

HLWTF
(585)367-3000

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UPCOMING EVENTS IN THE COMMUNITY:

- Soil Health Workshop is March 7th, 2019, go to ontswcd.com
- Tree & Shrub Sale Order Form is due March 8th, 2019, go to ontswcd.com

Honeoye Lake Watershed Task Force Newsletter



2018 NYSDEC Honeoye Lake Walleye Fingerling Stocking

The NYSDEC has been stocking 8.6M walleye fry in Honeoye Lake for many decades. However, in recent years the walleye fry recruitment has been very low. The NYSDEC stocked ~20,000 ~2-inch walleye fingerlings in Honeoye Lake on June 21, 2018! See pictures below:



Photo Credit: Terry Gronwall, HLWTF



Photo Credit: Terry Gronwall, HLWTF

This was done to address the declining walleye population in the lake. In 2000 the NYSDEC estimated the walleye population to be ~32,000 adults. In 2010 they estimated the walleye population to be ~6,000 adults. Walleye catch rates have been declining every year for the last several years. The NYSDEC is hoping to see an improvement in the walleye population size and catch rates in a few years as a result of the walleye fingerling stocking.

Announcement: The Draft Total Maximum Daily Load (TMDL) for Honeoye Lake has been released!!!

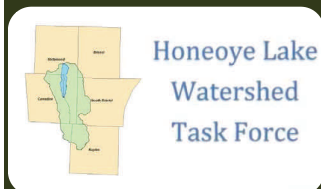
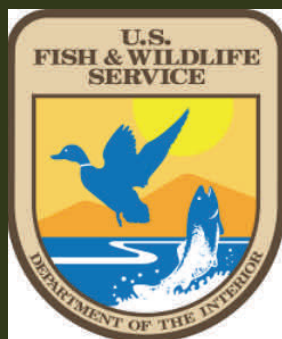
A Public Meeting to discuss the findings and answer questions will be held on **February 4, 2019 at 7:00 pm** at the Honeoye Central School Auditorium (8528 Main Street, Honeoye, NY 14471). See pg.14

Seneca Park Zoo Society's

ENVIRONMENTAL INNOVATION AWARDS & SYMPOSIUM

Honoring Impactful Solutions Inspired by Nature

AWARD WINNER CIVIC & NONPROFIT 2018



Honeoye Inlet Restoration Project

The Seneca Park Zoo Society's 2018 Environmental Innovation Awards honored The Nature Conservancy, the Ontario County Soil & Water Conservation District, New York State Department of Environmental Conservation, the Honeoye Valley Association, Finger Lakes Community College, the Honeoye Lake Watershed Task Force, and the United States Fish and Wildlife Service for the Honeoye Inlet Project completed in 2018.

Honeoye Lake has been suffering through chronic water quality issues over the years and these organizations took note. Honeoye Inlet has a huge impact on the nutrients and sediment that feed into the lake, which was discovered after completing an Analytic Watershed Model. These organizations worked together to reconstruct the inlet into its original structure which had a series of meanders and was much shallower. By adding several ditch plugs to the lateral channels of the inlet, this created small ponds, allowing water to slowly infiltrate and wildlife habitat to flourish. Water can now access the flood plain during storm events rather than rushing into the lake. This project helps to reduce approximately 30% of the total nutrients and sediment entering Honeoye Lake.

These organizations came together to use nature as a filtration device. This area is now flourishing with wildlife and is slowing the sediment and nutrient loading into Honeoye Lake. These organizations worked together for the future of our environment and are well deserving of the Environmental Innovation Award for their incredible efforts!



Honeoye Inlet Restoration Project

Check out this video that showcases the project and our partners:
<https://m.youtube.com/watch?feature=youtu.be&v=Fa-xPBNfuw>



Photo Credit: The Nature Conservancy



Photo Credit: Megan Webster, OCSWCD



Photo Credit: Terry Gronwall, HLWTF



Photo Credit: Terry Gronwall, HLWTF



Photo Credit: The Nature Conservancy

Take a visit to **County Road 36** to see the **Honeoye Inlet Restoration** results!

Water Quality Improvement Project (WQIP) Round 11 Grant Highlights:

Sediment Traps

In August, the Ontario County SWCD worked with the Ontario County Highway Department to install sediment traps along County Road 36 in Honeoye. These concrete traps are placed in-line with a roadside ditch. As water enters the open end, the sediment trap slows down the flow, causing deposits of sediment to stay within the concrete barrier. The water then slowly exits through two holes. The traps can easily be cleaned because they are the same dimensions as a standard ditching bucket. While the Ontario County Highway Department is cleaning ditches, they can use the same equipment to clean the sediment traps. In cases of high flowing water, the sediment trap will still allow water to safely flow over the top and continue in the ditches for proper drainage.



Photo Credits:
OCSWCD



Forestry Best Management Practices

As part of the Water Quality Improvement Project Round 11 grant focusing on sediment reduction in the Honeoye Lake Watershed, forest best management practices were installed at the Honeoye Inlet Wildlife Management Area. The BMP's installed included one rubber belt water bar, two earthen water bars, and one ford crossing. These BMP's will reduce erosion on forest trails and logging roads. The public is encouraged to view these completed projects. Access to the trailhead is located on East Lake Road in Richmond.



HLWTF Chairman's 2018 Project Update: Terry Gronwall

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

The common focus of these Honeoye Lake Watershed Management Plan-based projects is to implement Best Management Practices (BMPs) to reduce external sources of nutrients and sediments reaching Honeoye Lake.

NYSDEC WQIP Round 11 Grant Project:

Ontario County Soil & Water Conservation District and HLWTF received a NYSDEC Water Quality Improvement Program (WQIP) Round 11 Grant for over \$170,000 including local match funding to address stream bank erosion on public road right of ways, and build several detention basins and vernal pools in the Honeoye Lake Watershed. Completed in December 2018.

NYSDEC WQIP Round 12 Honeoye Lake Inlet Restoration Project:

This project includes 4 elements that work together to allow inlet stream flows during storms to spread out, slow down and drop sediment and nutrient loadings before reaching the lake. OCSWCD received the grant award for \$300,000 with \$100,000 local match to fund the implementation of this project. Several project enhancements were implemented in 2018. Project completion expected in 2019. Received Seneca Park Zoo Environmental Innovation Award October 2018. <https://m.youtube.com/watch?feature=youtu.be&v=Fa-xPBNfuw>

<https://m.youtube.com/watch?feature=youtu.be&v=Fa-xPBNfuw>

Blue-Green Algae (BGA) Monitoring Project:

At the request of NYSDEC, BGA samples were collected weekly from Honeoye Lake from June to October of 2018 for testing of blue-green algae blooms and toxin levels. Results are posted on DEC Harmful Algal Blooms website on Friday afternoons <http://www.dec.ny.gov/chemical/83310.html>

Collected lake water quality data June-Sept:

HLWTF collected weekly surface water temperature, dissolved oxygen, and water clarity data. Also, we collected water samples twice a month (Jun-Sep) for lab testing for phosphorus and nitrogen. HVA launched a citizen Secchi Disk volunteer program in 2018 to collect near shore water clarity and temperature data.

