CAYUGA LAKE WATERSHED
Network News
It takes a Network to protect a watershed.
2020 i3

COVID-19 and Water—*A preliminary report*

Hilary Lambert *CLWN Steward*

Introduction: the known and the unknown

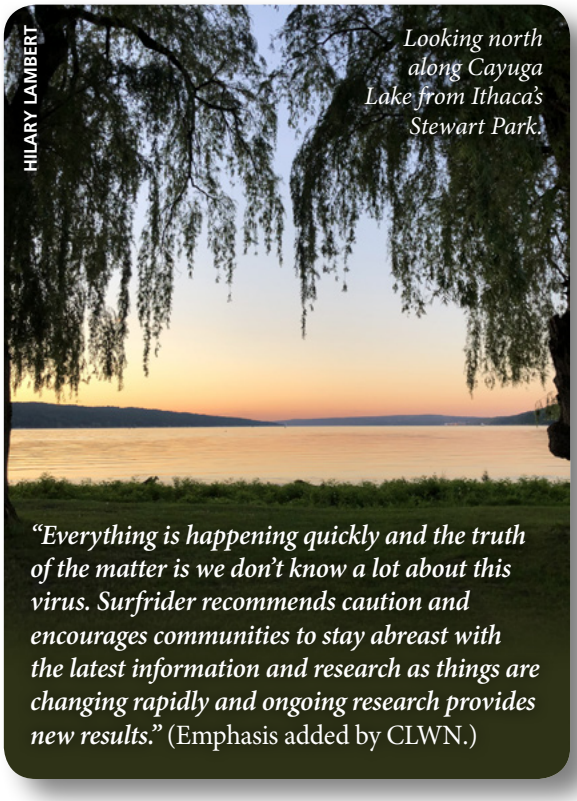
As the COVID-19 pandemic took hold of our lives during March 2020, the Network's staff and Board of Directors focused on ensuring that our programs and outreach could continue safely. Beyond that effort, the question soon arose, how might COVID-19 affect Cayuga Lake and its creeks, directly or indirectly?

A check in March of the CDC (Centers for Disease Control) online information about COVID-19 and water impacts was reassuring—at first. Basically, the CDC said that our water is safe. Nothing to worry about! But a closer reading indicated they meant *treated* water: drinking water that has gone through a water treatment plant; or swimming in a chlorinated pool. COVID-19 is destroyed by these processes; and the virus in human feces is destroyed in the sewage treatment process.

In other words, the CDC made the blanket assumption that all Americans interact only with chemically treated water. From other sources, we learned that the COVID-19 virus survives in human feces in untreated water, both salt and fresh. With that information, it was not much of a jump to wonder if people swimming in or drinking freshwater adjacent to poorly functioning septic systems could be infected by the virus.

Over the past few months, the overwhelming and often catastrophic impacts of the COVID-19 pandemic to our society has left researchers and public health officials little time to focus on this area of concern. The Surfrider Foundation (a national shoreline protection group) pulled together a report in late March, updated most recently on August 30. A June report from the New York State Water Resources Institute (located at Cornell University), was updated on July 28.

In the following paragraphs, we provide summary comments from the Surfrider and Water Resources Institute reports. Other in-state and national organizations are also now tracking this topic, and research studies are under way.



Looking north along Cayuga Lake from Ithaca's Stewart Park.

"Everything is happening quickly and the truth of the matter is we don't know a lot about this virus. Surfrider recommends caution and encourages communities to stay abreast with the latest information and research as things are changing rapidly and ongoing research provides new results." (Emphasis added by CLWN.)

Surfrider Foundation report excerpts July 28 2020

"While there are still notable research gaps, the general consensus is that the COVID-19 virus might be transmittable through the "fecal-oral route," meaning recreating in sewage polluted waterways could put you and your loved ones at risk of getting sick from a wide range of fecal-borne illnesses in addition to, potentially, COVID-19.

