

Finger Lakes HABs Surveillance Training

We will be starting at 5:05 pm

Attendees will be muted. Please use the chat feature to ask questions during the presentation. There will be a chance to unmute and ask questions at the end.





Department of
Environmental
Conservation

2024 HABs Volunteer Training

Finger Lakes Surveillance Programs

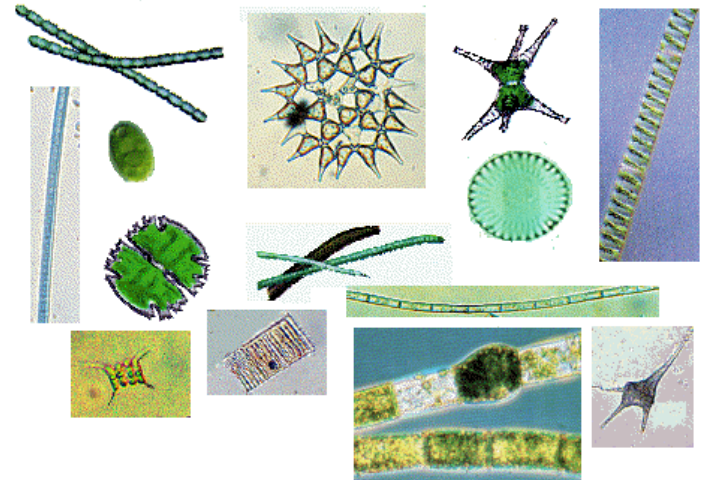
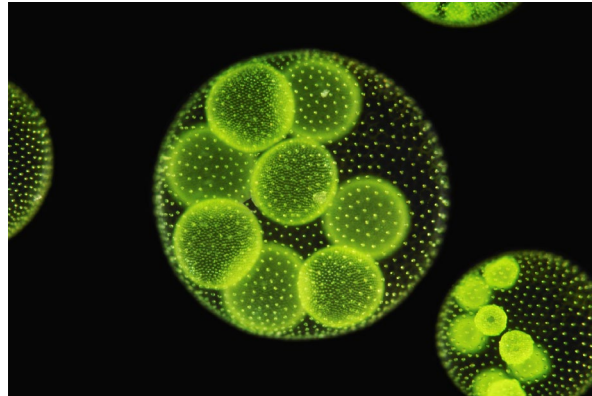
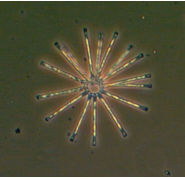
June 10, 2024

What are Harmful Algal Blooms?

Introduction

What are Algae?

- Single-celled plants
- Possess chlorophyll
- Conduct photosynthesis
- Normally, not harmful



Acronym time: HABs

H: Harmful (toxins, economic, aesthetics, ecological)

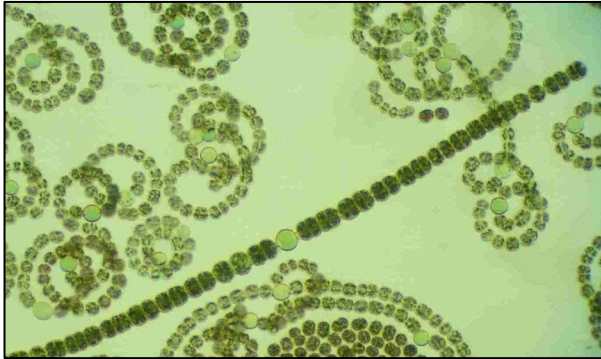
A: Algal (freshwater HABs refer to cyanobacteria, not truly algae)

B: Blooms (proliferation of cells, dense concentrations)