Electronic Macrophyte Mapping Service:

HLWTF provided two (Early July and Late August) macrophyte maps to our weed harvesting team to help them focus weed harvesting efforts in the areas of greatest macrophyte density.

NYS HABs Action Plan: NYS released the Honeoye Lake HABs Action Plan in June 2018. Several WQIP grants were submitted to implement plan recommendations in July 2018 and were awarded in December 2018. The 2019 plan is to have a certified lake manager complete an engineering study for an alum treatment and aeration system. https://www.dec.ny.gov/docs/water_pdf/honeoyehabplan.pdf

Cornell-FLCC-HLWTF Honeoye Lake Research

Collaboration: Professors Nelson Hairston (CU) and Bruce Gilman (FLCC), in collaboration with HLWTF Chairman Terry Gronwall and Dorothy Gronwall studied the causes of summer blooms of cyanobacteria (blue-green algae). This 3-year (2016-2018) research project data collection was completed in October 2018. Analysis to be completed in 2019.

Finger Lakes Institute Nitrogen Research

Project: Current management practices aim to curb harmful algal blooms (HABs) by phosphorus control strategies. Despite these controls, HABs continue to proliferate. Research shows cyanobacteria growth is higher with the addition of both phosphorus and nitrogen compared to either nutrient alone. The goal of the 2016-2018 project was to determine if nitrogen is a factor in Honeoye Lake HABs. Analysis to be completed in 2019.

Zebra Mussel Survey: Bruce Gilman (FLCC) and Terry & Dorothy Gronwall (HLWTF) completed a zebra mussel survey last summer. We found that the zebra mussel population was still small. No quagga mussels were found.

Sponsored a fall yard waste disposal initiative:

The Town of Richmond allowed watershed residents to properly dispose of yard waste in their town brush pit. This keeps leaf nutrients from reaching the Lake. OCPD, HVA, and HLWTF promoted this initiative.

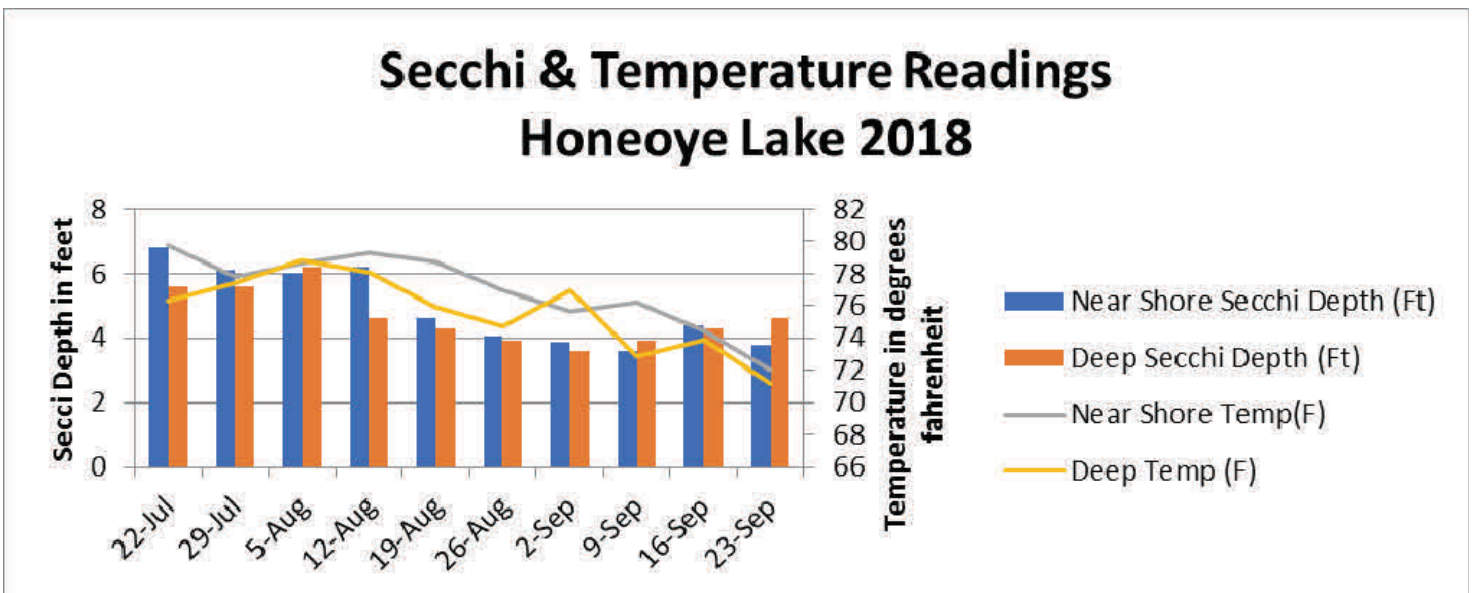
These efforts to improve Honeoye Lake and watershed water quality are a true partnership between The Nature Conservancy, NYS DEC, Ontario County Planning Department, Ontario County SWCD, Finger Lakes Community College, Finger Lakes Institute, Cornell University, Honeoye Valley Association, the Towns of Richmond, Canadice, Bristol, South Bristol and Naples, and all lake residents and users. We appreciate everyone's support. For more information, please contact me at: Terry Gronwall, HLWTF Chairman (585)367-3000 watershedtaskforce@gmail.com

2018 Honeoye Valley Association (HVA) Secchi Disk Volunteer Pilot Program

Last July the HVA initiated a Pilot Secchi Disk Volunteer Program to start collecting weekly near shore water clarity, surface water temperature, and additional Harmful Algal Bloom (HAB) data to augment the water quality information being collected at four deep water locations and ten near shore HAB monitoring locations.

Six volunteers participated in our pilot Secchi Disk program last summer; two volunteers in the northern lake basin and four volunteers in the southern lake basin. We thank and recognize these volunteers for their dedication.