Similar coronaviruses have been shown to remain viable and infectious in natural freshwater environments including lakes and streams, for up to 13 days at 77°F and over 14 days at 40°F (the study only lasted for 14 days and on the last day there was still no reduction in infectivity for one of the coronaviruses tested). To note this study used lake water but conducted the test in a laboratory environment. In the natural water body, dilution and exposure to other factors (UV, organic substances, other microorganisms) would alter the risk and duration of infectivity (Bilal et al 2020). However researchers during a March 12 Water Research Foundation webinar note that high concentrations of the viable COVID-19 virus could put freshwater recreation users at risk."

"Like many harmful viruses and pathogens, the main exposure risk to the water recreation community is from sewage pollution.

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Hilary Lambert receives Lake Steward Award

Each year, the New York State Federation of Lake Associations, Inc. (NYSFOLA) presents its Lake Steward Awards to recognize individuals who have made outstanding contributions to their lake associations.

ON behalf of NYSFOLA, Nancy Mueller (Manager) presented this award to Hilary—by mail, not in person—in May 2020. She wrote: "On behalf of CLWN, and NYSFOLA, we thank you for your dedication to the protection of Cayuga Lake and its watershed as well as the rest of the Finger Lakes Region."

Jennifer Tufano-Grillo, CLWN Staff, said, "Congratulations, Hilary! We are so fortunate to work side by side with such a dedicated, inclusive, and genuinely warm and kind professional who inspires us to be our best selves. I cannot think of anyone more deserving."

COVID-19 and Water—*A preliminary report* *continued from cover*

The release of raw or undertreated sewage into our surface waterways can cause diseases to spread through the "fecal-oral transmission route."

In other words, when we recreate at the beach during a sewage spill or release of undertreated wastewater, we risk ingesting fecal-borne pathogens that can cause symptoms like stomach upset; ear, eyes, nose and throat infections; as well as more severe infections like E. coli, MRSA, giardia, hepatitis, and worse. At this point, the research community does not know if people can contract the COVID-19 virus from exposure to feces in recreational waters but the overall consensus is that it might be possible."

Source: Day, Katie. July 28, 2020. *COVID-19 and Beach Water Quality: Updates from the Research Community.* Surfrider Foundation. Full report link: https://www.surfrider.org/coastal-blog/entry/covid-19-and-beach-water-quality-updates-from-the-research-community

NYS Water Resources Institute, Cornell University August 30, 2020

From the Scope & Findings of the NYS WRI Study

"The focus of this work is not on disinfected wastewater since the literature suggests that SARSCoV-2 cannot survive the disinfection processes of water and wastewater treatment plants. However, not all wastewater is disinfected—in fact, there are multiple pathways that untreated, or partially-treated sewage can enter waterbodies.

For example, untreated or partially-treated sewage can be discharged by a wastewater treatment plant in the event of: 1) a combined sewer overflow (CSO) event, or 2) treatment plant malfunctions or failures (such as clogs or leaky sanitary sewer pipes). In addition to that, treated effluent that has not been disinfected can be legally discharged when a plant disinfects only seasonally or is not required to treat the effluent prior to release. Untreated wastewater can also enter a waterbody through pathways not related to wastewater treatment plants, including illegal sewage discharges and leaky septic systems." *(Please see the document online for full review of research to date.)*

Concluding Remarks from the NYS WRI Study

"Given that the viability of SARS-CoV-2 in wastewater has not been demonstrated, there is currently no evidence to suggest infection through contact recreation and professional interaction (sampling, monitoring, etc.). However, given the rapidly evolving body of knowledge on this virus, and the public health implications of infection, it seems prudent to take a conservative approach." (Emphasis added by CLWN).

"For people handling wastewater, or for those coming in contact with surface water that might reasonably contain raw or partially treated sewage, there are existing guidelines in place for doing so safely... These guidelines prescribe a combination of best sanitation and hygienic practices, as well as personal protective equipment (PPE).

A reasonable response to stakeholders interested in the questions addressed here could reference these existing guidelines, and act as a reminder that conservative approaches to protection are appropriate given the state of knowledge and the risks associated with COVID-19 infection. This document aims to increase dialogue and provide reference points regarding the current research on the presence of the virus in raw or partially treated sewage. For medical advice and other recommendations, please consult a medical professional or the Center for Disease Control and Prevention (CDC…)."