Common types of Cyanobacteria

Dolichospermum

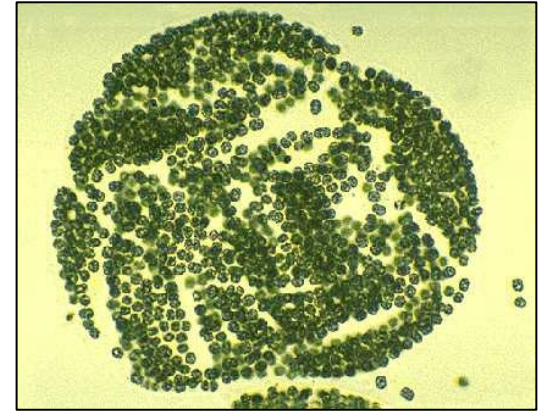


- Fixes Nitrogen
- Produces anatoxin (nerve toxin) and others

Aphanizomenon



Microcystis



- Adjusts buoyancy
- Produces microcystin (liver toxin)

Cyanobacteria – Blue-green Algae – HABs

- Highly specialized and competitive
 - Some regulate buoyancy
 - Some fix nitrogen
- Best in high temps, high light, high nutrients
- But, HABs are present in low nutrient waterbodies too (Finger Lakes, Lake George)
- Bloom triggers not fully understood
 - Some low P systems bloom, some high P systems don't bloom
- Interannual/seasonal variability within lakes



