



Department of  
Environmental  
Conservation

# How to Collect a Harmful Algal Bloom Sample

Division of Water, Bureau of Water Assessment  
and Management

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# What is a HAB?

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

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

**B: Bloom** (proliferation of cells, dense concentrations)



The Lake in Central Park

# Cyanobacteria – Blue-green Algae – HABs

- Highly specialized and competitive ancient bacteria
- Some types can regulate buoyancy or fix nitrogen
- Grow best in high temperature, high light, high nutrient conditions
- Causes not fully understood, hard to predict



# Common types of Cyanobacteria

*Dolichospermum*

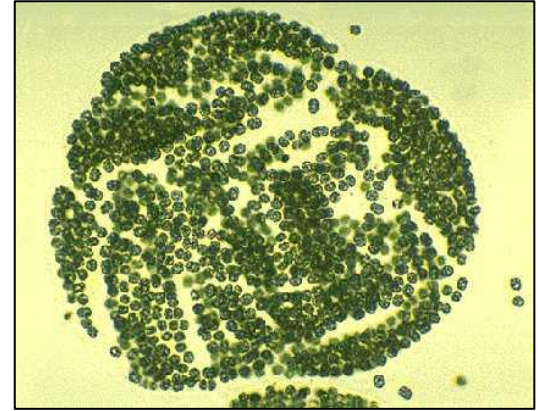


- Fixes Nitrogen
- Produces anatoxin (nerve toxin) and others

*Aphanizomenon*

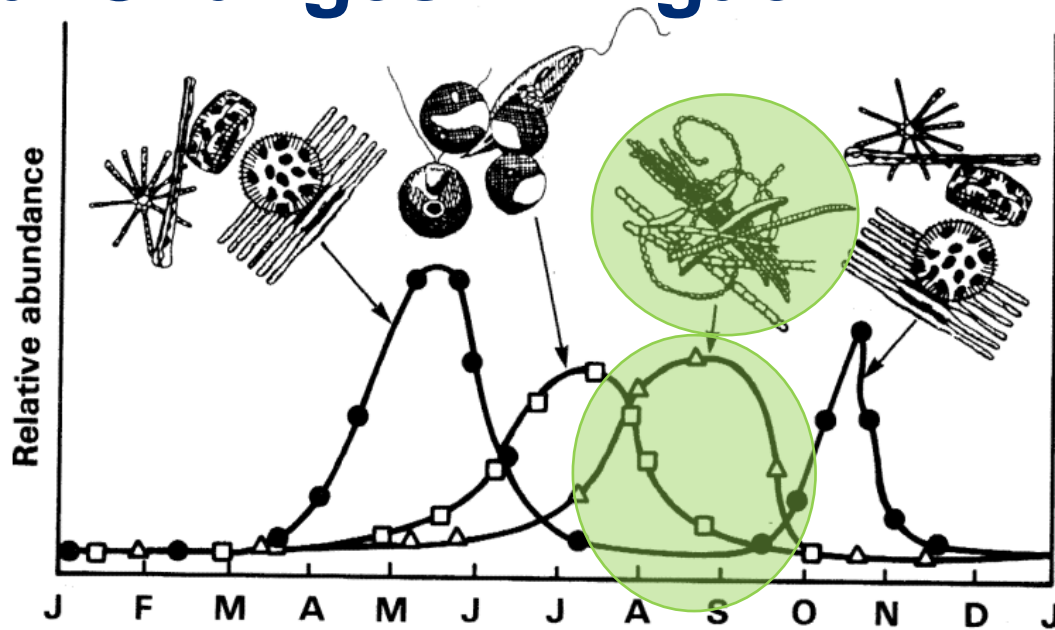


*Microcystis*



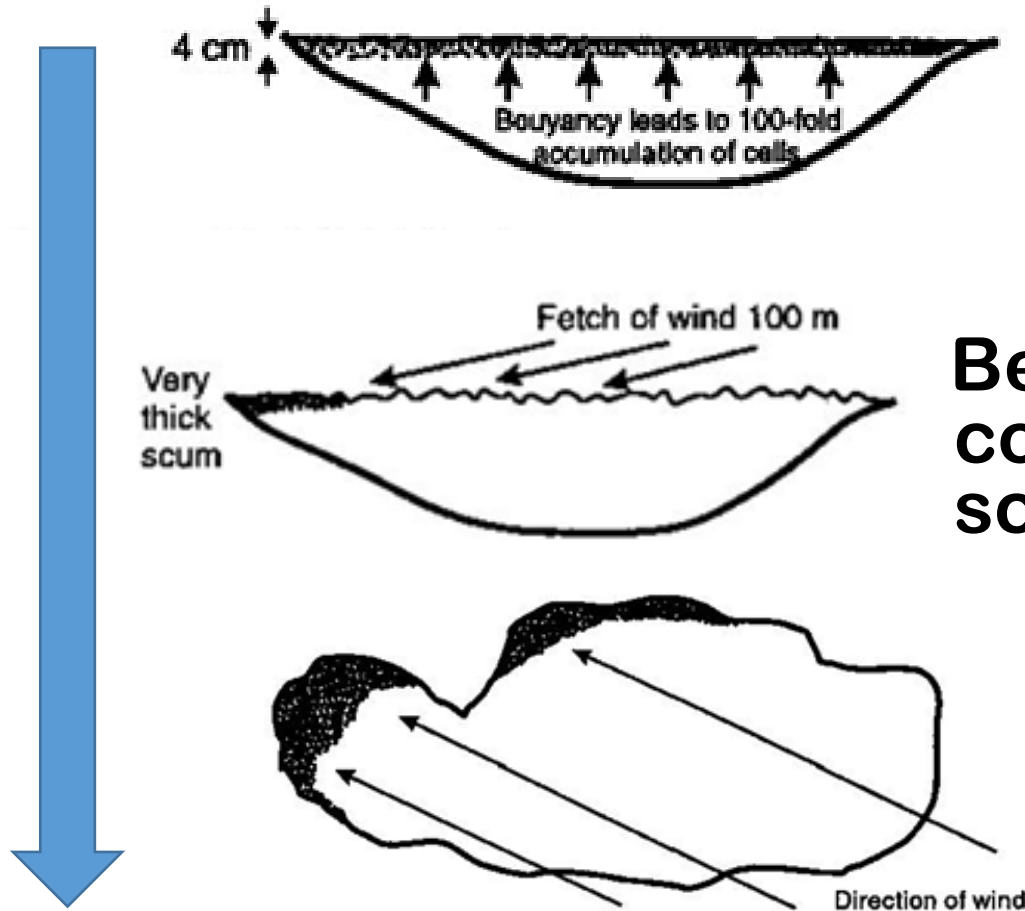
- Adjusts buoyancy
- Produces microcystin (liver toxin)

# 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.



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

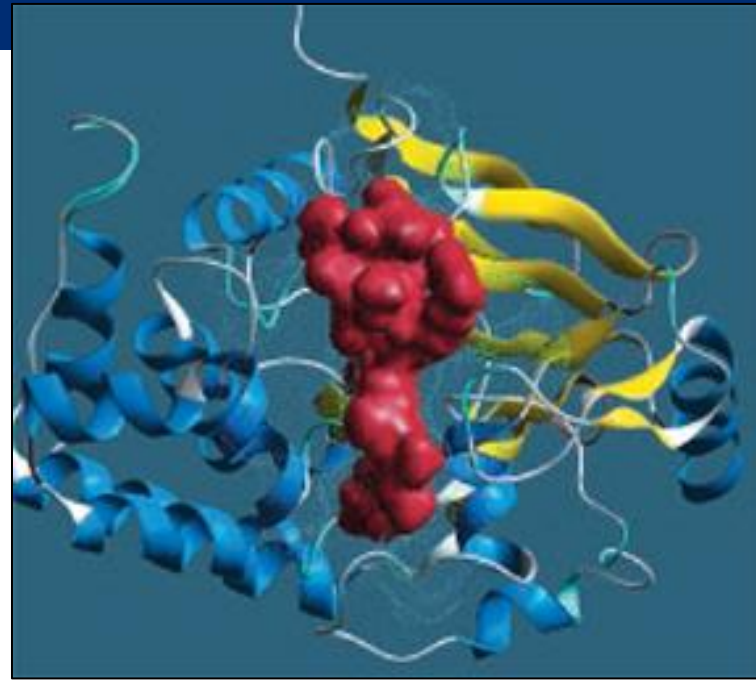
## Lipopolysaccharides (endotoxins)