The near shore average water clarity and water temperature data that these volunteers collected is shown along with the data we collected at the deepest location on the lake. The near shore water clarity was slightly higher than the deep location in July and August and somewhat mixed in September. The near shore water temperature was warmer than the deep location most of the summer. See graph below:



We are looking for 2 to 3 more Secchi Disk volunteers for the northern lake basin for the summer of 2019! Please let us know if you are interested in learning more about this volunteer opportunity by contacting us at watershedtaskforce@gmail.com



Photo Credit: Terry Gronwall, HLWTF

Honeoye Lake Shoreline Stabilization

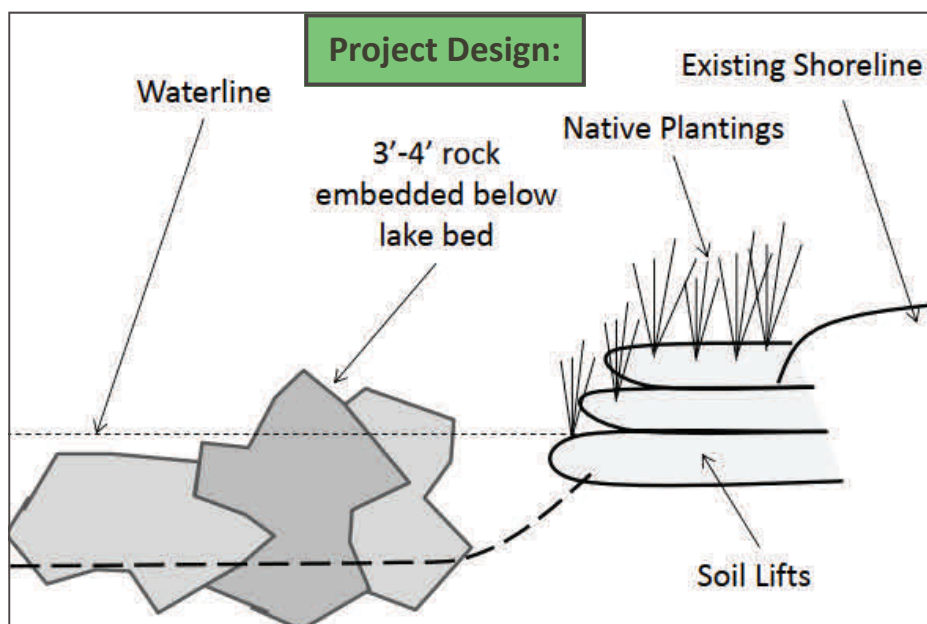
The Ontario County Soil & Water Conservation District received funding to complete the Honeoye Lake Shoreline Stabilization Project! Through the New York State Sea Grant, they received funding to pay for the engineering and design of the project. Through the New York State Department of Environmental Conservation Water Quality Improvement Project Round 15, they received additional funding to install the shoreline stabilization project on Honeoye Lake. This project aims to stabilize 150 feet of shoreline in Sandy Bottom Park adjacent to the public swimming beach. Nature-based shoreline protection practices will be implemented as part of this project. These practices have been proven to increase ecosystem resiliency to climate change, increase the availability of native habitat and reduce the negative impacts to waterbodies caused by erosion and sediment deposition. In Sandy Bottom Park, the design includes a series of soil lifts protected by erosion control fabric and native plantings to stabilize the eroding shoreline (as seen in the below design photo). In front of these structures, large rock will be placed in the water to disperse energy from wave action and ice movement before reaching the shoreline. We are very excited for this project to be implemented!

Before Photographs:



Photo Credits: OCSWCD

Project Design:



2018 State of the Lake

What are the main contributors to Honeoye Lake's algae blooms?

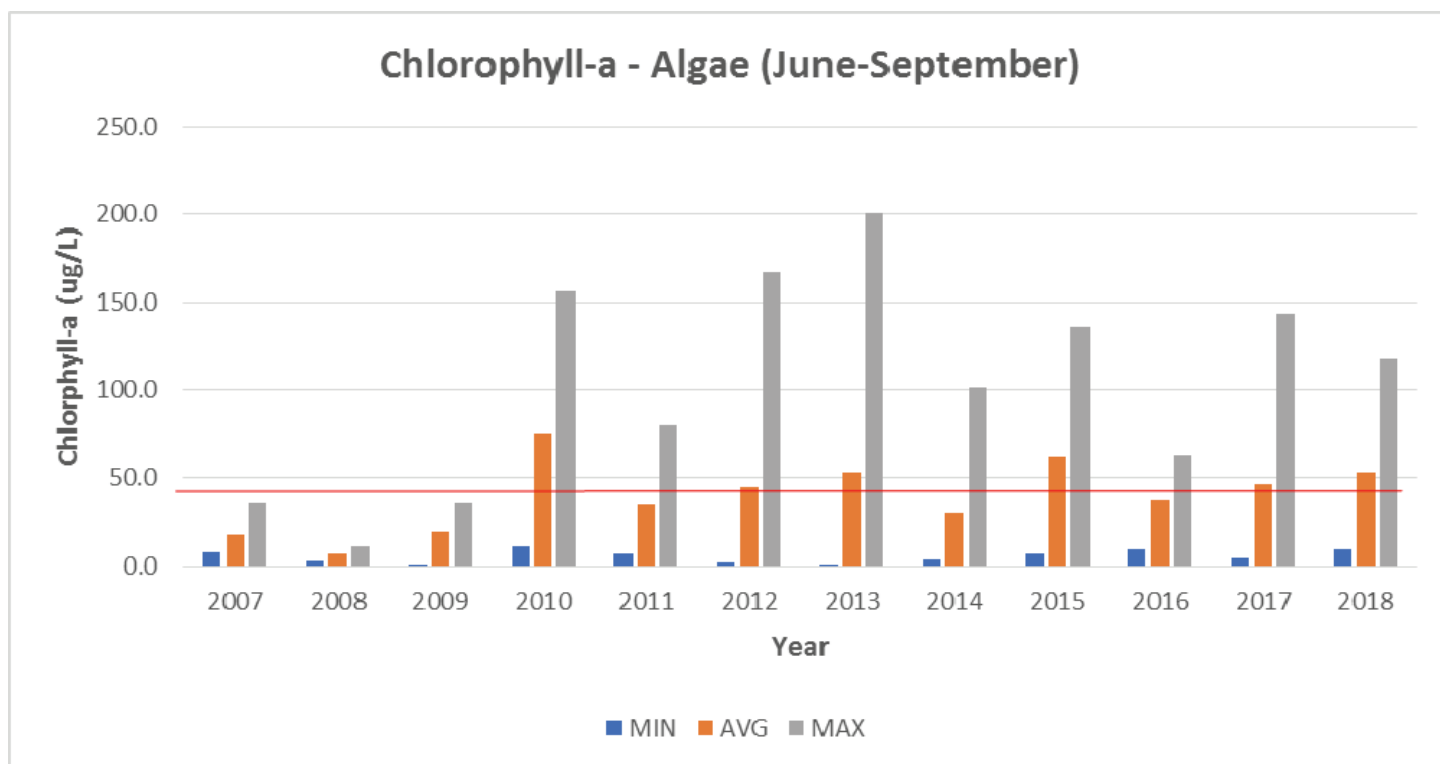
The source of excessive nutrients, such as phosphorus and nitrogen, which fuel HABs, vary between each lake and watershed. A shallow lake such as Honeoye contains large amounts of legacy phosphorus in the bottom sediments. These nutrients can be released when the lake stratifies and the bottom water goes anoxic (contains no dissolved oxygen). This lack of oxygen allows phosphorus, which was previously bound to iron within the sediment, to be released into the water. Events which then cause the lake to mix, such as wind or rain events, cause this nutrient rich bottom water to mix with surface water creating conditions ideal for a HABs event to occur. In addition to internal sources such as legacy nutrients, all lakes have external sources as well through nutrient and sediment run-off. Major storm events where 2 inches of rain or more is recorded are becoming more frequent. Over the last 30-50 years, major rain events in the northeast United States have increased by over 70%. These rain events bring nutrient rich sediment from high in the watershed and deposit it within the lake. Invasive zebra and quagga mussels also have an impact on the occurrence of HABs. Not only does the waste produced by these mussels add to the bioavailable nutrients needed to fuel HABs; but these invasive species are selective feeders, eating green (good) algae and filtering out the blue-green algae. In Honeoye Lake, the presence of invasive zebra mussels along with nutrients both in the sediments as well as entering the lake from the surrounding watershed are contributing to the HABs events we are seeing.