Seasonal Changes in Algae

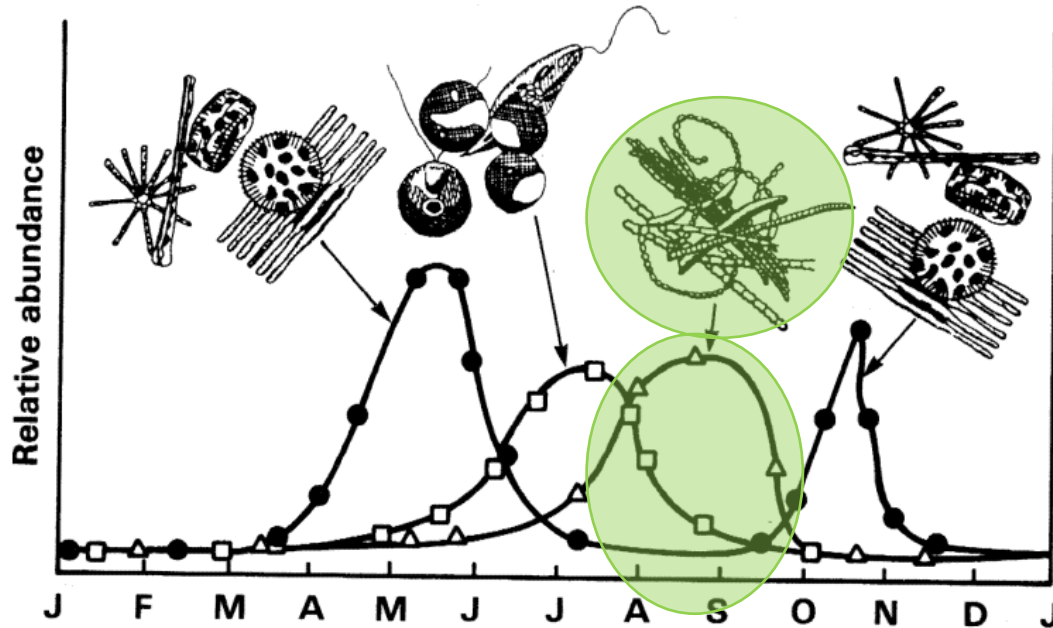


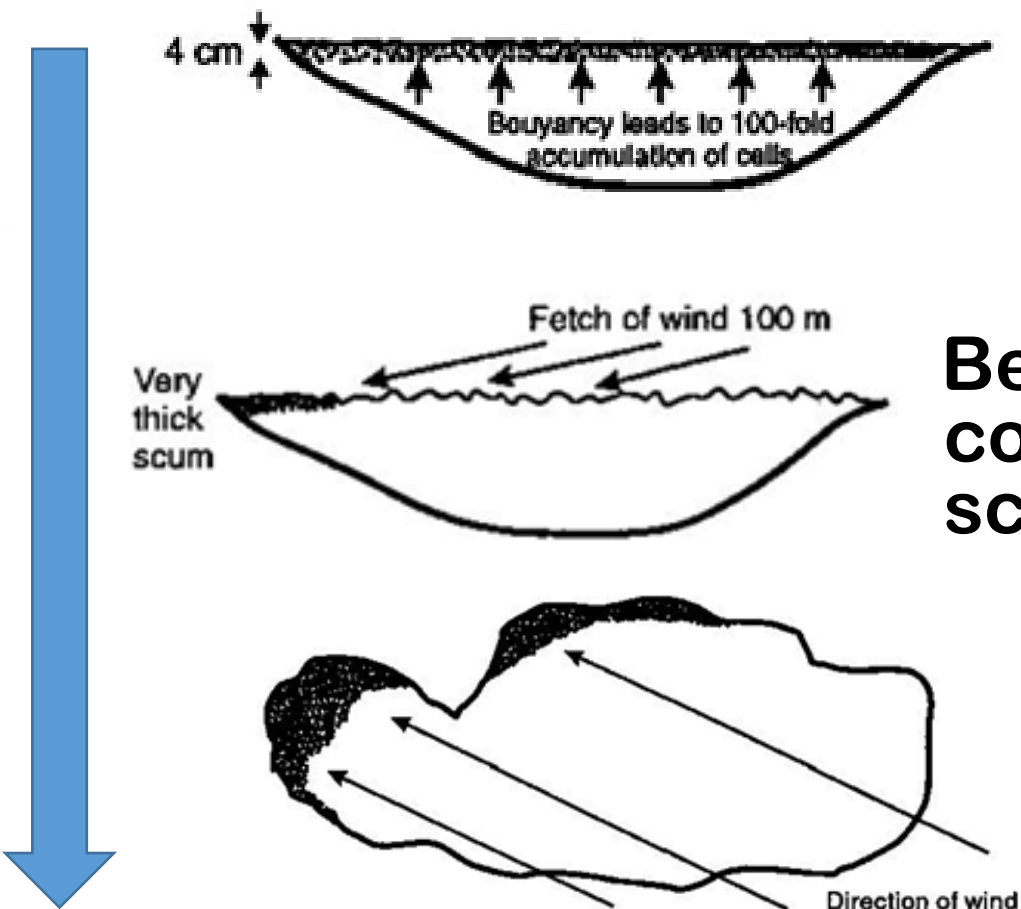
Figure 5. Seasonal Succession of Phytoplankton (Olem and Flock, 1990)

Diatoms tend to dominate in spring and fall, with greens and blue-greens dominant during summer, but many variations are possible.

Wild Cards Affecting HABs

1. Climate change
2. Trophic interactions
 - increased nutrient recycling
 - selective feeding by **dreissenid mussels**
3. Emerging contaminants





Each level
has 10-
1000x
increase
in cells

**Be careful of wind
concentrated
scums!**

Cyanotoxins

Microcystins (liver toxins)

- Most common toxin in New York

Anatoxins (nerve toxins)

