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STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

HABs monitoring and surveillance efforts in New York State

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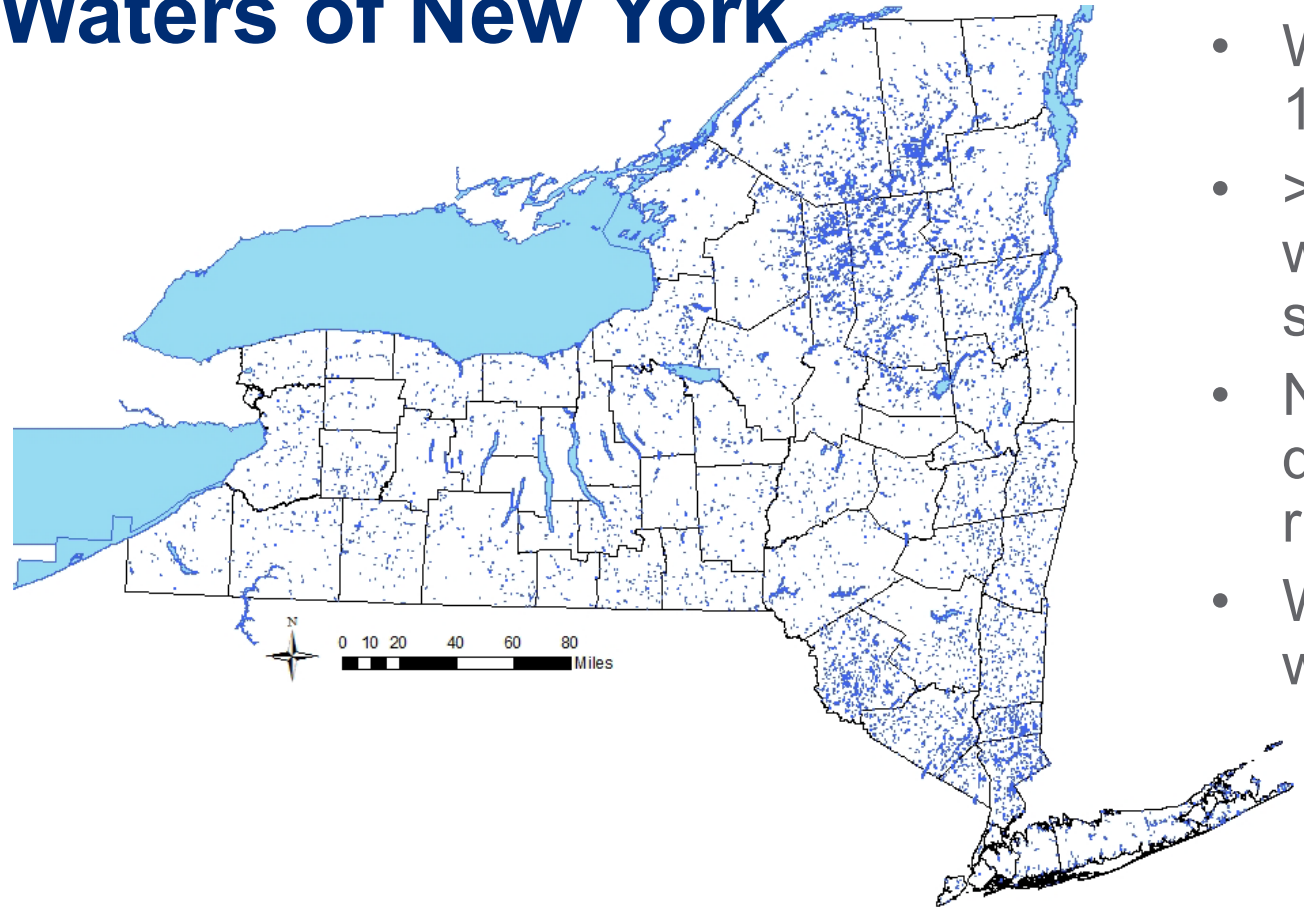
Waters of New York



- Water covers over 10% of the state
- >16,000 ponded waters >0.1 acre in size
- No private/public distinction, “Home rule” applies
- Wide range in waterbody types