Source: Sayess, Rassil, Kristen C. Hychka, and Brian G. Rahm. August 30, 2020. *Short Communication: Presence of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the virus causing coronavirus disease 2019 (COVID-19), in raw and in partially treated sewage*. To view the entire report with CDC guidance and other links, go to https://wri.cals.cornell.edu/ and scroll down to the "Short Communication" link.

Other COVID-19 and water trends we are following

In the next issue of Network News, we will provide updates from these and other sources. We are also watching for research-based information about COVID-19 in toilet flush plumes; and will report on the tracking of COVID-19 via monitoring of wastewater in college dormitories. Note also that people without ready access to running water are at increased risk of infection because they cannot clean and disinfect effectively. This social justice issue needs to be paid attention to.

Additional References

Bilal, Muhammad, Muhammad Shahzad Nazir, Tahir Rasheed, Roberto Parra-Saldivar, Hafiz M.N. Iqbald. 2020. Water matrices as potential source of SARS-CoV-2 transmission—An overview from environmental perspective. Case Studies in Chemical and Environmental Engineering. Online: https://www.sciencedirect.com/science/article/pii/S2666016420300219?via%3Dihub#!

Becoming a Lake Friendly Living Champion

Ed and Nancy Currier *CLWN Board of Directors*

Making small changes as we live in the watershed can make a big difference. The health and recreational enjoyment of the Finger Lakes depends on our actions and involvement.

In our Spring issue, we highlighted the Lake Friendly Living (LFL) program, launched this summer for Cayuga Lake Watershed residents. We now have 22 program members! The LFL program currently includes Canandaigua, Keuka, Seneca, Cayuga, Owasco, and Skaneateles Lakes, creating awareness among watershed residents to adopt practices that lead to better water quality.

To get involved, go to our website—cayugalake.org > Get Involved > Lake Friendly Living and follow the steps:

1. Explore the Cayuga Lake Home Owner's Guide link
2. Review the 12 Simple Strategies, and
3. Choose any of the Best Practices you will use to make your property more lake friendly.

Then—Take the Pledge! You will have access to a wide range of Lake Friendly Living Resources, including Smart Steps for Clean Water. Everyone who submits a Pledge will receive an LFL logo sign to display on your property, as well as a sticker to let others know of your commitment to improve water quality as an LFL Champion!

Once you have your sticker and sign, please snap a picture of one or both and send to us for use on our continuing outreach and social media accounts. Thank you!

Caring for the Watershed During Seasonal Change

As seasons change, now is a good time to revisit our roles in helping to improve water quality. For those who are part of the ***Lake Friendly Living program*** and adopting best practices, we acknowledge your commitment to making positive changes to your property. Taking simple actions within our watershed benefits Cayuga Lake. At this time of year, two best practices for everyone to consider are lawn care, and leaf management.

Lawn Care

Many people feel the need to fertilize lawns at this time to ensure a healthy lawn in the Spring. However, we may not need to add fertilizer. Determine your soil's needs first by obtaining a simple soil test kit from your garden store. If your soil is in need of enrichment, be sure to purchase a phosphorus free fertilizer. The three numbers on the bag show the N-P-K (nitrogen—phosphorus—potassium) content. Phosphorus is an essential nutrient for initial plant growth, but not necessary for mature established lawns. Nitrogen and Phosphorus are the "maintainers" for your lawn. Limiting phosphorus will help with pollution runoff into nearby water bodies. Select a fertilizer, if needed, with a zero number in the middle.

Leaf Management

As trees and shrubs respond to shorter days and cooling temperatures, leaves change color and fall. Research has shown that leaves shredded by lawnmowers and left on the lawn improves the vigor and appearance of lawns by returning organic matter and nutrients to the soil. Mulching or shredding leaves in place is a simple solution that can save time and money. Leaf mulch recycles nutrients into soil to feed your lawn, improves soil health and retains moisture, reducing the need for watering in dry months. Transporting and managing leaf removal wastes energy and contributes to pollution. Leave them in place to reduce greenhouse gas emissions in your community.

