

# Recreational Risk Management of Surface Waterbodies: Cyanobacteria Surveillance in Massachusetts



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# Outline



1. Harmful Algae Blooms
2. MDPH Guidelines
3. Environmental Monitoring Program
4. Lessons Learned
5. Future Efforts





# Harmful Algae Blooms



- Blue-green algae/cyanobacteria occur in aquatic ecosystems
- Highly concentrated in water: harmful algae bloom (HAB)
- Ability to produce toxins
- Human and animal health concerns





# MDPH Guidelines



- Established cyanobacteria guidelines in 2008
- MDPH recommends an advisory when:
  - A cyanobacteria scum is present
  - A cell count exceeds 70,000 cells per milliliter of water
  - A microcystin level exceeds 14 parts per billion
- Advisories remain in place until levels remain below guidelines



# MDPH Guidelines





## CAUTION

**PUBLIC HEALTH ADVISORY**

**CYANOBACTERIA BLOOM PRESENT**



**Waterbody Unsafe for  
People and Pets**

-  Do not swim.
-  Do not swallow water.
-  Keep animals away.
-  If you have any contact with water, rinse off immediately.

Call your local health department with questions:



Additional info on algae can be found at:  
[www.mass.gov/dph/algae](http://www.mass.gov/dph/algae)



# Environmental Monitoring



- MDPH established an environmental monitoring program for recreational waterbodies:
  - Monitoring strategy
  - Sampling and analysis protocol
  - Data evaluation
  - Recommendations







# Monitoring Strategy



- Two types of HAB monitoring:
  - Routine
  - Response
- Once detected, samples collected weekly until advisory rescinded





# Sampling and Analysis



- Sample collection:
  - Chose location based on likelihood of exposure
  - Fill 1L amber bottle at a location 6 inches below the water surface, in 3 feet of water
- Water quality parameters collected in the field included:

■ Air and water temp.	■ Salinity
■ Secchi disk depth	■ pH
■ Dissolved oxygen	■ Turbidity







# Sampling and Analysis



- Photographs are taken to record surface water observations
- Samples are shipped to a private laboratory for analyses:
  - Genera identification
  - Genera cell count
  - Microcystin level





# Results



- From 2009-2014, 1,075 samples were collected from 75 waterbodies in 58 municipalities
- One-third of samples exceeded the cell count guideline
- The dominant genera in the exceeding samples were primarily *Anabaena*, *Aphanizomenon*, and *Microcystis*
- Less than 1% exceeded the microcystin guideline

