



What Lurks in the Lake?

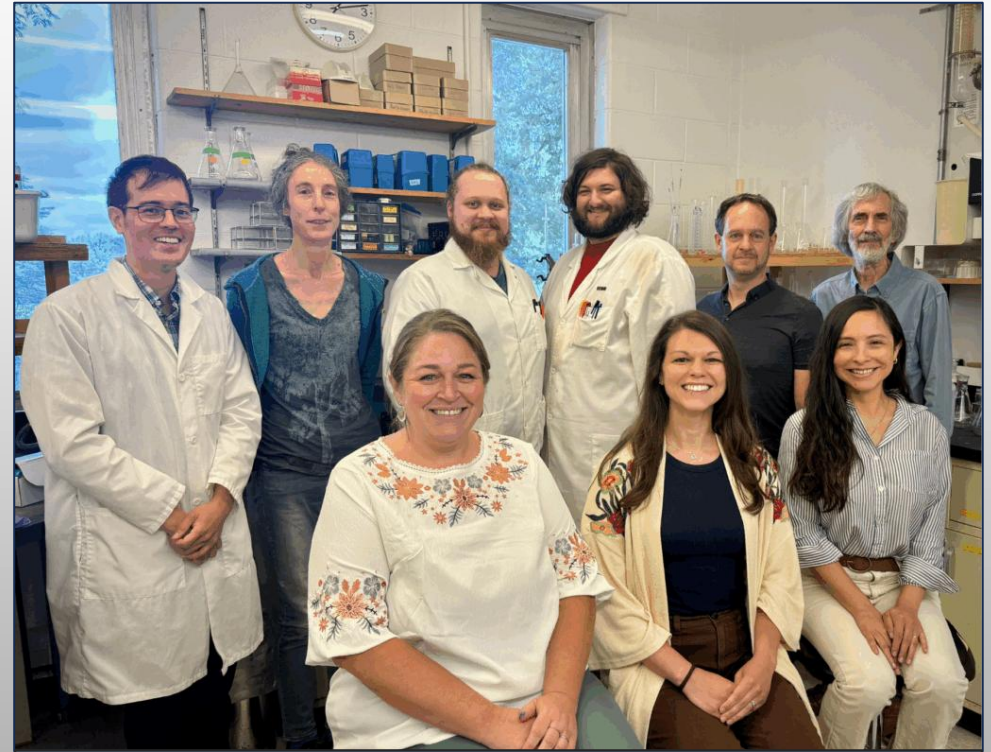
From Reports to Reality: Making Sense of the 2025 Harmful Algal Bloom Data

Interlaken Green Thumb Garden Club
Interlaken Reformed Church
April 15, 2026

Alyssa Johnson
*Cayuga Lake Harmful Algal Bloom Monitoring Program Coordinator,
Outreach and Programs Coordinator*

Agenda

- **Intro to Community Science Institute**
- HABs 101
- HABs Identification
- HABs Monitoring & Outreach Programs
- HABs Database and 2025 Results
- NYSDEC Research
- What can *you* do?
- Stay Informed
- Acknowledgements & Q&A



2025 CSI Staff

Community Science Institute

CSI is a 501(c)3 non-profit and NYSDOH-ELAP certified water testing lab in Ithaca, NY



Our Mission:
To inspire and empower communities to safeguard water resources by cultivating scientific literacy through volunteer water quality monitoring, certified laboratory analyses, and education.



Volunteer Water Monitoring



Outreach and Education



Fee-for-Service Water Testing

CSI's Volunteer Monitoring Partnerships



Synoptic Stream and Lake Monitoring

Biomonitoring

Cayuga Lake Harmful Algal Bloom (HAB) Monitoring

CSI's Water Quality Database

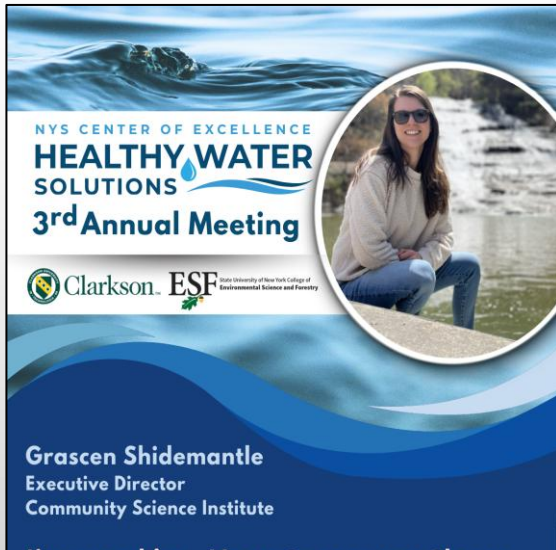
Free, open-access data available to the public

The screenshot shows the website's header with the CSI logo and navigation links: 'About', 'Streams and Lakes Chemistry', 'Harmful Algal Blooms (HABs)', and 'Groundwater Baseline'. Below the header is a welcome message: 'Welcome to CSI's Water Quality Database' followed by a paragraph explaining the database's mission. The main content area is divided into two columns. The left column, titled 'Stream and Lake Monitoring 2002 - Ongoing', lists several synoptic events with dates and monitoring set names: 'Direct Streams' (Nov 18, 2025), 'Minnegar Brook' (Nov 13, 2025), 'Salmon Creek' (Nov 13, 2025), and 'Cayuga Lake East Shore' (Nov 13, 2025). The right column, titled 'Harmful Algal Bloom (HAB) Monitoring', lists events at 'Taughannock Falls State Park' on Nov 7, 2025 and Nov 5, 2025, and at 'Taughannock Falls State Park' on Oct 31, 2025. An inset image shows a hand holding a smartphone displaying the mobile version of the website.

Key improvements in 2025 include:

- Mobile-friendly database for easier access on any device
- Accessibility improvements: color-blind-friendly maps and site themes, clearer graph symbols
- Enhanced data tools:
 - Graphs can be downloaded directly as files
 - Streams and Lakes Map can be filtered by date
 - Monitoring regions, locations, and graph analytes listed alphabetically
 - Stream and site names reformatted for readability
- HAB monitoring updates: exports now include analyte results and microscopy data
- Database security: reduction of automated bot traffic while supporting more human users
- Updated Terms of Use including Acknowledgements: required if you make use of our data

CSI's Outreach and Education



I'm speaking at
Session 1B: Community Science
May 20-22, 2024
SUNY ESF Gateway
Syracuse, New York



CSI's Fee-for-Service Water Testing



We test water from private wells, municipal water systems, swimming beaches, effluents, and more!



We serve:

Residents:

- Home sales
- Routine testing
- Health/taste/quality concerns

Local Businesses:

- Farms
- Restaurants
- Wineries and Breweries
- Local schools/universities
- Mobile Home Parks
- Apartment Buildings

Government Agencies

- Tompkins County Whole Health
- NY State Parks
- NYS Dept. of Environmental Conservation
- NYS Dept. of Health

WATER TESTING ASSISTANCE PROGRAM

Making reliable drinking water testing affordable for everyone



Why test your water?

Access to clean, safe drinking water is a basic human need. For households on private wells, routine testing is the only way to ensure your water is free from harmful contaminants.

But the cost of regulatory-quality testing can be a barrier for low-income families. That's why **Community Science Institute (CSI)** has launched the Water Testing Assistance Program.



WHAT CSI OFFERS

- 50% discount on CSI's in-house drinking water tests for low-income households
- Personalized testing recommendations from CSI's scientific staff
- Certified testing for contaminants such as:
 - Bacteria (total coliform/E.coli)
 - Nitrate + Nitrite
 - and more!

HOW TO ACCESS ASSISTANCE

- Talk to a CSI staff member
 - ☎ 607-257-6606
 - ✉ info@communityscience.org
 - 📍 283 Langmuir Lab 95 Brown Rd. Ithaca, NY
- Referrals also available through trusted partners:
 - Tompkins County Whole Health's Healthy Neighborhoods Program
 - Ithaca Neighborhood Housing Services (INHS)

This program was made possible thanks to a generous grant from the Rotary Club of Ithaca



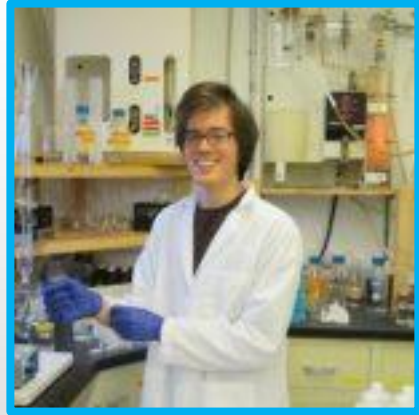
CSI is a 501(c)3 non-profit and state-certified water testing lab (NYSDOH-ELAP #11790)



CSI Staff



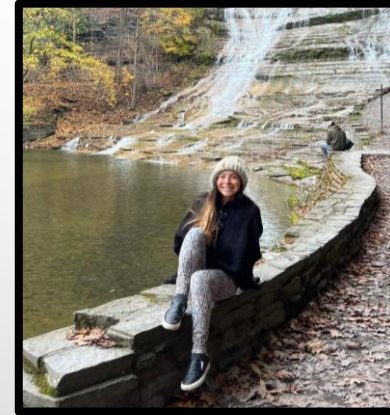
Grascen Shidemantle
Executive Director



Noah Mark
Laboratory Director



Adrianna Hirtler
Biomonitoring Coordinator



Katia Appel
Office Administrator Outreach and Programs Coordinator



Alyssa Johnson



Seth Bingham
Water Quality Scientist



Dan Pascucci
Water Quality Scientist



Rama Hoetzlein
Database Developer



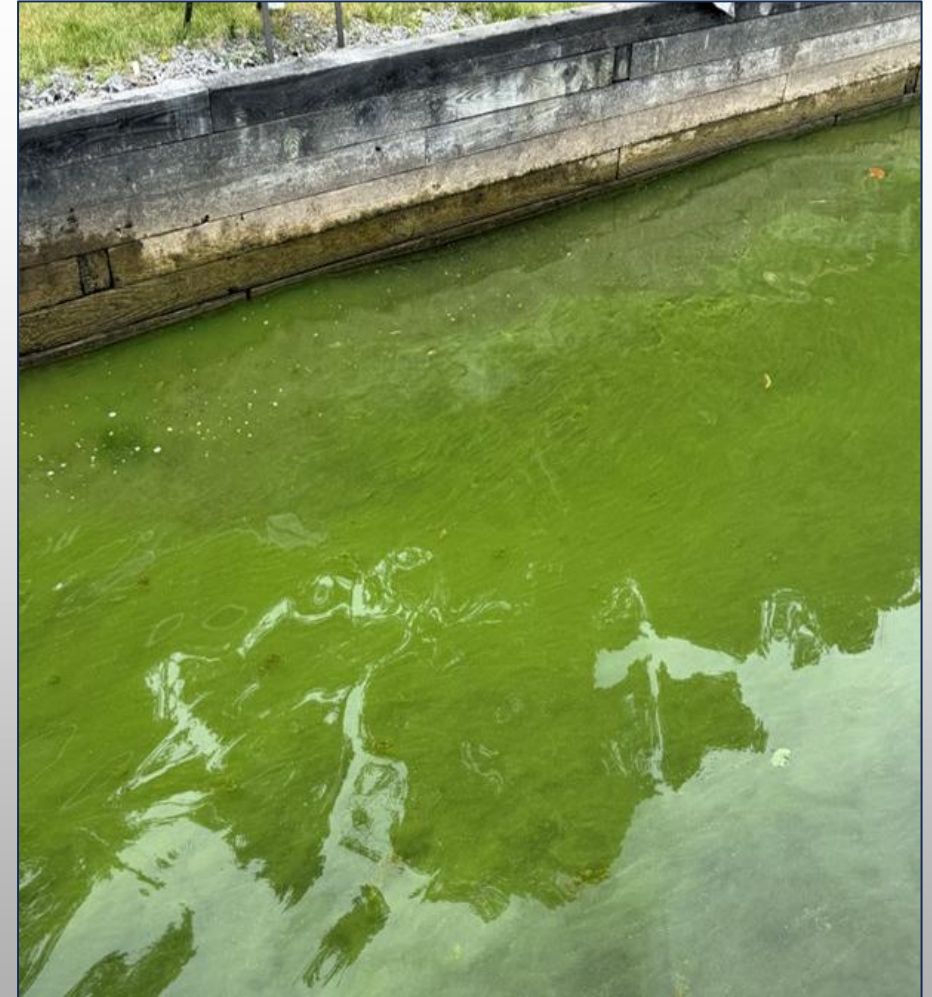
Aditi Khare
Database Developer



Bill George
Data Entry Specialist

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Holton Beach Rd, Interlaken - 7/9/25

HABs 101: What is a **HAB**?

