Cyanobacteria:

What Can A Lake Association Do?

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Presentation Outline

- Bloom response (short-term)
- Bloom reduction/prevention (medium/long term)
  - Why prevent blooms
  - Root causes
  - Actions for homeowners and lake associations

Short-term Actions: Bloom Response

Goal: Protect yourself and others from immediate risk

Report a bloom: https://arcg.is/1e8Tfy

- Perform a self risk assessment
- Report suspected blooms
- Spread the word about Warnings
- Join email list to receive notifications

More information: https://www.des.nh.gov/water/healthy-swimming/harmful-algal-blooms

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  - **Why prevent blooms**
  - **Root causes**
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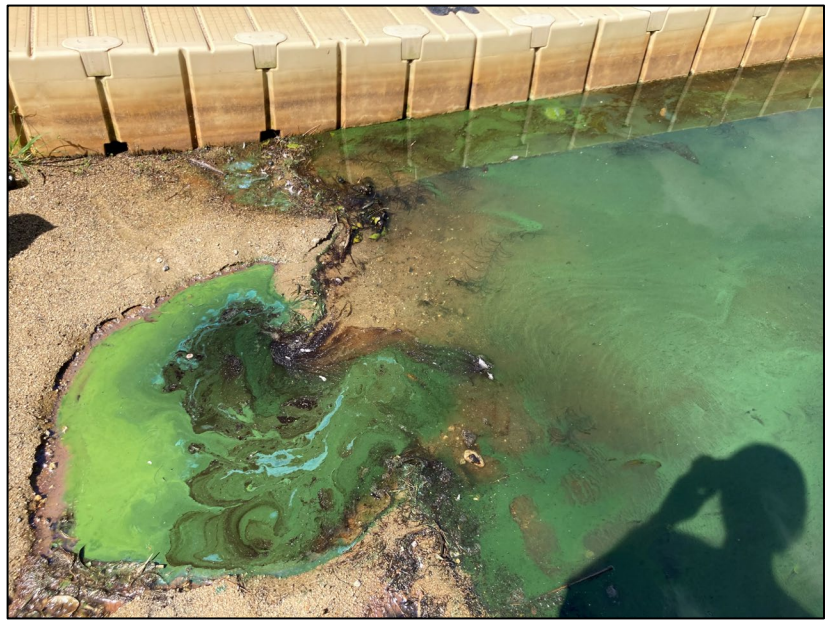
Why prevent blooms?

- Blooms:
  - Threaten public health
  - Impair recreation
  - Harm pets and wildlife
  - Affect business revenues
  - Discourage tourism
  - Decrease property values



Report a bloom: https://arcg.is/1e8Tfy

What creates a bloom?

Sunlight + More Nutrients (P) + Warm Water

=

Cyanobacteria Bloom

Phosphorus feeds cyanobacteria

Too much phosphorus → Too many cyanobacteria (blooms)

Photo credit: Carol Wyman

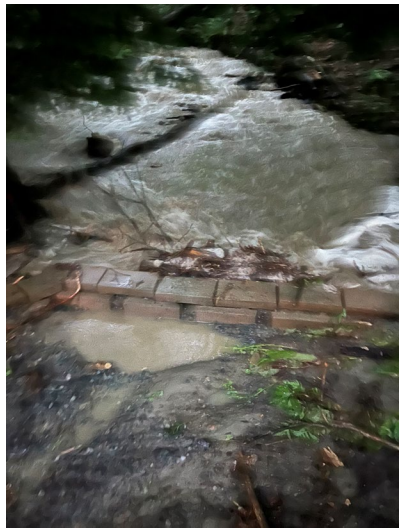
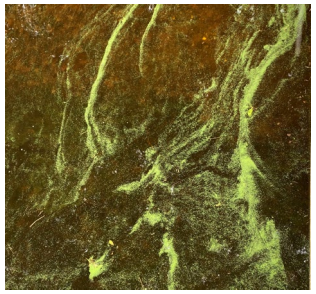
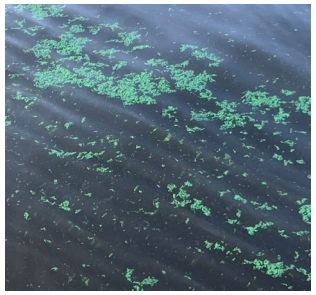