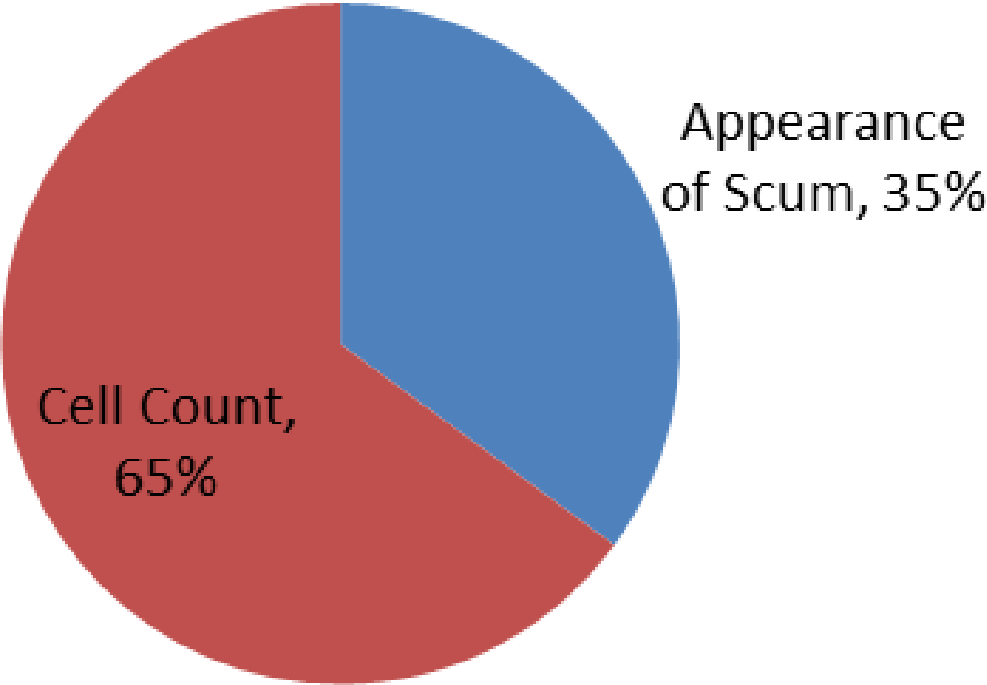


***Anabaena* Blooms**

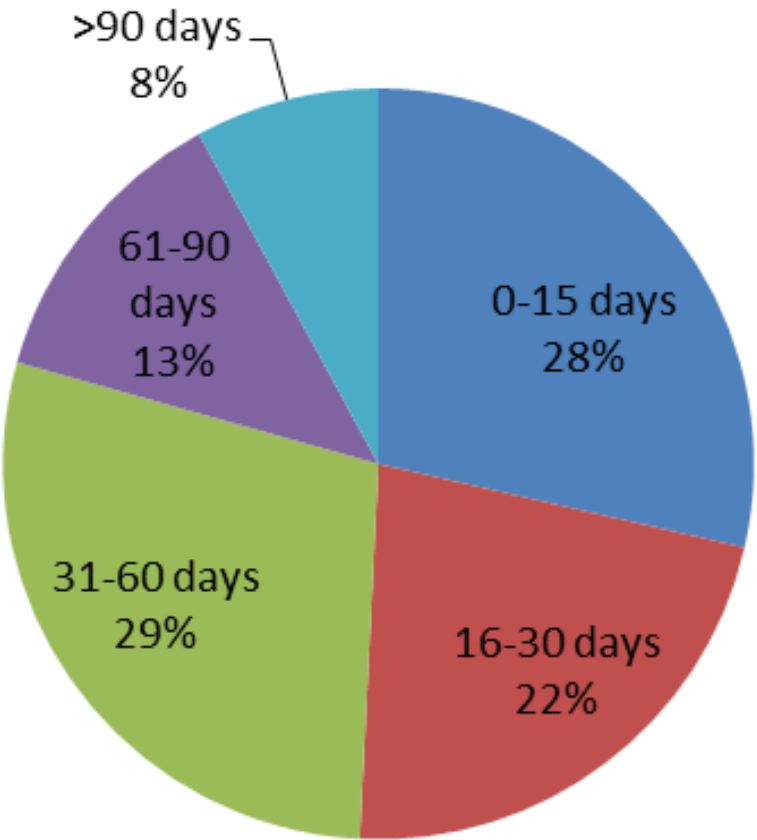


***Microcystis* Blooms**

- MDPH recommended a total of 97 public health advisories



- In general, these advisories lasted less than 60 days

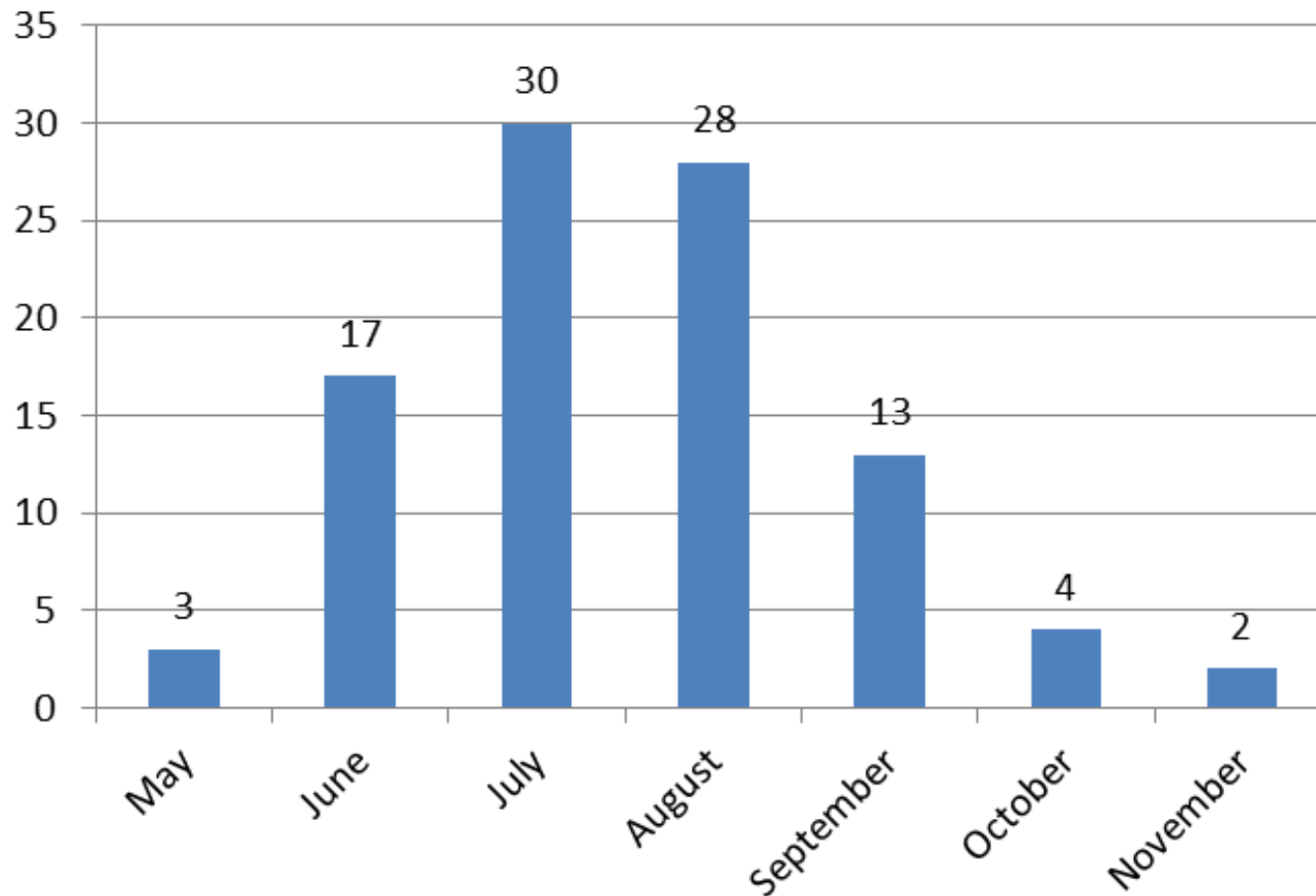




# Advisory Issuance by Month



- Majority of advisories issued in July and August

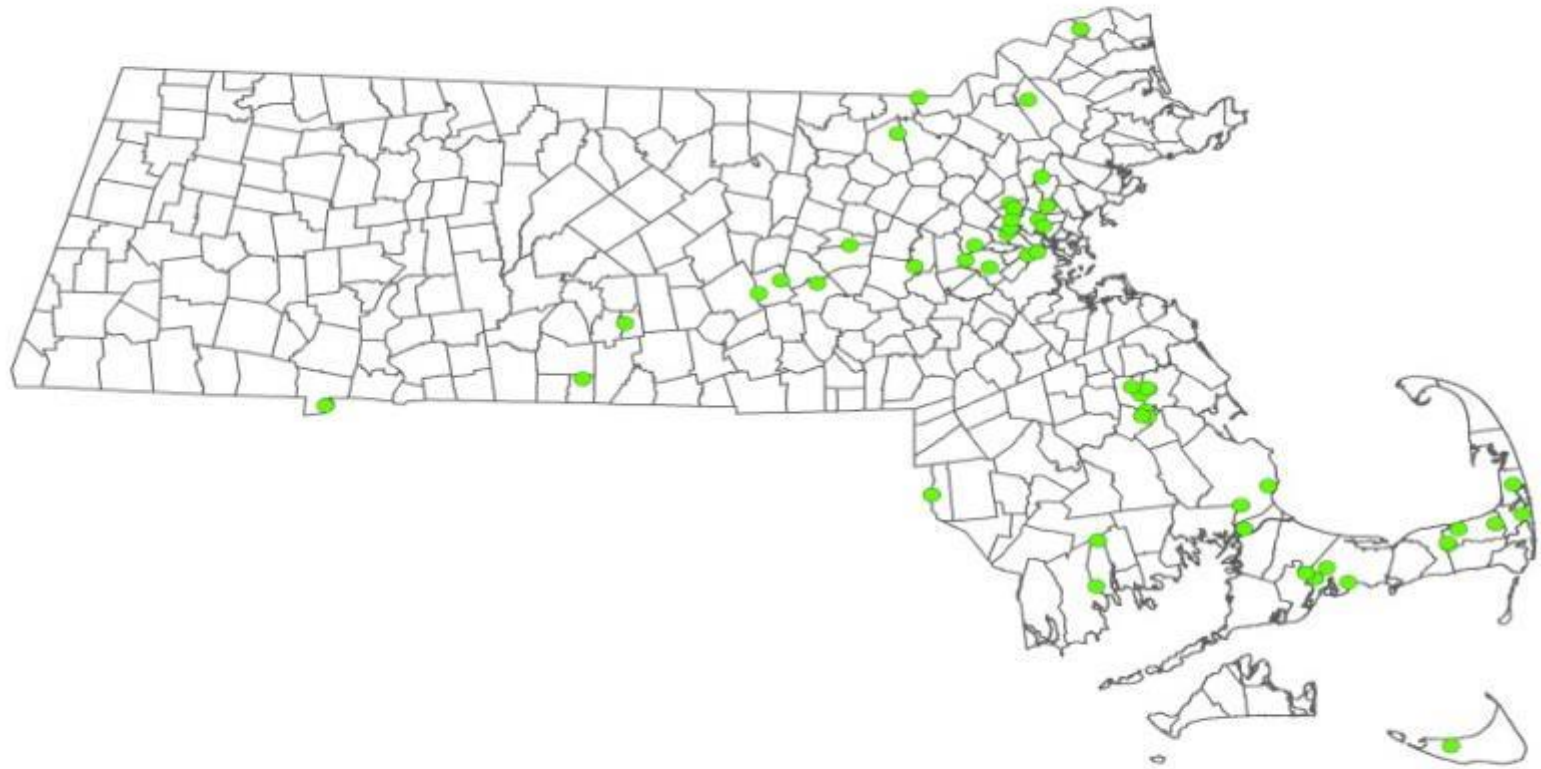




# Advisory Locations



- Locations tend to be in Eastern Massachusetts







# Lessons Learned



- HABs are a common in Massachusetts
  - Tend to be concentrated in eastern Massachusetts
  - Most frequently occur in the summer months
  - May continue into the fall
- Mutual reliance
  - MDPH relies on local officials/residents to report blooms
  - Local officials rely on MDPH to provide technical and analytical support
- Monitoring is resource intensive



# Lessons Learned



- Photographs are important!
  - A significant number of blooms are identified by photographed scums
  - Helps to limit responding to issues that are clearly not HAB-related



Likely a HAB



Not Likely a HAB



# Lessons Learned



- Great deal of public interest in this issue
- Sampling of media reports from 2015:

## PLYMPTON HALIFAX EXPRESS

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### High algae counts close West Monponsett Pond

JULY 21, 2015 BY DEBORAH ANDERSON, EXPRESS STAFF