Photo Credit: Dr. Roxanne Razavi, SUNY ESF

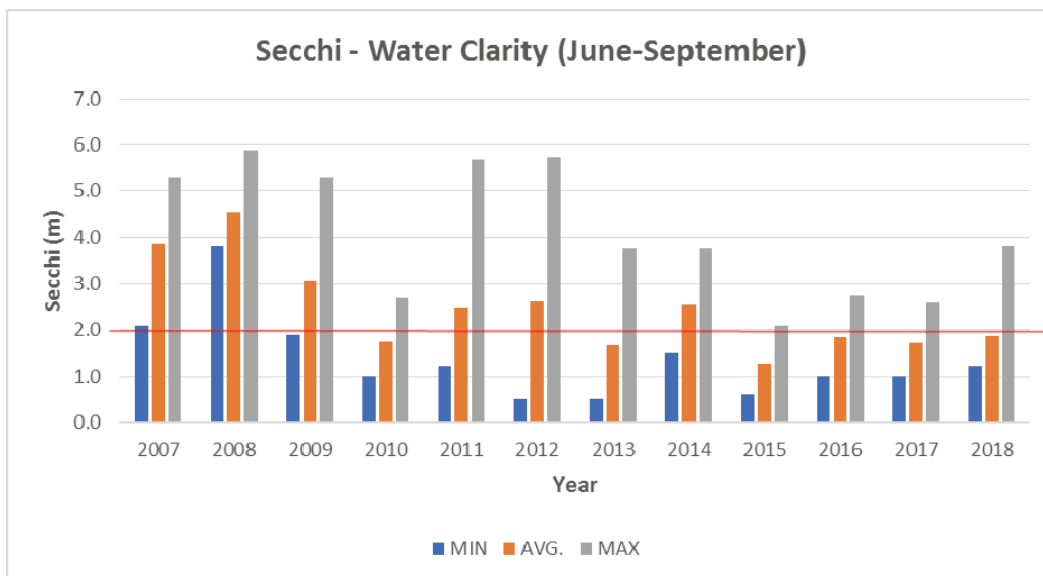
Water Quality Trends

We have been collecting 8 sets of water quality samples every summer from June through September starting in 2007. It is important to note that we did an alum treatment in 2006/2007 to address our internal load. Our NYSDEC alum permit was for ~50% of the alum dosage that was recommended by our lake management consultant. However, you will see on the three water quality summary charts that 2007-2009 were the three best water quality years for the lake over the last 12 years. The Chlorophyll-a (Algae Level) Chart below shows that the lowest three years for algae concentrations occurred immediately after our 2006/2007 alum treatment. 2010 was the highest year for algae concentrations. 2010 was the warmest and had the second highest amount of precipitation for a spring and summer period since weather records have been kept for our area. 2011 through 2018 have a relatively consistently higher level of algae than 2007-2009, averaging around 45 ug/L with some year-to-year variation.

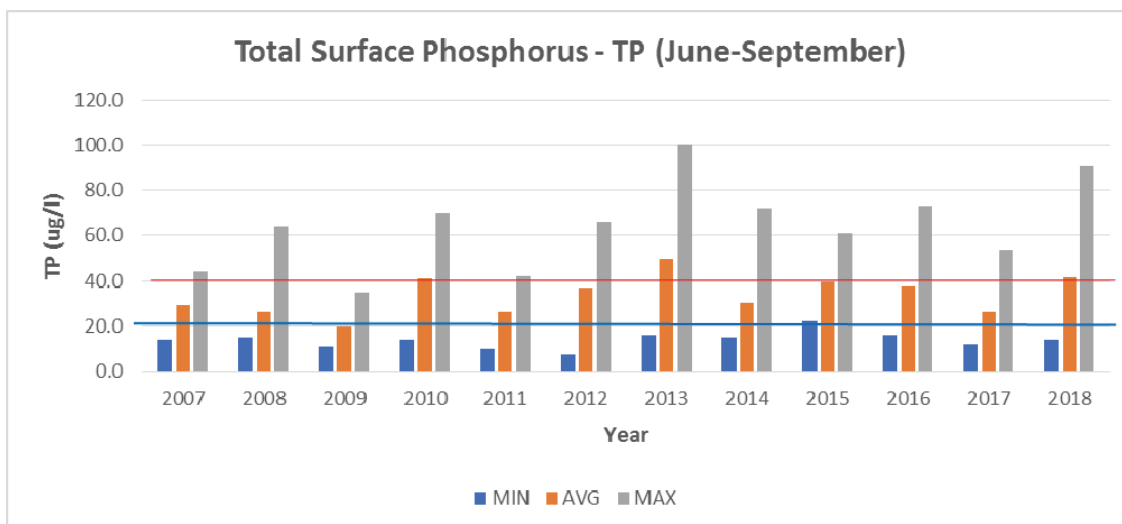


2018 State of the Lake Continued...

The Secchi (Water Clarity) Chart below shows that the highest three years for water clarity occurred immediately after our 2006/2007 alum treatment. Water clarity averaged from 3-4.5 meters (~10-15 feet). 2010 through 2018 have a relatively consistently lower level of water clarity than 2007-2009, averaging around 2 meters (6.6 feet) with some year-to-year variation. Water clarity decreases as algae levels increase.



The Total Surface Phosphorus (TP) Chart below shows that the lowest three years for TP occurred immediately after our 2006/2007 alum treatment (~25 ug/L). 2010 through 2018 have a relatively consistent higher level of TP than 2007-2009 (~40 ug/L red line). The EPA criterion for an impaired water body is 20 ug/L of TP (blue line). Our lake management goal is to reduce the total surface phosphorus to be less than 20 ug/L, which should improve water quality.



What measures are we taking to prevent blue-green algae blooms?

