

St. Lawrence County Environmental Management Council
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Draft

MEETING MINUTES

March 20, 2019

**2nd - Floor Conference Room, Public Safety Complex
49½ Court Street, Canton, New York**

Action items in bold italics / Motions underlined.

Blue boxes indicate internal links to sections of these Minutes.

1. **Call to Order:** Chair Joseph Brant called the meeting to order at 6:02 PM.
2. **Roll Call, Determination of Quorum:** A quorum was achieved during **Hearings, Comments From the Public.**

Members present: Catherine Bennett; Jennifer Berbrich; Joseph Brant, *Chair*; Ryan Burkum; Don O'Shea, *Vice Chair*; Lance Rudiger; Tiernan Smith; Nicole Terminelli, *BOL Liaison*; Pat Whalen, *Secretary*.

Members absent: Richard Marshall; Sue Rau.

Guest(s): Aaron Barrigar, County Forester; Lee Harper, President, Riveredge Environmental, Inc.

Staff: John Tenbusch.

3. **Hearings, Comments from the Public.**

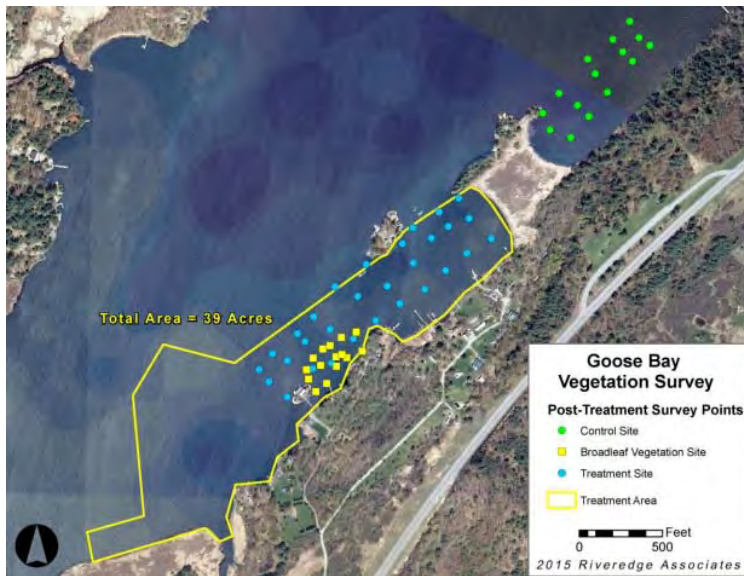
The invited speaker was Lee Harper, President, Riveredge Environmental, Inc.

Dr. Harper stated that he has been best known for 30 years as a "bird guy", but that his firm has more recently been working in local waterbodies to address problems with Eurasian Water milfoil. He reported that his firm has worked on milfoil projects in Goose Bay (on St. Lawrence River in Jeff. Co.); Mud Lake (Redwood NY.); Higley Flow (Colton); Norwood Lake (Norwood); Hickory Lake (Macomb).



Eurasian Watermilfoil

Harper described in depth the work his firm has done in Goose Bay and Mud Lake: application of herbicides in selected locations in each waterbody, with follow-up to determine effectiveness of the treatment, as well as to document any adverse effects.



Lee described that multiple steps are required to obtain a license from NYS DEC to apply herbicide in a particular location. He showed how small areas are mapped and geocoded; this allows application of herbicides in precise amounts at precise locations. Harper described the application process: it requires many volunteers to haul 40-lb bags of herbicide from whatever storage location to the boats; pouring bags into the spreader; then using the bow-mounted spreader (see photo below) to apply the herbicide.

Harper reported good results with certain herbicides that are very species-specific (kill milfoil while leaving most other aquatic plants alone), that do not travel far beyond their application area, and that break down quickly, so as not to remain in the water body for an extended period.

Harper’s presentation indicates that herbicide application may be used periodically to “knock down” an infestation of milfoil in a specific area, in order that other techniques (cutting or pulling by boat; hand pulling; benthic mats; etc.) might be able to slow future growth of this invasive species.



Chair Brant thanked Dr. Harper for his presentation, and called a five-minute recess. The meeting resumed at 7:35 PM. BY THIS TIME, A QUORUM WAS ACHIEVED.

4. **Acceptance of Order of Business, Items for New Business, and Items for Unfinished Business:** Adopted by consensus.
5. **Approval of Minutes of the December 2018, January and February 2019 EMC Meetings:** On a motion by Rudiger (T. Smith), the Minutes of all three EMC meetings were approved.
6. **Report by Representative of the Board of Legislators.** Nicole Terminelli reported that new members for the EMC will be appointed at the BOL’s April 1st meeting. She also reported that the BOL had approved in committee their annual resolution recognizing Earth Day (April 22) in St. Lawrence County. She mentioned that one Legislator had suggested that the Earth Day resolution might include a reference to agriculture. This suggestion was taken under advisement.

7. **Reports by EMC Members on Conversations with County Legislators:** None.

8. **Report of the Committees:**

a. **Executive Committee:** No meeting; no report.

b. **Conservation of Resources Committee (CRC):** P. Whalen reported; see attached.

i. Cat Bennett reported that she had been in contact with the owners/developers of the Trashpresso machine that might be used to convert waste plastic materials into usable building materials; she reported that they might be willing to bring their machine to St. Lawrence County to demonstrate its effectiveness. (For further information about Trashpresso, see <https://trashpresso.com/trash-tech/>)

ii. Bennett also reported that the movie “Plastic Paradise: The Great Pacific Garbage Patch” (see <http://plasticparadisemovie.com/>) will be shown at the Canton U-U Church on Tuesday March 26th at 6:00 PM. Promotion for this showing will commence immediately. The CRC would like to show a series of movies as a way to engage the public’s attention.

c. **Environment + Economy Committee (E+E):** R. Burkum reported. See attached.

d. **Invasive Species Committee (ISC).** D. O’Shea gave the Committee report; see attached.

i. The ISC had approved a proposal for an Earth Day activity: to work with the Ogdensburg Tree Commission to put on events in conjunction with Arbor Day. This proposal came to the EMC as a motion; it was approved.

e. **Watershed Management Committee (WMC).** J. Brant gave the Committee report; see attached.

i. Brant reported that the FUND for Lake George has published a map that indicates Black Lake as a source for invasive species to enter the Adirondack Park. He stated that the FfLG has asked to partner with the EMC to work on issues of invasive species.



9. **Report of the Staff:** Tenbusch reported that he is working on an application for CDBG funds to support the 23rd round of Direct Homeownership Assistance Program. The deadline for this application is Friday April 26th.

10. **Unfinished Business:** None.

11. **New Business:**

a. **EMC Facebook Page.** The creation of a Facebook page for the EMC was suggested. After some discussion, it was determined that Tenbusch will research what County policies and procedures are involved.

- b. ***Election of Officers.*** Tenbusch reported that he had been assigned by the Chair to poll the current officers about their willingness to serve another one-year term; each officer (Joseph Brant, Chair; Don O’Shea, Vice-Chair; Pat Whalen, Secretary) agreed to serve another term.
 - i. Brant called for nominations from the floor; there were none.
 - ii. On a motion from P. Whalen (J. Berbrich), the Secretary was directed to cast one vote for the nominees.

12. Announcements: Tenbusch announced that the Third Annual Sustainability Day will be held at SUNY Potsdam on Friday April 5th. The full day of activities will include workshops, panel discussions, poster presentations, and a keynote address by photojournalist Peter Menzel who will discuss consumption and waste around the world. For more information, see <https://sites.google.com/clarkson.edu/sustainabilityday/home>

13. Message to the Board of Legislators: EMC members were asked to let their assigned BOL members know about Dr. Harper’s work to address Eurasian Watermilfoil in various waterbodies in and around St. Lawrence County. EMC members are also encouraged to thank their assigned BOL members for the resolution to recognize April 22nd as “Earth Day” in St. Lawrence County. The BOL has recognized “Earth Day” in St. Lawrence County every year since 2000.

14. Adjournment: The meeting adjourned by consensus at 8:07 PM.

Respectfully submitted:

Patrick Whalen

Secretary

Minutes written by J. Tenbusch



St. Lawrence County Environmental Management Council Conservation of Resources Committee Meeting Wednesday March 13, 2019

Purpose of the *Conservation of Resources Committee*.

- “Conservation” can mean “saving” or “effective/efficient/wise use”.
 - Thus, “conservation of resources” might include topic areas including solid waste management; household hazardous waste management; recycling; energy efficiency; wise use of natural resources of St Lawrence County
 - Conservation might also mean “preservation”, as in preservation of endangered/ rare/ significant flora (plants) or fauna (animals/creatures).
-

Present: Pat Whalen, Chair; Catherine Bennett; Jennifer Berbrich. Sandy Maine attended as a guest. J. Tenbusch attended as staff.

