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# Overview of HABs in NYS

**Rebecca M. Gorney**

Bureau of Water Assessment and Management, Division of Water

June 2, 2022

Rebecca M. Gorney, Ph.D.

Research Scientist

## 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



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# Cyanobacteria – Blue-green Algae – HABs

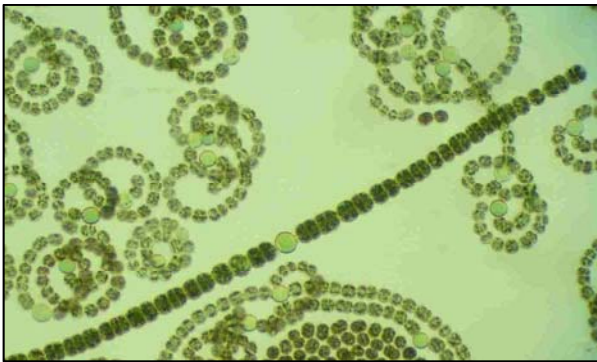
- Highly specialized and competitive ancient bacteria
- Some types can regulate buoyancy or fix nitrogen
- Grow best in high temperature, high light, high nutrient conditions
- Causes not fully understood, hard to predict



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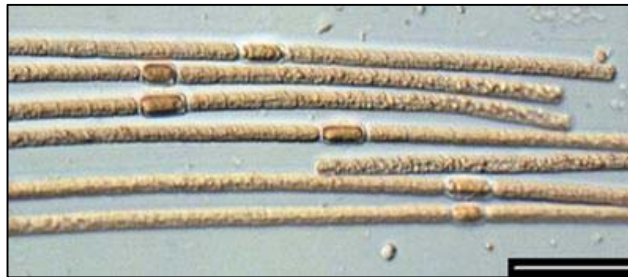
# Common types of Cyanobacteria

*Dolichospermum*

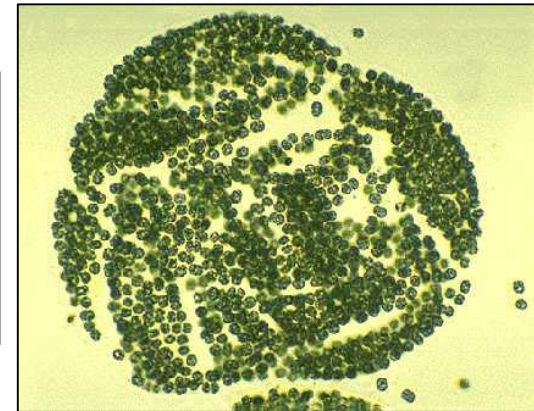


- Fixes Nitrogen
- Can produce anatoxin (nerve toxin) and others

*Aphanizomenon*



*Microcystis*



- Adjusts buoyancy
- Can produce microcystin (liver toxin)



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# Cyanotoxins

## Microcystins (liver toxins)

- Most common toxin in New York

## Anatoxins (nerve toxins)

- Potentially fatal to dogs

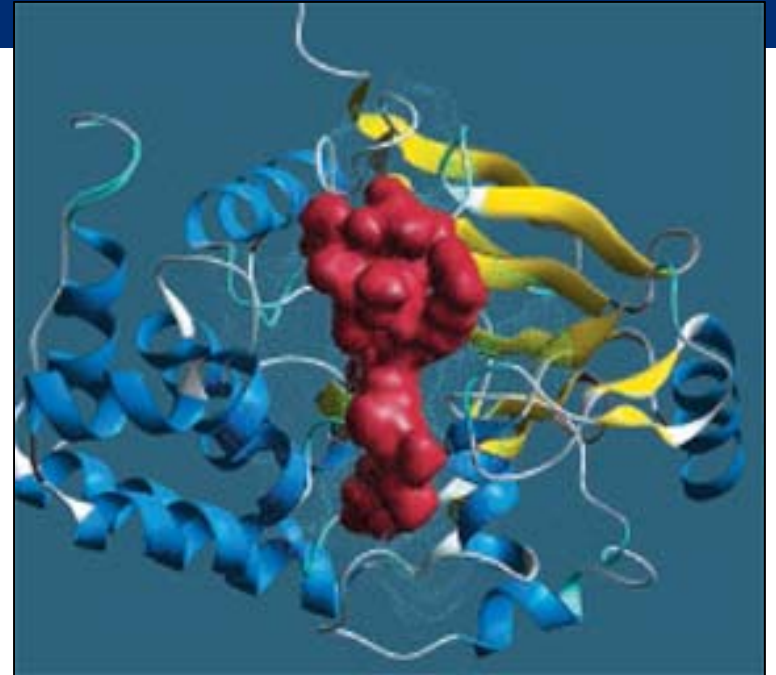
## Lipopolysaccharides (endotoxins)

- 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**



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# Avoid exposure to HABs and toxins



1. **Consumption:** incidental swallowing, drinking water
  2. **Inhalation:** aerosols created during household use or recreation
  3. **Dermal:** skin contact during recreation
- Consider visiting a healthcare provider if you, your family, or your animals experience symptoms related to HABs.