Available for your viewing pleasure on our YouTube channel

Millions of people obtain entertainment and information via YouTube. To improve our public outreach at a time when in-person meetings are on indefinite "pause," we launched a Cayuga Lake Watershed Network YouTube channel this spring. Short and longer videos are being added as we develop them, and as they are sent to us by Network supporters and partners.

How to reach our channel: Go to www.youtube.com and enter Cayuga Lake Watershed Network. Select the option showing six or more videos. (We will soon have a link via our website.) Here's what's showing:

- "CLWN Welcome"—recorded June 22 2020, featuring Network staff Jenn and Hilary (2:24 minutes).
- "The Summer 2020 Interns of the CLWN and Community Science Institute"—recorded August 20 2020 (1:37 minutes).
- "Harmful Algal Blooms and the Cayuga Lake Monitoring Program" by Sofia Walzer. A July 2020 introduction to HABs and the HABs Harriers program run by the Community Science Institute (6:19 minutes).
- "Winter wander at Six Mile Creek" by Frank Muller—beautiful images and music by this great Ithaca photographer/artist (16:30 minutes).
- "Sky, water, land—Cayuga Lake—a celebration" (a day in the life of Cayuga Lake'), by Frank Muller. With spectacular nature sounds (34:40 minutes). Relax a while.
- "Cayuga Lake January to March 2020"—by Hilary Lambert. A short (4:33 minutes) compilation of brief videos from several locations around the lake, previously posted to our Instagram page. A summer 2020 compilation will be added soon.

2020 Summer Interns, from left: Sofia Walzer (CLWN), Madeline Czymmek (CSI), and Abbey Yatsko (CLWN), featured on our YouTube channel.

Celebrating 10 years of wetland restoration management at the Seneca Meadows Wetlands Preserve

Mark Benjamin *Community Outreach, Seneca Meadows, Inc.*

The Seneca Meadows Wetlands Preserve is situated on the northern boundary of the Cayuga Lake watershed, about three miles west of the Montezuma National Wildlife Refuge.

Fourteen years ago the team at Seneca Meadows was inspired to dream big. They dreamed of a nature preserve teeming with flowers and abundantly alive with reptiles, amphibians, mammals and birds. That vision required an initial investment of over $8 million, four years of planning and faith that the monumental investment would make that dream come true. In August of 2010 Seneca Meadows cut the ribbon on that vision. The ribbon cutting would be just the beginning. It would take even more to nurture the land and work with nature to craft it into the ultimate destination for family nature outings and birding experiences—The Seneca Meadows Wetlands Preserve.

The Seneca Meadows Wetlands Preserve also known as the Dove Wetland Mitigation Project officially opened on August 5, 2010. This year marks the 10 year anniversary of the Seneca Meadows Wetlands Preserve and its active management. The mitigation project, 576 acres in Seneca Falls, New York was permitted with the Army Corps of Engineers in 2007 (#1992-99316-15) and with New York State Department of Environmental Conservation (DEC# 8-4532-00023) in 2006. The mitigation was for a 71-acre class 2 regulated Freshwater Wetlands due to the landfill footprint.

The wetlands complex took more than four years to develop. The $8 million project restored meadows and forested wetlands. Nearly 200,000 native plants, trees and shrubs were planted. A team, including Applied Ecological Services Inc., specialists in ecological restoration, management, and research, designed and constructed the preserve. The result is an exciting educational and recreational wetlands preserve, complete with seven miles of hiking trails, open year round to the public. Fourteen years ago the preserve was a cornfield. Now it is a lush and diverse native plant habitat that has become a popular hiking and birding site. Through the special partnership with Audubon New York, Seneca Meadows has ensured that this environmental treasure will exist in perpetuity.

Mitigation to Conservation Transformation

The conceptualization team at Applied Ecological Services, Inc. and through collaboration with major environmental groups including Audubon, along with the support of Seneca Meadows, Inc. and community stakeholders, the wetland project ultimately became an 1100-acre ecological complex far beyond the industry standard of a 3-to-1 acreage mitigation. Originally deemed a mitigation project for the 2007 expansion at the landfill, the preserve was transformed into an 8-to-1 permanent wetland creation and restoration dream come true.