The meeting began at 4:45 PM.

Item 1: Review Report of Last Meeting.

- J. Tenbusch reported on the discussion concerning the results from the fishing survey that had been conducted at the Bassmaster tournament on the St. Lawrence River in August 2018.
- There was discussion about several ideas that had been proposed to help deal with the issue of waste plastics.
 - Cat Bennett had reported on a machine that could be used in third-world environments to re-manufacture plastic material into tiles that would be usable for construction projects (See <https://www.nationalgeographic.com/magazine/2018/06/genius-arthur-huang-plastic-waste-planet-trashpresso/>)
 - Tenbusch had reported having seen a video about converting waste plastics into oil. (See <https://plastics.americanchemistry.com/Plastics-to-Oil/>)
 - There had been discussion about asking local universities to develop local solutions to the issue of waste plastics.
 - Sandy Maine reported that she is very interested in working on issues of plastic waste.
- Tenbusch reported that the E+EComm was also interested in contacting local universities to discuss how local solutions might be developed to deal with recyclable waste materials.
 - Tenbusch recalled that, during a presentation to the EMC in Oct. 2018, it had stated that St. Lawrence County faces two major problems in getting recyclers to be interested in our waste material:
 - We are too small; we don’t generate sufficient quantities of useable material.
 - We are too far away; it costs more to transport our waste/recyclables than they are worth.

- The E+EComm had suggested that a meeting be set up to which reps from universities would be invited. This meeting might best be scheduled before spring semester ends (i.e., before the end of April).
- Tenbusch reported on an earlier proposal to eliminate non-recyclable and/or single-use plastics. The proposal would be to ask local stores, restaurants, etc., to voluntarily replace NR/SUP materials with recyclable, compostable or re-usable materials. Those businesses that make progress can be publicly celebrated, as a way to encourage other businesses to follow their example.
 - There was discussion about how to motivate individuals to reduce/eliminate their use of NR/SUPs.
 - There was discussion that Save The River is also beginning a program to eliminate single-use plastics. Staff will investigate. (**Note:** The presentation made at STR's Winter Conference on Feb. 2nd can be seen here: <https://www.youtube.com/watch?v=Lyo8jXEDOwE&feature=youtu.be>)

Item 2: New Projects for 2019

- Bennett reported that she had an agreement with the Canton Unitarian-Universalist Church to show the movie "Plastic Paradise: The Great Pacific Garbage Patch". The movie will be shown at the U-U Church on Tuesday March 26th at 6:00 PM.
 - The movie lasts approx. 1 hour; there will be time for discussion afterward.
 - Staff will ask Nature Up North to co-promote.
 - Staff will ask North Country Now/This Week to publicize.
 - Maine will send word out to her customer list (2,000 email addresses)
 - Interested people will be asked to RSVP to CPO; we would like to provide some basic refreshments.
- **Earth Day Project.** Tenbusch explained that the EMC typically conducts an activity in conjunction with Earth Day (annually on 4/22).
 - Tenbusch reported on a proposal to coordinate with the Ogdensburg Tree Commission for an Arbor Day project on Friday April 26th.
 - The Committee is willing to work on this project

The meeting was adjourned at 5:35 PM.

The next meeting of the CRC will be held on Wednesday April 10th at 4:45 PM.



St. Lawrence County Environmental Management Council Environment + Economy Committee Meeting Monday, March 11, 2019

Purpose of the Environment + Economy Committee.

- To explore the relationship and interactions of the environmental resources of St. Lawrence County with the local and regional economy.
 - To reach out to individuals, business, and organizations involved in the use of natural resources in an economic capacity and to learn from these individuals and organizations about the challenges and opportunities in their endeavors.
 - To act as the interface between business, residents, and lawmakers of St. Lawrence County with regards to the role of natural resources in the economy, with an emphasis on sustainable use.
-

Meeting started at 5:02 PM. **Present:** Ryan Burkum, Chair; Tiernan Smith; Rod Tozzi; Pat Whalen. J. Tenbusch attended as staff.

Item 1: Review Report of Last Meeting.

- Dwyer presentation to BOL. Tenbusch reported that Hogan Dwyer had presented the concept of a “carbon-fee-and-dividend” program to the BOL Operations Committee. Dwyer returned to the full BOL meeting on March 4th, and spoke during the “Citizen Participation” portion of the meeting; he offered to continue the discussion as the BOL desire.
- Follow-up on Survey of Businesses.
 - Tenbusch reported that he has contacted two persons (David Fisher; Bill Hosmer) who had responded to the Survey of Businesses in 2018. Fisher is scheduled to speak to the EMC in April 2019. Hosmer has not yet committed to a date. Tenbusch will reach out to Steve Curran, as well.
 - Ryan Burkum reported that he has not yet drafted a follow-up note to be sent to businesses that had responded to the Survey.
 - Tenbusch reported that he has not yet spoken to the SLC Chamber of Commerce about coordinating communication to businesses.
- Idea to ask local colleges about working on technical solutions to problems of recycling plastic waste.
 - There was discussion about hosting an open meeting, with reps from different colleges in attendance. Others to invite to this meeting might include:
 - Rep from Casella Waste Management
 - Rep from Development Authority of the North Country
 - Larry Legault, SLC Recycling Coordinator

- Timing. It was suggested outreach about this project be done in the spring, before the academic year ends.
- An initial meeting might be held immediately before the start of the 2019-20 academic year (August?).
- P. Whalen, R. Tozzi and T. Smith volunteered to contact local colleges to determine to whom invitations to this meeting might be sent.

Item 2: New Projects for 2019.

- Earth Day Project. Tenbusch described the proposed Earth Day project:
 - The EMC would coordinate with the Ogdensburg Tree Committee to host a series of events in Ogdensburg in conjunction with Arbor Day, April 26th.
 - Events would include tree planting/dedication; marking/banding remaining ash trees located on public property across the City; peeling bark from ash trees that NYSDOT will take down in late March/early April in order to look for EAB larval evidence.
 - The Committee agreed that this would be a suitable project.

The meeting adjourned at 5:40 PM.

The next E+E Committee meeting will be held on Monday April 8th at 5:00 PM.



St. Lawrence County Environmental Management Council Invasive Species Committee Meeting Tuesday March 12th, 2019

Overview of the Invasive Species Committee.

- The Committee decided that the variety of “invasive species” topics is so large, that it might be best for this committee to work on specific areas.
 - Emerald Ash Borer
 - Eurasian Watermilfoil
 - Wild Parsnip
 - Others
-

Meeting started at 1:05 PM.

Present: Don O’Shea, Chair; P. Whalen. John Tenbusch attended as staff.

Item 1: Review Previous Meeting Report. No comments were made.

Item 2: New Projects for 2019:

- ***Emerald Ash Borer.*** Tenbusch reported:
 - Tenbusch, Whalen, and Aaron Barrigar and Jevonnah Foster of SLC SWCD had conducted a preliminary driving survey of ash trees along SH 37 and nearby roads. The purpose had been to observe where EABs might have created pockets of infestation.
 - New infestations were found in Massena, Louisville, Waddington, Morristown.
 - **Note:** these observations have not been confirmed by DEC.
 - See attached for photos, map of infestation sites.
 - Infestations had previously been reported in Hammond (twice) and Lisbon.
 - Curiously, no EABs have been found to date in Ogdensburg or Oswegatchie.

Item 2: ISC Projects for 2019:

- ***Eurasian Watermilfoil.*** Tenbusch has spoken with Lee Harper about talking to the EMC about his work with milfoil. Harper will speak at the March EMC meeting.
 - Still on the list is observing the milfoil harvesting machine that is reported to be operating at Hickory Lake.
- ***Wild Parsnip.***
 - P. Whalen will check with DEC about what are their guidelines for dealing with Wild Parsnip. (Note: see attached email from P. Whalen.)
- ***Blue-Green Algae Blooms.***
 - This Committee will work cooperatively with the Watershed Management Committee on this topic.

Potential Project(s) for Earth Day, April 22nd.

- Tenbusch reported on a proposal for the EMC to work with the Ogdensburg Tree Commission to hold a series of events in conjunction with Arbor Day, Friday April 26th. These will include:
 - Dedication of new trees planted at Groulx Park to replace 4 aged, deteriorated ash trees that were removed last fall.
 - Several teams of volunteers moving around the city by car to tag all publicly-owned ash trees (50 trees+/-?). Locations of these trees are known, since they were included in the tree inventory completed in 2017.
 - Other volunteers will meet at the Old Landfill (at the south end of Champlain Street, south of SH 37) to peel sections of ash tree trunk; these trees will have been removed from the area in downtown Ogdensburg, near the Old Customs House, between the Arterial (east-west highway) and the Oswegatchie River.
 - *The Committee recommended this project to the full EMC.*

The meeting ended at 1:45 PM.