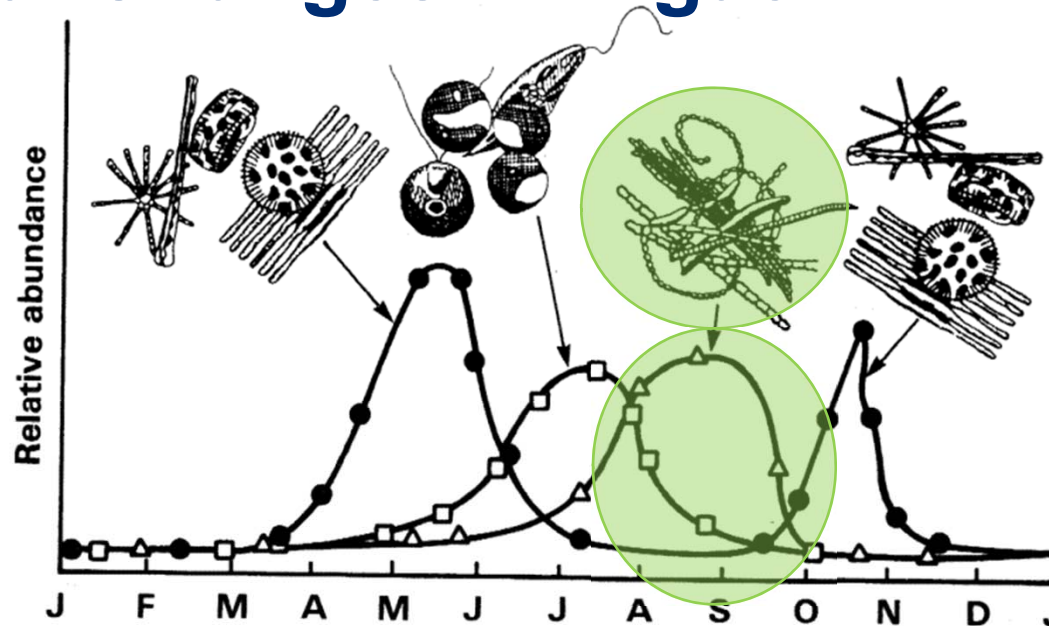
## Potential Symptoms:

- Allergic reaction
- Skin, eye, or throat irritation
- Diarrhea
- Nausea
- Vomiting
- Respiratory difficulties

- For more information: [www.health.ny.gov/HarmfulAlgae](http://www.health.ny.gov/HarmfulAlgae)



# 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.

## NOT HABs

**Filamentous = wet cloth, hair**



**Duckweed/watermeal = very small plants**



**Pollen = In Spring, very yellow, breaks apart**



**Whiting Events**



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## 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
- Other



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## Learn how to ID HABs

Several resources available:

- DEC Reporting Guide:  
[www.dec.ny.gov/docs/water\\_pdf/habsreportingguide.pdf](http://www.dec.ny.gov/docs/water_pdf/habsreportingguide.pdf)
- DEC: “Harmful Algal Bloom (HAB) Identification Tips and Tricks”:  
[www.youtube.com/watch?v=8nL\\_s77FV-o](http://www.youtube.com/watch?v=8nL_s77FV-o)
- HealthVermont: “How to identify cyanobacteria”:  
[www.youtube.com/watch?v=ea0EHw5suDs](http://www.youtube.com/watch?v=ea0EHw5suDs)
- Interstate Technology and Regulatory Council (ITRC): “Learn to Identify Cyanobacteria Blooms”:  
[www.youtube.com/watch?v=1Aknc7dZHMg](http://www.youtube.com/watch?v=1Aknc7dZHMg)

