably around Honeoye Lake, where the flood elevation is proposed to be almost 3 feet higher than the existing.

Continued

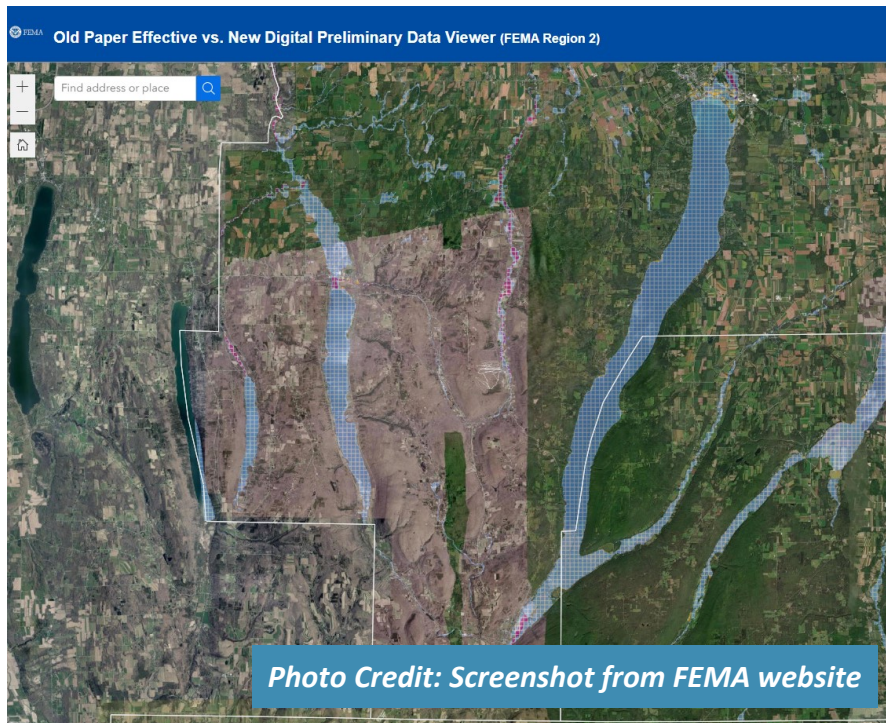


# Flood Insurance Rate Maps Continued...

- In the Towns of Richmond and Canadice, there are currently 834 parcels located wholly or partially in the SFHA or floodplain. The preliminary FIRMs include **210 additional parcels in the Town of Richmond and 34 additional parcels in the Town of Canadice that are in the floodplain.**
- **FEMA does not reach out to individual property owners when the mapping affecting their properties is proposed to be changed.**
- Mortgage lenders are free to require flood insurance for existing borrowers when the FIRMs become official. Lenders can send mortgagees a notice requiring they obtain flood insurance within 45 days. If the mortgagee does not comply, the mortgage company can obtain the insurance on behalf of the mortgagee and charge them for the chosen coverage.

**It is imperative that property owners visit [FEMA's website](#) or [FEMA's map comparison tool](#) to check the status of their properties.**

**FEMA will soon advertise a formal 90-day appeal period**, during which time property owners and residents can submit appeals based on technical or scientific information or comments on base map features to FEMA via their community officials. In the spring or summer of 2024, FEMA will issue a Letter of Final Determination (LFD) to community officials after the 90-day appeal period has elapsed and FEMA has responded to all appeals and revised maps as warranted. The LFD signifies the start of a 6-month adoption/compliance period. During this period each municipality will need to adopt an updated flood damage prevention local law. At



**Photo Credit: Screenshot from FEMA website**

**Photo Credit: Terry Gronwall**



the end of the adoption/compliance period, the new digital FIRM and FIS report will become effective. Ontario County and each of its municipalities are also updating their Hazard Mitigation Plans. To reduce flood damage, Ontario County is encouraging all local communities to adopt a higher standard for issuance of floodplain development permits in conjunction with adoption of updated flood damage prevention local law. The higher standard would require any development in the floodplain to balance fill with compensatory cuts to result in no net decrease to the storage volume of the floodplain.