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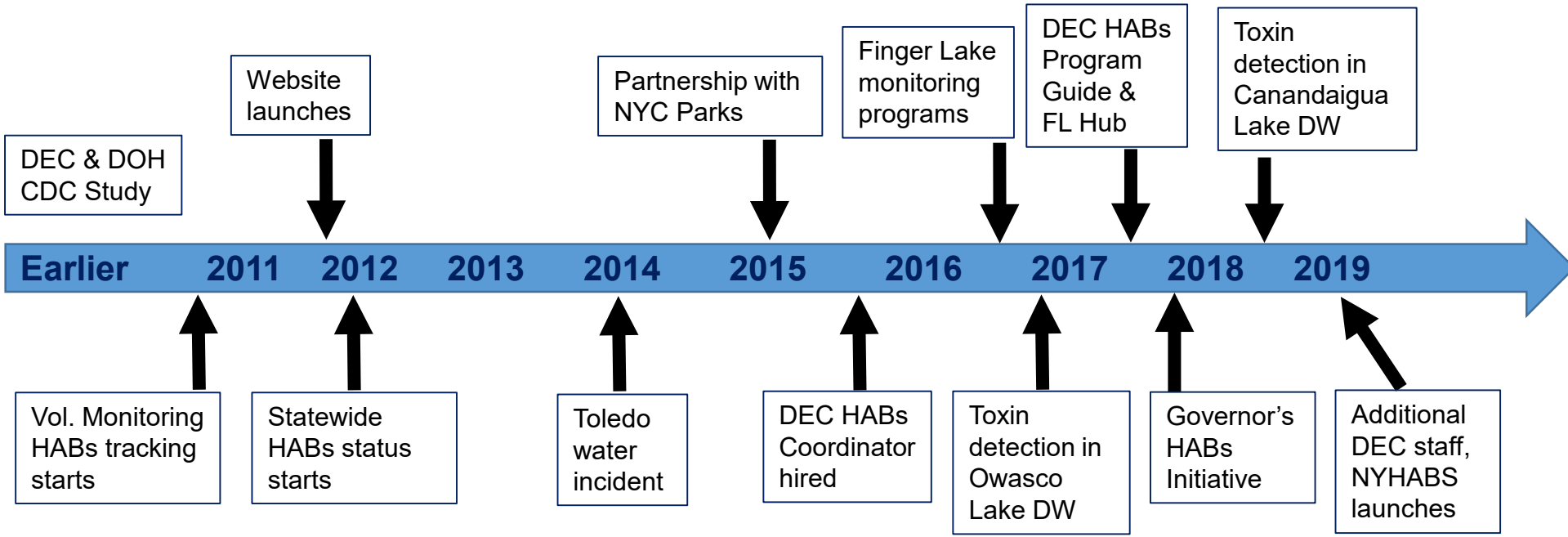
Timeline of NYS HABs Program



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DOH – State Parks – DEC: Separate but overlapping

- DOH oversees drinking water testing & reporting, health concerns related to exposure to HABs
- DEC provides near real time interagency and public bloom notifications
- DEC, DOH and Parks operate regulated swimming areas; communicate HABs-related closures to DEC
- Agency staff communicate regularly

How does NYS define a bloom?

Know it, Avoid it, Report!

- If HAB accumulations are visually apparent, there is the potential for toxins and other harmful compounds to be present; contact should be avoided
- Visual scums are satisfactory criteria for beach closure and bloom notification procedures to occur

The NY DEC HABs Program

Surveillance & Sampling

- Paired water quality monitoring in many waterbodies (DEC LCI and citizen scientists in CSLAP)
- Both visual surveillance and grab sampling support program outreach and notifications
- HABs sampling mostly by trained volunteers, DEC staff, partnership programs
- Drinking water is the jurisdiction of DOH & local providers

The DEC HABs Program

Bloom Status

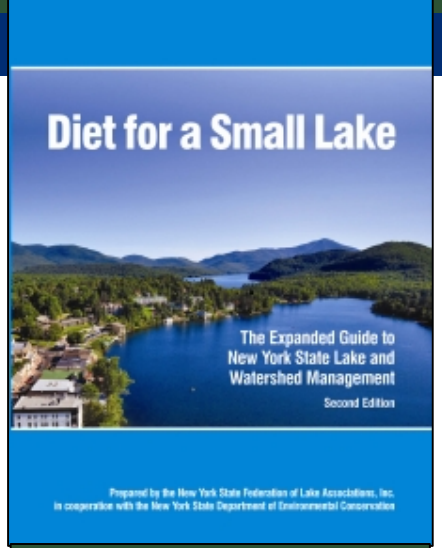
- Determine bloom status (**Suspicious**, **Confirmed**, or **Confirmed with High Toxins**) based on surveillance (visual evidence) and sampling data

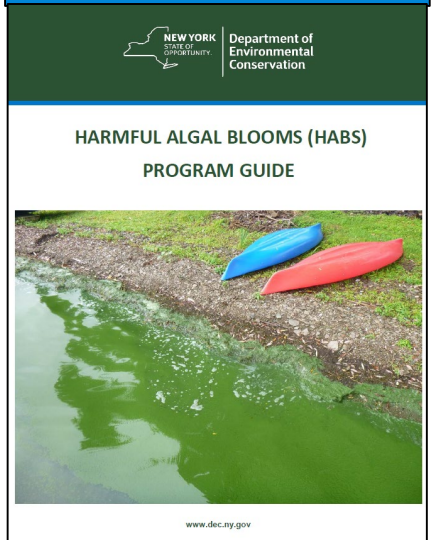
Education

- Maintain website with HABs primer, FAQs, photo gallery and more (**on.ny.gov/hab**)
- Publish articles, respond to press inquiries, public presentations and training workshops

Outreach

- Regular updates to NYHABS website (statewide map) and weekly email newsletter (MakingWaves)