The Seneca Meadows Wetlands Preserve, with inset of restoration work.

Regulations typically require the creation of three acres of wetlands for every one taken. Seneca Meadows, Inc. decided to create eight times the required wetlands, creating one of the largest wetland recreation complexes in New York State. The complex includes 576 acres of wetland and grassland habitat. The site provides habitat, food and water to a variety of bird species year round. Under permanent protection through an Audubon New York conservation easement, the area supports a 157-acre wooded wetland and a 419-acre wetland complex. The site also supports an exemplary example of an upland savannah and tall grass prairie. All the wetlands are free of non-native, or "invasive" plant species. The 500-acre Black Brook floodplain which meanders through the complex was enhanced by re-routing the stream 2.5 miles and returning it to its original path as part of the project. The Seneca Meadows Wetlands Preserve

is free and open to the public 365 days a year, contains over 7 miles of groomed trails, overlook structures, and storm shelters for visitors.

Active Management

Immediately after the ribbon cutting ceremony in 2010, the teams from Seneca Meadows and Applied Ecological Services (AES) immediately began the work of nurturing the land. Seneca Meadows groomed the trails. AES continued to plant native species and manage for invasive species plants. This became a weekly, daily ritual and the fruits of that labor were being seen.

In addition hydrological indicators were regularly measured to provide evidence the site has the hydrology conditions present to support wetland vegetation. Eighteen water level recorders are continually monitored throughout the preserve and complemented by several soil moisture meters to ensure the meters meet or exceed the required fourteen consecutive day minimum for saturation. Along with that hydrology restoration methods have been implemented to provide performance—essentially to retain ground and surface water. These methods include agri-drains, ditch plugs and rock riffle weirs. Proper hydrology supports the growth of wetland vegetation, which in turn offers the best conditions for wildlife—especially wetland and grassland species.

Annual Surveys

If you build it, they will come. And did they ever! As part of the active management of the preserve AES began surveying for reptiles, amphibians, mammals and birds. A baseline survey was established prior to construction, and annual survey results began to tally some remarkable results, especially bird species.

All surveys at the preserve have been performed in accordance with NYSDEC via scientific collection permit.

Results to note include a comparison to the baseline survey consisting of three (3) New York Species of Greatest Conservation Need to thirty-five (35) New York Species of Greatest Conservation Need in 2019. Similarly striking was the measurement of seventy-eight (78) bird species at the baseline survey to 226 bird species to date. Of these birds, over 65% were not documented on the preserve until after the site was created and restored.

Important Bird Area (IBA)

This diversity of species along with the thirty-five (35) New York Species of Greatest Conservation Need being observed at the Seneca Meadows Wetlands Preserve enforce the importance of the preserve. Seneca Meadows Wetlands Preserve was designated an Important Bird (IBA) area in 2014 by Audubon New York. The Important Bird Area program is an international bird conservation initiative with the significant goal of identifying the most important places for birds and conserving them. IBAs are identified according to standardized, scientific criteria through a collaborative effort among state, national, and international non-governmental conservation organizations, state and federal government agencies, local conservation groups, academics, grassroots environmentalists, and birders. The site met the IBA at-risk Criterion because of the number of breeding Pied-billed Grebe and American and Least Bittern. Some of the most abundant bird species that rely on Seneca Meadows are Common Merganser, American Black Duck, Mallard, Wood Duck, Great Blue Heron, Snow Geese, Northern Shoveler, Blue-winged Teal, Marsh Wren, Bobolink, Savannah Sparrow, Short-eared Owl (winter), Rough-legged Hawk (winter), Common Moorhen, Wilson's Snipe and Northern Harrier.