# New York State HABs Efforts



- Interagency: DEC, OPRHP, & DOH
- DEC coordinates reporting; >400 lakes/year & hosts NYHABS map
- Health concerns & drinking water treatment overseen by local operators and DOH
- Regulated swimming areas (beaches) have a protective response protocol based on visual observations
- Mitigation, Clean Water Planning, Permitted treatments

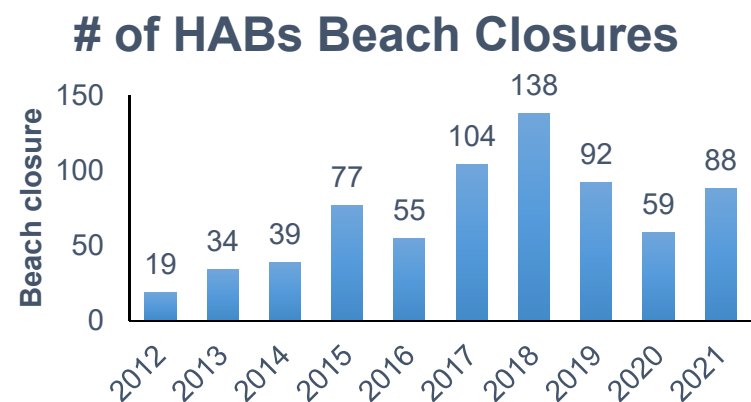
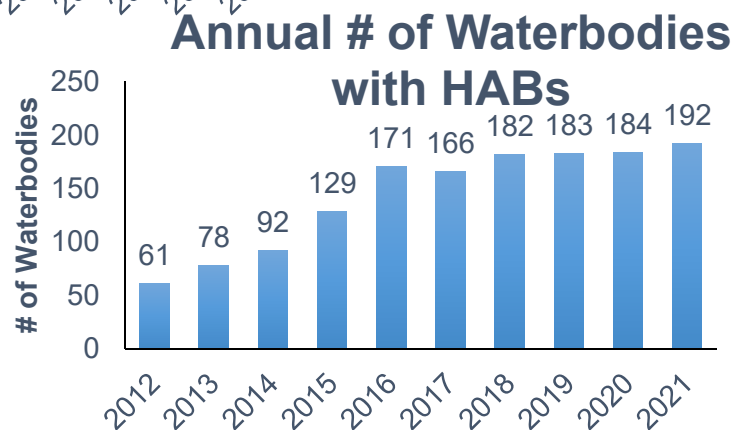
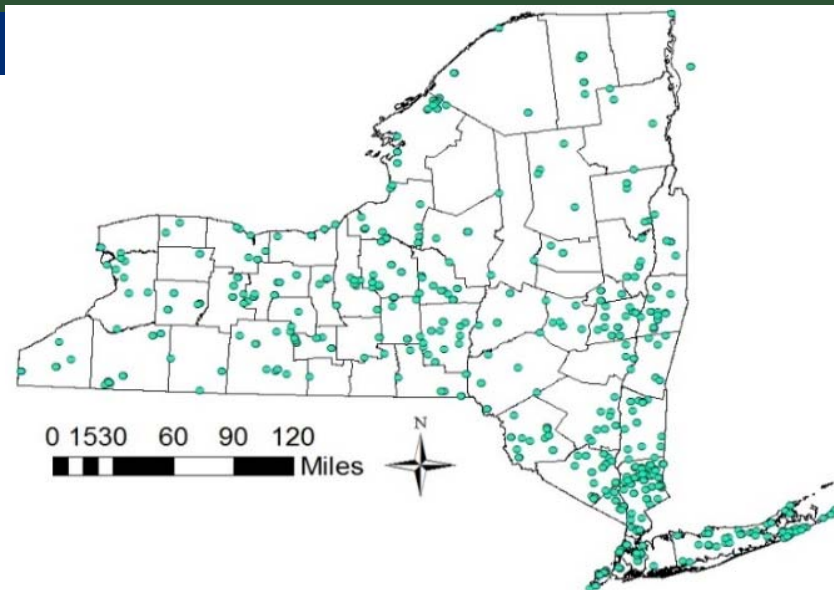
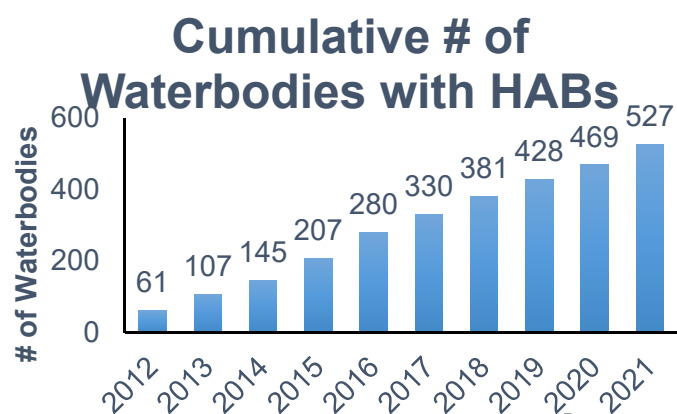
## Visual Based Response: Why?