H: Harmful

- Human & Animal Health, Economics, Aesthetics, Ecological

A: Algal

- Freshwater HABs refer to **cyanobacteria**
- Not true algae

B: Bloom

- Proliferations of cells, dense concentrations

HABs 101: H is for Harmful



Human & Animal Health

Exposure can have both:

- acute (short-term, immediate) and
- chronic (long-term, cumulative)

health impacts depending on dose and frequency

Dogs are highly vulnerable:

- ingest bloom material or contaminated water while swimming, drinking, or grooming
- can lead to rapid illness or death

- Fish and shellfish can accumulate cyanotoxins, creating potential health risks for humans and animals if consumed

- No state-wide tracking system, many health care practitioners unfamiliar, symptoms can be attributed to other illnesses

HABs 101: H is for Harmful

Economics

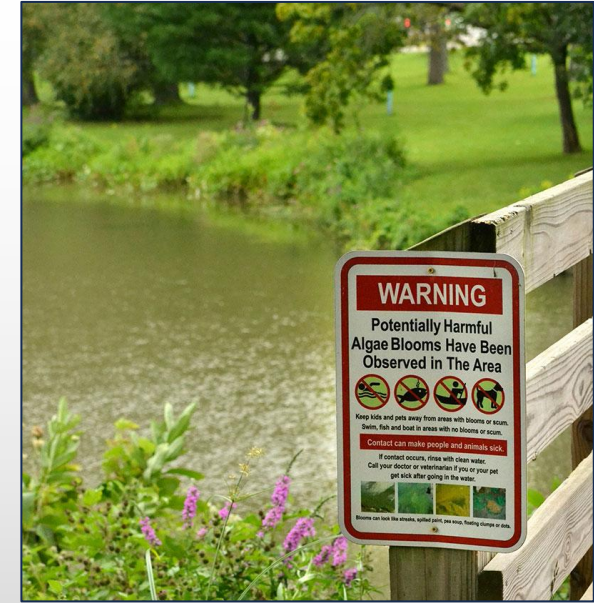
- Beach, marina, and recreation closures reduce tourism activity and associated spending (food, fuel, lodging)
- Declines in waterfront property values due to perceived or actual water quality issues
- Increased costs for drinking water treatment (e.g., advanced filtration, monitoring, and testing)
- Losses to local businesses dependent on lake-based recreation (kayak rentals, charter fishing, hospitality)



HABs 101: H is for Harmful

Aesthetics

- Thick, unpleasant scums and streaks discolor water, reduced water clarity
- Accumulation of decaying algae along shorelines
- Unpleasant odors resembling rotting vegetation or sewage
- Negative public perception, discouraging swimming, boating, and shoreline use
- Not very inviting to swim, paddle, even sit by the water



HABs 101: H is for Harmful



Ecological

- Oxygen depletion (hypoxia) as blooms die and decompose, leading to fish kills
- Disruption of aquatic food webs
- Competitive dominance of cyanobacteria, reducing biodiversity
- Shading of submerged aquatic vegetation limits oxygen production
- Release of toxins that can harm aquatic organisms, including fish, invertebrates, and wildlife

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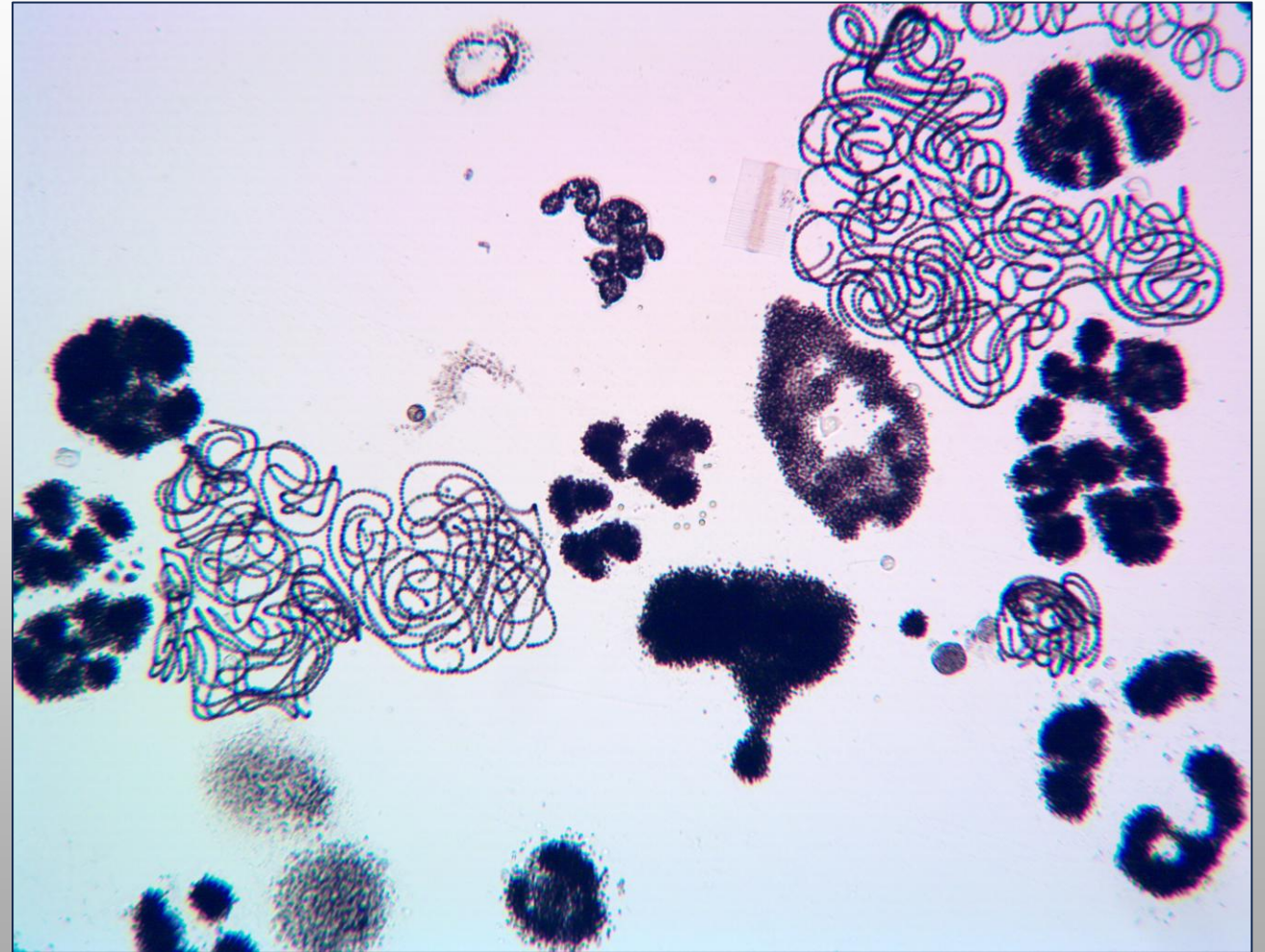
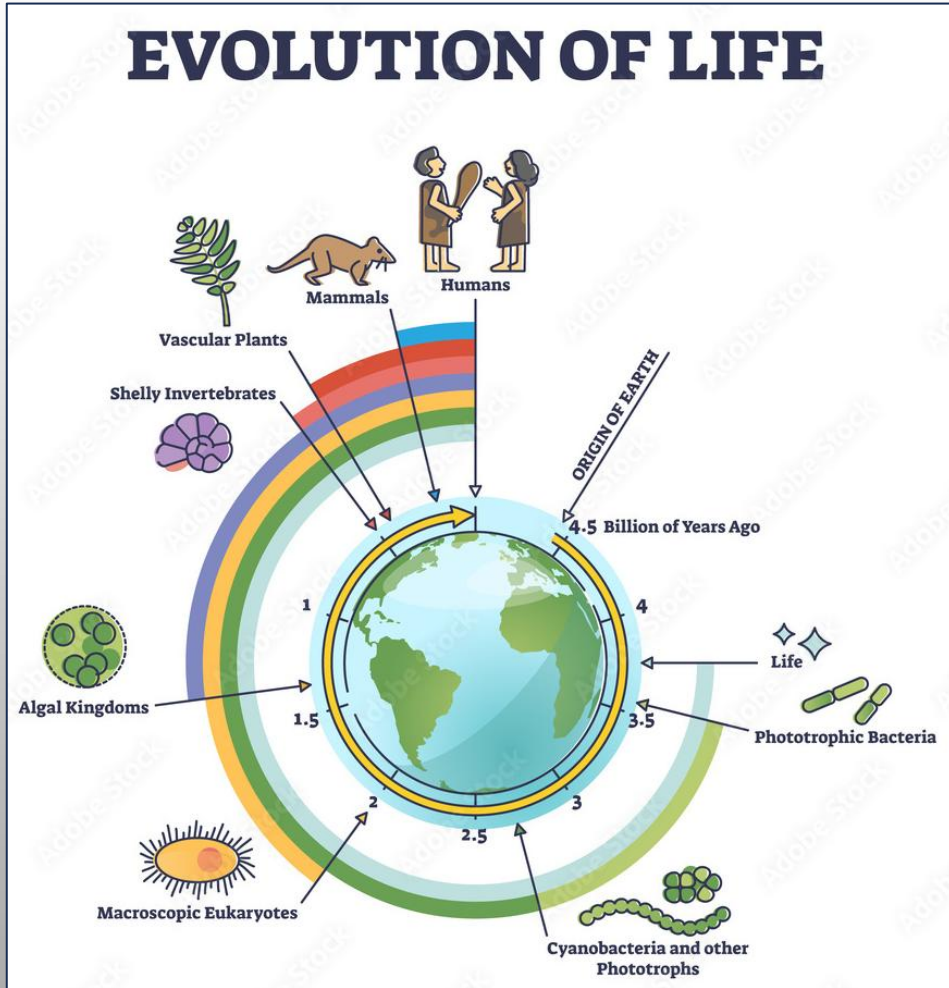
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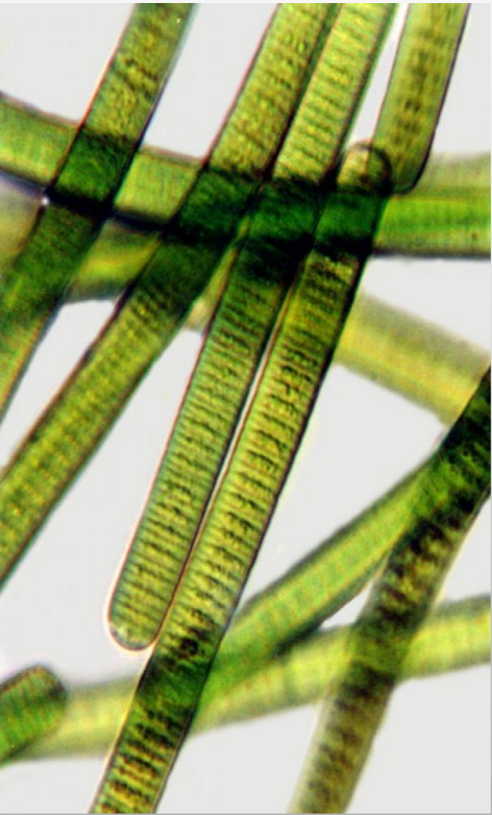
B: Bloom

- Proliferations of cells, dense concentrations

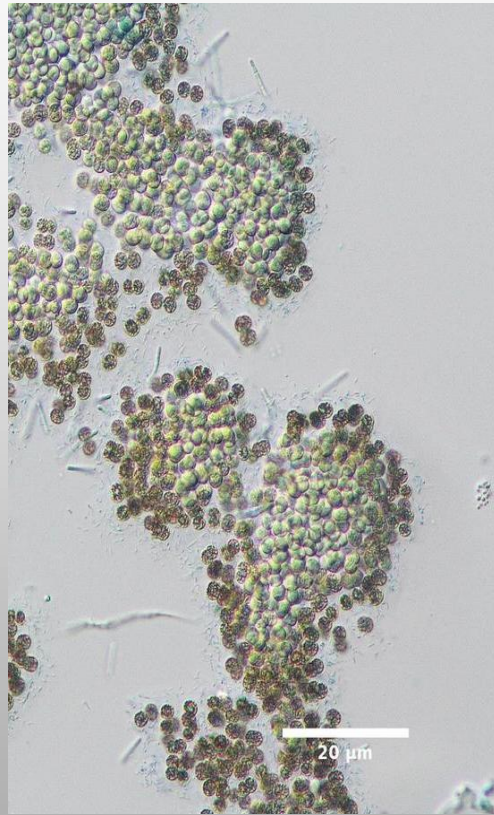
HABs 101: B is for Bloom



HABs 101: What is a HAB?