We have been focusing on reducing our external load (run-off) into the lake in recent years. There are updated articles on our DEC WQIP Round 11 Projects and Inlet Restoration Project in this newsletter. See our recent Honeoye Lake Watershed Task Force newsletters for more information: [Honeoye Valley Association - Honeoye Lake Watershed Task Force](#)

We will be aggressively implementing the recommendations in the [NYS Honeoye Lake HABs Action Plan](#) over the next few years. See the separate article on our HABs Action Plan activity in this newsletter.

NYS Honeoye Lake HABs Action Plan Update

Governor Cuomo launched a \$65M initiative to combat HABs in December of 2017 for 12 New York State lakes. Honeoye Lake was one of the 12 named lakes. The NYSDEC completed a Honeoye Lake HABs Action Plan last June, which you can review at:

https://www.dec.ny.gov/docs/water_pdf/honeoyehabplan.pdf

Photo Credit: Terry Gronwall, HLWTF



Recommended actions to address Honeoye Lake's HABs issue are on pages 61-66.

Two DEC WQIP Grant applications that our Honeoye Lake Watershed Task Force partners submitted last July to implement recommended actions from our Honeoye Lake HABs Action Plan were awarded in late December:

1. Ontario County- Aquatic Vegetation Management Program \$41,250

Ontario County will purchase a custom conveyor system to increase efficiency of aquatic vegetation fragment collection and enhance the efforts of the existing aquatic vegetation management program. The project will reduce the amount of floating vegetation, improving conditions in the lake and potentially reducing the growth of harmful algal blooms.

2. Ontario County Soil & Water Conservation District – Honeoye Lake Shoreline Stabilization \$30,000

The OCSWCD will use nature based shoreline protection practices to stabilize the shoreline of Honeoye Lake at Sandy Bottom Park. The project will improve water quality by reducing sediment and nutrients entering the lake from shoreline erosion, including phosphorus that may lead to harmful algal blooms, as well as protect and enhance native shoreline habitat. Funding for the engineering of this project will be provided through New York Sea Grant with funds from the Environmental Protection Fund under the authority of the New York Ocean and Great Lakes Ecosystem Conservation Act.

Also, Ontario County received two DEC WQIP grant awards for the Honeoye Lake Wastewater Treatment Plant. The first grant is for an ultraviolet disinfectant system (\$825,000) and the other is to increase hydraulic capacity to eliminate overflows (\$3,517,500) at the wastewater treatment plant. The Town of Richmond received a DEC grant to complete several Climate Smart Community certification actions (\$5,000) and a Trees for Tribs grant award (\$18,598) for trees in Sandy Bottom Park. We will be launching projects to address our internal load over the next year or two. We expect to have our lake management consultant complete an engineering study to evaluate doing an alum treatment and/or an aeration system in 2019. Alum binds with the phosphorus instead of the iron and maintains that bond under anoxic conditions. An aeration system keeps the bottom water with enough dissolved oxygen to keep the phosphorus bound to iron naturally. ***We will keep you posted on our progress.***

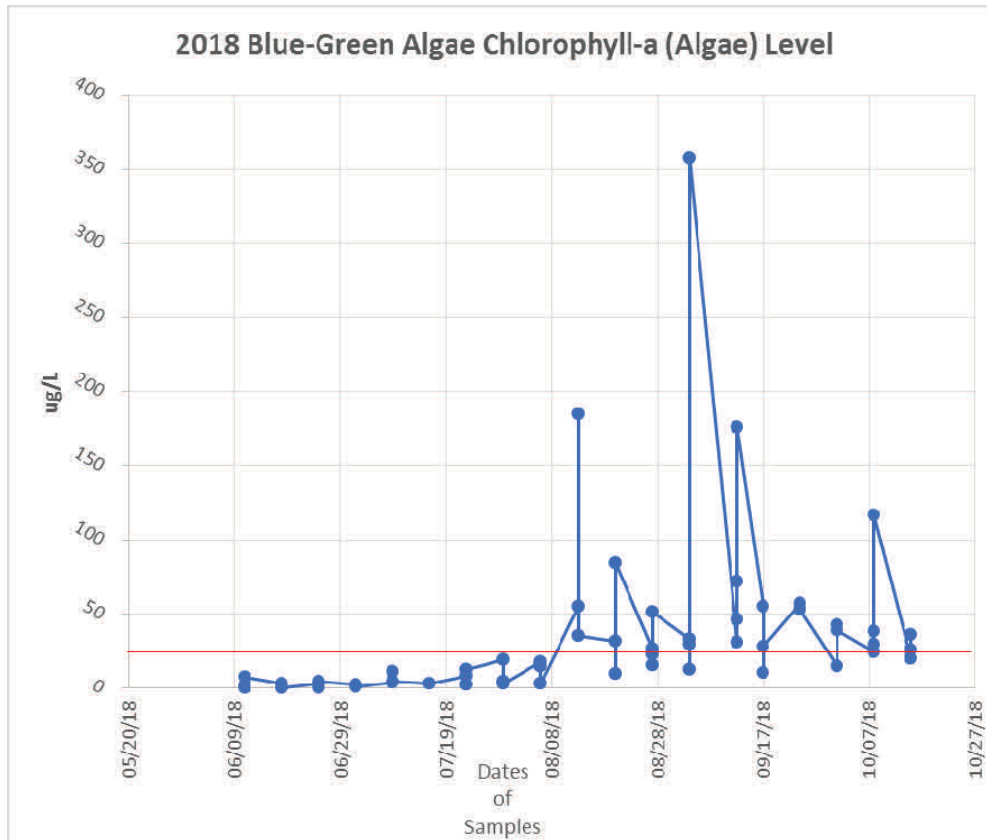


Photo Credit: Terry Gronwall, HLWTF

2018 Blue-Green Algae Sampling Results

We collected 3-5 blue-green algae samples every week from June 11th – October 15th 2018; one from open water and the rest from near shore locations. Samples were then sent to the official DEC certified test lab for analysis.

The NYSDEC criteria for classifying a lake with a blue-green algae bloom is 25 ug/L. This is shown by the red line on the Blue-Green Algae Graph below:



Honeoye Lake was well below the DEC blue-green algae bloom criteria in June and July, but then we started having a series of thermocline disturbances and lake mixing events from early August through mid-October. These events brought phosphorus released from the lake bottom to the surface water fueling a series of blue-green algae blooms. You can see how the intensity of the blooms varies from week to week on the graph above. All of our blue-green algae samples tested well below the NYSDEC criteria for high toxin levels (microcystin of 20 ug/L or higher) that might be a health concern. Most samples were non-detect for microcystin. The highest microcystin level in any of our samples was only 3.4 ug/L.