Next ISC meeting will be at 1:00 PM on April 9th.

Survey of Ash Trees along St. Lawrence River 3/8/2018

A. Barrigar; J. Foster; J. Tenbusch; P. Whalen



At Massena Golf Course

Survey of Ash Trees along St. Lawrence River 3/8/2018

A. Barrigar; J. Foster; J. Tenbusch; P. Whalen



At Old River Road, Massena

Survey of Ash Trees along St. Lawrence River 3/8/2018

A. Barrigar; J. Foster; J. Tenbusch; P. Whalen



At Coles Creek State Park, Waddington

Survey of Ash Trees along St. Lawrence River 3/8/2018

A. Barrigar; J. Foster; J. Tenbusch; P. Whalen



Along SH 37, near Seaway Diner, Waddington

Survey of Ash Trees along St. Lawrence River 3/8/2018

A. Barrigar; J. Foster; J. Tenbusch; P. Whalen



At West end of Interchange, Rts 12 & 37, Morristown

Survey of Ash Trees along St. Lawrence River 3/8/2018

A. Barrigar; J. Foster; J. Tenbusch; P. Whalen

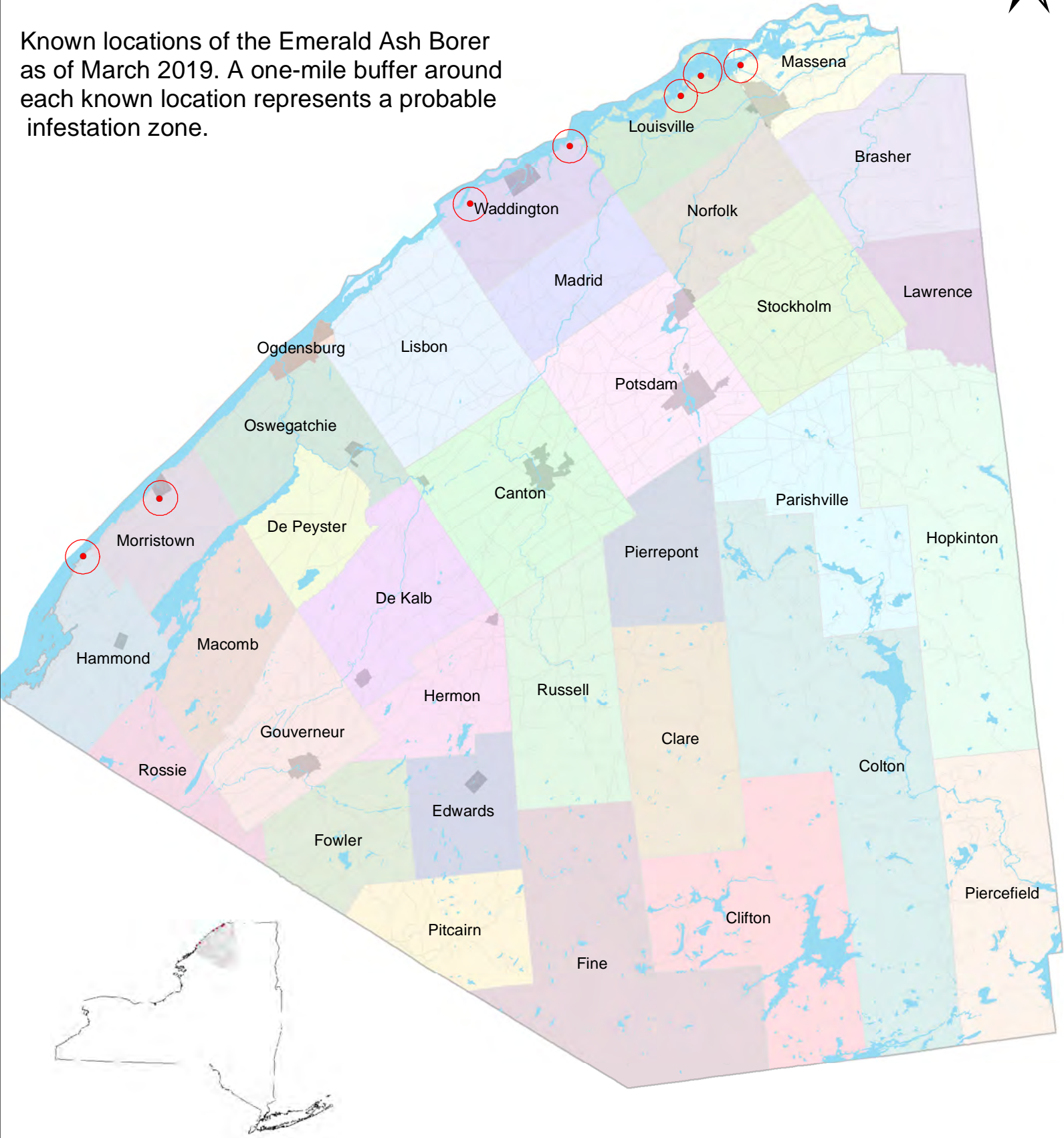


At Rest Stop on SH 12 in Hammond

St. Lawrence County: EAB Locations

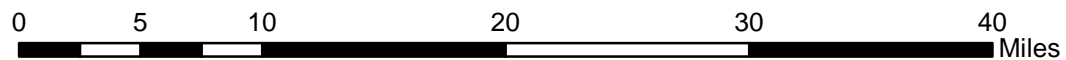


Known locations of the Emerald Ash Borer as of March 2019. A one-mile buffer around each known location represents a probable infestation zone.



Legend

- EAB
- 1 Mile Buffer



Tenbusch, John

From: whalenpj@gmail.com
Sent: Tuesday, March 19, 2019 4:27 PM
To: Tenbusch, John
Subject: Fwd: Wild Parsnip

FYI

Sent from my iPhone

Begin forwarded message:

From: "Smith, David (DEC)" <david.smith@dec.ny.gov>
Date: March 19, 2019 at 11:55:21 AM EDT
To: Patrick Whalen <whalenpj@gmail.com>
Subject: Wild Parsnip

Pat,

Good to hear from you, glad all is well and you're soon to be a grandfather. Does that worry you?

I checked around, including with Irene today (who says hello), and there are not any special treatments for wild parsnip. Like giant hogweed, dig out small patches, and/or spray with herbicide. I have attached an info flyer from our website, and the only other thing it says is if you cut the plant after it's flowered and before the seed is set you may kill the plant, and prevent future seedlings. So probably for town and county road maintenance unless there is an especially thick patch the main advice would be to be careful when handling mowing machines and weed whipping to keep out of reach of the parsnip and keep skin covered when you could be in contact with the plant or plant parts.

Enjoy spring as of tomorrow, though there does not appear to be any big warmup in sight.

<wildparsnipfact_pdf.pdf>



St. Lawrence County Environmental Management Council Watershed Management Committee Meeting Tuesday, March 12th, 2019

Overview of *Watershed Management Committee*.

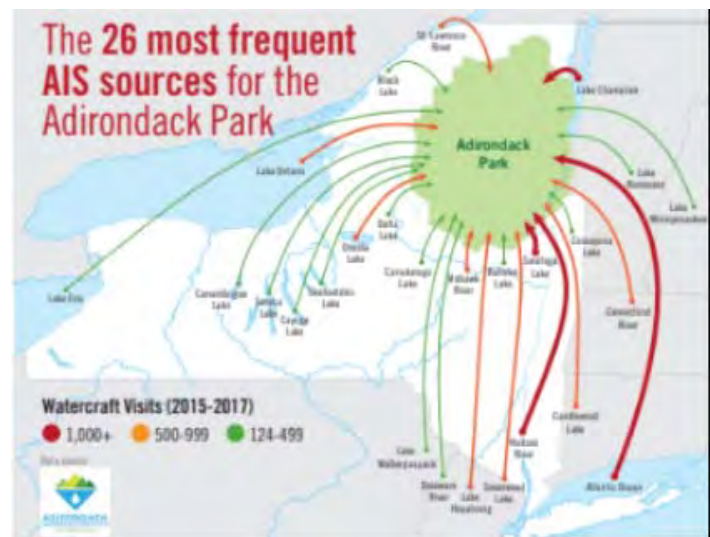
- This Committee has worked on a number of watershed questions/issues, including:
 - Development / promotion of riparian buffers
 - “No Mow Zones” / “Trees for Tribs”
 - Work with U.S.A. Corps of Engineers to bring Sediment Transport Analysis and Regional Trainning to local colleges, high schools, etc.
 - Stenciling storm drains to read: “Don’t Dump – Drains to River”
-

Meeting started at 4:00 PM.

Present: J. Brant, Chair. J. Tenbusch attended as staff.

Item 1: Review Priority Projects.