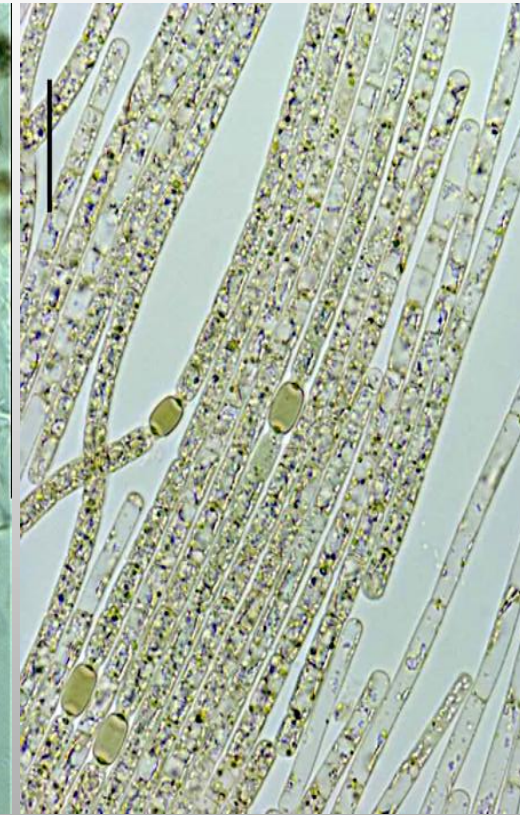
Oscillatoriales



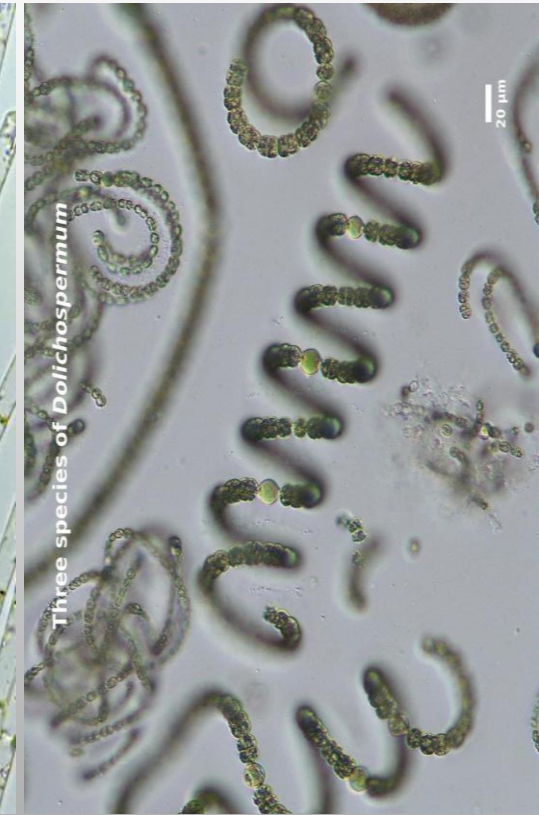
Microcystis



Woronchinia



Aphanizomenon



Dolichospermum

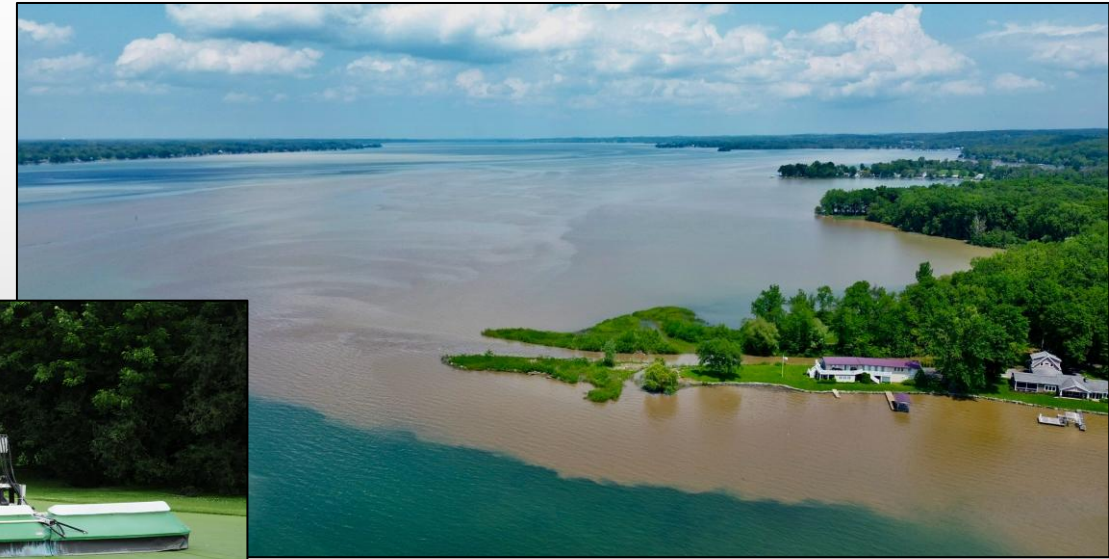
HABs 101: Conducive conditions

Excess nutrients (P)

+ Sun/prolonged hot temps

+ Low oxygen

= BLOOM CONDITIONS



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Taughannock Falls SP Marina – 10/16/25

HABs Identification

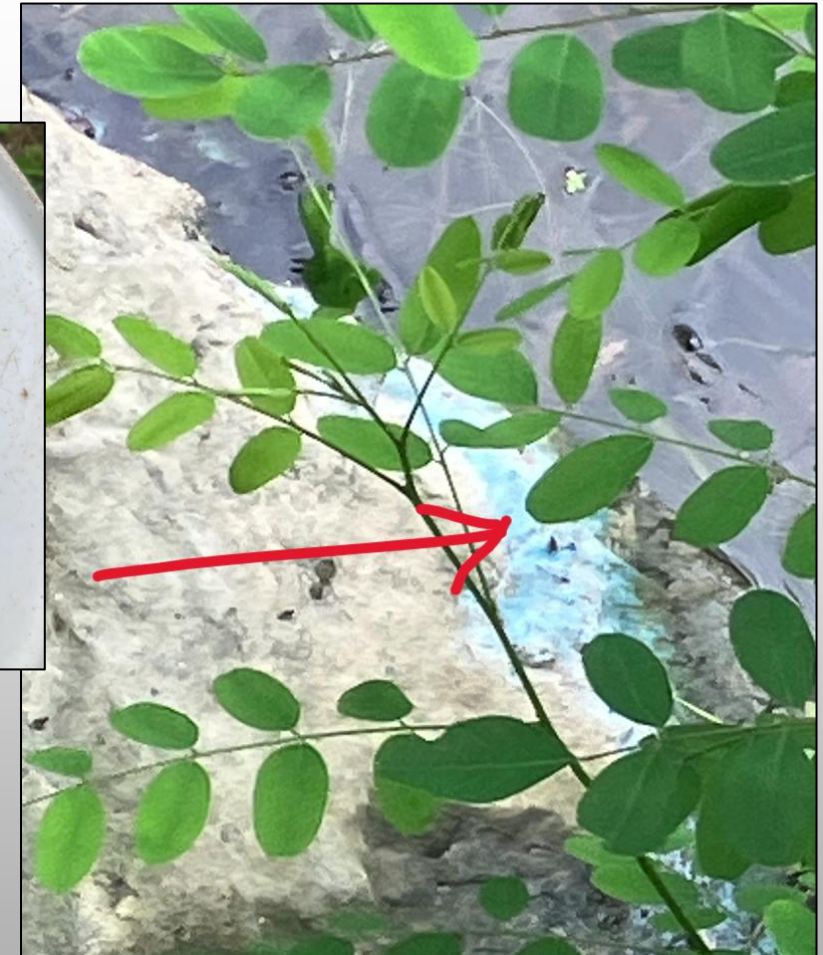
Other terms/names used to refer to the blooms:

- Blue-green algae
- Cyano-HABs
- Blooms
- Toxic algal blooms
- Cyanobacterial blooms
- Harmful blue-green algae



Contains two pigments:

- Chlorophyll
- Phycocyanin

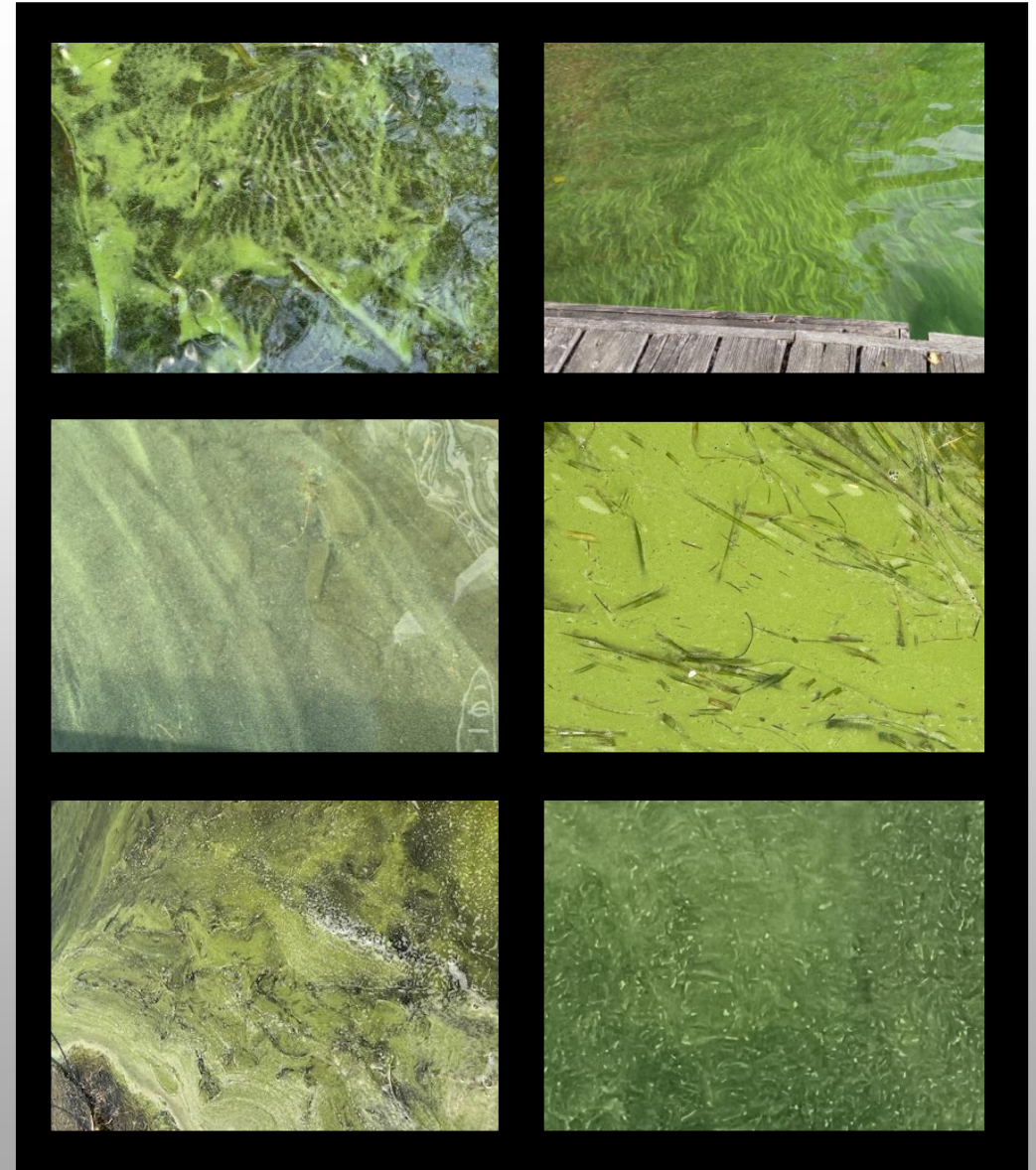


Deans Cove Boat Launch, Romulus
7/12/25

HABs Identification

Physical characteristics:

- Floating blooms: surface scum
- Oily sheen
- Spilled or frothy paint
- Pea soup
- Foamy, marbled
- Speckling/tiny dots
- Variety of colors
- Can create a “scum line” on docks, shore, etc.