# New Glacial History Sign at Sandy Bottom Park

By Alaina Robarge (Ontario County Soil & Water Conservation District) and Bruce Gilman (Professor Emeritus & Curator of Finger Lakes Herbarium, Finger Lakes Community College)



Photo Credit: Solon Barnard, Friends of Sandy Bottom Park

Next time you are exploring Sandy Bottom Park and admiring Honeoye Lake, make sure you check out the new “Glacial History of Honeoye Lake” sign installed just north of the beach. This sign was designed by Alaina Robarge from Ontario County Soil & Water Conservation District. Dr. Bruce Gilman provided the content for the sign. Funding was provided from the Ontario County Water Resources Council. The Finger Lakes Land Trust provided the aerial imagery of the watershed behind the glacial lake and retreating ice margin overlay that Alaina and Bruce created. We hope you take a minute to look at the sign and learn a little bit about the incredible geological history of our area!

## GLACIAL HISTORY OF HONEOYE LAKE

Over 12,000 years ago, a very large proglacial lake stood here in the Honeoye Valley. This was Glacial Lake Honeoye. The retreating margin of the continental ice sheet blocked all drainages northward and high hillsides blocked the escape of lake water to the east and west, so glacial meltwater that filled the lake could only flow south out of the valley. The glacial lake outlet channel is today occupied by County Road 36 as it traverses the southern Honeoye Valley near French Hill Road, crossing a drainage divide of 1,160 feet above sea level, nearly 350 feet above the modern lake level. Here the outlet channel encountered a hard bedrock obstacle, forcing the flow eastward toward the Canandaigua Valley where it drained into another, even larger and deeper glacial lake, Glacial Lake Middlesex.

**Where You Are Standing:**  
The most recent ice sheet advance is known as the Wisconsin Stage of the Pleistocene. Where you are standing at Sandy Bottom Park, the ice overhead reached a maximum thickness of more than 4,000 feet! The massive weight of ice depressed the land beneath, only to have the land rebound once the ice finally melted away.

**Dropstone**  
Michael C. Byggel via Wikimedia Commons

**Varves**  
Lines indicating alternating layers of silt and clay

**Evidence of Glacial Lake Honeoye:**  
With a proglacial lake that was higher in surface elevation, longer and ten times deeper than the modern lake, the search for evidence must span the entire Honeoye Valley. Somewhere up on the hillsides well above the modern shoreline, wave-cut terraces should mark the shoreline of the proglacial lake. Streams that flowed from the hillsides into the lake would have made delta deposits. A notable example is the delta deposited into Glacial Lake Honeoye by a ravine draining westward near Blueberry Hill Road, today the site of a pioneer cemetery and abandoned gravel pit. In the valley floor near Cross Road, recent excavations have revealed ancient glacial lake bottom deposits called varves. These rhythmic couplets consist of alternating layers of silt and clay. During the wavy open waters of summer, larger silt particles would settle out to the lake bottom while calm waters of an ice-covered lake allowed the finer clay particles to settle out. Thus, one couplet of silt and clay is thought to represent one year in the existence of the lake. If icebergs floated on the lake, rocks contained within them would form dropstones on the lake bottom varves when and where the icebergs melted.

**Meet the Pleistocene:**  
Also known as the Great Ice Age, the Pleistocene time period spanned the last 2.5 million years. Under multiple alternating cycles of warm and cold conditions, continental ice sheets expanded across Eastern North America. Ocean levels were lowered hundreds of feet during the cold periods as so much of the earth's water budget was stored in ice sheets that crept across the continent. Glacial erosion beneath the thick ice sheet transformed the landscape, scratching exposed ancient bedrock and scouring broad U-shaped valleys in north-south aligned stream drainages throughout the Finger Lakes region. Rocks that had been captured by the slowly moving ice were eventually sloughed off the ice margin to become erratic boulders.