- Shoreline Resiliency Planning Project. Tenbusch reported that the Planning Office is holding monthly teleconference meetings with the consultants hired to conduct the Study.
 - The consultants are working on an early draft of their report.
 - The next meeting will be held on Monday March 25th at 10 AM.
- Blue-Green Algae / Harmful Algal Blooms. J. Brant and J. Tenbusch discussed recent developments regarding blue-green algae.
 - Brant had provided additional information about HABs. See attached.
 - Tenbusch will make contact with Greg Boyer, of SUNY ESF, to see if Boyer (or someone else whom he would recommend) might make a presentation to the EMC.
 - Brant reported that the FUND for Lake George had published a map that indicates Black Lake as a source for invasive species to enter the Adirondack Park. See attached for the related article, or see here: <https://www.adirondackalmanack.com/2018/04/monroe-and-sly-act-now-to-stop-invasives.html>



Item 2: Other Items.

- Committee Work Plan for 2019

- Brant reported that he wants to see Black Lake remain as a priority for this Committee.
- Brant wanted to remind the EMC that March 22nd is observed as “World Water Day”. The theme for World Water Day this year is “Leaving no one behind”.
 - See <https://www.worldwaterday.org/> for more info.
 - See attached factsheet.
- Brant also reported that “Septic Smart Week” will be observed September 16 – 20th. See <https://www.epa.gov/septic/septicsmart-week> for more information.
 - There was discussion about how this event might be observed in St. Lawrence County, considering that the County has secured two grants, totaling over \$1.5 million, to assist homeowners who have deficient septic systems to repair or replace their systems.



- Earth Day Project. Tenbusch reported on a proposal for the EMC to work with the Ogdensburg Tree Commission to observe Arbor Day. There would be several activities, including:
 - Dedication of trees that have been planted at Groulx Park in Ogdensburg, to replace 4 mature ash trees that were taken down last fall.
 - Several volunteer teams will drive around the City to tag publicly-owned ash trees.
 - Other volunteers would gather at the old landfill, at the southern end of Champlain Street, to peel sections of ash tree trunks from ash trees that NYS DOT will take down in late March/early April.

The meeting was adjourned at 4:35 PM.

The next meeting of the Watershed Management Committee will be held on Wednesday, April 9th, 2019 at 4:00 PM.



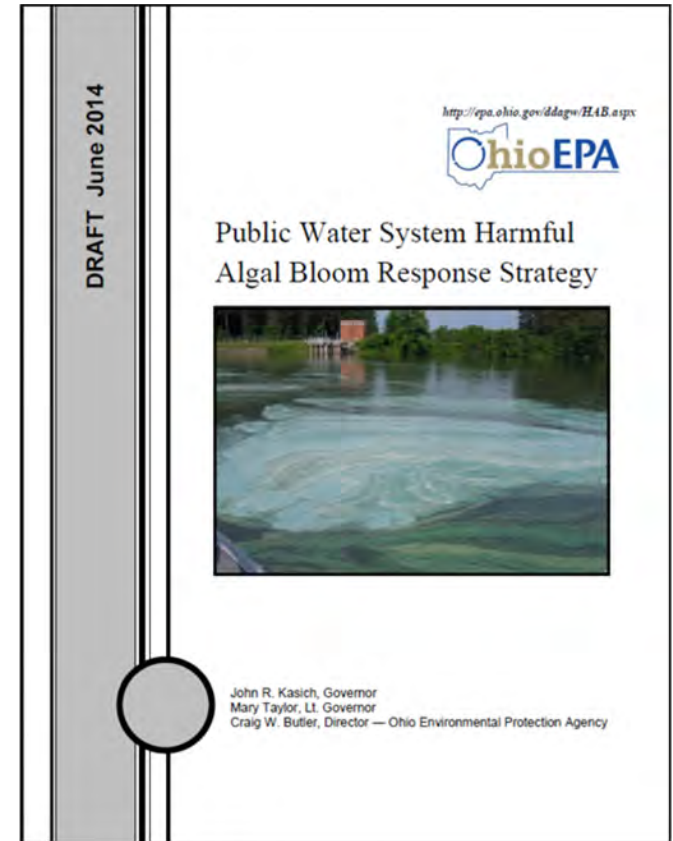
Ohio EPA Prevention, Detection and Response to Cyanotoxins in Drinking Water

Beth Messer
Assistant Chief
Division of Drinking and Ground Waters
Ohio Environmental Protection Agency



Ohio Harmful Algal Bloom Response

- **Ohio EPA began Sampling for Cyanotoxins at Public Water Systems in 2010**
- **Collaborated with Ohio Department of Health and Ohio Department of Natural Resources to Develop State of Ohio HAB Response Strategy**
 - Developed in 2011, reviewed and revised annually
 - Sampling Frequency and Procedures,
 - Cyanotoxin Advisory Levels for:
 - Microcystins (total)
 - Cylindrospermopsin
 - Saxitoxins (total), and
 - Anatoxin-a
 - Public Notice Templates, and
 - HAB-related Contingency Planning Recommendations
 - <http://www.epa.ohio.gov/portals/28/documents/HAB/PWS-HAB-response.pdf>
 - Will revise based on U.S.EPA national health advisory guidance and lessons learned in 2014



Cyanotoxin Sampling



- **Ohio EPA Sampling is Primarily Incident-Response Based**
- **Factors Considered:**
 - **Source Water Quality:** Phytoplankton, Phycocyanin, Chlorophyll-a, pH, Geosmin or MIB taste and odors
 - **Operational Issues:** Decreased filter run times and filter clogging, Increased chlorine demand
 - **Satellite & NASA Flight Data:** Remotely monitor bloom based on presence of pigments unique to cyanobacteria
 - **Algaecide Application:** At a minimum, sample following Ohio EPA pesticide permit requirements
- **Ohio EPA Encourages PWSs with a History of Persistent HABs to Voluntarily Monitor**
- **Sampling at Lake Erie Islands and Marblehead routinely in lieu of triggered – perhaps others in 2015**
- **Inland Lake Ambient Monitoring (Partner with Clean Water Act program)**



Sampling Frequency & Analytical Method

- **Sampling Frequency:**
 - Weekly until toxins are $< \frac{1}{2}$ Ohio threshold for two consecutive weeks and bloom has dissipated.
 - If raw water microcystin concentrations are > 5 ug/L, increase sampling and analysis to 3 times/week.
 - Finished water detections trigger repeat sampling & analysis within 24 hours. Ongoing sampling may include distribution sampling.
 - Need to reevaluate based on U.S. EPA H.A. Guidelines.
- **Analytical Method:** Ohio EPA utilizes the ELISA method for total microcystins (MC-ADDA), saxitoxin, and cylindrospermopsin and LC-MS/MS for anatoxin-a