HABs Identification

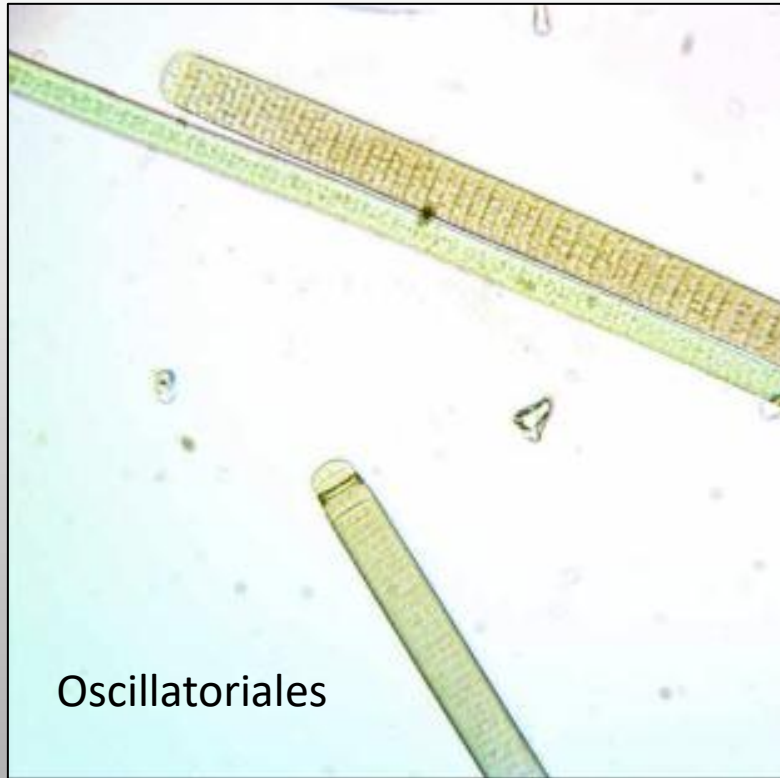
Jar Test



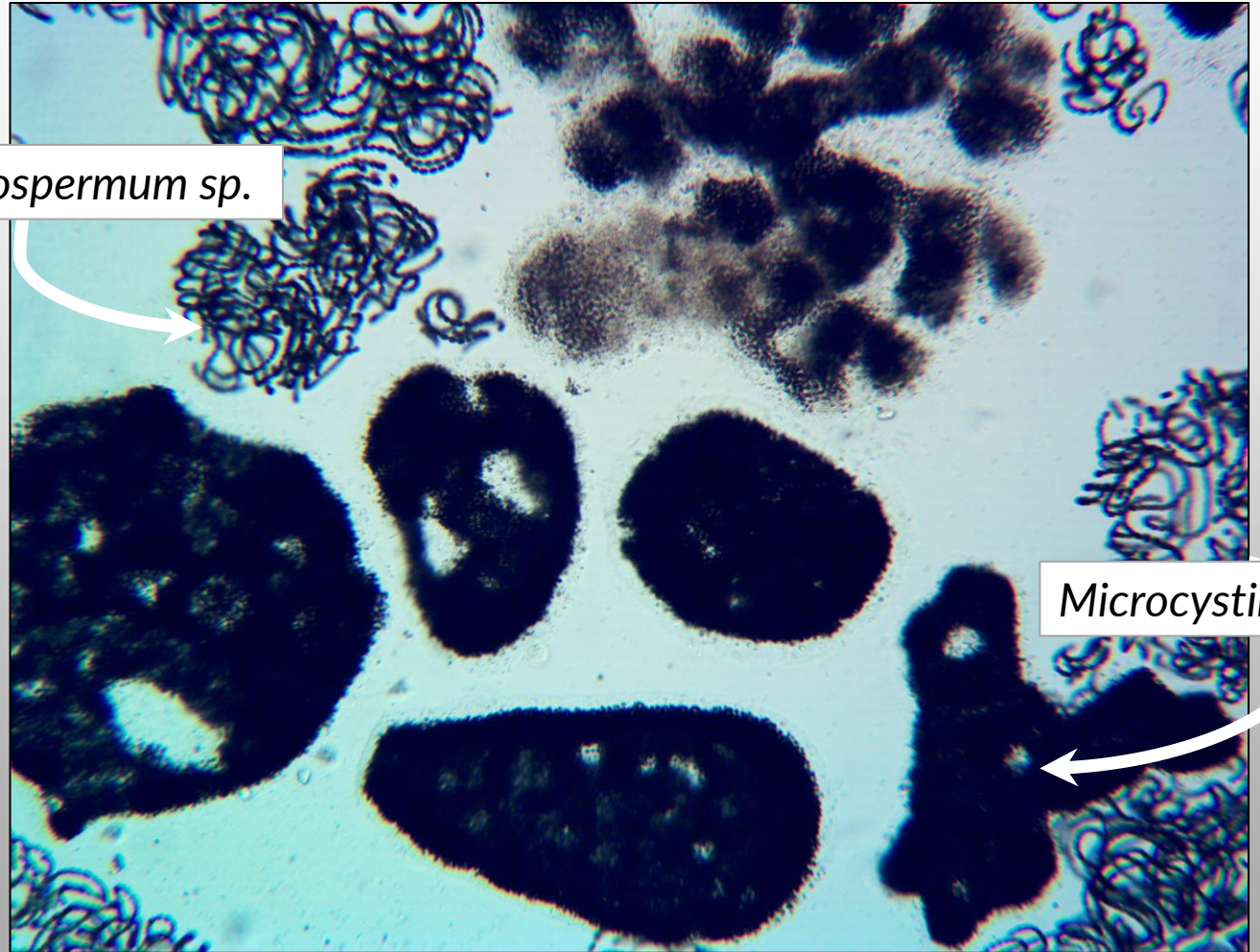
Rake/Stick/Paddle Test



HABs Identification: Microscopy



Dolichospermum sp.



HABs Identification: *Not HABs*

Algae

- Creates dense mats
- Long, stringy/hair-like strands
- Can build up on the shore
- Often rooted to rocks, limbs, docks, the bottom
- NOT harmful



HABs Identification: *Not HABs*

Duckweed

- “Tiny lily pads”
- Not rooted to the bottom
- Will “part” in the water
- NOT harmful



HABs Identification: *Not HABs*

Watermeal

- The tiniest plants on earth
- Even smaller than duck weeds
- Will “part” in the water
- NOT harmful



HABs Identification: *Not HABs*

Pollen:

- Bright yellow
- Breaks up easily if you swirl the water
- Most common May-June (when trees are flowering)
- NOT harmful



To HAB or Not to HAB?

To **HAB** or Not to **HAB**?



✗ NOT a HAB

To **HAB** or Not to **HAB**?

HAB ✓



To **HAB** or Not to **HAB**?



HAB ✓

To HAB or Not to HAB?

X NOT a HAB



To HAB or Not to HAB?

X
NOT
a HAB



To **HAB** or Not to **HAB**?

HAB ✓



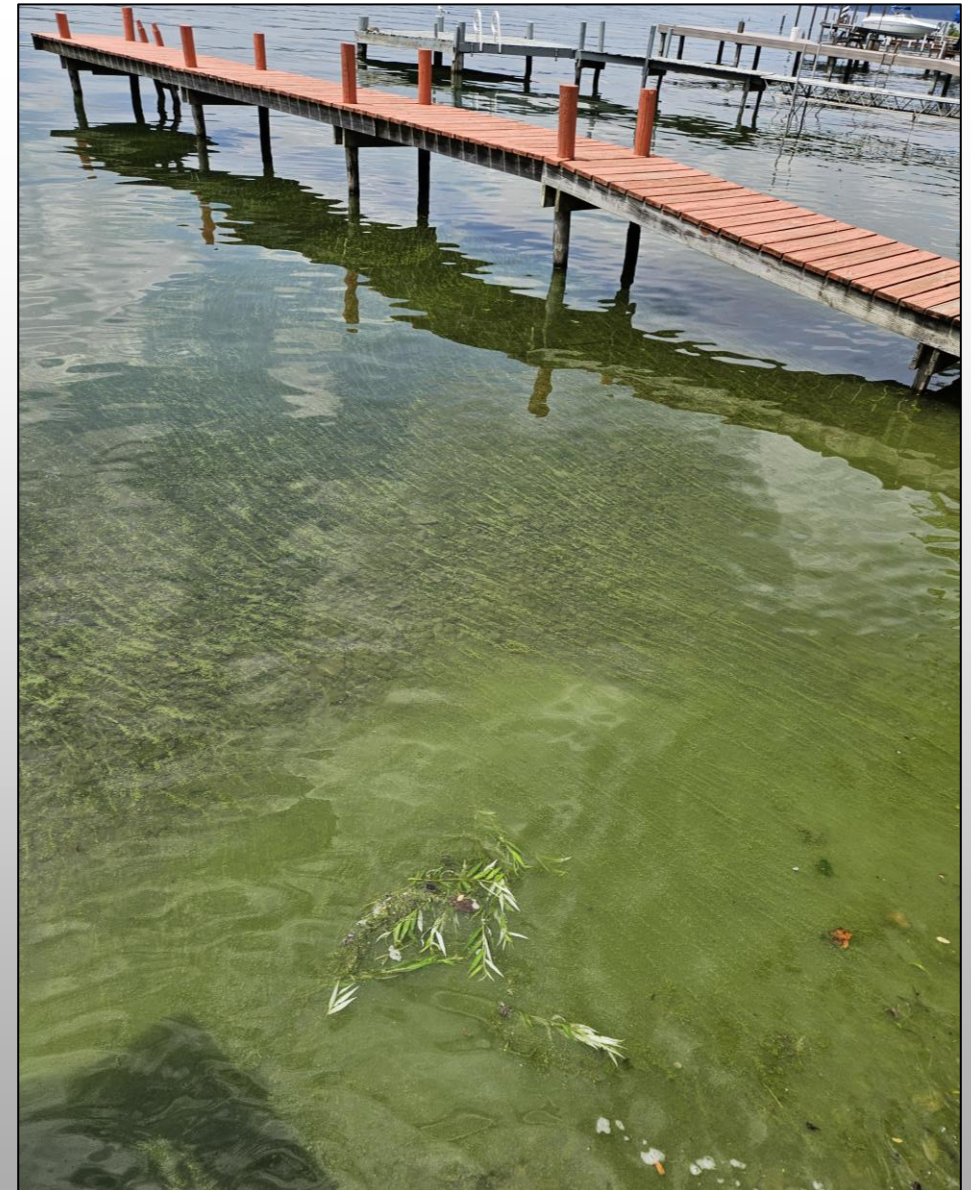
To **HAB** or Not to **HAB**?