- Potentially fatal to dogs

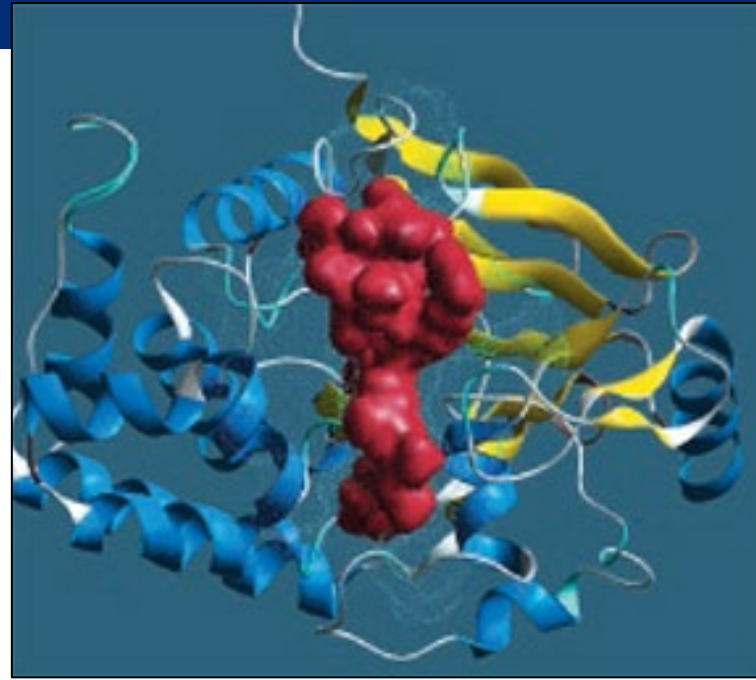
Lipopolysaccharides (endotoxins)

- Skin irritants and allergens
- Produced by most cyanobacteria

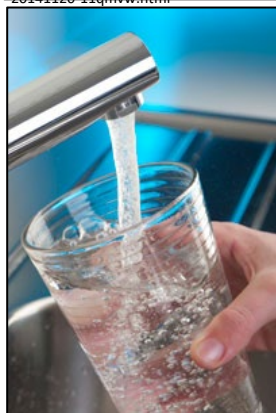
Other Toxins (Cylindrospermopsin, Saxitoxin, BMAA, etc.)

No visual cues that toxins are present

Toxin production not well understood



Routes of exposure to toxins



1. Consumption: incidental swallowing, drinking water
2. Inhalation: aerosols created during household use or recreation
3. Dermal: skin contact during swimming

Any health effects should be reported to your local health department!

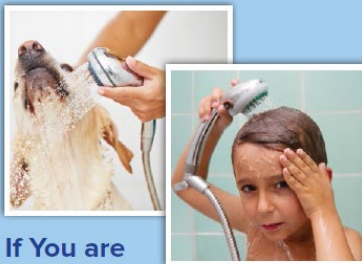


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HABs & Health

Potential Symptoms

- Allergic or irritative skin, eye, ear, throat reaction
- Diarrhea
- Nausea
- Jaundice
- Vomiting
- Respiratory difficulties
- Neurological



If You are Exposed

- Rinse off yourself, children, and animals with clean water if exposed to blooms or surface scums, or water that is noticeably discolored.
- Stop using the water and consider medical attention if people or animals have symptoms and might have touched, swallowed, or inhaled surface waters with possible blooms. Symptoms include diarrhea, nausea or vomiting; skin, eye or throat irritation; and allergic reactions or breathing difficulties.]

Report it.

- Please report suspicious blooms to HABsInfo@dec.ny.gov, your local health department (health.ny.gov/EnvironmentalContacts), or harmfulalgae@health.ny.gov
- Please report symptoms to your local health department or harmfulalgae@health.ny.gov

More Information

NYS Department of Health
www.health.ny.gov/harmfulalgae

NYS Department of Environmental Conservation
www.dec.ny.gov/chemical/77118.html

US Centers for Disease Control and Prevention
www.cdc.gov/nceh/hsb/hab/default.htm

US Environmental Protection Agency
www2.epa.gov/nutrient-policy-data/cyanohabs

Avoid blooms in surface waters because blue-green algae can cause health effects in people and animals.



Know it.

It might be a blue-green algae bloom if you see:

- Strongly colored water.
- Paint-like appearance.
- Floating mats or scums.



Avoid it.

Always stay away from blooms in surface waters:

- Don't swim, fish, boat, or wade in areas with blooms.

- Don't eat fish caught from areas with blooms.

If you're **not** on a public water supply:

- Bloom or no bloom, never drink, prepare food, cook, or make ice with untreated surface water.
- During a bloom, don't drink, prepare food, cook, or make ice with surface water, even if you treat the water yourself. Also consider not using it for showering, bathing, or washing.