- 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!**



# HABs & Health

## Potential Symptoms

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



# 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.

# Duckweed





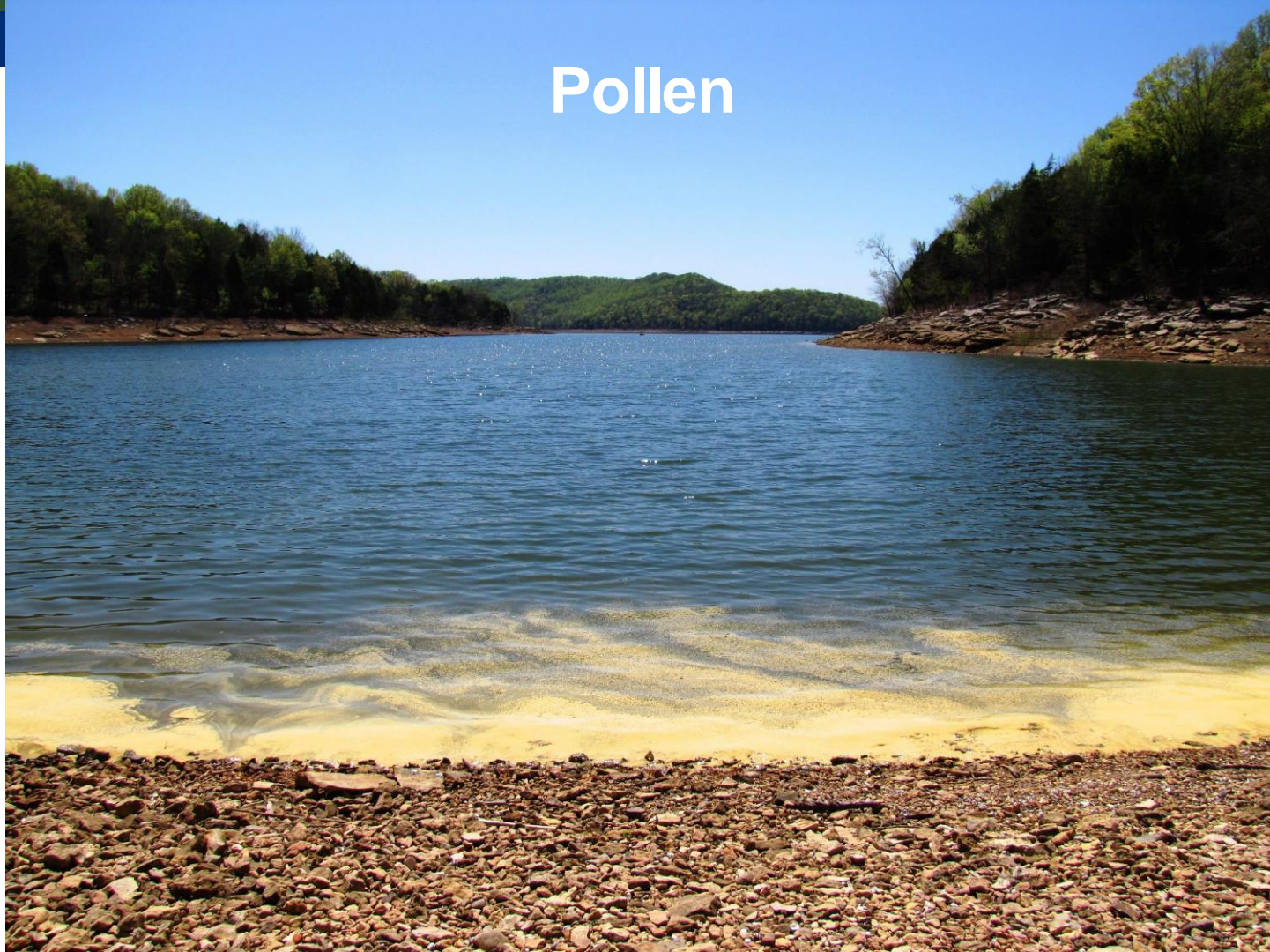
# Duckweed

15





# Pollen





## Pollen

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

# 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



# Oily, shiny, sheeny





# Pea Soup, Scum, Foamy



# Paint, scum, foamy





# Surface or mixed in water column



# Surface or water column





# Accumulates on shorelines, docks or coves

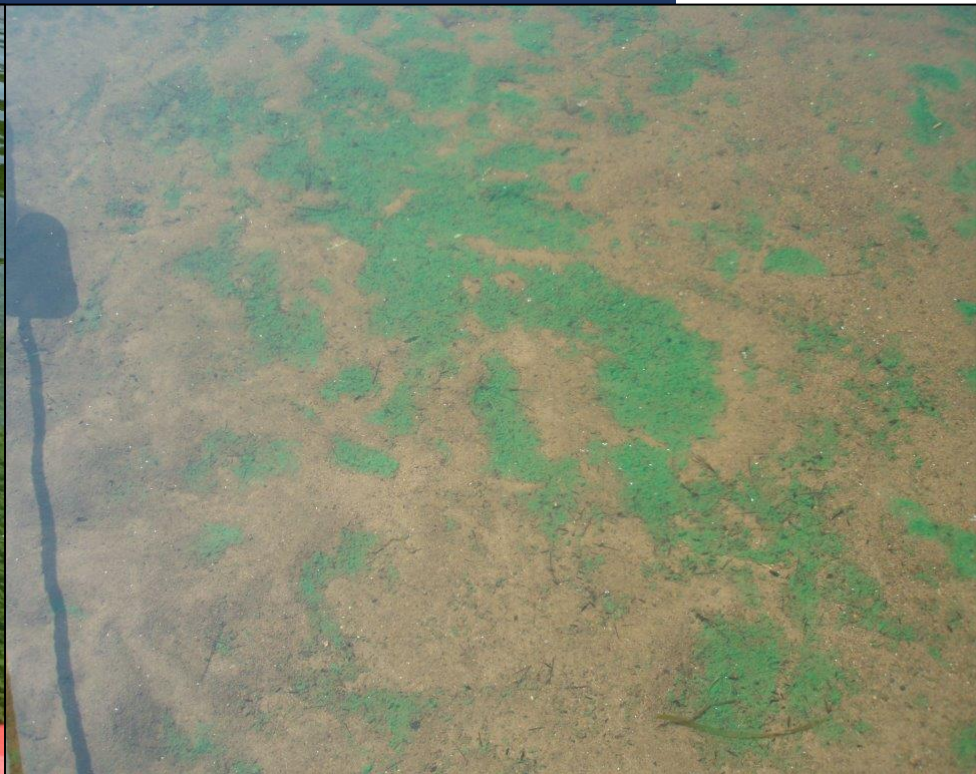


# Accumulates on shorelines, docks or coves

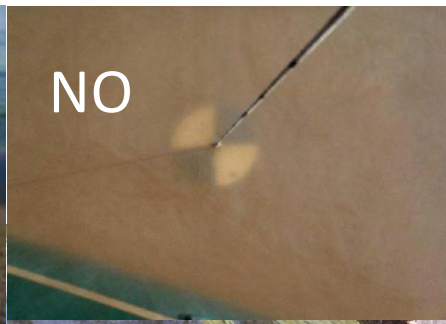




# Streaks, clumps, globs



# Test your skills





# Shorebloom Sample Collection

- Protect yourself - wear gloves
- Wash any exposed areas with clean water
- Collect surface scum by skimming surface; Capture “worst case scenario”
- Document with pictures



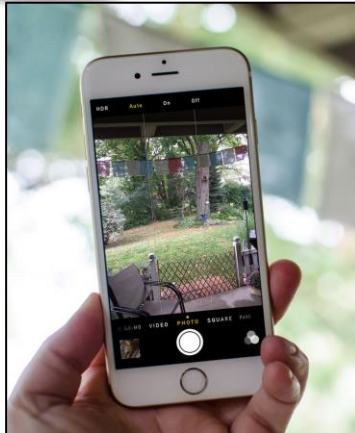
[CSLAP Training Video:](https://www.youtube.com/watch?v=X5os1xFd_3w)

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# Sampling Supplies



- Keep supplies ready
- Please take photos
- Split sample:
  - Collect directly into large sampling bottle
  - Gently invert to homogenize
  - Pour off into 2 smaller bottles
- Ship both bottles to UFI



# Label your samples!



Use this format:

Year – CSLAP Lake # - B Sample#

So, for 3<sup>rd</sup> sample this year from  
Cyano Lake (23) would be:

19-23-B3

# Sample Shipment

- Samples need to be kept cool, especially if kept overnight, ***Do Not Freeze***
- Send labeled sample bottle in cooler with filled out Chain of Custody

## CHAIN OF CUSTODY/REQUEST FOR ANALYSIS – UFI HABs Shoreline Sample

224 Midler Park Dr., Syracuse, N.Y. 13214 (315) 431-4962  
N.Y.S. ELAP ID# 11462

1. Sampling Date	_____
2. Sampled by	_____
Sampling Location/Project: <u>Anawanda Lake / CSLAP</u>	
Field ID Number <u>19-53-B1</u>	
Sample Coordinates (if known): Latitude _____ Longitude _____	
Site Location / Description: _____	