Education & Research

In 2017 a formal partnership was developed with Braddock Bay Bird Observatory to install a radio tower to collect and track bird flight data. Braddock Bay Bird Observatory chose a site atop the Seneca Meadows landfill to launch a new radio tower as part of the Western New York MOTUS Network. The Western New York MOTUS Network is a network of radio receivers currently developing to be used in the tracking of birds and other terrestrial animals. Independent researchers deploy nanotags primarily on birds and bats, which are then detected whenever the tag is within the detection radius of one of the receiving stations. The tower located at Seneca Meadows landfill provides a unique elevation for expanded coverage, and an annual bird banding demonstration event is held at the Seneca Meadows Wetlands Preserve to further highlight this ongoing project. This tracking system will be a critical source of knowledge for wildlife conservation and research well into the future.

"The Montezuma Audubon Center has been proud to work with Seneca Meadows to manage and connect people to the Seneca Meadows Wetlands Preserve. With 1,100 acres of preserved land, the Preserve is teeming with over 200 bird species and provides vital habitat, food, and water resources birds and other wildlife depend upon to successfully raise young during the spring and summer and for survival in the winter months. The Seneca Meadows Wetlands Preserve supports an exemplary upland savanna and tall grass prairie and includes seven miles of hiking, walking and biking trails for observing wildlife. In 2014, the Preserve was designated an Audubon Important Bird Area because of the number of breeding Pied-billed Grebe and American and Least Bitterns and wintering Short-eared Owls. We are grateful to Seneca Meadows for their efforts in actively managing this habitat and congratulate them on this milestone."

—Chris Lajewski, Center Director

In 2018 Seneca Meadows through its partnership with The Nature Conservancy hosted Nature Conservancy LEAF (Leaders in Environmental Action for the Future) interns from New York City high schools for a day at the Seneca Meadows Wetlands Preserve. The LEAF program provides paid summer internships for high school students and helps educators from environmental high schools share best practices and scientific resources. The long-term goal of LEAF is to support more than 30 environmental high schools across the country.

The Seneca Meadows Wetlands Preserve has hosted several college and university research studies throughout the past 10 years, and is currently hosting a 2-year SUNY ESF Master's candidate pollination research study through 2020 as well as a 5-year Cornell University PhD candidate plant & pathogen

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Cayuga Lake Hydrilla Update

Summer 2020 hydrilla infestation & treatment on Cayuga's south end & east shore: *The four areas of hydrilla infestation in the lake being treated with Fluridone and a copper product include the Finger Lakes Marina, Lansing; Don's Marina, King Ferry; Village of Aurora shoreline; and several locations around the lake's south end, including the places where hydrilla was successfully eradicated in 2016. It is likely that at least some of this re-infestation is via boats bringing hydrilla back to these areas. Boaters need to practice CLEAN, DRAIN and DRY (see more below).*

Report from Bob Johnson, Racine-Johnson Aquatic Ecologists, LLC, about the Ithaca area

Chemically-treated areas responding well: "No hydrilla found as of mid-July in the area off Stewart Park, at the Cornell Sailing Center, in the Inlet near Cass Park, and the two locations on the west side of the lake just north of Treman Marine Park. Getting the herbicide treatment started the last week of June helped and may have worked this year. We did however find hydrilla at three sampling stations just west of the treated area at Stewart Park and these were spot-treated with herbicide. So far we have not found any other locations in the lake with hydrilla."

Benthic mats used instead of chemical treatments: "We have lots of hydrilla at the golf course lagoon off Fall Creek, and some in Fall Creek by the foot bridge. We did not find any in the Stewart Park Pond. We have placed 4 large mats over the area that was excavated by the City earlier in the spring and in the golf course lagoon, all by early July. Since then we have added many more benthic mats to the lagoon. We have placed a total of 42 mats to date in Fall Creek and covered about 8,680 sg. ft. of area." Benthic mats suppress growth by excluding light, air etc.

"Historic" amounts of rooted plant biomass at the south end: People whose boats are getting caught in giant beds of aquatic vegetation are not imagining things. Bob reports: "From our rake tosses It appears the biomass we are finding rivals anything we recorded in 1973, the year after Tropical Storm Agnes in '72. That year we recorded very high biomass of Eurasian watermilfoil at both the north and south ends of Cayuga. Although watermilfoil is present in 2020, it is a minor species at both ends of the lake now. Native plants like Elodea, *Potamogeton pusillus* and *Stuckenia pectinata* are the dominants [in 2020]."