If you **are** on a public water supply:

- Your water is treated, disinfected and monitored for drinking and household use.



Report it.

Report blooms to: HABsInfo@dec.ny.gov, your local health department (health.ny.gov/EnvironmentalContacts), or harmfulalgae@health.ny.gov

Report bloom-related symptoms to: Your local health department or harmfulalgae@health.ny.gov

Consider visiting a health care provider if you, your family, or your animals are experiencing symptoms that might be related to blue-green algae exposure.

Learn more health.ny.gov/harmfulalgae



Blue-green Algae and Health



Know it.



Avoid it.



Report it.

To HAB or not to HAB?



NOT HABs



Filamentous = wet cloth, hair



Duckweed= very small plants



Pollen = In Spring, very yellow, breaks apart



Filamentous green algae

Common types:

Cladophora

Mougeotia

Spirogyra



Spirogyra – bright green “cloud”, under the surface



Examples of *Spirogyra* green algae blooms.

Cladophora



Differences between Cladophora & HABs

Cladophora

- Dense mats in water; often on bottom or on shore
- Not known to produce toxins
- Peaks in early summer
- Filamentous (end to end) growth

HABs

- Floating blooms tend to stay in water, on surface
- Can produce toxins
- Peaks in late summer
- Colonial



Duckweed



Duckweed





Pollen

- Bright yellow in color (which is not typical of HABs)
- Breaks up easily
- Most common in early summer

Pollen on Skaneateles Lake (June 2020)



Photo credit: Lewis McCaffrey

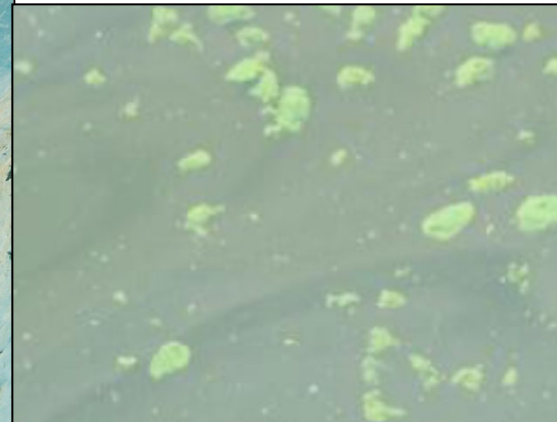
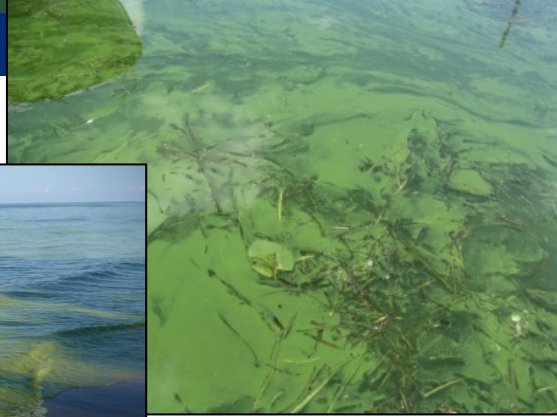
**Pollen on
Owasco Lake
(June 2022)**



HABs

Likely to be HABs

- Oily, shiny, sheeny
- Pea soup appearance
- Surface scums, foamy
- Spilled paint on the surface
- Discolored (green or blue green) streaks
- Floating clumps or globs



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Oily, shiny, sheeny



Pea Soup, Scum, Foamy



Paint, scum, foamy



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Surface or mixed in water column