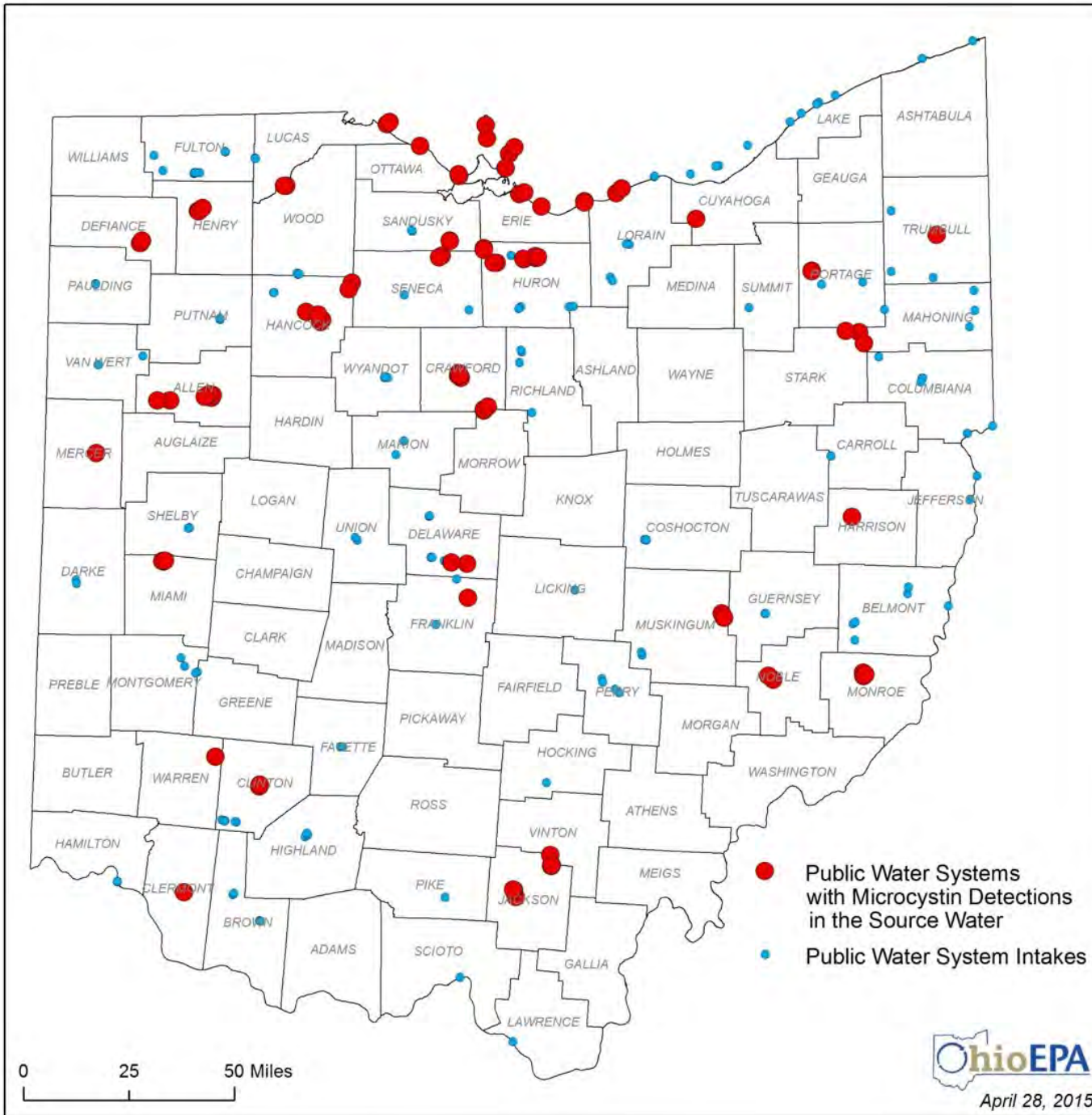
Public Water System Sampling Summary

- Ohio EPA has collected approximately 2,000 cyanotoxin samples at 56 water systems (almost 1/2 of all Ohio surface water supplies).
- Public water systems have voluntarily submitted results to Ohio EPA for over 1,000 cyanotoxin samples.
- Cyanotoxins detected in MAJORITY of source waters sampled.
- Five water systems had finished water detections >0.3 ug/L
- Two water systems exceeded 1.6 ug/L

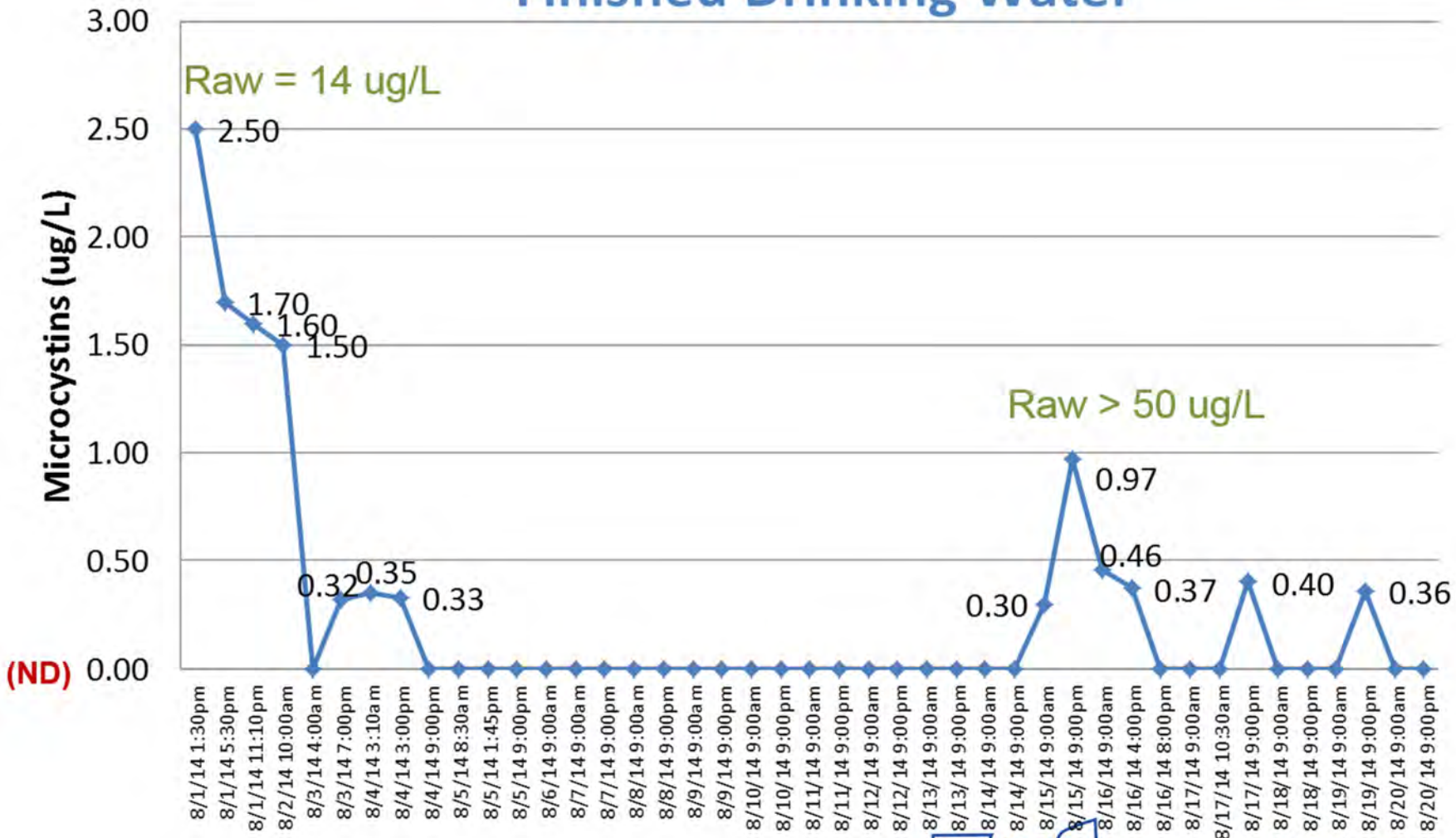
Public Notice is recommended if a health advisory level is exceeded, however, Director also has authority to issue public notice.



Public Water Systems with Cyanotoxin Detections in their Source Water



Microcystins Concentrations in Toledo's Finished Drinking Water



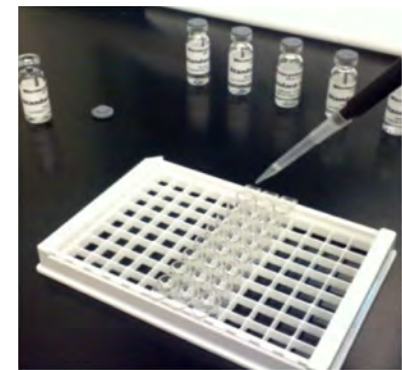
ND= Not Detected (Concentration <0.25)

Data Source: Toledo PWS

Microcystins Testing - ELISA

- **Ohio EPA uses the Enzyme-Linked ImmunoSorbent Assay (ELISA) Microcystin-ADDA Method**

- Measures Total Microcystins
 - (all congeners, based on ADDA)
- Certified by USEPA (ETV Program)
- Moderately sensitive (RL: 0.30ug/L)
- Suitable for raw & finished water
- Quick (four hours), useful for operational adjustments
- Relatively inexpensive
- Does not require high end equipment or expertise to run (can be used in water system lab)
- Does not provide concentrations of specific Microcystin congeners
- Is an indirect measure of toxin



Microcystin-ADDA ELISA SOP

- Helps ensure consistent sample handling, preparation, and application of analytical method.
 - Finished water samples and treatment train samples that are subjected to an oxidant must be quenched upon collection.
- Labs must demonstrate they can achieve an acceptable level of precision and accuracy.
- Ohio EPA conducts site visits at labs performing analysis.
- Considering Ohio EPA confirming finished water detections triggering an advisory