The Halifax Board of Health has closed West Monponsett Pond to fishing, boating and water recreation in the wake of an algae count slightly higher than the level recommended by the Commonwealth.

The BCH tests the water of each pond weekly on Tuesdays, with the results back to the town on Thursdays. The last test showed West Monponsett Pond at 75,000 cells/ml, slightly higher than the maximum recommendation of 30,000 cells/ml.

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NEWS NOW

Court updates order to evict parishioners from St. Luke's church

Spencer 2:41

### Harmful algae forces restrictions at Brookline Reservoir



By Erik Clancy  
[ecclancy@wickedlocal.com](#)

Posted Jul. 30, 2015 at 2:35 PM  
Updated Jul 30, 2015 at 2:50 PM

BROOKLINE

Residents are being told to keep their dogs from swimming out of the Brookline Reservoir after state health officials found blue-green algae floating on the surface.

The Boston Globe Metro BUY TICKETS Hundreds of Cheaters, Beer, Wine and More

### Charles River bacteria levels prompt health advisory

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News The Boston Globe Metro BUY TICKETS Hundreds of Cheaters, Beer, Wine and More

### Toxic algae closes down Jamaica Pond



By Alexandra Kuchuk  
GLASS COVINGTON REPORT JUNE 24, 2015

The Boston Public Health Commission has issued a health advisory and halted all water activities at Jamaica Pond because of a recent growth of toxic algae in the water, officials said.

Visitors to the pond will not be allowed to swim, boat, or fish, or let their dogs swim in or drink from the water for as long as the algal bloom persists, the health commission said in a statement.

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Police investigate shooting on I-495 in Norwood

### Sudbury's Willis Pond now safe



By Brittany McNamara/Daily News Staff

capecodtoday  
cape cod community news

Barnstable Bourne Brewster Chatham Dennis Eastham  
Marblehead Orleans Plymouth Provincetown Sandwich Truro

HOME NEWS POLICE & FIRE POLITICS CALENDAR COMMUNITY

### Town of Orleans issues health advisory for Uncle Harvey's Pond

People should avoid contact due to high bacteria levels

ARTICLE | TOWN NEWS | AUGUST 31, 2015 05:00 AM | BY CAPECODTODAY STAFF



# Future Efforts



- Harmonize MDPH guidelines with evolving federal guidance
- Use data for development of predictive models
- Continue to provide analytical and technical assistance to local health officials, requesting agencies, and others



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The content of this presentation and the views expressed by the authors do not necessarily reflect the official views of our federal partners.

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