Field ID (for lab use only)	Sample ID (for lab use only)	3. Time	Sample container (# / type)	Exact sampling location	Matrix	Raw Water (fluoroprobe, microscopy, toxins)
B1 (UFI)			1 125mL glass amber bottle	Lake surface	Water	X
B1 (ESF)			1 250mL plastic bottle	Lake surface	Water	X

### SAMPLING VOLUNTEERS- PROVIDE INFORMATION IN BOXES

1. Date, 2. Sampled By (Printed), 3. Time (Military Hours), 4. Sample Relinquished By (Signature)  
(any additional site location, including coordinates, can be added in the gray box below "2. Sampled by")

UFI Sample ID _____
Comments (FOR LAB USE ONLY): _____
By signing this form, I certify that the samples enclosed were collected in accordance with the CSLAP protocols.
4. Sample relinquished by: _____ Date: _____ Time: _____
Sample bottles prepared by: _____ Date: _____ Time: _____
Received @ UFI laboratory signature: _____ Date: _____ Time: _____

When a container type is listed it is understood that proper preservation techniques and the appropriate containers are being used. Be advised that the field sampler is responsible for the care of the samples collected until they are transferred or dispatched properly



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# NYS HABs Program

What do we do?



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# The NYS HABs Program



- Interagency collaborative effort (DEC, OPRHP, DOH)
- Reports of HABs go to DEC or DOH
- DEC coordinates extensive monitoring; >400 lakes/year & notification on their website: [on.ny.gov/hab](https://on.ny.gov/hab)
- Drinking water overseen by local operators and DOH
- Regulated swimming areas (beaches) have a very protective response protocol based on visual observations

# The DEC HABs Program

## Interpretation: Bloom Status

- Determine bloom status (**Suspicious**, **Confirmed**, or **Confirmed with High Toxins**) based on surveillance (visual evidence) and sampling data

## Education

- Maintain website with HABs primer, FAQs, photo gallery and more ([on.ny.gov/hab](https://on.ny.gov/hab))
- Publish articles, respond to press inquiries, etc.
- Public presentations and training workshops

## Outreach

- Weekly updates to website (map), social media, etc.

### Diet for a Small Lake



Prepared by the New York State Federation of Lake Associations, Inc.  
in cooperation with the New York State Department of Environmental Conservation



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### HARMFUL ALGAL BLOOMS (HABS) PROGRAM GUIDE



## ***For all blooms.... (Suspicious, Confirmed, or Confirmed with High Toxins)***

- **Avoid exposure.** Keep children and pets away from scums or discolored water
- Seek immediate medical assistance for symptoms consistent with exposure
- Report any symptoms to local/state Health Department
- Report additional and on-going blooms to DEC through digital photos, suspicious bloom form, or email drop box (HABsInfo@dec.ny.gov)