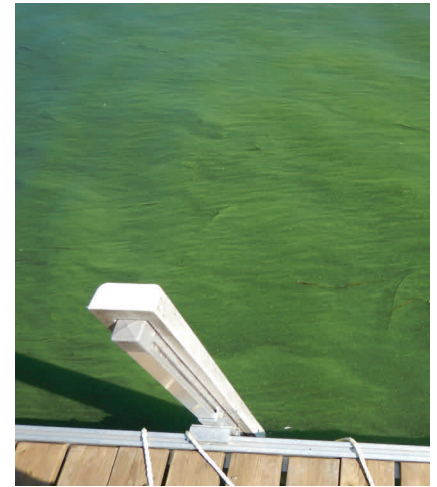


Photo Credits: Terry Gronwall, HLWTF



Watercraft Stewards on Honeoye Lake, 2018

By: Sam Beck-Andersen - AIS Program Manager,

Finger Lakes Institute at Hobart and William Smith Colleges

With a constant stream of boaters coming to the Honeoye Lake State Marine Park, the Finger Lake Institute's (FLI) Watercraft Steward Program, along with other regional steward efforts, remains an important mainstay in managing the spread of invasive species in Honeoye and other regional waterbodies. During the summer of 2018 there were two different groups operating watercraft steward coverage on Honeoye Lake, exclusively at the Honeoye Lake State Marine Park. From the end of May until mid-August, an FLI steward covered the launch Monday through Thursday for 8 to 10 hours per day, while the two NYS Office of Parks, Recreation, and Historic Preservation (OPRHP) stewards covered the launch Thursday through Sunday for around 10 hours per day. From mid-August to the end of October, an FLI steward covered the Honeoye launch Friday through Sunday for 8 to 10 hours per day.

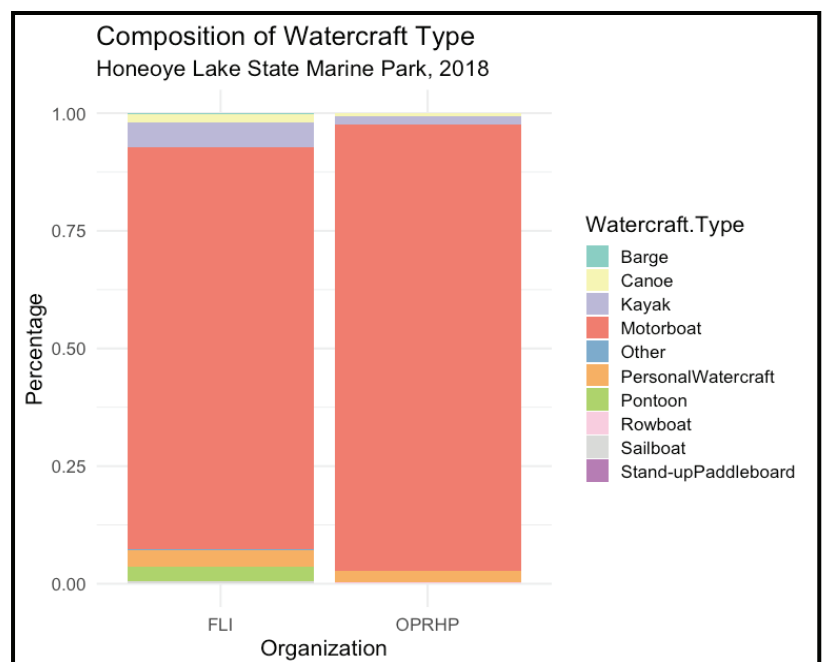
I like to look at the role of watercraft stewards from a couple of different angles. First, the stewards provide physical presence at a boat launch. Their friendly faces and good attitudes make them perfect to educate the boating communities utilizing Honeoye Lake about the dangers of spreading Aquatic Invasive Species (AIS) among waterbodies. This physical presence acts as a first line of defense, actively ensuring watercraft entering or leaving the lake are free from harmful invasive species. Just this past year, an FLI steward named Jason Hanselman stopped a boat with the invasive Quagga mussel as it was getting ready to launch at the Honeoye Lake State Marine Park. This instance illustrates the role of a steward perfectly. Jason followed protocol by inspecting the incoming vessel, and his thorough process resulted in halting this known invasive species from entering Honeoye Lake.



Watercraft stewards are also tasked with collecting a huge amount of data through inspecting boats at public launches. In 2018 alone, over the course of 106 days of coverage, the FLI and OPRHP Stewards inspected and collected data for over 3,800 watercrafts at the Honeoye Lake State Marine Park. On average, stewards inspected around 36 boats per day, with the busiest being June 16th, with 126 boats inspected throughout the day! Stewards collect data on a number of variables including date and time, watercraft type, user group, what was found during physical inspection of a watercraft, and where that boat was used before bringing it to the current launch. Through the use of tools like ArcGIS Online, Survey123, and R Studio, our manager and seasonal coordinators are able to conduct detailed and comprehensive analysis on large datasets, producing replicable reports for internal use and formal reporting purposes alike. Without consistent and efficient data collection methods as well as a base of talented and motivated stewards at a launch, this type of informed program management would not be possible.

Identifying the most common watercraft types used at a launch can help managers and stewards in strategizing outreach techniques. **Figure 1** shows the composition of watercraft types inspected at the Honeoye launch. A launch with primarily motorboats and personal watercrafts (PWCs) will differ in many ways from those serving a high proportion of canoes and kayaks. Inspection times can be increased, group sizes can be larger, and the user type can differ. Knowing about these differences allows managers to strategize outreach and educational strategies deployed at different sites. As with most NYS launches, this site has a very high proportion of motorboats due to the predominant angler user group and also the availability of other free launches on Honeoye Lake for canoe and kayak users.

Figure 1. Different watercraft inspected at Honeoye Lake.
Watercraft are primarily motorboats, with a small number PWCs and hand-powered crafts also present.



Watercraft Stewards on Honeoye Lake, 2018 continued...

Identifying common user groups for a launch is key to formulating outreach and education strategies. Depending on who is using a boat launch, managers may choose to equip stewards with certain handouts and educational materials that are pertinent to a certain group. **Figure 2** shows that Honeoye Lake has a high proportion of anglers compared to general recreation or commercial users. In this instance, we may urge our stewards to connect with users by asking about an angler's daily catch or we may stock our stewards with regional angling guides to offer launch users. No matter the strategy, one of our main objectives is to effectively communicate the goal of AIS prevention to as many individuals as possible. For comparison, **Figure 3** shows user data for Canandaigua Lake State Marine Park, one of the busiest public launches in the state. In contrast to Honeoye, the majority of users of Canandaigua Lake are from the general recreation category. Given this information, we are able to point out key strategies for connecting with users to stewards at the respective launches.