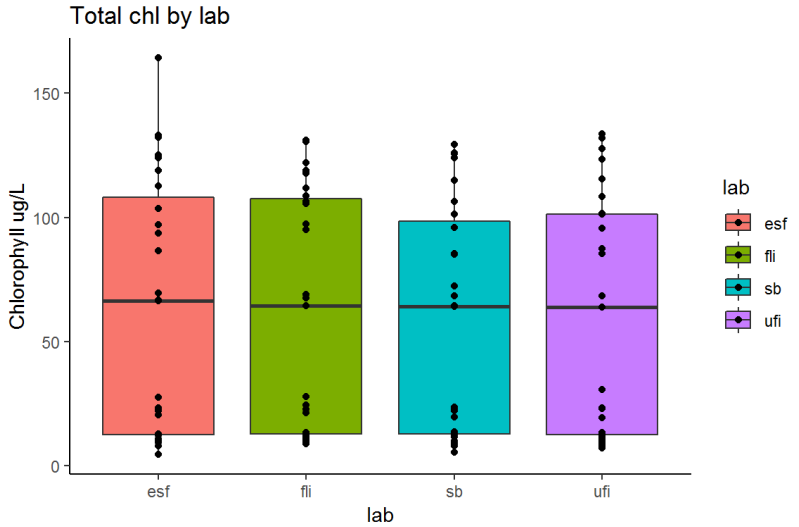
2019 NYS HABs Partnerships

- CSLAP lake monitoring: **>150** lakes; 8x/summer
- DEC ambient lake monitoring : **~100** lakes; 1-4x/summer
- Enhanced shoreline surveys, individual lakes: **~10**; weekly
- Academic researchers: **>20** lakes; weekly
- VT DEC, USACE, NYC Parks, NYC DEP and others: **>30** lakes; variable frequency
- Regulated swimming areas: **>1,400** locations; nearly daily
- Research efforts: additional lakes and rivers; variable

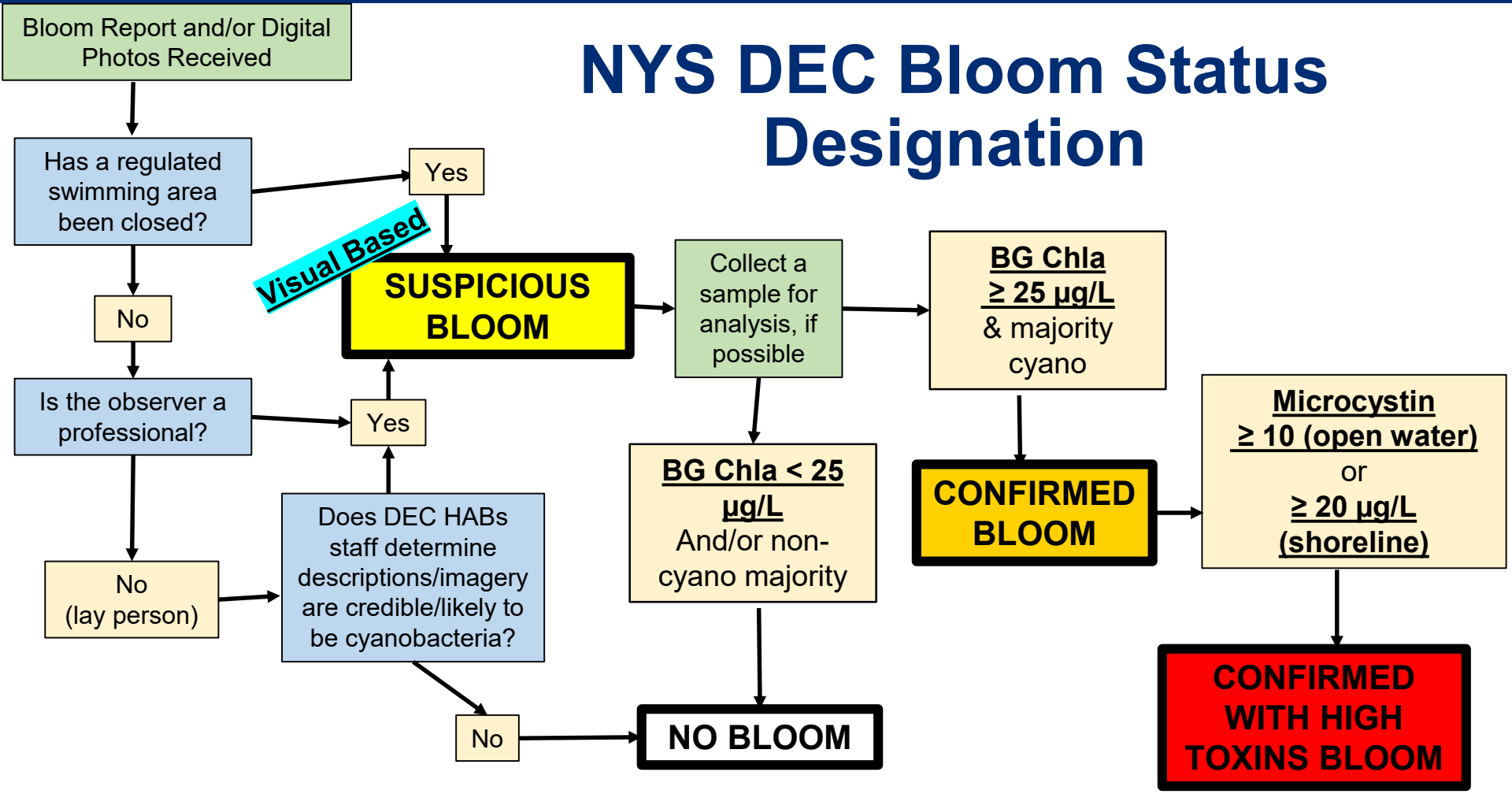
What is measured by the labs?