- 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 sample all waters at all times
- **Know it, Avoid it, Report it!**



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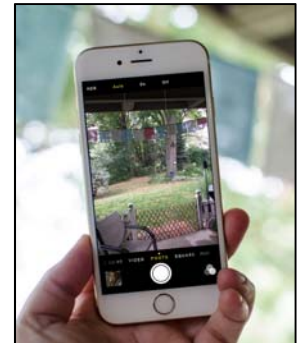
# HABs in NYS





## 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 a bloom (required)
- Public HABs Form: **[on.ny.gov/habform](https://on.ny.gov/habform)**

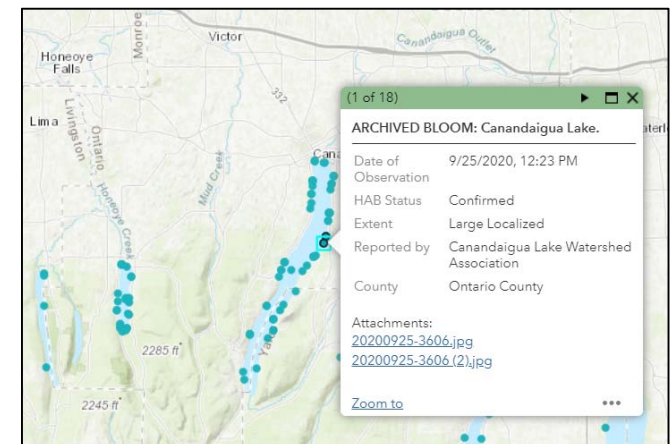
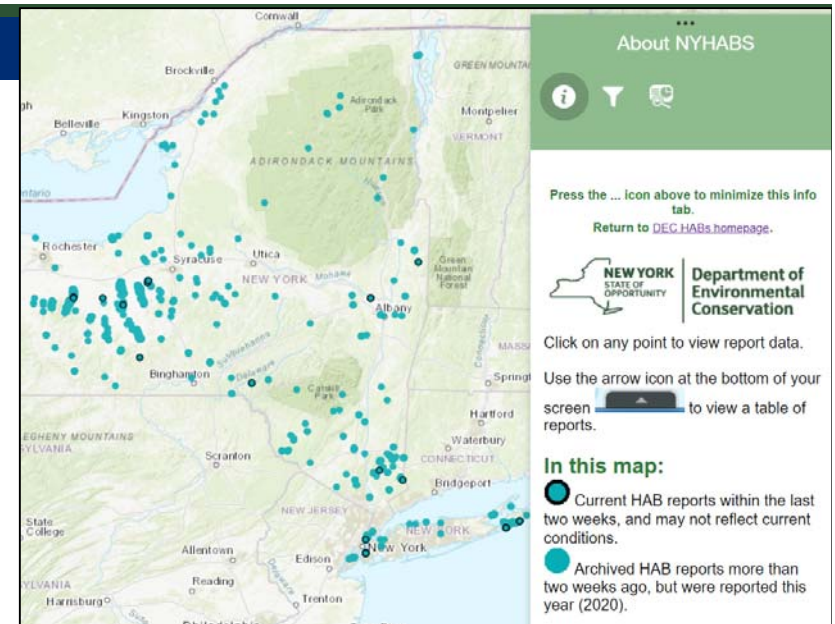


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# The NY HABs System (NYHABS)

- Interactive map, updated daily\*
- Reports include status, extent, reported by, location, photos
- Current reports - last 2 weeks
- Archived reports - >2 weeks ago
- User can filter by lake or county and export reports as pdf

[on.ny.gov/nyhabs](https://on.ny.gov/nyhabs)





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# Thank you

Rebecca Gorney

[rebecca.gorney@dec.ny.gov](mailto:rebecca.gorney@dec.ny.gov)

(518) 402-8258

DEC HABs information:

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

DOH HABs information:

[harmfulalgae@health.ny.gov](mailto:harmfulalgae@health.ny.gov)