**Ice Age creatures:**  
Before humans came to the region, Ice Age mammals lived in the tundra-like vegetation along the retreating ice sheet margin. Herbivores, carnivores, and scavengers were all present based on fossil evidence. Remains of woolly mammoths and American mastodons have been discovered in upstate New York, including one mastodon found during pond construction in East Bloomfield! Many of the larger Ice Age mammals became extinct while most of the smaller mammals continue to exist in modern time.

**Charles R. Knight 1897**  
American mastodon

Thank you to Dr. Bruce Gilman for content, the Ontario County Water Resource Council for funding, and the Finger Lakes Land Trust for imagery.



Photo Credit: Solon Barnard, Friends of Sandy Bottom Park



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)

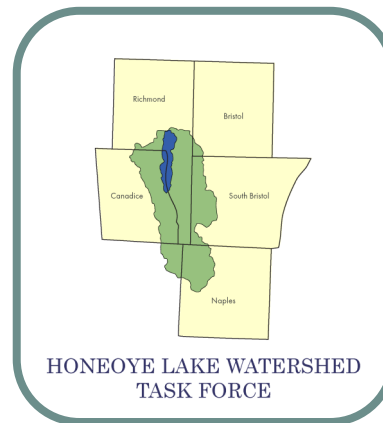
**Steve Barnhoorn**, Councilmember, Town of Richmond

**Lauren Bolonda**, Councilmember, Town of Bristol

**Ann Jacobs**, Representative, Town of South Bristol

**Mark Adams**, Representative, Town of Naples

**Linda Vanderbeck**, Representative, Honeoye Valley Association



**Permanent Professional Support is Provided by:**

**Megan Webster, Katie Lafler, Alaina Robarge, and Diana Thorn** Ontario County Soil & Water Conservation District

**Dr. Bruce Gilman**, Professor Emeritus, Finger Lakes Community College

**Tom Harvey, Betsy Landre**, Ontario County Planning Department

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NYS Department of Environmental Conservation

Finger Lakes Community College

The Nature Conservancy

Finger Lakes Institute

Cornell University

Cornell Cooperative Extension of Ontario County

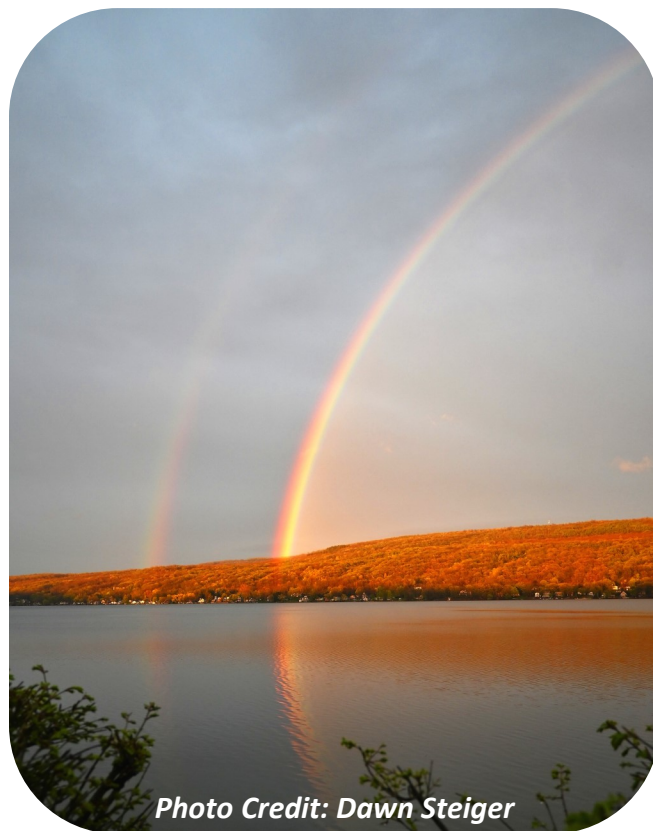
Ontario County Water Resources Council

Princeton Hydro Consulting Services

**Further Information may be obtained by contacting:**

**Chairman Terry Gronwall at**

[watershedtaskforce@gmail.com](mailto:watershedtaskforce@gmail.com)



*Photo Credit: Dawn Steiger*