Surface or water column



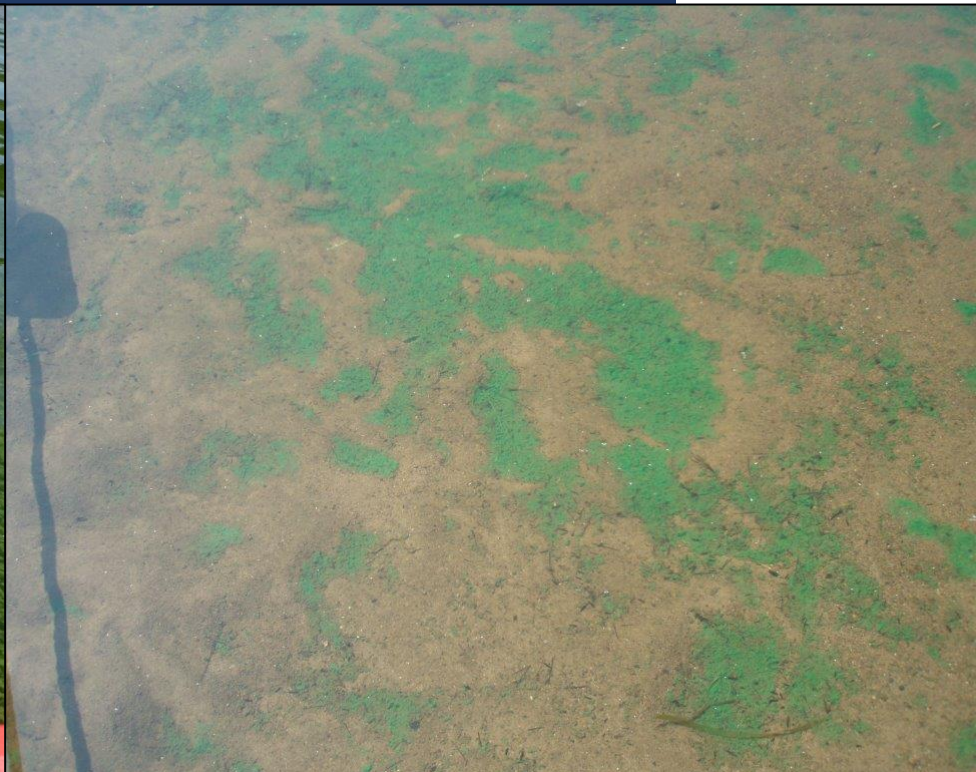
Accumulates on shorelines, docks or coves



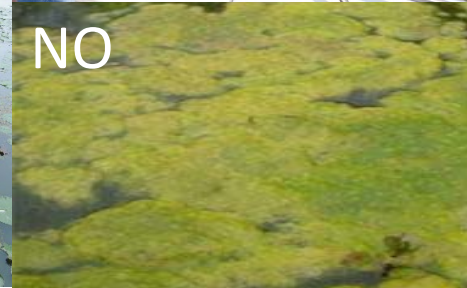
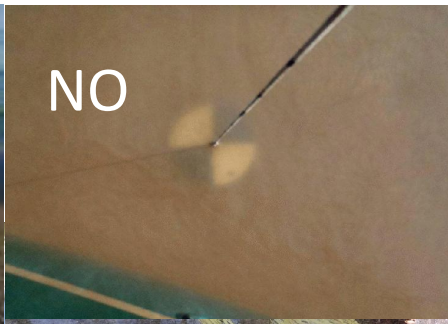
Accumulates on shorelines, docks or coves



Streaks, clumps, globs



Test your skills



NYS HABs Program

What do we do?

The NYS HABs Program



- Interagency collaborative effort (DEC, OPRHP, DOH)
- DEC coordinates several HABs reporting efforts
- DEC operates NYHABS with DOH and OPRHP 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

2024 NYS HABs Reporting Partnerships

- DEC LCI Program: ~80 lakes; 1x/summer
- Enhanced shoreline surveillance program: ~10 lakes: weekly
- Academic researchers: >20 lakes; weekly
- VT DEC, USACE, NYC Parks, NYC DEP, others: >30 lakes; variable frequency
- Regulated swimming areas: >800 locations; daily



The role of volunteers

What do volunteers need to do?