Join the Lake Rakers! We have identification kits & free lake rakes to use from dock or boat to check for hydrilla. This is important from August to late autumn, when hydrilla plants are at their full extent.

Contact Jenn programs@cayugalake.org or Hilary steward@cayugalake.org to receive information and obtain a lake rake (that you promise to use). We ask you to check/patrol a shoreline area and report regularly.

BOATERS PLEASE HELP! ***Clean, Drain and Dry: Stop Invasives*** http://fingerlakesinvasives.org/get-involved/prevent/

Lakeshore municipalities have been contacted about hydrilla: To help prevent the spread of hydrilla into water up to 30 feet deep around the lake, elected leaders of the nineteen lakeshore municipalities receive hydrilla information updates.

Hydrilla information boxes are stocked at 70 sites (launches, marinas, parks) around Cayuga Lake for 2020.

The Hydrilla Hunters Team

- **Cayuga Lake Watershed Network**
  steward@cayugalake.org
  programs@cayugalake.org
  www.cayugalake.org
- **Discover Cayuga Lake**
  floatingclassroom@gmail.com
  www.discovercayugalake.org
- **Working in cooperation with:** the Cayuga Lake Watershed Intermunicipal Organization; NYS DEC; Buffalo Office of the US Army Corps of Engineers; the Finger Lakes PRISM; the Tompkins and Seneca County Soil & Water Conservation Districts; the Cayuga, Seneca and Tompkins County Departments of Health; & the Cayuga County Department of Planning. *And you.*

These free services & your volunteer time help to protect Cayuga Lake from Aquatic Invasive Species.

"It takes a Network to protect a watershed."

Celebrating 10 years of wetland restoration management... *continued from page 5*

research study through 2024. This plant & pathogen research already resulted in a site visit from Dr. Carla Di Antonio from University of California at Santa Barbara in late September of 2019. Her work includes restoration ecology research in Hawaii as well as in California grasslands. She was surprised to know that there are native prairie habitats in New York and was very impressed with the scale and design of the preserve.

Ongoing management and care for the preserve has been made possible by the active operation of the landfill, and AES continues to be onsite today performing the daily tasks to ensure the preserve continues to be that dream come true.

Young naturalists at the Seneca Meadows Wetlands Preserve.

HABs Harrier volunteers watch over the lake as blooms continue to occur in 2020

Nathaniel Launer *Community Science Institute*

HABs Harrier volunteers of the Cayuga Lake Harmful Algal Bloom (HABs) Monitoring Program continue to closely monitor the lake as the summer comes to an end. In recent weeks, HABs have started to occur on the shoreline more frequently with an extent and intensity that has been concerning to many.

HAB that occurred near Union Springs on Tuesday, September 8th. HABs Harrier volunteers carefully surveyed the extent of this bloom by boat, finding it along a roughly two-mile stretch of shoreline. View the virulent green HAB color at www.cayugalake.org > Resources > Newsletter: Network News.

During the 2020 monitoring season to date, the Community Science Institute (CSI) has confirmed 64 HABs in partnership with our volunteers around the lake. Unlike the pattern of bloom occurrence observed in the previous two years, in which a lull in HAB occurrence was seen in early August, blooms have occurred steadily throughout July (27 blooms), August (21 blooms), and early September (16 blooms) of 2020.

Of these 64 blooms, 41 were found to have levels of microcystin toxin that exceeded all safe guidance values set by the New York State Department of Health (NYSDOH) for microcystin in water. By examining samples of blooms under the microscope at CSI lab, we found that these high-toxin HABs were dominated by a toxin-producing cyanobacteria called *Microcystis*.

On September 8th one of these *Microcystis* dominant blooms inundated an approximately two-mile stretch of shoreline between Frontenac Park and Hideaway Harbor, extending as far from the shore as Frontenac Island (pictured on the right).