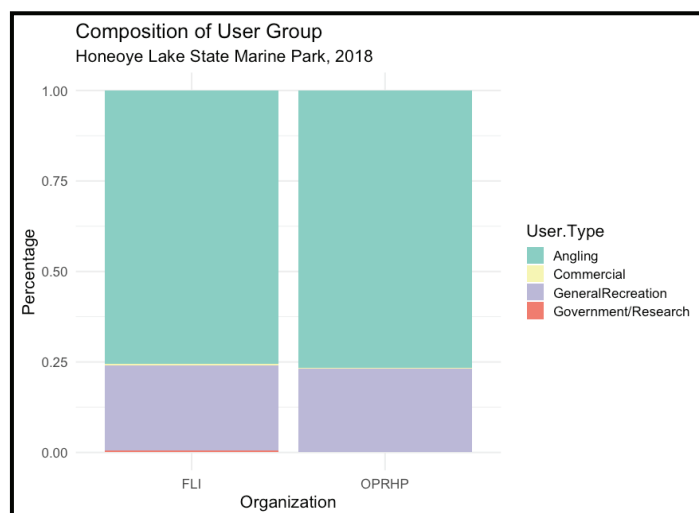


Figure 2. User groups reported at Honeoye Lake State Marine Park. Around 75% of users are anglers, consistently reported throughout the week by both steward programs.

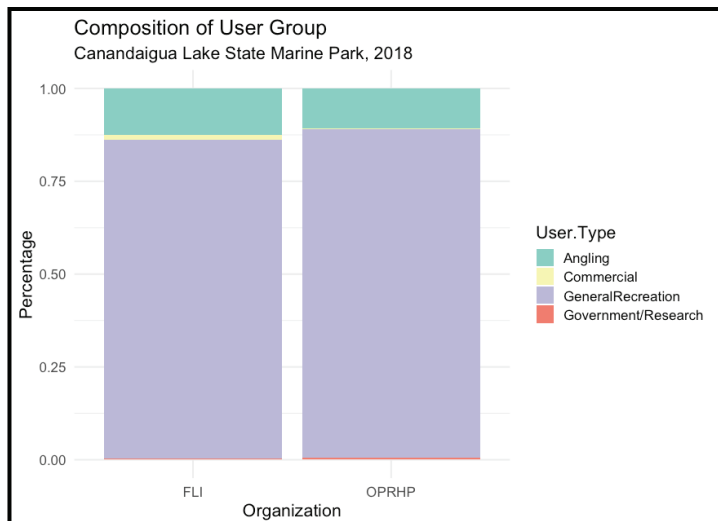


Figure 3. Composition of user groups inspected at the Canandaigua Lake State Marine Park. Most common user type, in purple, represents General Recreation users.

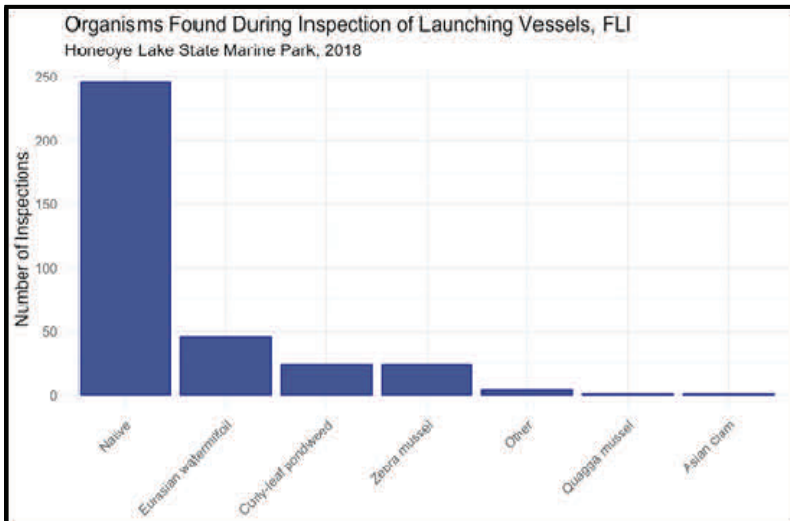


Figure 4. Number of inspections resulting in the identification of different invasive species and overall native species found by FLI

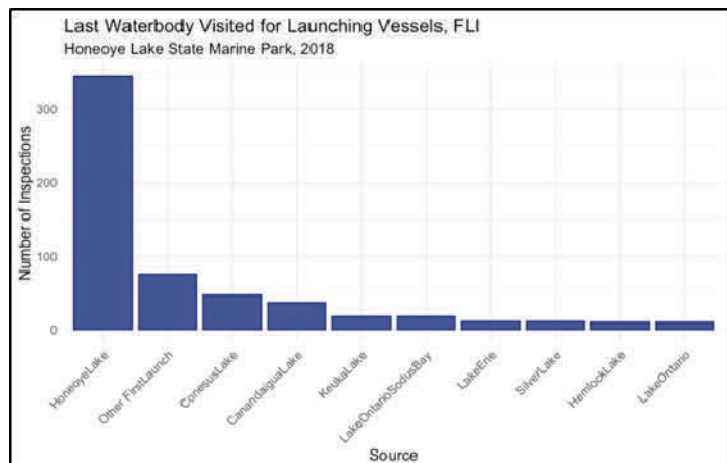


Figure 5. Top ten most common last waterbodies visited by launching boat inspected by FLI Stewards

Figure 4 outlines organisms that were found during steward inspections. As with many other launches around the Finger Lakes, the top three species found at the Honeoye Lake State Marine Park are consistent: native species, curly-leaf pondweed, and Eurasian watermilfoil. **Figure 5** outlines the most common waterbodies previously visited by watercrafts and users launching at the Honeoye Lake State Marine Park. Examining where boaters are coming from helps managers to evaluate the potential threats facing certain lakes by identifying the most likely sources of contamination. Typically the most common last waterbody visited by launching boats is the destination waterbody, which is also true for Honeoye Lake State Marine Park. For more information about FLI's Watercraft Steward Program, please visit flisteward.com. We are always recruiting for new stewards all around the Finger Lakes Region. Part-time or full-time college students, high school and college graduates, and retired persons are all encouraged to inquire about opportunities for the 2019 season. To inquire please email beck-andersen@hws.edu

The Draft Total Maximum Daily Load (TMDL) for Honeoye Lake has been released!

ENB - Region 8 Notices 1/16/2019

Public Notice

This notice announces the availability of a Draft Total Maximum Daily Load (TMDL) document proposed by New York State Department of Environmental Conservation (NYS DEC) to address the following waterbody:

Honeoye Lake, Ontario County

Honeoye Lake is impaired for phosphorus.

Public comment on this document will be accepted through February 19, 2019.

Background: States are required by Section 303(d) of the Clean Water Act and the United States Environmental Protection Agency's (US EPA) implementing regulations (40CFR Part 130) to develop TMDL plans for waterbodies and pollutants where water quality standards are not being met. By definition, a TMDL specifies the allowable pollutant loading from all contributing sources (e.g., point sources, nonpoint sources, and natural background) at a level necessary to attain the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between the sources of the pollutant and water quality.

The draft TMDL requires the reduction of total phosphorus loading to Honeoye Lake by 93%. This is intended to achieve a chlorophyll-a target of 4 ug/l during the summer season to address the phosphorus-induced algal growth. Implementation options include internal loading reduction, watershed best management practices and general conservation efforts such as erosion control, streambank stabilization and enforcement of the New York State phosphorus fertilizer law.