- Agree to survey specific zones on your lake weekly at about the same time
- **Submit a report whether bloom is present or not**
- If a HAB is present, take pictures and submit a bloom report
 - Two photos if possible (close up, further away)



Visual Based Response: Why?

- HABs can be identified with the naked eye
- Symptoms possible with or without toxins
- Sampling and analysis takes time
- Not all toxins analyzed
- Blooms are dynamic:
 - Spatial, temporal & toxin gene expression
- Not practical to always sample all waters



Cayuga Lake

Know it, Avoid it, Report it



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Photos are important!



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Updates for 2024

- **NYHABS Year 6: No major changes**
- Confirmed Bloom will be determined from visual reports.
- Consistent with DOH protocols to close public beaches and public messaging to avoid blooms based on visual sightings
- Improves reporting efficiency
- New for 2024:
 - Take photos and submit with no bloom reports



NYHABS - The NY HABS System

- ArcGIS Online interactive map of HABS reports, updated daily*
- Reports include status, extent, reported by, exact location, photos
- Current Reports: last 2 weeks
- Archived Reports: all previous reports of the year
- User can filter by lake or county and export reports as pdf

on.ny.gov/nyhabs

About NYHABS

Press the ... icon above to minimize this info tab.
Return to DEC HABS homepage.

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Click on any point to view report data.

Use the arrow icon at the bottom of your screen to view a table of reports.

In this map:

- Current HABS reports within the last two weeks, and may not reflect current conditions.
- Archived HABS reports more than two weeks ago, but were reported this

(1 of 18)

ARCHIVED BLOOM: Canandaigua Lake.

| | |
|---------------------|----------------------------------------|
| Date of Observation | 9/25/2020, 12:23 PM |
| HAB Status | Confirmed |
| Extent | Large Localized |
| Reported by | Canandaigua Lake Watershed Association |
| County | Ontario County |

Attachments:
[20200925-3606.jpg](#)
[20200925-3606 \(2\).jpg](#)

Zoom to

Streamlined Reporting Tools



- Survey123: ESRI ArcGIS Online fillable forms
- Works on any platform (desktop, mobile, tablets)
- Fill out anywhere, but ideally in the field for exact location
- Attach photos to report (required)
- Trained User Report Form: on.ny.gov/habproform
- Select User Group: Your Watershed Group

Bloom Report Form
on.ny.gov/habform



Field data
(location,
extent, photos)

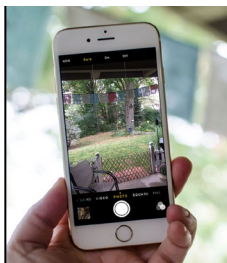
DEC & DOH
Evaluation



NYHABS

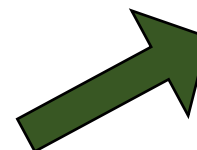


Trained User Report Form
on.ny.gov/habproform



Field data (location, extent,
photos, lakeID, water supply
yes/no, beach closures)

DEC & DOH
Evaluation



Shortened Links

| Name | Arc GIS link | Short link |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Public Report Form | https://survey123.arcgis.com/share/66337b887ccd465ab7645c0a9c1bc5c0 | on.ny.gov/habform |
| Trained User Report Form | https://survey123.arcgis.com/share/e63430b712c94309819f72d4dd5e5c9c | on.ny.gov/habproform |
| NYHABS | https://nysdec.maps.arcgis.com/apps/w ebappviewer/index.html?id=ae91142c812a4ab997ba739ed9723e6e | on.ny.gov/nyhabs |



Take Aways

- Volunteers should use the pro form to submit bloom reports
- Public form is available for you as an outreach tool as well
- Photos will be required to submit a bloom report (we are asking for photos with no bloom reports this year)
- No sampling
- No changes with bloom status, extent, etc.
- HABsInfo@dec.ny.gov for questions to NYSDEC



Thank You/Questions

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General HABs Questions/Updates to Zones:

HABsInfo@dec.ny.gov



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