✗ NOT a HAB



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Milliken Station, Lansing - 7/10/25

HABs Monitoring & Outreach: NYS

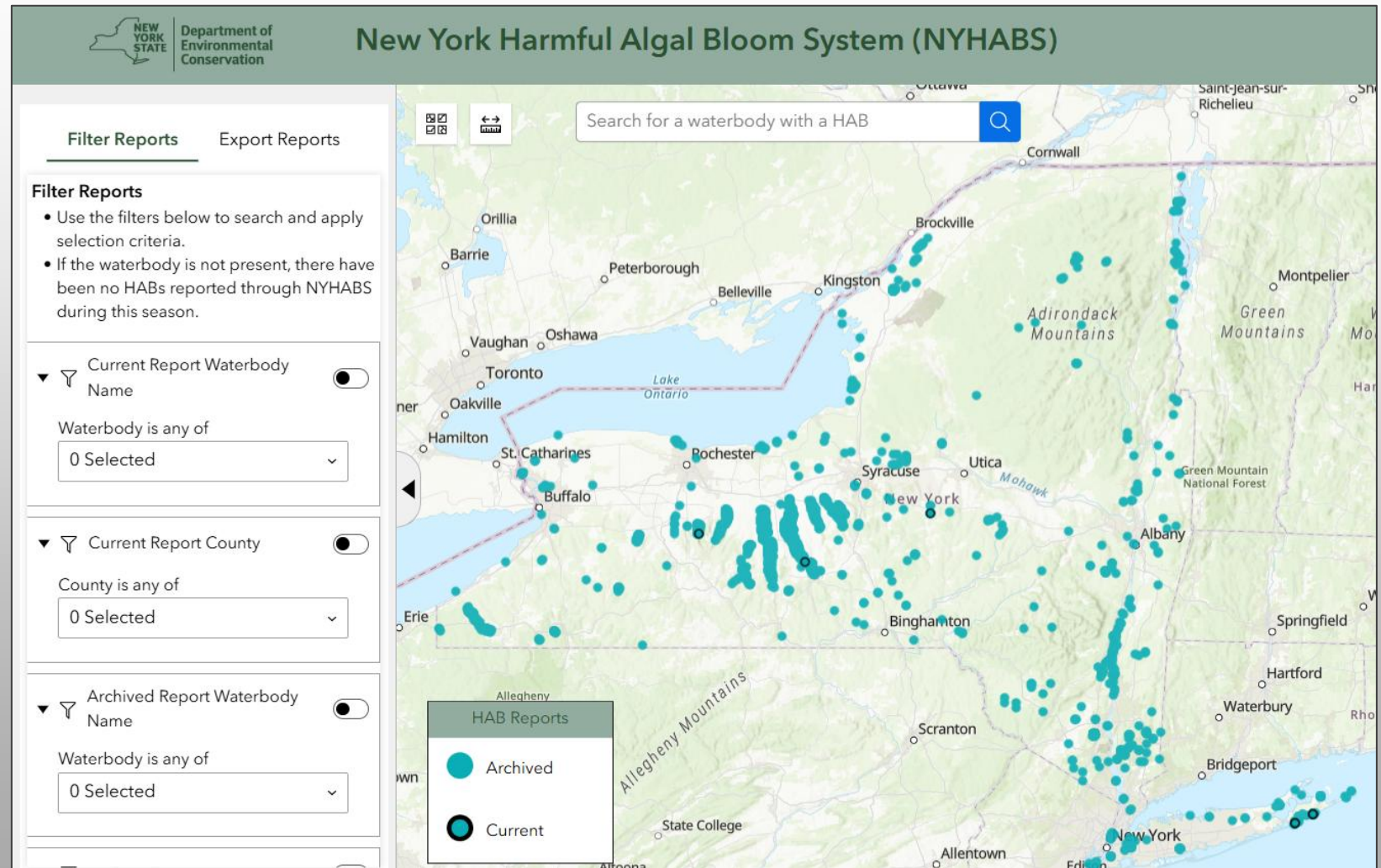


- Interagency collaborative effort (DEC, OPRHP, DOH)
- NYSDEC created the monitoring protocol that CSI follows
- Operates NYHABS and issues bloom notifications
 - Health concerns & drinking water treatment overseen by local operators and DOH
 - Regulated swimming areas (beaches) have a protective response protocol based on visual observations

HABs Monitoring & Outreach: NYS

NYHABS Map

11/17/25 @ 2:42 pm



HABs Monitoring & Outreach: Cayuga Lake

Purpose:

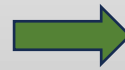
Collect actionable data on cyanobacteria blooms, protect public health, and relay bloom information and testing results quickly and efficiently.



HABs Monitoring Program: Cayuga Lake

HABs Harriers perform weekly shoreline surveys for HABs:

Anyone can report HABs to CSI via online forms:



2025 Cayuga Lake Harmful Algal Bloom Volunteer Reporting Page

Cayuga Lake HABs Volunteer Report Form

Please fill out this form as completely as possible.

If you are experiencing difficulty advancing that you have answered each question that means it is a required question and you can't questions are answered.

Thank you for taking the time to report, and experiencing any difficulties reporting a HAB.

The name, email, and photo associated with you upload files and submit this form

* Indicates required question

2025 Cayuga Lake Community Member HABs Report Form

2025 Community Member Cayuga Lake HABs Report Form

Community Science Institute oversees all daily operations of the Cayuga Lake HABs Program including volunteer coordination, sample collection, sample analysis, and reporting to NY State.

This form is to be used by community members to report a suspected harmful algal bloom (HAB) on Cayuga Lake. Receiving as much information as possible, as quickly after you've spotted the HAB, is very helpful to CSI's Cayuga Lake HABs Monitoring Program Coordinator. Upon receipt of your report, the Coordinator will reach out to you directly to follow up. Please be sure you are available to respond to a text/call/email!

Receiving a report of a suspected HAB hours or days after it has been observed is not usually helpful as HABs can dissipate quickly.

To view all of the HABs reports/data collected to CSI on Cayuga Lake (2018-present), visit the [CSI HABs Database](#).

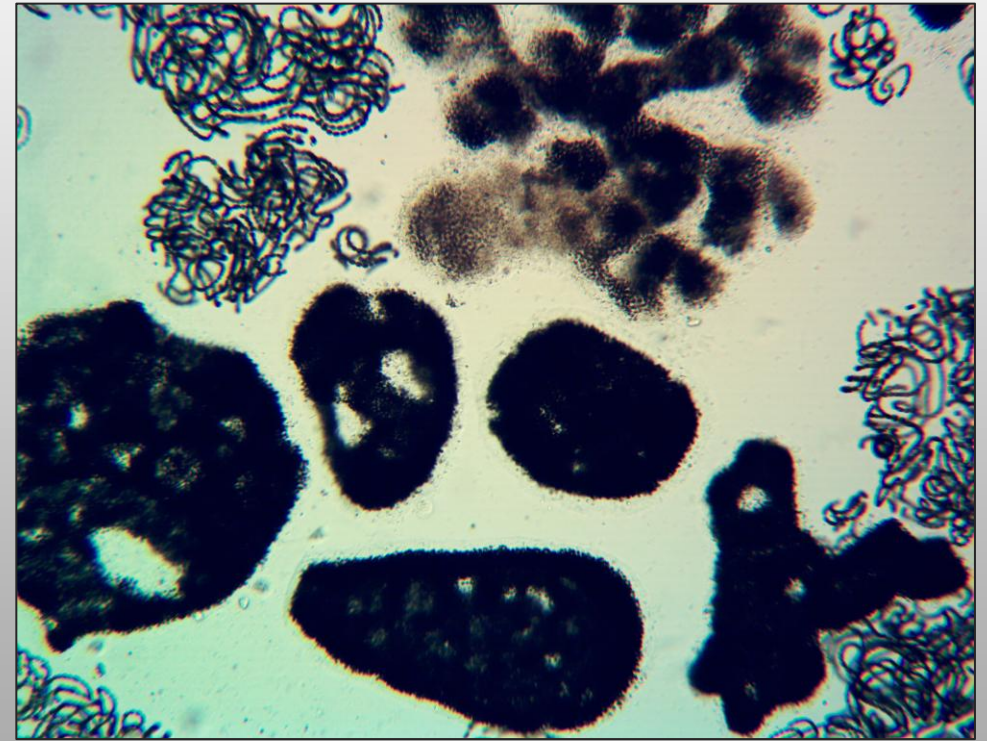


COMMUNITY SCIENCE INSTITUTE - (607) 257-6606
HABsHotline@gmail.com - www.communityscience.org



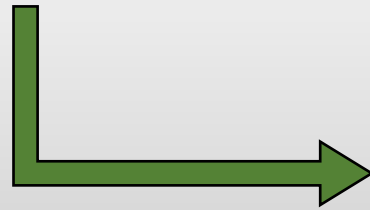
HABs Monitoring Program: Cayuga Lake

Upon arrival to CSI's lab:



HABs Monitoring Program: Cayuga Lake

Once the sample is confirmed:



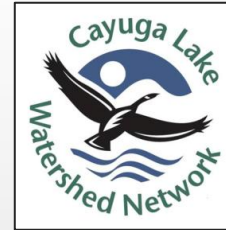
Then:

- Program Coordinator alerts local county departments of health,
- updates HAB report/results on the CSI HAB database,
- and submits the report via NYHABs.



Application	Microcystins ($\mu\text{g/L}$)
DW	0.3
REC	4.0
DW	0.3 - 1.6
REC	8.0

HABs Outreach Programs: Cayuga Lake



Weekly summer updates published by the Cayuga Lake Watershed Network,
in partnership with the Community Science Institute.



Cayuga Lake Harmful Algal Bloom (HAB) Mid-Sept. Special Update

46

CONFIRMED HAB REPORTS
9/6 - 9/19, 2025

this special report covers two weeks

see map for locations →



Cayuga Lake HABs Monitoring Program

Changes to the program in 2025 and what to expect in 2026:

- Strategic sample collection
- 2025: 14 sites
- 2026: 15 sites (1 new, 1 moved)

Were any samples collected in 2025?