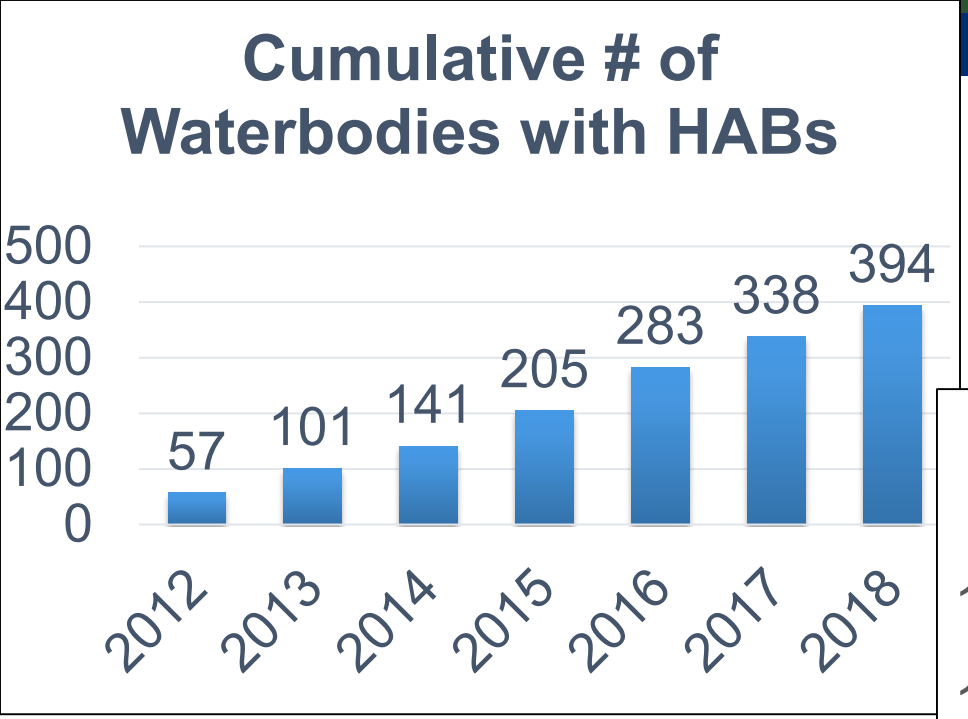
- **Fluoroprobe Chlorophyll** – Measures chlorophyll by algal type (total, blue green, diatoms, green algae)
- **Microscopy** – Quick qualitative scan, list most common taxa
- **Total microcystins**– ELISA
- **Other toxins** - Anatoxin-a, Cylindrospermopsin, BMAA, microcystin congeners LC-MSMS