Honeoye Lake is one of the New York State Governor's 12 Harmful Algal Bloom (HAB) Priority Lakes. The HABs Action Plan and the TMDL are aligned. As part of the strategy to alleviate HABs in the Lake, NYS DEC has retained a contractor to develop Aeration and Nutrient Inactivation Plans to be implemented in the Lake.

Information: The [draft TMDL](http://www.dec.ny.gov/chemical/23835.html) can be found on the NYS DEC website at: <http://www.dec.ny.gov/chemical/23835.html>

TMDL Comments can be mailed or e-mailed to the contact listed below by the close of business February 19, 2019.

A Public Meeting to discuss the findings of the TMDL and to answer questions will be held as follows:

Date: February 4, 2019

Time: 7:00 pm

**Location: Honeoye Central School Auditorium
8528 Main Street
Honeoye, NY 14471**

Summary of the Honeoye Lake Population Study of Invasive Zebra Mussels

Photo Credit: Terry Gronwall, HLWTF

By Dr. Bruce Gilman, Finger Lakes Community College

Impacts of invasive zebra mussels (food-web disruption, altered nutrient cycles, role in algal blooms, changes in lake ecology, human health issues) make it desirable to periodically monitor their population levels. This past summer, four near-shore sampling locations (Sandy Bottom Beach, gravelly point south of Trident Marine, large embayment at Young's home south of California Point, and small embayment north of Forest View) were selected as representative of the range of environmental conditions within Honeoye Lake. Dredge samples were taken at three different depths from each location yielding twelve samples. Three additional samples were collected in deep water of the north central basin, south central basin, and maximum depth zone (30 feet) in the lake. Samples were processed by tallying total number, measuring up to 100 shell lengths per sample with digital calipers, and weighing total sample biomass. Additional organisms found in the samples were noted. Total count, mean sample density, mean total biomass, mean individual biomass as well as statistical shell size class analyses were completed. Shell length was used as a proxy for mussel age, with maximum length for first year growth validated by shell lengths of 40 mussels collected off a residential dock that is annually removed prior to complete winter ice formation across the lake surface.

Zebra mussel population density estimates ranged from 0 to 7492/m² in 2018, with a mean density of 2034 mussels/m². These numbers are far lower than those reported from the deeper, hard bottomed Finger Lakes. Variable density estimates are expected for organisms with a known, spatially clumped distribution pattern like that exhibited by zebra mussels. Some mussels occurred as individuals but most grew as variably layered colonies attached to sparsely distributed hard bottom materials or as "necklace" colonies on macrophyte stems of several different aquatic plant species. Among these common aquatic plants, coontail stem fragments overwinter beneath the ice and may serve as a refugium from which zebra mussels colonize the next year. Mussels also successfully overwinter on gravel bottoms associated with major points along the lake shore. Zebra mussels were not detected below 5 meters of water depth due to the softness of the muddy bottom. Sample total biomass of zebra mussels ranged from 0 to 653.92 grams/m² in 2018, with mean sample total biomass of 234.7 grams/m². Mean individual zebra mussel weight was 0.102 grams. In 2018, one-year-old zebra mussels had a maximum shell length of approximately 2.5 centimeters. Banded mystery snails and ram's horn snails were often collected in the samples. Our sampling did not detect other invasive species like Asian clams and quagga mussels in Honeoye Lake.

Comparing this year's data to that collected at the same locations in 2002 and 2014 demonstrates a subtle "boom and bust" cycle in population structure, that is, population density increases slightly in some years followed by decreases in subsequent years (see Figure 1). Zebra mussel density is influenced by many factors including intraspecific competition for the proportion of the plankton community that they find palatable (varies each year and monthly within any given year), the concentration of dissolved calcium in the water (required for their shell formation), the availability of hard substrates where they can connect and grow (may be decreasing with the decline of native pearly mussels in the lake), limited overwintering opportunities, and the level of predation on zebra mussels by fish (zebra mussels are found in stomach contents of several fish species). Fortunately, most zebra mussels in Honeoye Lake only live one year, and their population density never reaches the nuisance levels seen elsewhere in the Finger Lakes region.



Photo Credit: Terry Gronwall, HLWTF

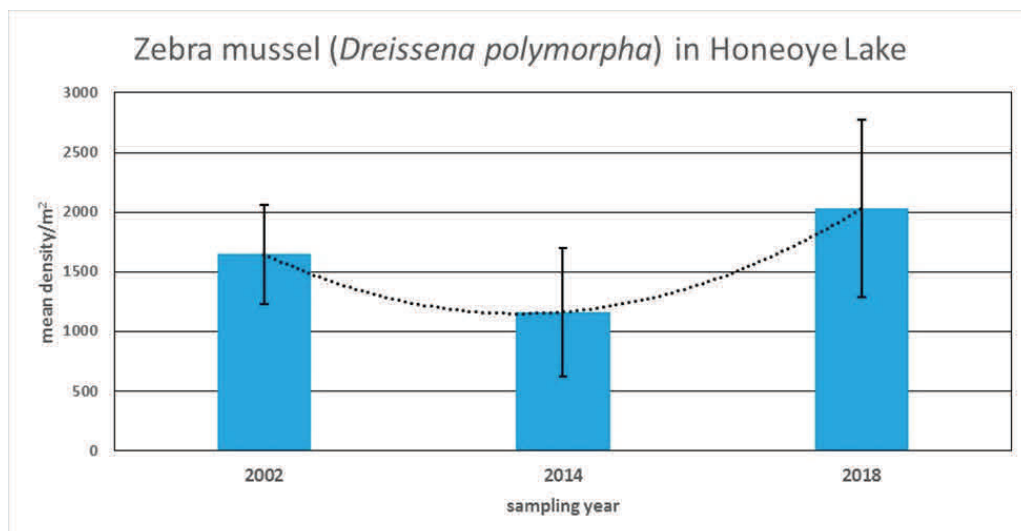


Figure 1: Changes in estimates of zebra mussel mean population density (\pm SE)

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

Al Favro, Representative, Town of Bristol

Ann Jacobs, Representative, Town of South Bristol

Mark Adams, Representative, Town of Naples

Dave Baker/Lindsay Mc Millan, Honeoye Valley Association

Permanent Professional Support is Provided by:

Megan Webster, Katie Cappiello, Alaina Robarge; Ontario County Soil & Water Conservation District (OCSWCD)

Dr. Bruce Gilman; Finger Lakes Community College (FLCC)

Tom Harvey, 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 Services

Finger Lakes Institute

Cornell University

The Nature Conservancy



Further Information may be obtained by contacting:

Chairman Terry Gronwall at (585)367-3000

watershedtaskforce@gmail.com



Honeoye Inlet After Completion of the Restoration Project!
 Photo Credit: Dr. Bruce Gilman, FLCC