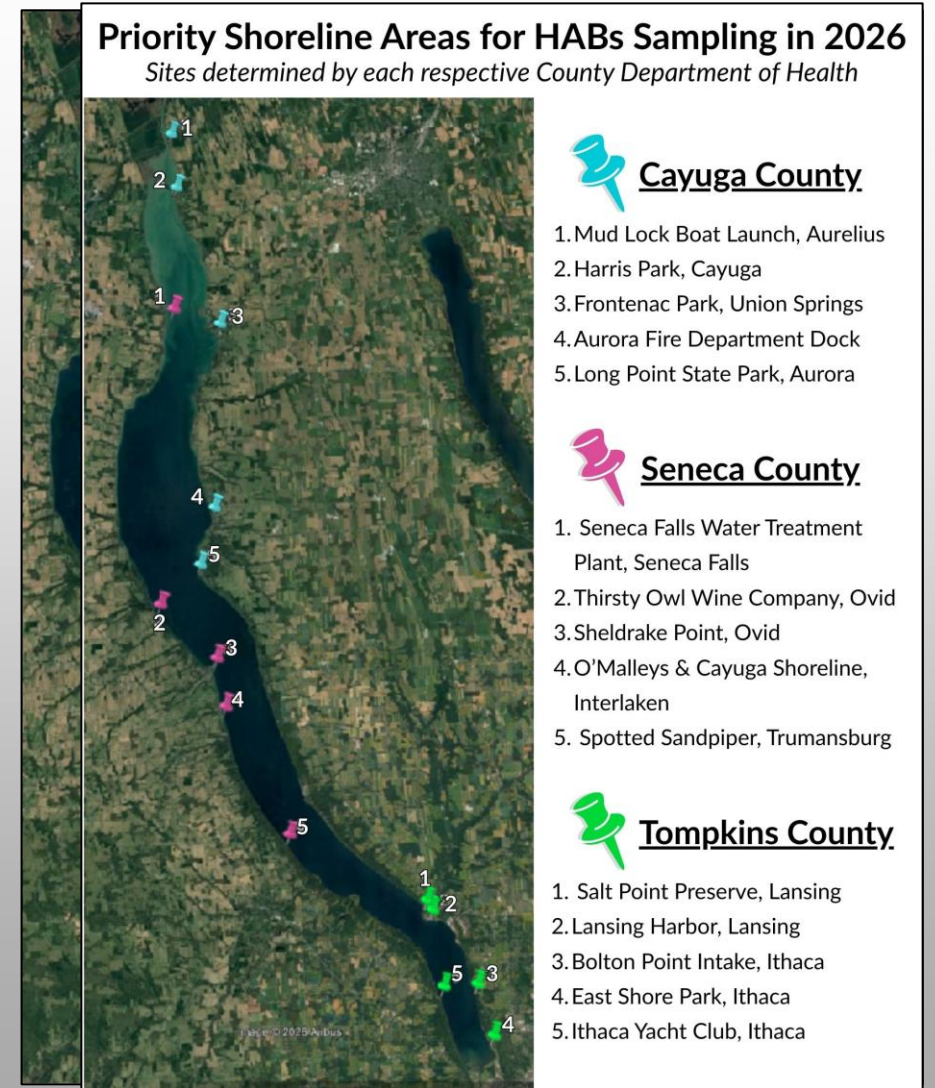
- Yes, 34 samples
- Data on par with trends observed during the previous years
 - Over half of the samples (~70%) analyzed had microcystin levels at or exceeding 4.0 µg/L

Community members assisted more than ever in 2025!

- ~25% of reports

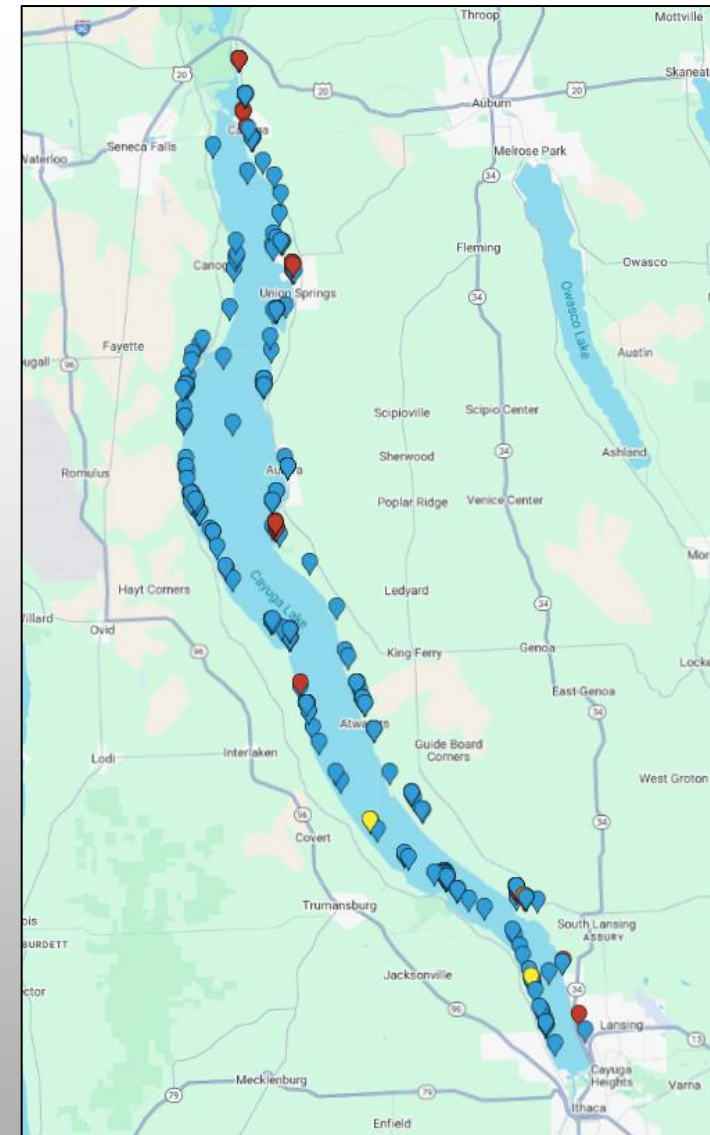
What stayed the same from pre-2025 monitoring?

- Volunteers monitored Cayuga Lake's shoreline and submitted reports
 - Followed NYSDEC's protocol
- All accepted reports of "confirmed" HABs (plus any related analysis) were posted on CSI's HABs Database



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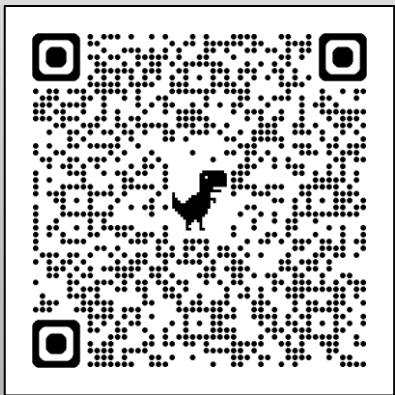
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Screenshot of the 2025 database
HABs map

CSI's HABs Database and 2025 Results

FREE and ACCESSIBLE to the public!



Community Science Institute Database

Partnership with Communities to Protect Water

Streams and Lakes Chemistry Harmful Algal Blooms (HABs) Groundwater Baseline

Bloom code: 25-3439-B1

Cayuga Shoreline, Interlaken

Date/time

Field notes

Microscopy results

Lab results

Filter HAB Reports

Showing Year (2025-03-17 to 2026-03-17)

Start Date: 03/16/2025 End Date: 03/17/2025

Filter: All Year Month

What is a Harmful Algal Bloom (HAB)?
A harmful algal bloom (HAB) occurs when aquatic microorganisms, primarily cyanobacteria on Cayuga Lake, grow rapidly under favorable conditions. These blooms have the potential to impact the public health with regard to recreation (swimming) and consumption.

Purpose of this Database
This database is designed to:
1. Quickly alert you to recent reports of cyanobacteria blooms (HABs)
2. Provide detailed information about each HAB reported
3. Make it possible to analyze long-term patterns of HABs occurrences.

Background
The Cayuga Lake HABs Monitoring Program was launched in 2018, recording HABs and their location, approximate size, density, genera of cyanobacteria it contained, and concentration of microcystin (a toxin created by the most commonly detected genera of cyanobacteria on Cayuga Lake). The reporting of bloom occurrences in this database is organized by geography and by areas of recreational interest, for example, parks and boat launches. Thus, Cayuga Lake is divided into 34 shoreline segments and four open water segments for a total of 38 segments used to track HABs spatially along the shore and in the open water of Cayuga Lake.

More Info & Reporting a HAB
Click here for more information about our Cayuga Lake HABs Monitoring Program. To report a HAB on Cayuga Lake, please e-mail HABsHotline@gmail.com

284 HABs REPORTED 2025-03-17 to 2026-03-17

Events	Bloom Code	Observed	Segment	Extent
1	25-3435-830	November 07, 2025	Lakeshore Segment Southwest 7: Taughanock Falls State Park	Small Localized (few properties)
2	25-3435-829	November 05, 2025	Lakeshore Segment Southwest 7: Taughanock Falls State Park	Small Localized (few properties)
3	25-3435-828	October 31, 2025	Lakeshore Segment Southwest 7: Taughanock Falls State Park	Small Localized (few properties)

Community Science Institute Database

Partnership with Communities to Protect Water

About Streams and Lakes Chemistry Harmful Algal Blooms (HABs) Groundwater Baseline

Home

Harmful Algal Bloom (HAB) Event Information

Bloom Code: 25-3439-B1

Where

Water Body: Cayuga Lake

Latitude and Longitude: 42.6402, -76.69222

Segment: Lakeshore Segment Southwest 10: Lively Run to Sheldrake Point

County: Seneca

Extent: Large Localized

When

Bloom Reported: July 08, 2025 05:15 PM

Bloom Sampled: July 08, 2025 05:25 PM

Microscopic Examination: July 09, 2025

What

Bloom Genera [1]

Microscopy	Present	Dominant
Microcystis	✓	
Dolichospermum	✓	✓

Water Chemistry

Total Microcystin and Nodularins (EPA 546) [2]	4.46 ug/L
Total Chlorophyll a	2210.0 ug/L

Map of HAB event

Map Satellite

Map Description: 2025 PRIORITY SITE, Zone #3439: Cayuga Shoreline/O'Malley's- identified by Seneca County Health Department as a sample-collection site. Volunteer reports: Overcast/ 75 degrees /calm /one dead fish @ Cayuga Shoreline Part of western shoreline bloom event

Weather

Wind speed

Wind direction

Water Temp

Air Temp

NYSDOH Contact Limits:

- Drinking water 0.3 µg/L
- Recreation: 4.0 µg/L

CSI's HABs Database and 2025 Results



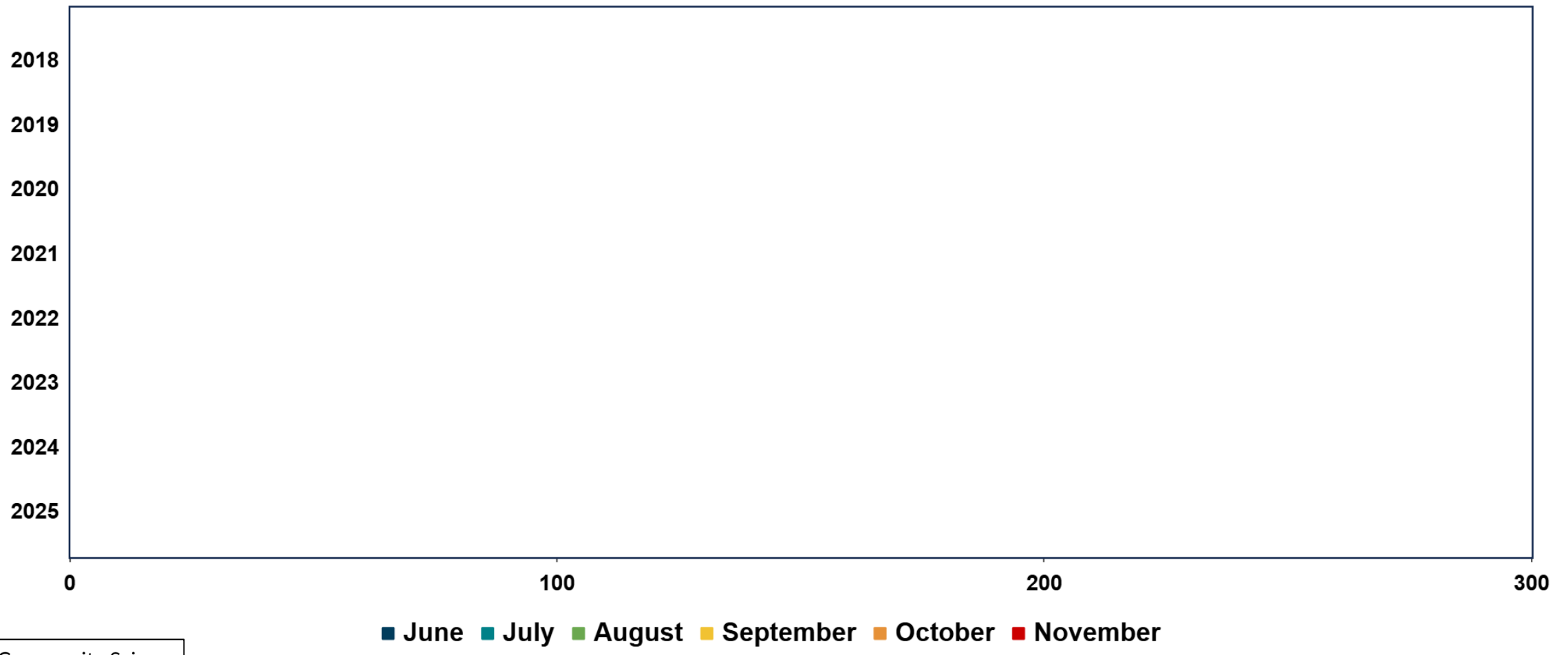
Pictures of the bloom from “the field”

Microscopy picture(s): *Dolichospermum* sp.