Less than 48 hours later, toxin analysis of the sample at CSI lab determined the bloom had a microcystin toxin concentration of more than 25 ug/L, exceeding all safe guidance values set for this toxin.

In 2018 and again in 2019, blooms dominated by *Microcystis* with high levels of microcystin toxin generally occurred within the northern half of the lake. This summer, the pattern of occurrence has been similar. So far, 39 of the *Microcystis* dominant blooms with high microcystin toxin levels have occurred along northern shoreline locations, however two have occurred on southern shorelines as well.

The data that we have collected so far show that HABs can present a clear threat to the quality of Cayuga Lake and our ability to use and enjoy this precious natural resource.

On August 24th a HABs Harrier reported and sampled a suspicious bloom that occurred on the shoreline of Stewart Park in Ithaca. Microscopic examination at the lab a few hours later found that the bloom was formed by an assemblage of different cyanobacteria, including a moderate to dense abundance of *Microcystis*. The next day, toxin analysis of the bloom sample showed it to have a microcystin concentration of 34 ug/L, exceeding all safe guidance values set for microcystin by the NYSDOH and the New York State Department of Environmental Conservation (NYSDEC) 20 ug/L threshold for a "high-toxin" shoreline bloom.

This data that CSI is collecting in partnership with our volunteer HABs Harriers is improving the collective understanding of HAB occurrence on Cayuga Lake and the risks that these blooms present. The data that we have collected so far show that HABs can present a clear threat to the quality of Cayuga Lake and our ability to use and enjoy this precious natural resource.

We must continue to work together to improve our understanding of HABs and the factors that promote their occurrence. By doing so, we can help inform and guide management strategies that will help ensure that more of these harmful blooms do not occur each year and hopefully even reduce the presence of these blooms on Cayuga Lake in the future. *See Upcoming Events, page 8, for information about Nathaniel Launer's October 24 online presentation about* HABs.

The mission...

The Cayuga Lake Watershed Network identifies key threats to Cayuga Lake and its watershed, and it advocates for solutions that support a healthy environment and vibrant, sustainable communities.

PO Box 348
Aurora, NY 13026

Current Resident

- **Educate**
- **Advocate**
- **Protect**

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Photographs by Hilary Lambert unless otherwise noted.

The Cayuga Lake Watershed Network thanks Leigh Dezelan of Dezelan Dezign and Pioneer Printing of Lodi for newsletter production excellence.

Upcoming Events

Check our website ***www.cayugalake.org*** *& Facebook page for the latest!*

Online Fall Community Conference gets rolling on October 24

In place of our usual in-person fall community conference at the south end of Cayuga Lake, the Network is providing a rolling (several dates) online community conference via Zoom.

The conference will kick off October 24 from 10 a.m.-noon with two HABs presentations. Nathaniel Launer (Community Science Institute) will report about the 2020 HABs season on Cayuga Lake, and Ruth Richardson (Environmental Engineering, Cornell University) will report on a pilot project using inexpensive microscopes and trained volunteers to look for HABs in lake water samples.

We will offer several more online sessions to the public during the ensuing weeks, on topics relating to the health of the Cayuga Lake watershed. All presentations will be recorded and made available at our YouTube Channel. Details soon via listserv, website, and Facebook page. Contact Jenn Tufano Grillo at programs@cayugalake.org to pre-register (required), receive details, and a Zoom link.

Unveiling of CLWN's new Strategic Plan

The Network's Staff and Board of Directors have been working on a new Strategic Plan since early summer 2020, with facilitation and wise guidance by Brenna Goggin and Diana Toledo of River Network www.rivernetwork.org. We will unveil the results and preview our next steps this fall and into the new year. Big Hint: Climate Change is our central focus, going forward.

Join the Lake Friendly Living program *See page 3 for details*

At our website www.cayugalake.org > Get Involved. Sign the pledge and display window sticker and logo sign, to demonstrate your resolve to protect our lake and watershed.

Please donate to support us!

The Network's Staff and programs could use your support. At our website, click on Become a member/Donate under the Get Involved heading. Donors receive a member benefit of the Network's quarterly newsletter.