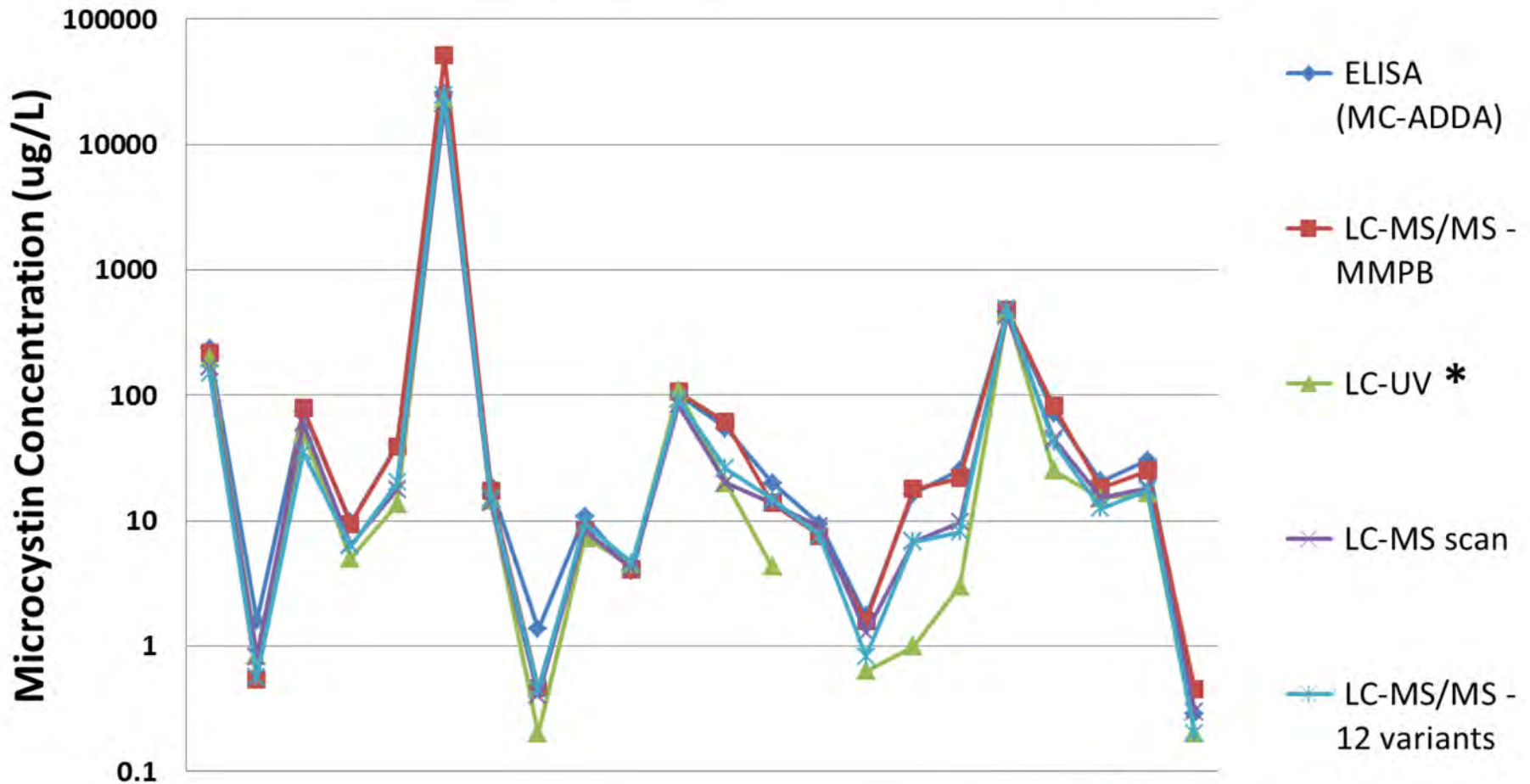


Analytical Method Comparison & Microcystin Congener Evaluation

- 11 Sites/22 Samples: 4 Up-ground Reservoirs, 2 In-stream Reservoirs, 2 Lake Erie locations, 2 Canal-feeder Lakes, and 1 River Source.
- Variety of Cyanobacteria Genera Represented
- Each Sample Analyzed Using 5 Separate Analytical Methods
- MC-LR was not the most common congener
- Confirmed ELISA results



Results of Method Comparison



* LC-UV data presented does not include false-positives that were eliminated from total (Based on lack of confirmation with LC-MS methods).
Sample # 14 was non-detect using LC-UV.



HAB Response Strategy Revisions

- Incorporate USEPA Health Advisory Guidance
- Determine Analytical Method and sampling and analytical protocols
- Apply 10 Health Advisory as “not to exceed”
- Initiating an advisory
 - Confirmation analysis and sampling
 - Allowing for treatment adjustments



HAB Response Strategy Revisions

- Removing an advisory
 - Defining the number and time between samples
 - Entry point or distribution
- Cyclical advisory level detections
- Messaging
 - Revising Public Notices
 - Clarifying Exposure pathways



Ohio EPA Preparation

- Hosting Multi-Agency Tabletop Exercises to Better Prepare for any Future Advisories.
- Expanding the early warning network.
- Requiring HAB Contingency Plans for Susceptible Public Water Systems.
- Collaborating with University and Federal Researchers on Treatment Technologies, Analysis Methods, Remote Sensing, Bloom Dynamics, and other Applied Sciences.
- Assisting with Revisions to Ohio AWWA Cyanotoxin Treatment White Paper.
- Participating in State and National HAB Workgroups.
- Assisting other States.



Technical Assistance, Training & Outreach

- Responded to over 700 requests for information related to HABs at public water systems
- Gave over 30 presentations on HAB impacts to water systems
- Present at the 2-day OSU Stone Lab HAB Workshop (since 2010)
- 5 Targeted meetings with PWSs in 2014
- Additional Meetings in 2015
- Targeted Outreach to Susceptible Systems

Algae ID and HAB Workshops Offered by OSU & Ohio EPA

- Held at Stone Lab Campus on Gibraltar Island
- Geared to Water Supplies and Lake Managers
- August

<http://stonelab.osu.edu/courses/noncredit/87/>



HAB Funding

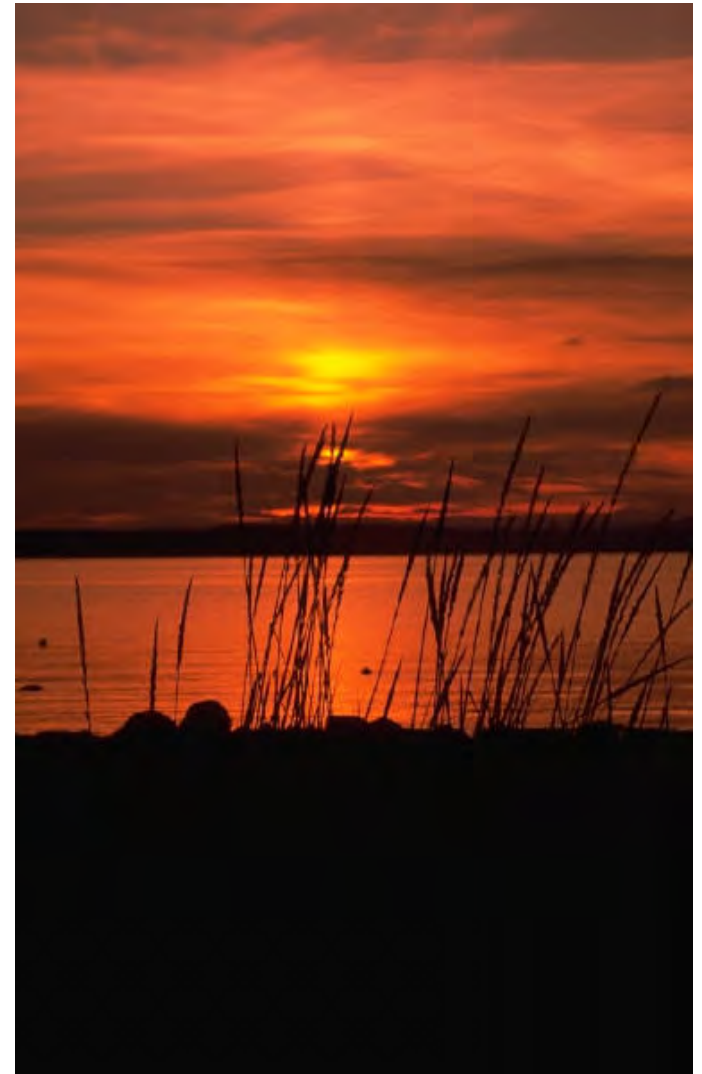


- \$1 million in grants to surface water public water systems to enhance their monitoring capacity for cyanotoxins and harmful algal blooms.
- \$50 million in 0% interest rate loans to surface water public water systems for enhanced water treatment infrastructure components as well as back-up water sources.
- \$100 million in 0% interest rate loans for equipment and facilities that reduce the levels of phosphorus and other nutrients.
- \$1.25 million in grants for farmers to plant cover crops or install controlled drainage devices.
- OBOR \$2 million in grants for applied research on harmful algal blooms.



Thank You!