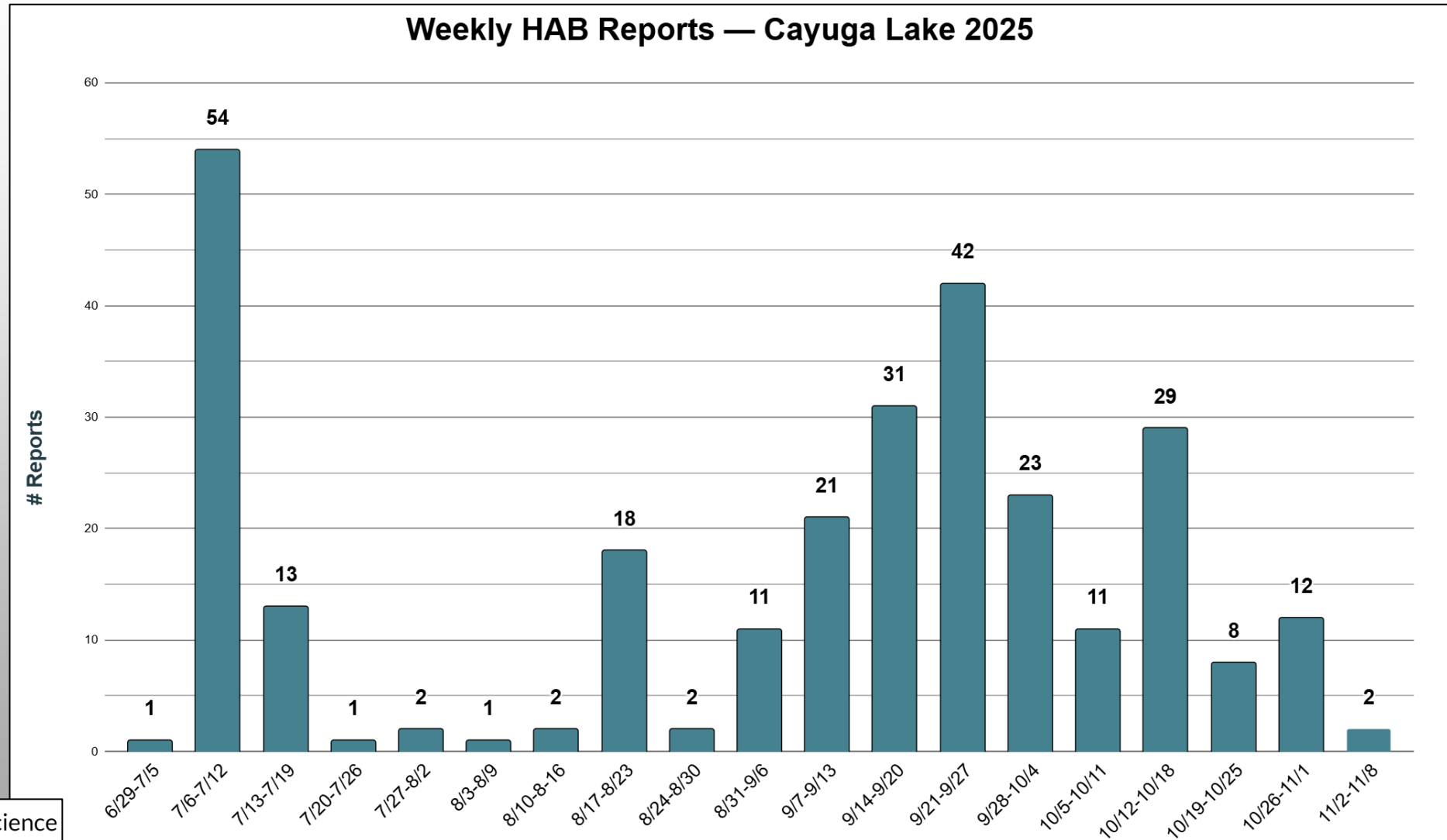
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CSI's HABs Database and 2025 Results

Number of Cayuga Lake HAB Reports 2018-2025

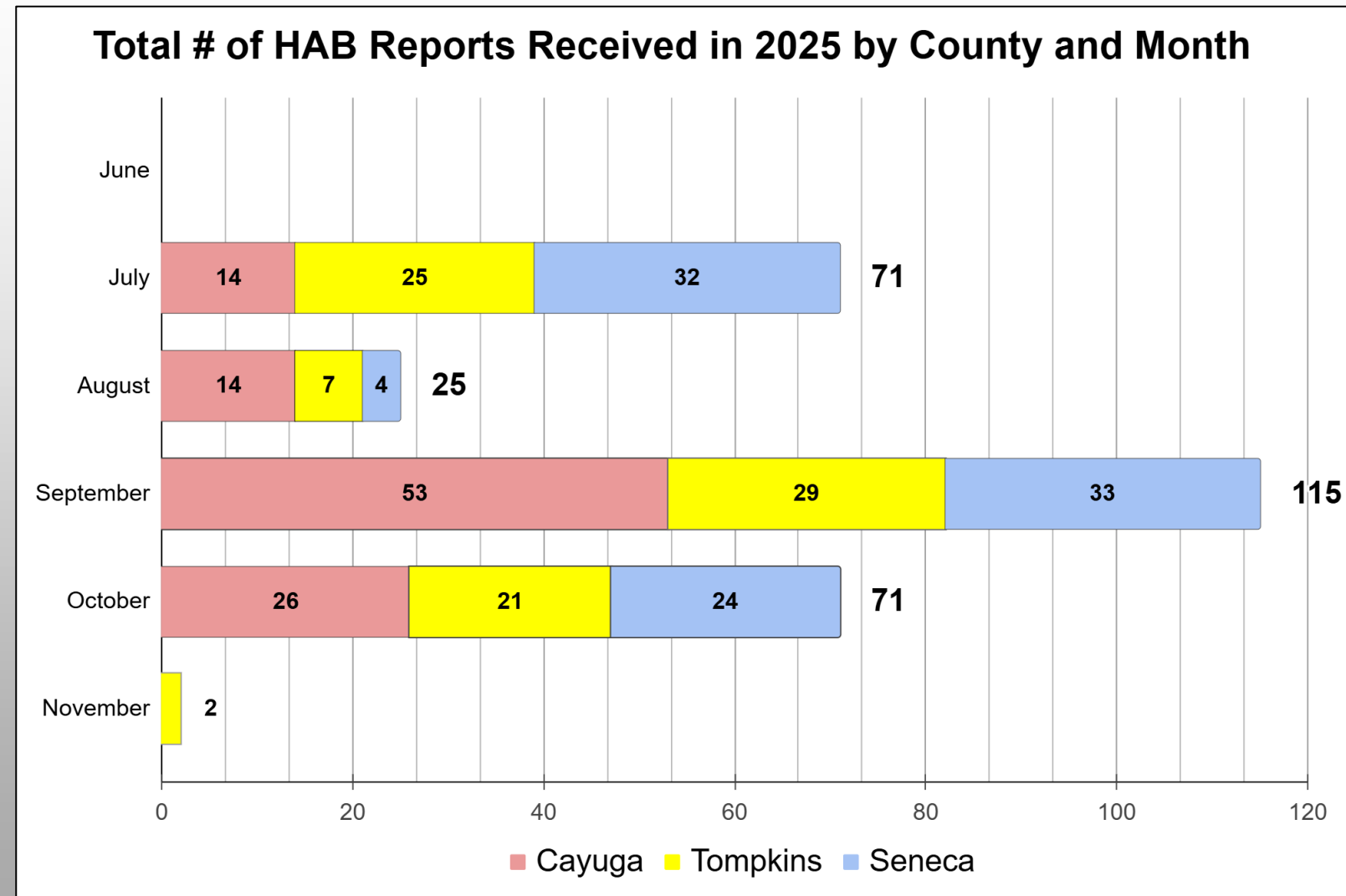


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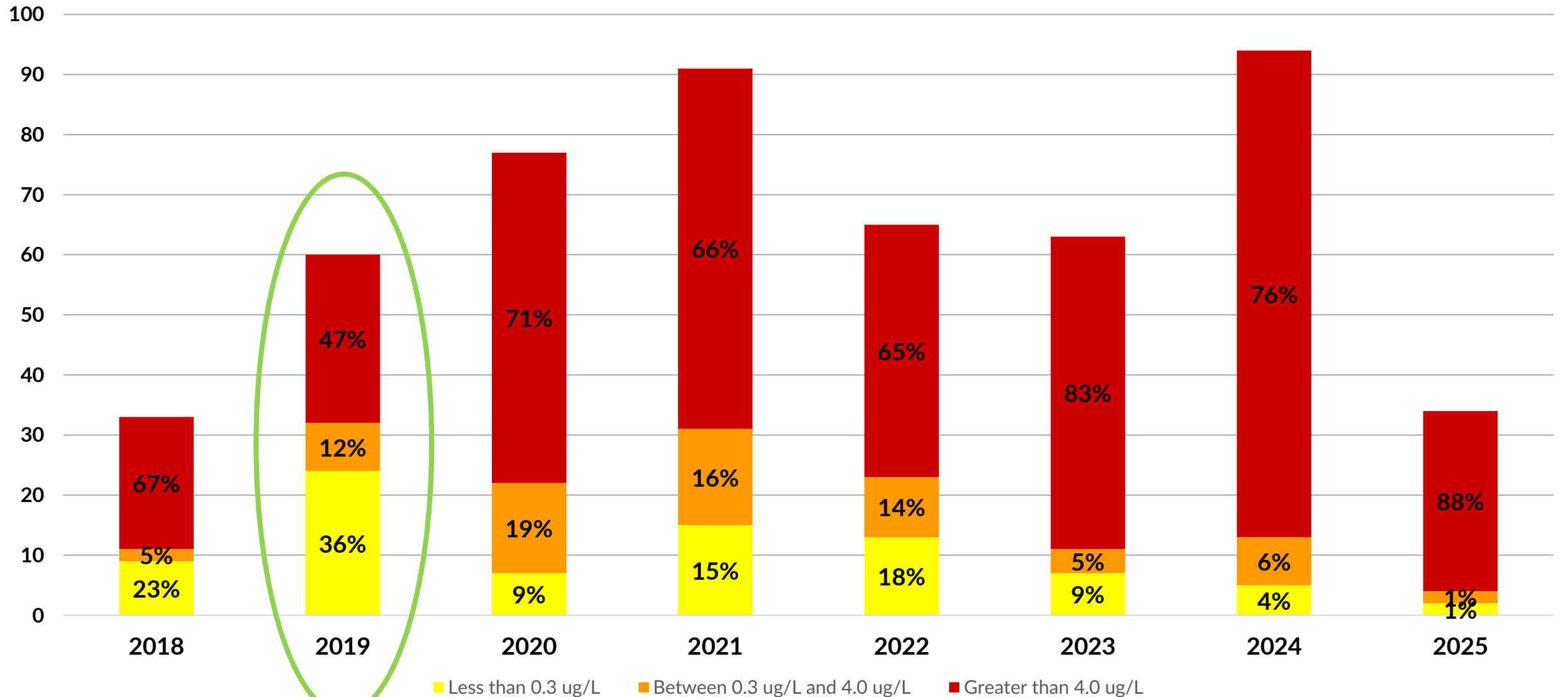
CSI's HABs Database and 2025 Results

County	June	July	Aug.	Sept.	Oct.	Nov.	County Totals
Cayuga	0	14	14	53	26	0	107
Tompkins	0	25	7	29	21	2	84
Seneca	0	32	4	33	24	0	93
Monthly Totals	0	71	25	115	71	2	284



CSI's HABs Database and 2025 Results

Microcystin Trends in Harmful Algal Bloom (HAB) Samples Collected on Cayuga Lake 2018-2025



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Ithaca - 9/17/25

NYSDEC Research



NYSDEC/USGS HABs Advanced Monitoring Pilot

- (2018–2020)
- Collaborative effort between New York State Department of Environmental Conservation, United States Geological Survey, and New York State Department of Health

Monitoring Approaches

- In-lake continuous monitoring + discrete sampling
- Tributary sampling + nearshore lake mapping
- Water and biological quality sampling of tributaries
- Intensive lake characterization of Northern Skaneateles Lake and Northern Canandaigua Lake



Agenda

- Intro to Community Science Institute
- HABs 101
- HABs Identification
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Ithaca - 9/17/25

What can you do?