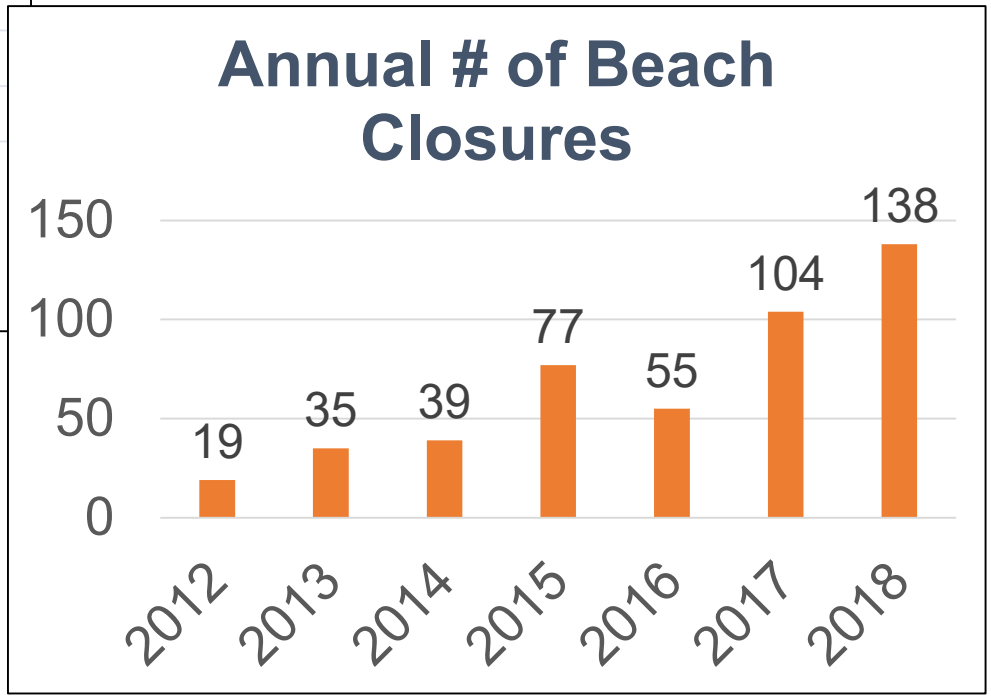
Bbe moldaenke Fluroroprobe

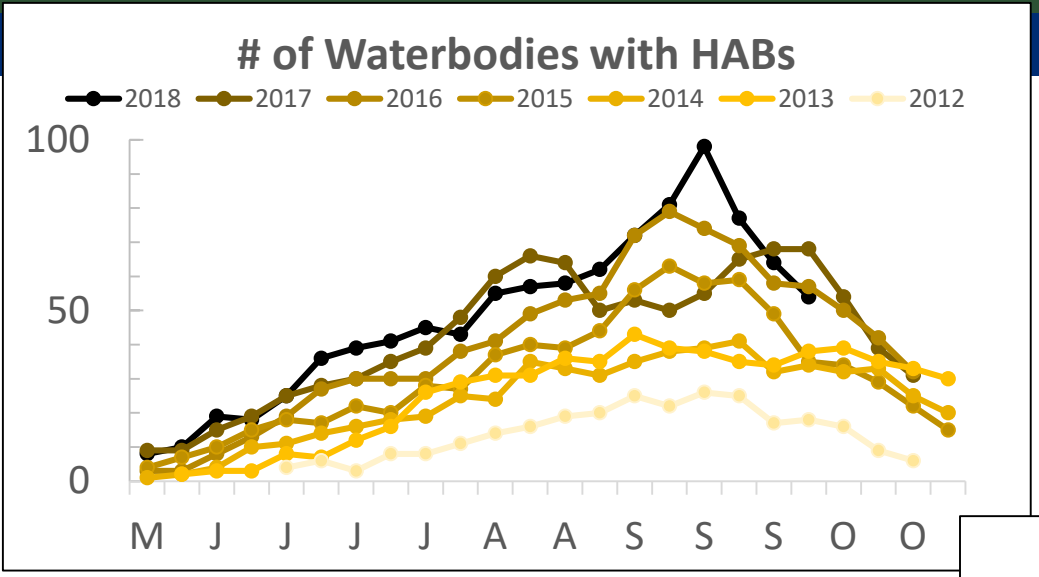


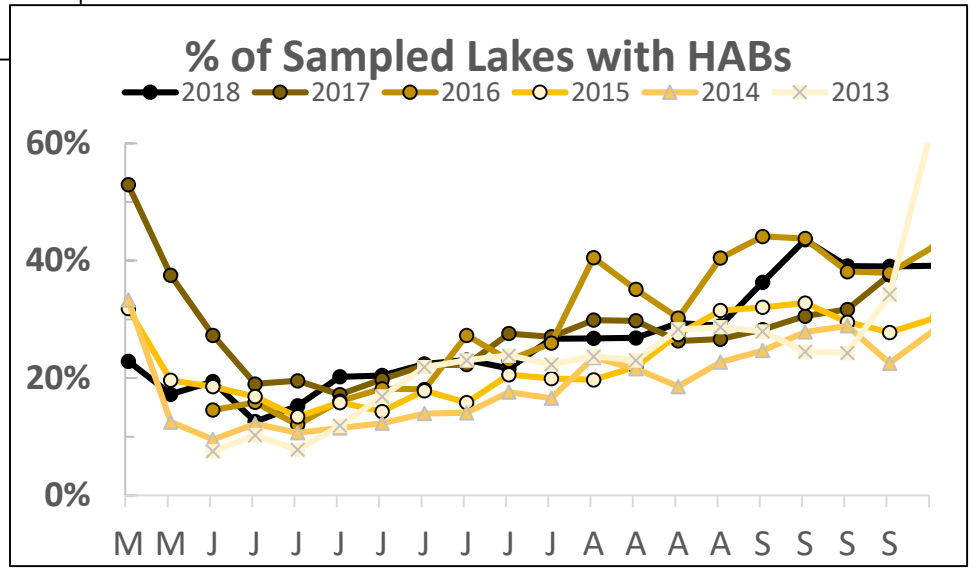
NYS DEC Bloom Status Designation



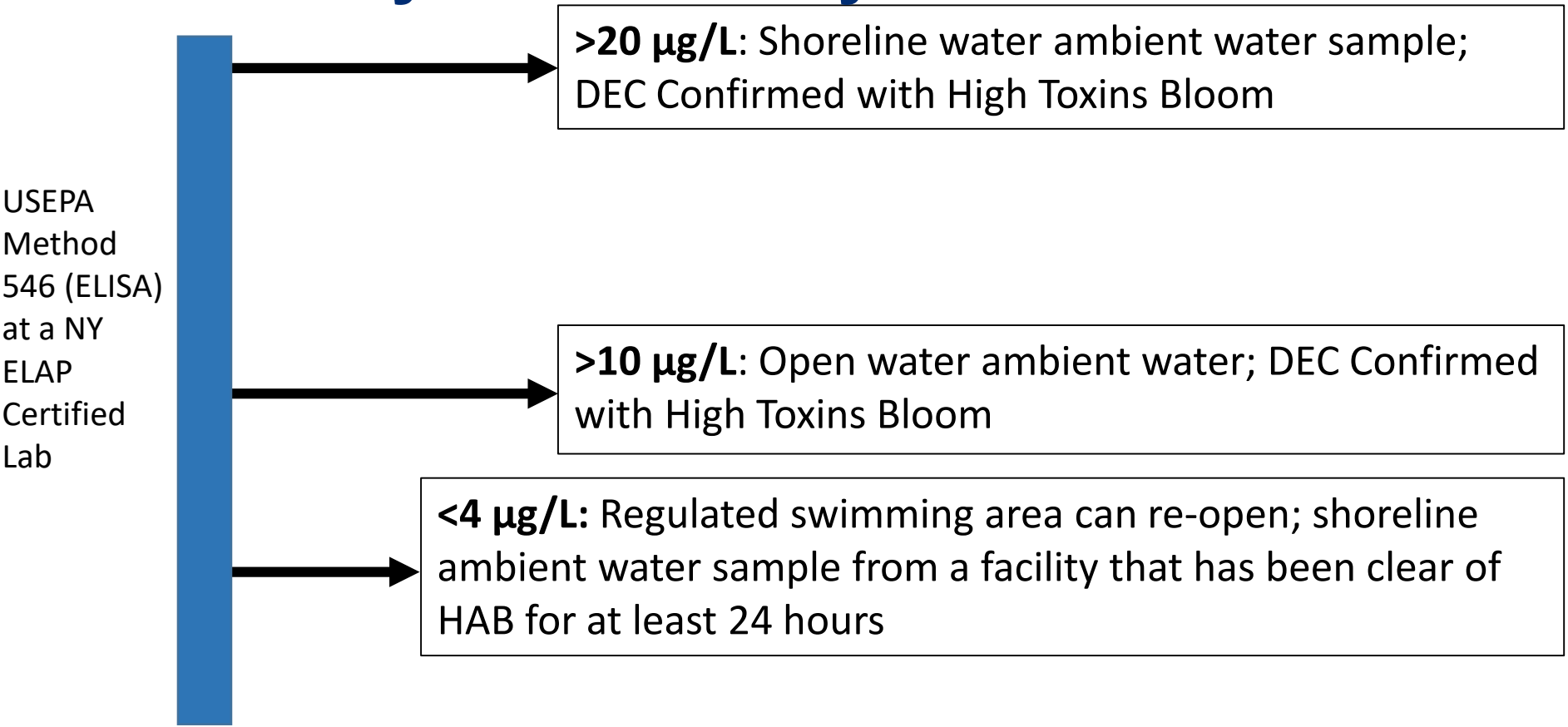

Cumulative # of Waterbodies with HABs
500
400
300
200
100
0
57
101
141
205
283
338
394
2012
2013
2014
2015
2016
2017
2018


Annual # of Beach Closures
150
100
50
0
19
35
39
77
55
104
138
2012
2013
2014
2015
2016
2017
2018


# of Waterbodies with HABs
2018