<http://www.epa.ohio.gov/ddagw/HAB.aspx>

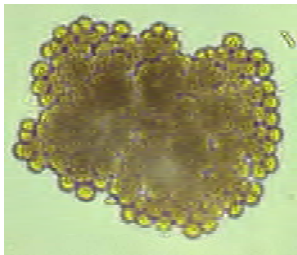


Freshwater HABs=CyanoHABs

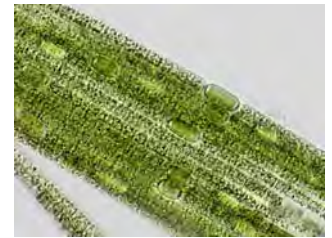
Anabaena



Microcystis



Aphanizomenon



Gloeotrichia

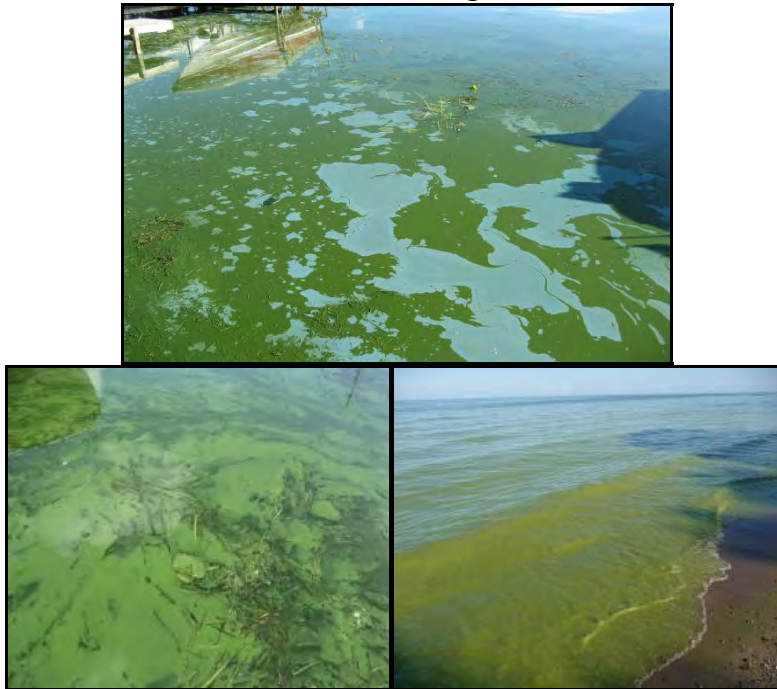


Toxins (LD50 = acute toxicity ^A)	Structure (number of variants)	Activity	Toxigenic genera
Hepatotoxins			
Microcystins (25 to ~ 1000)	Cyclic heptapeptides (71)	Hepatotoxic, protein phosphatase inhibition, membrane integrity and conductance disruption, tumour promoters	<i>Microcystis</i> ^{BCD} , <i>Anabaena</i> ^{BCD} , <i>Nostoc</i> ^{BC} , <i>Planktothrix</i> ^{BCD} , <i>Anabaenopsis</i> ^B , <i>Hapalosiphon</i> ^{BC}
Nodularins (30 to 50)	Cyclic pentapeptides (9)	Hepatotoxic, protein phosphatase inhibition, membrane integrity and conductance disruption, tumour promoters, carcinogenic	<i>Nodularia</i> ^{BCD}
Cylindrospermopsins (200 to 2100)	Guanidine alkaloids (3)	Necrotic injury to liver (also to kidneys, spleen, lungs, intestine), protein synthesis inhibitor, genotoxic	<i>Cylindrospermopsis</i> ^{BC} , <i>Aphanizomenon</i> ^{BC} , <i>Anabaena</i> ^C , <i>Raphidiopsis</i> ^{BC} , <i>Umezakia</i> ^B
Neurotoxins https://quarrylifeproject.wordpress.com http://www.plingfactory.de			
Anatoxin-a (250)	Tropane-related alkaloids (5)	Postsynaptic, depolarising neuromuscular blockers	<i>Aphanizomenon</i> ^B , <i>Anabaena</i> ^{BCD} , <i>Raphidiopsis</i> ^{BC} , <i>Oscillatoria</i> ^{BC} , <i>Planktothrix</i> ^{BC} , <i>Cylindrospermum</i> ^B
Anatoxin-a(5) (40)	Guanidine methyl phosphate ester (1)	Acetylcholinesterase inhibitor	<i>Anabaena</i> ^{BC}
Saxitoxins (10 to 30)	Carbamate alkaloids (20)	Sodium channel blockers	<i>Aphanizomenon</i> ^{BC} , <i>Anabaena</i> ^{BC} , <i>Planktothrix</i> ^{BC} , <i>Cylindrospermopsis</i> ^{BC} , <i>Lyngbya</i> ^{BC}
Dermatotoxins (irritants) and cytotoxins			
Lyngbyatoxin-a	Alkaloid (1)	Inflammatory agent, protein kinase C aktivator	<i>Lyngbya</i> ^B , <i>Schizotrix</i> ^B , <i>Oscillatoria</i> ^B
Aplysiatoxin	Alkaloids (2)	Inflammatory agents, protein kinase C aktivators	<i>Lyngbya</i> ^B , <i>Schizotrix</i> ^B , <i>Oscillatoria</i> ^B

Blaha et al. 2009

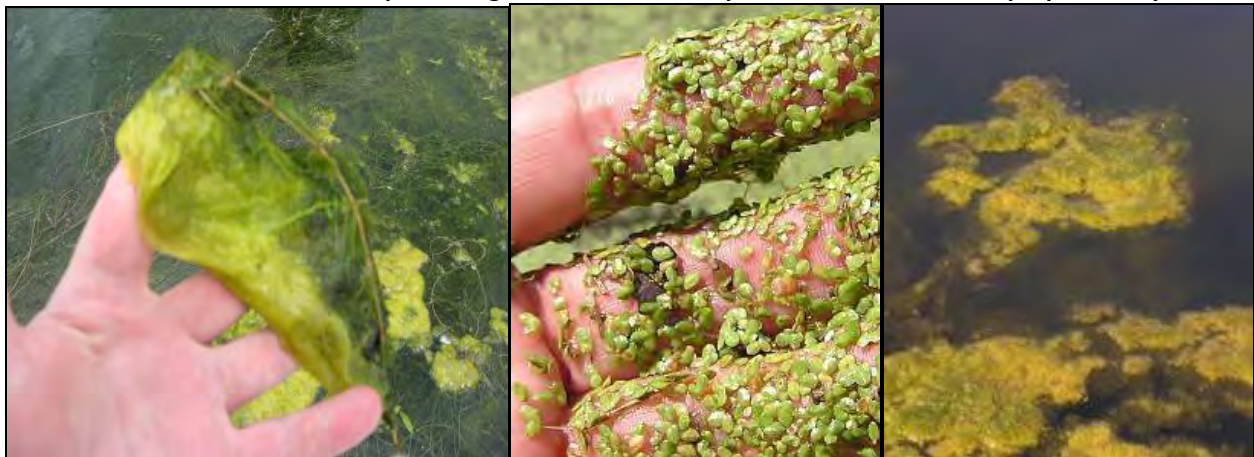
Photo References

Blue-Green Algae



NOT Blue-Green Algae

Caution: Do not collect suspicious algae with bare hands, photo for demonstration purposes only.



Sandy beaches still rim the lakes, but if Lake Michigan, for example, were drained it would now be possible to walk almost the entire 100 miles between Wisconsin and Michigan on a bed of trillions upon trillions of filter feeding quagga mussels.” With no natural predators here, “the mussels have transformed the lakes into some of the clearest freshwater on the planet. But this is not a sign of a healthy lake; it’s the sign of a lake having the life sucked out of it.”

In the summer of 2016, quagga mussels were found by watercraft inspectors on a trailered boat coming from Lake Erie and preparing to launch in Lake Placid. This “catch” was hailed as a victory, a tribute to the Adirondack Watershed Institute’s boat-inspection program sponsored by New York State (adkcleanboats.com). Hydrilla, a fast-growing invasive plant that chokes out native life, was caught last summer on a watercraft before launching into Upper Saranac Lake. Both of these species have invaded other New York waters, including the Finger Lakes. Other AIS already in the Adirondacks include the spiny waterflea, originating from ballast waters discharged by ships in the Great Lakes, where it has contributed to the demise of native fisheries. These are but a foreshadowing of the escalating threat.

Even as the state’s largest coordinated program, the Adirondack AIS program is voluntary with limited regional coverage and hours of operation. Only Lake George has a mandatory boat-inspection program for all trailered boats, considered the strongest program of its kind in the eastern United States. The invasives threat is 24/7, and only through such rigorous measures can we stop them from ravaging the region and a recreation economy that depends on healthy waters.

Yet there is good news: latest surveys conducted last year by the Nature Conservancy’s Adirondack Park Invasive Plant Program, show 75 percent of the lakes surveyed still remain invasives free. By contrast, the Great Lakes possess nearly two hundred invasive and non-native species, driving home the need for action now.

Winning the fight for the Adirondacks demands both defense and offense. This means coupling strong prevention programs—exemplified by the governor’s inclusion of a state-of-the-art boat-inspection station at the new Welcome Center at Glens Falls on the Northway (I-87)—with preemptive actions that take the fight as close to the source of the problem as possible. Other states such as Idaho, Oregon, Montana, and Washington are employing pre-emptive inspection stations at their borders to protect waterways critical to their economies. We must follow their lead.