Ten Actions to Reduce Harmful Algal Blooms in the Cayuga Lake Watershed:

1. Pick up pet waste consistently.
2. Reduce stormwater runoff
3. Strengthen natural shorelines.
4. Choose water-wise NATIVE landscaping.
5. Manage yard debris responsibly.
6. Use phosphorus-free fertilizers and detergents.
7. Maintain septic systems
8. Dispose of chemicals safely
9. Civic and community engagement
10. Get involved with CSI!

We need YOU!

SHARE THIS BILL

f X ✉

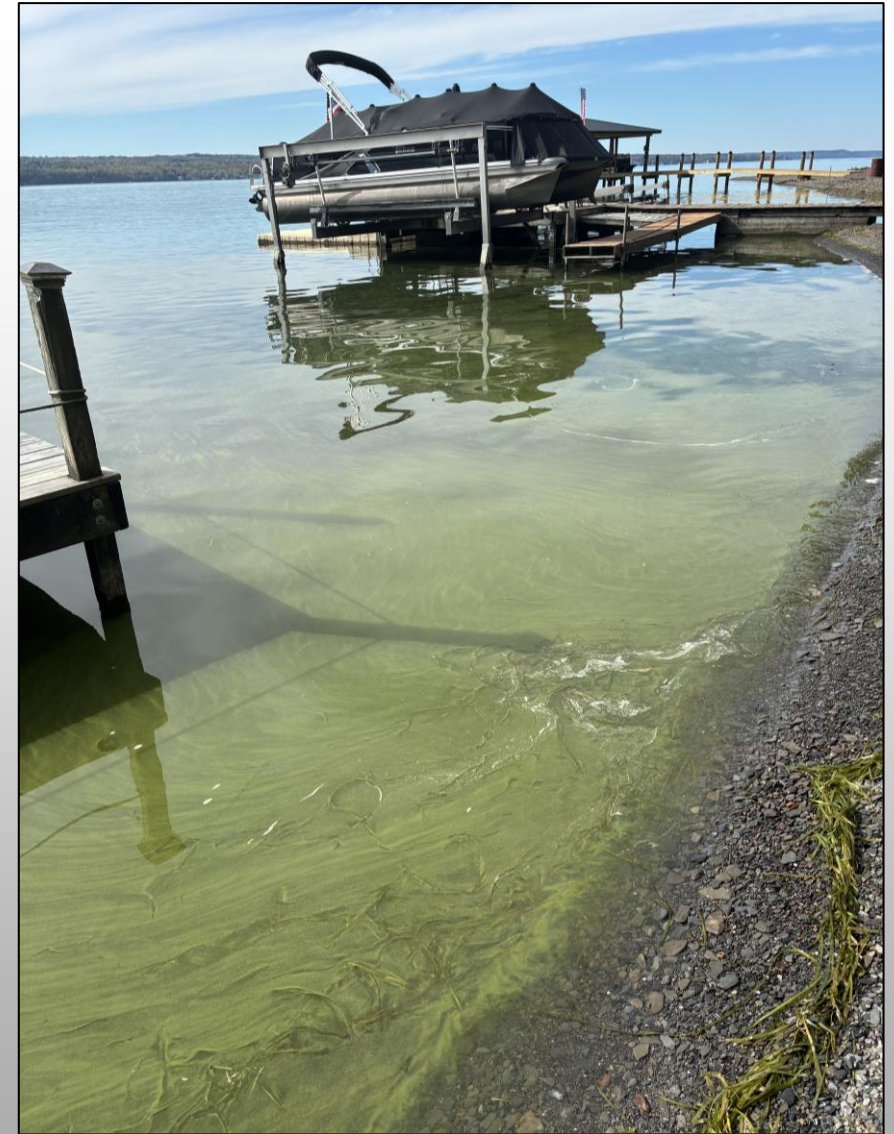
KELLES

CURRENT BILL STATUS -
In Assembly Committee

Introduced — In Committee Assembly — On —
In Committee Senate — On —

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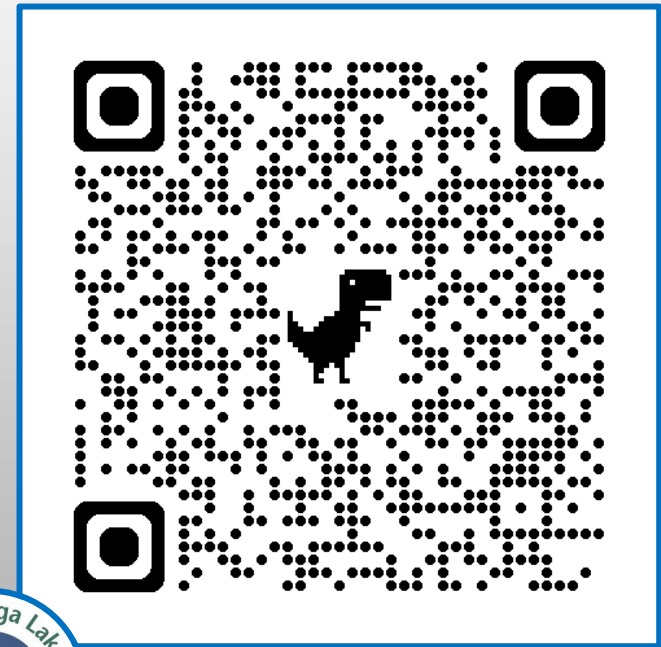
King Ferry – 9/29/25

Stay Informed:

CSI's Monthly Email Updates



CLWN Weekly HAB Email Updates



Stay Informed:



Go for a cruise next summer on DCL's new boat!



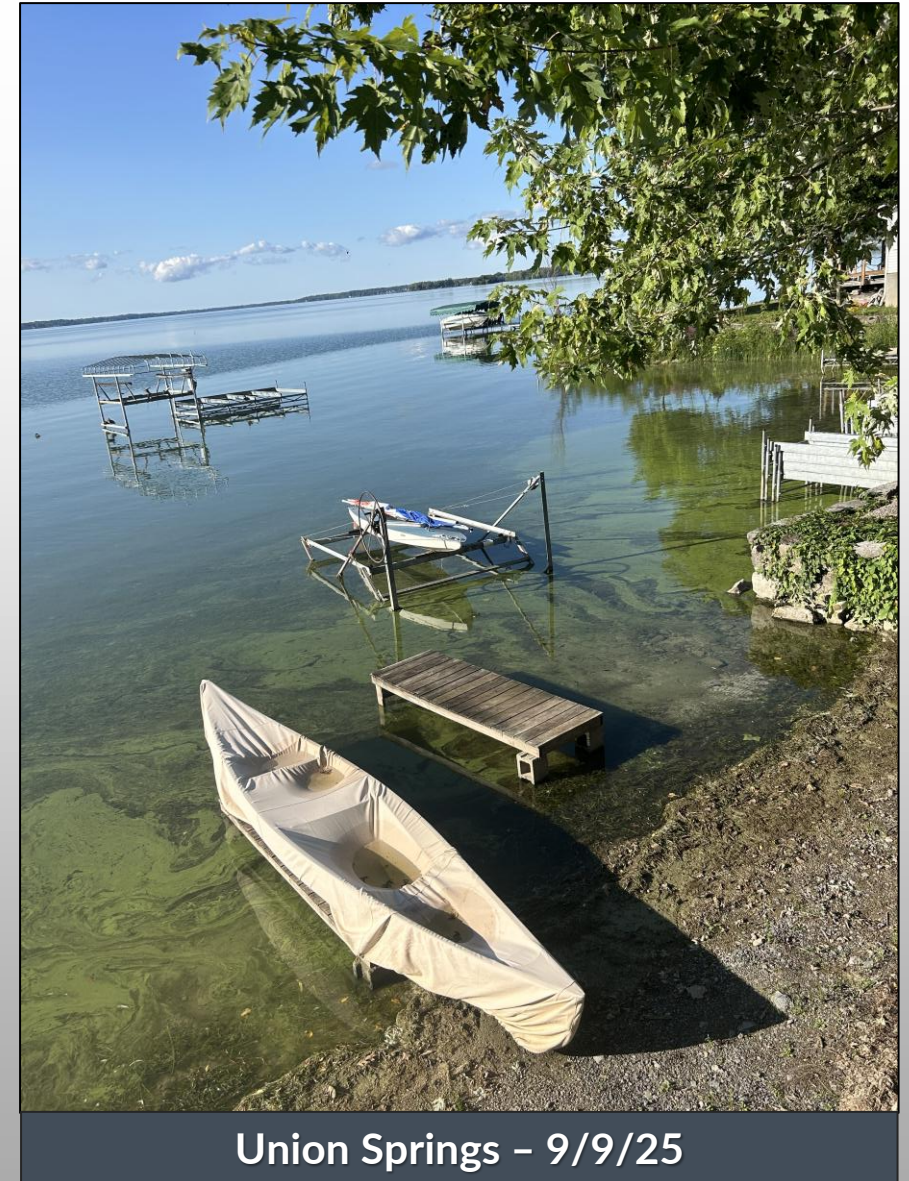
A Sneak Peek at our New Boat



Currently named the Under Pressure (UP), this boat has lived its life on the coast of Georgia as a dolphin tour boat. As a fiberglass hulled boat it'll require less maintenance than the Teal and ... it has an upper deck! The UP will spend the winter in Georgia and then makes its way up the intercostal seaway and the Hudson River and then west onto the Erie Canal and onto Cayuga Lake next April. We can't wait to have this new boat available to everyone and to hear your input about the many ways we'll be able to use it to serve our community's needs!

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Acknowledgements

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Cayuga County
HEALTH DEPARTMENT



Seneca County
Health Department



TOMPKINS COUNTY
Whole Health

Acknowledgements

Programmatic Support:



CSI's Members & Business Members:

FARMER GROUP

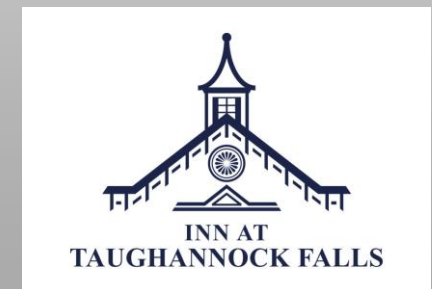


FINGERLAKES
Wealth Management

gimme!



Growing Native Plants and More
Creating Beautiful, Sustainable Landscapes



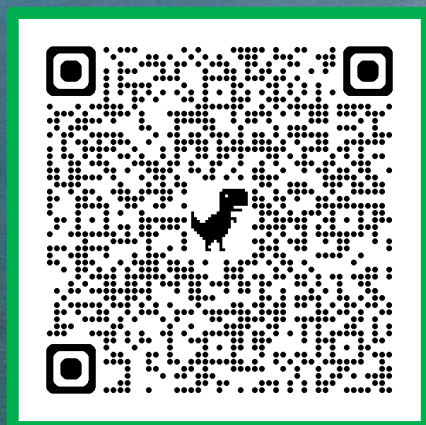
Acknowledgements



DOZENS of HABS Harriers
& HABS Carriers!



Thank you!



Are you interested in becoming a HAB volunteer?

Scan this QR code and fill out the brief form!

North end looking SE towards Cayuga - 7/11/25
Photo: Nicholas Leonard Dronography