2017
2016
2015
2014
2013
2012
100
50
0
M
J
J
J
J
A
A
S
S
S
O
O

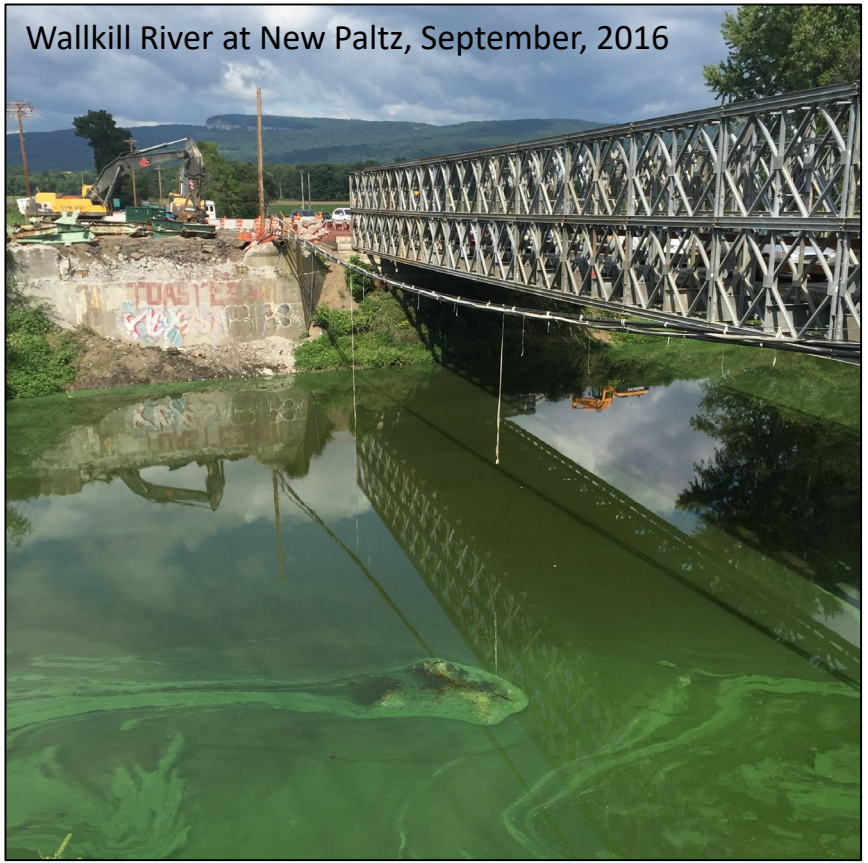

% of Sampled Lakes with HABs
2018
2017
2016
2015
2014
2013
60%
40%
20%
0%
M
M
J
J
J
J
J
J
J
J
J
A
A
A
A
S
S
S
S

NYS Microcystin Advisory Thresholds



High Profile Events

- Finished drinking water detections & threats
- HABs in all 11 Finger Lakes
- Over 30 miles of the Wallkill River, 2016
- Illness reporting tracked by DOH
- Record 98 waterbodies with HABs on 9/14/18