Effective preemption begins by using AIS data from the Adirondack Watershed Institute to identify priority source waters (shown on the map) from which invasives are entering the state or region. Using this information, we can then site mandatory inspection facilities at high-risk locations. “A Source Waters Compact” would call for active cooperation with representatives within and outside New York State. Its terms would focus on proactive measures to be taken at those source waters as the first line of protection before boaters travel to the region.

Building on their vital leadership in this now-or-never fight, Governor Andrew Cuomo and the state Department of Environmental Conservation can leverage diverse and growing public support across the state for stopping invasive species from destroying our waters. An executive order would enable rapid advance on this imperative.

Hope for bringing back the Great Lakes begins with “closing the door on future invasions.” By doing the same here — and now — we can avoid having to suffer the death of the Adirondacks in order to save it.

Eric Sij is executive director of the Fund for Lake George.

Fred Monroe is executive director of the Adirondack Park Local Government Review Board.

Photo courtesy FUND for Lake George.

This piece was first published in [Adirondack Explorer magazine](#).



Guest Contributor

The *Adirondack Almanack* publishes occasional guest essays from Adirondack residents, visitors, and those with a biding interest in the Adirondack Park.

Submissions should be directed to *Almanack* editor John Warren at adkcalmanack@gmail.com.

[View all posts by →](#)

Leave a Reply



WHAT IS THE THEME?

The theme for World Water Day 2019 is 'Leaving no one behind'. This is an adaptation of the central promise of the 2030 Agenda for Sustainable Development: as sustainable development progresses, everyone must benefit.

HOW DOES IT RELATE TO WATER?

Sustainable Development Goal 6 (SDG 6) includes a target to ensure availability and sustainable management of water for all by 2030. By definition, this means leaving no one behind.

WHAT IS THE PROBLEM?

Today, billions of people are still living without safe water – their households, schools, workplaces, farms and factories struggling to survive and thrive.

Marginalized groups – women, children, refugees, indigenous peoples, disabled people and many others – are often overlooked, and sometimes face discrimination, as they try to access and manage the safe water they need.



WHAT DOES 'SAFE WATER' MEAN?

'Safe water' is shorthand for a 'safely managed drinking water service': water that is accessible on the premises, available when needed, and free from contamination.¹

WHY IS IT IMPORTANT?

Whoever you are, wherever you are, water is your human right. Access to water underpins public health and is therefore critical to sustainable development and a stable and prosperous world. We cannot move forward as a global society while so many people are living without safe water.

WHAT IS THE HUMAN RIGHT TO WATER?

In 2010, the UN recognized "the right to safe and clean drinking water and sanitation as a human right

that is essential for the full enjoyment of life and all human rights."²

The human right to water entitles everyone, without discrimination, to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use; which includes water for drinking, personal sanitation, washing of clothes, food preparation, and personal and household hygiene.³

WHY ARE PEOPLE BEING LEFT BEHIND WITHOUT SAFE WATER?

People are left behind without safe water for many different reasons. The following are some of the 'grounds for discrimination' that cause certain people to be particularly disadvantaged when it comes to accessing water:

- Sex and gender
- Race, ethnicity, religion, birth, caste, language, and nationality
- Disability, age and health status
- Property, tenure, residence, economic and social status

Other factors, such as environmental degradation, climate change, population growth, conflict, forced displacement and migration flows can also disproportionately affect marginalized groups through impacts on water.



¹ WHO/UNICEF: <https://washdata.org/monitoring/drinking-water>

² UN (2010): A/RES/64/292 Resolution adopted by the General Assembly on 28 July 2010: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/64/292

³ OHCHR, UN Habitat, WHO: <https://www.ohchr.org/Documents/Publications/FactSheet35en.pdf>

KEY FACTS

- 2.1 billion people live without safe water at home.⁴
- One in four primary schools have no drinking water service, with pupils using unprotected sources or going thirsty.⁵
- More than 700 children under five years of age die every day from diarrhoea linked to unsafe water and poor sanitation.⁶
- Globally, 80% of the people who have to use unsafe and unprotected water sources live in rural areas.⁷
- Women and girls are responsible for water collection in eight out of ten households with water off-premises.⁸
- Over 800 women die every day from complications in pregnancy and childbirth.⁹
- For the 68.5 million people who have been forced to flee their homes, accessing safe water services is highly problematic.^{10,11}
- Around 159 million people collect their drinking water from surface water, such as ponds and streams.¹²
- Around 4 billion people - nearly two-thirds of the world's population - experience severe water scarcity during at least one month of the year.¹³
- 700 million people worldwide could be displaced by intense water scarcity by 2030.¹⁴
- The wealthier generally receive high levels of WASH services at (often very) low cost, whereas the poor pay a much higher price for a service of similar or lesser quality.¹⁵



⁴ WHO/UNICEF (2017) *Progress on drinking water, sanitation and hygiene*: https://www.who.int/water_sanitation_health/publications/jmp-2017/en/

⁵ UNICEF (2018) *WASH in Schools: Global baseline report 2018*: <https://data.unicef.org/resources/wash-in-schools/>

⁶ Calculation made in 2018 based on data from UNICEF: <https://data.unicef.org/topic/child-health/diarrhoeal-disease/>

⁷ WHO (2017) *Safely managed drinking water - thematic report on drinking water 2017*: <https://data.unicef.org/wp-content/uploads/2017/03/safely-managed-drinking-water-JMP-2017-1.pdf>

⁸ WHO/UNICEF (2017) *Progress on drinking water, sanitation and hygiene*: https://www.who.int/water_sanitation_health/publications/jmp-2017/en/

⁹ UNICEF: <https://data.unicef.org/topic/maternal-health/maternal-mortality/>

¹⁰ UNHCR (2017) *Global Trends Report: Forced Displacement in 2017*: <https://www.unhcr.org/5b27be547.pdf>

¹¹ WWAP (UNESCO World Water Assessment Programme)/UN-Water (2019) *The United Nations World Water Development Report 2019: Leaving No One Behind*

¹² WHO/UNICEF (2017) *Progress on drinking water, sanitation and hygiene*: https://www.who.int/water_sanitation_health/publications/jmp-2017/en/

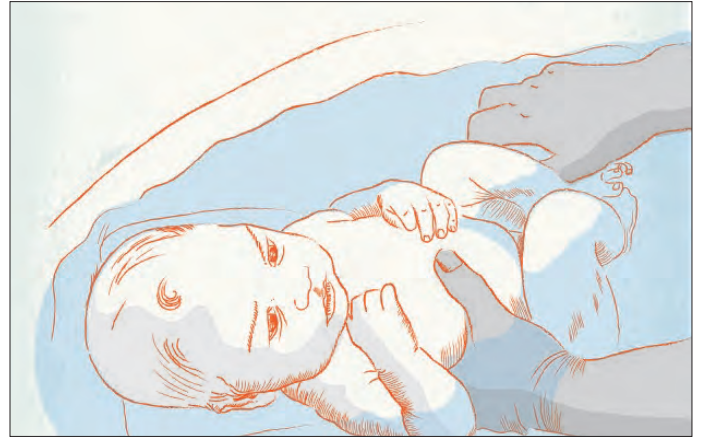
¹³ Mekonnen and Hoekstra (2016), Four billion people facing severe water scarcity. *Science Advanced*, Vol. 2, No. 2: <https://www.ncbi.nlm.nih.gov/pubmed/26933676>

¹⁴ Global Water Institute (2013) *Future water (in)security: facts, figures and predictions*: https://img1.wsimg.com/blobby/go/27b53d18-6069-45f7-a1bd-d5a48bc80322/downloads/1c2meuvon_105010.pdf

¹⁵ WWAP (UNESCO World Water Assessment Programme)/UN-Water (2019) *The United Nations World Water Development Report 2019: Leaving No One Behind*

WHAT NEEDS TO BE DONE?

To 'leave no one behind', we must focus our efforts towards including people who have been marginalized or ignored. Water services must meet the needs of marginalized groups and their voices must be heard in decision-making processes. Regulatory and legal frameworks must recognise the right to water for **all** people, and sufficient funding must be fairly and effectively targeted at those who need it most.



HOW TO GET INVOLVED WITH THE CAMPAIGN

• Share:

Use or adapt campaign materials on your social media channels

Engage your friends and contacts with information and stories about the reality of the water crisis and how it affects every aspect of society.

Go to www.worldwaterday.org/resources or www.worldwaterday.org/social-media to start a conversation and inspire action.

• Act:

Organize an event or activity

Gather people together to share ideas and make them grow. Hold or attend an event to make personal connections that could make a difference to people living without safe water.

Go to www.worldwaterday.org/events to see where a World Water Day event is taking place near you and find out how you could hold an event yourself.