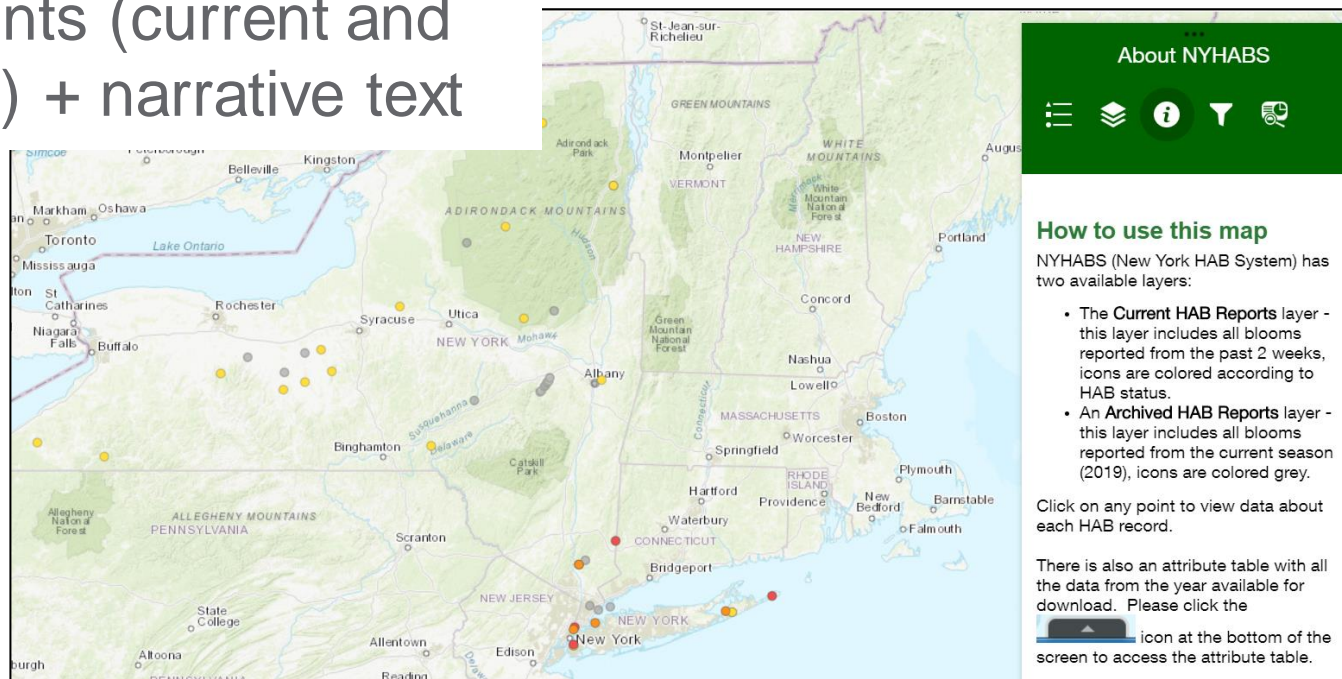
# New Bloom Reporting & Notification

- New and Improved reporting system using ArcGIS Online
- Mobile-ready Suspicious Algal Bloom Report Form for HAB reporting
- Works on any platform (desktop, mobile, tablets)
- Streamlined quality control of HAB reports by DEC
- Rapidly disseminate results internally to other state agencies
- <https://arcg.is/5mT4v>



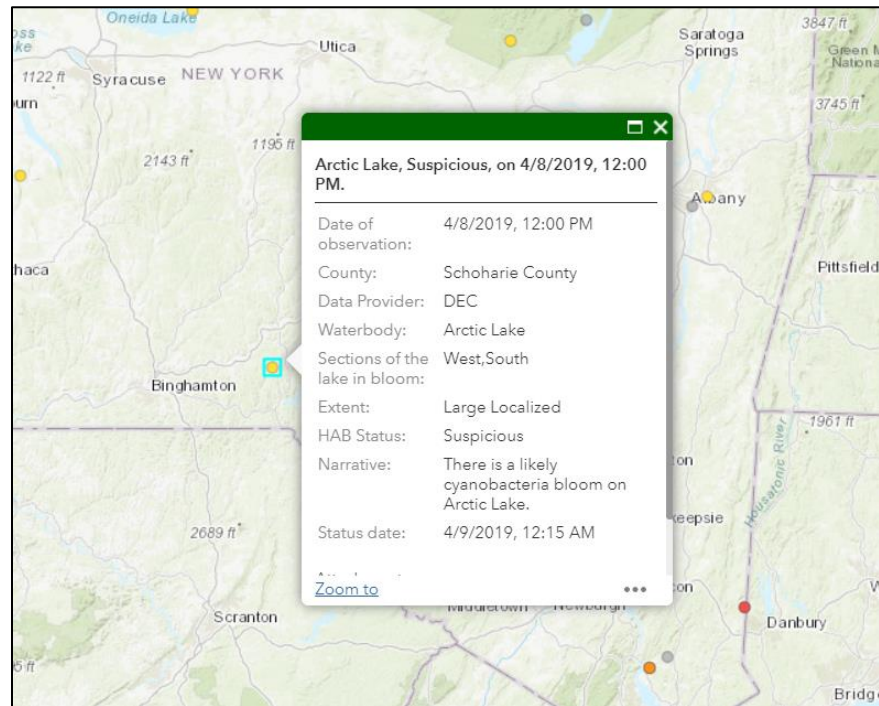
# Introducing.....NYHABS

Weekly updated interactive map with sampling points (current and year-long archive) + narrative text



# More info on HABs Updates: Webinar

- Demonstration of how to view and use NYHABS  
**Thursday, May 16**  
**10-11:30 am**
- Watch your email for more information on how to log-in





# Thank You!

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Stephanie June (CSLAP)

Keleigh Reynolds (HABs Notifications)

518-402-8179

[HABsInfo@dec.ny.gov](mailto:HABsInfo@dec.ny.gov)