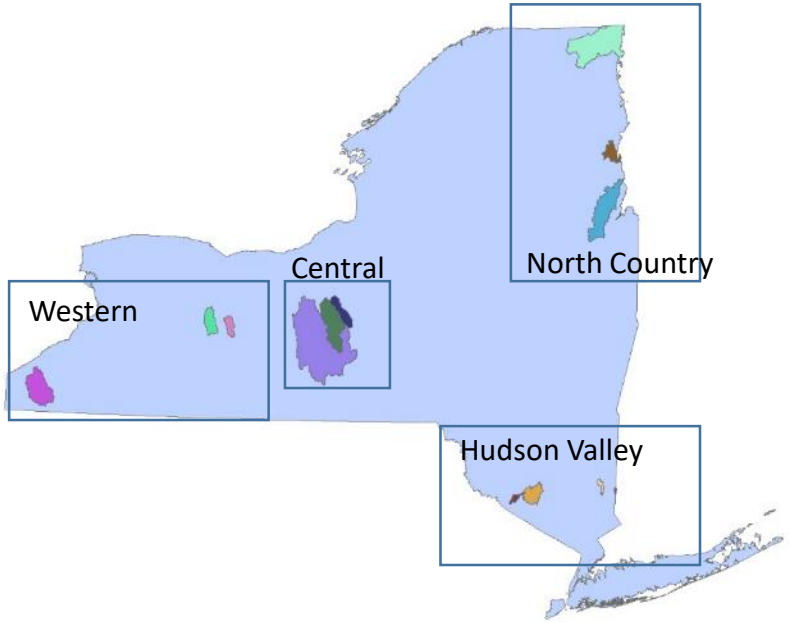
Combatting HABs in NYS

Governor Cuomo's 2018 HABs 4-point initiative

1. Selection of priority lakes
2. Regional HABs summits
3. Completion of Action Plans
4. Pilot new methods of treatment and monitoring

Selection of Priority Lakes

- Lakes are water supplies or critical tourism drivers
  - **Western Group:** Conesus; Honeoye; Chautauqua Lakes
  - **Central Group:** Owasco; Skaneateles; Cayuga Lakes
  - **North Country Group:** Parts of Lake Champlain; Lake George
  - **Greater Hudson Valley Group:** Lake Carmel; Palmer Lake; Putnam Lake; Monhagen Brook watershed (five small reservoirs)



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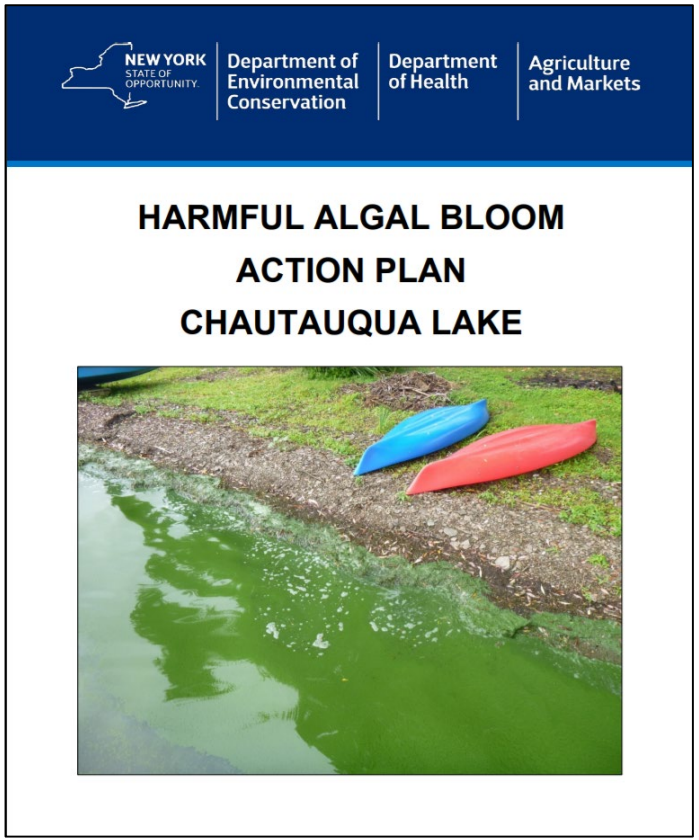
Regional HABs Summits

- Daytime private/Evening open to the public
- 12 lakes divided into 4 regions
- National experts brought in
- Presentations and discussions on:
  - Sources of nutrients
  - Nutrient Reduction Strategies
  - Algal ecology
  - HABs treatment
  - Regionally specific topics

HABs Action Plans



- 12 plans, one for each priority waterbody
- Summary of lake, water quality and HABs history
- Waterbody and statewide analysis of HAB triggers
- Lake and watershed implementation projects to address HABs
- http://www.dec.ny.gov/chemical/113733.html

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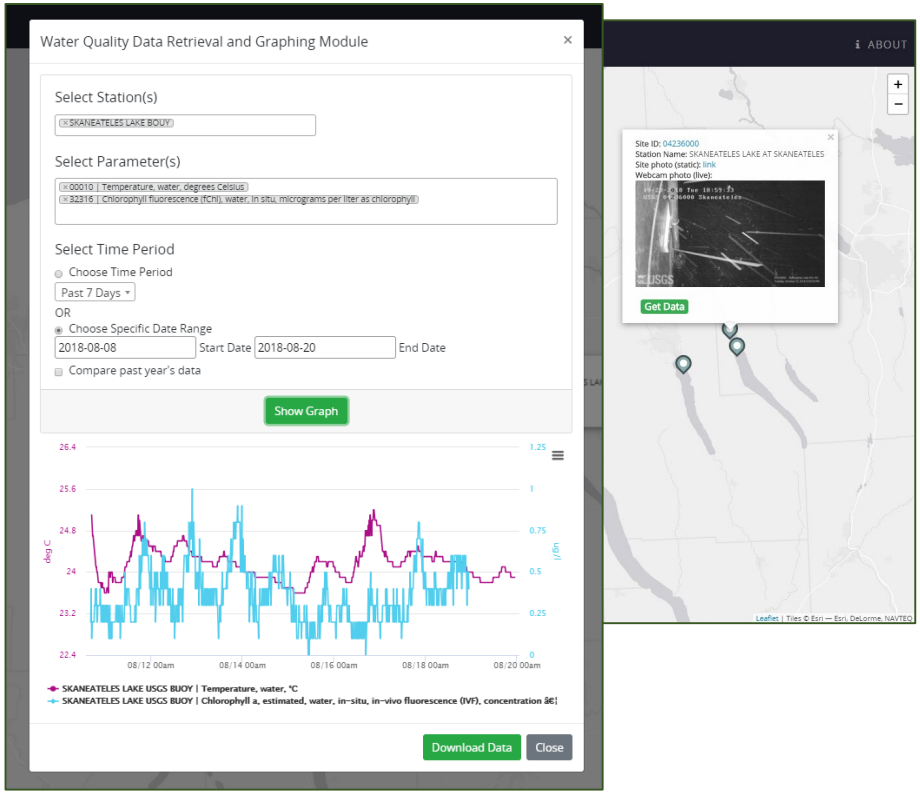
HABs Mitigation & Monitoring Pilots



- Evaluation of mitigation methods
  - Nutrient inactivants
  - Hydrogen peroxide
  - Ultrasonic devices
- DEC & USGS collaboration: deployment of advanced monitoring platforms https://ny.water.usgs.gov/maps/habs/

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Lessons Learned

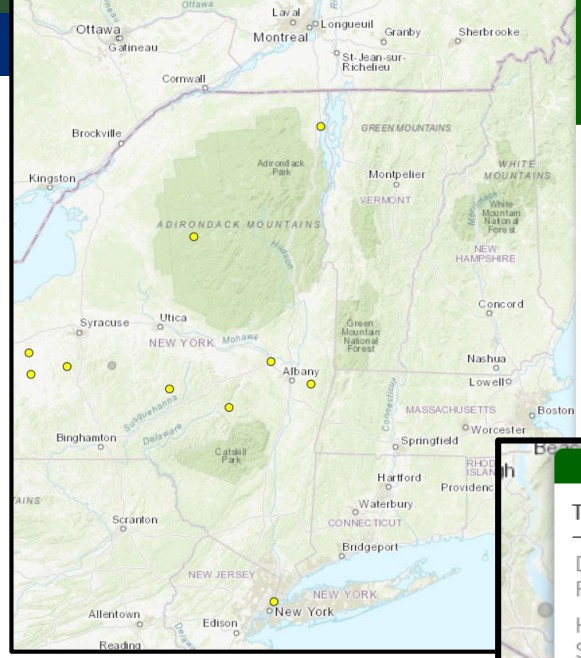
- HABs are occurring with a greater frequency than just a few years ago
- Waterbodies with a HAB are very likely to see future recurrances
- About ~30% of HABs have microcystin levels of concern for recreation
- Previous email-based notification model was unsustainable
- Visual bloom reports can serve much of the same functions as sample collection with regard to public notification

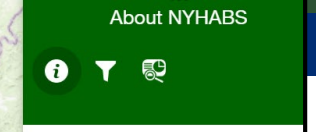
Introducing…

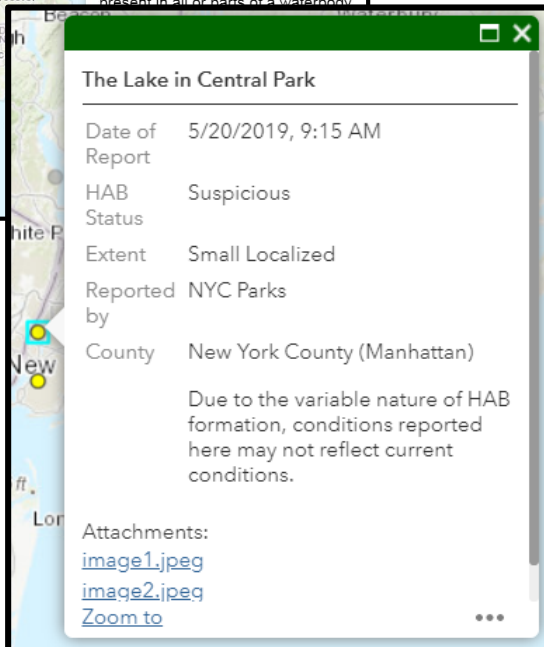
NYHABS – The NY HABs System

- Interactive map of HAB reports, updated daily*
- Reports include status, extent, reported by, exact location
- Reports will remain Current on map for 2 weeks
- After 2 weeks, all HABs will be visible as Archived
- User can filter by lake or county and export reports

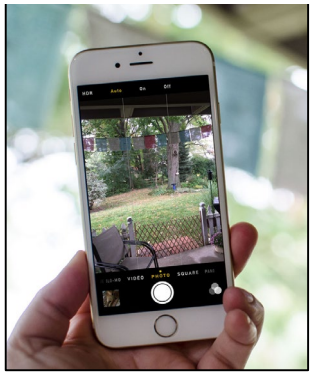
on.ny.gov/nyhabs







Bloom Report Form
on.ny.gov/habform



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DEC Evaluation

NYHABS

Sample

Lab Analysis

Results

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DEC Evaluation

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Thank You/Questions

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