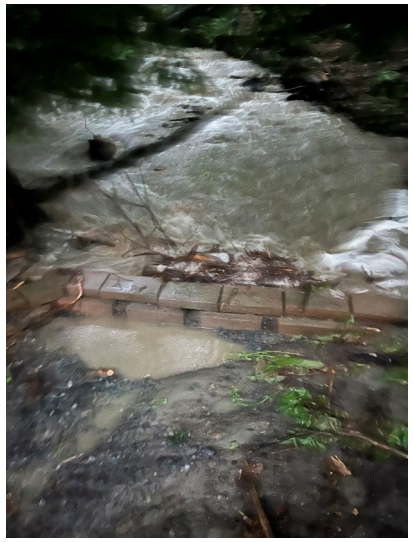
Photo credit: Ed Rippe



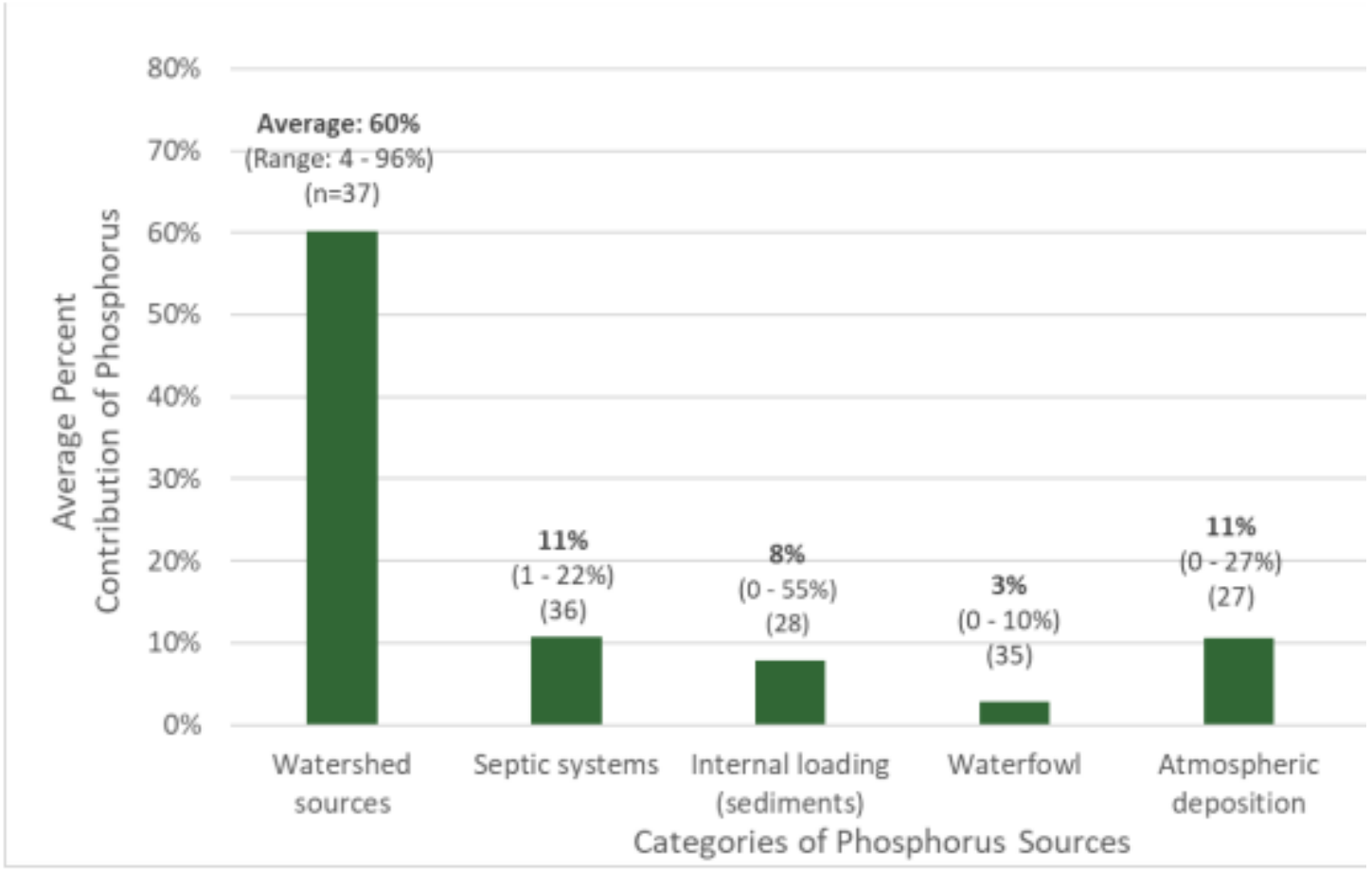


New Hampshire Cyanobacteria Plan

- **Strategy 1: Develop policies and practices to reduce, control and prevent the nutrient inputs that cause cyanobacteria blooms.**
- Strategy 2: Advance education/outreach efforts
- Strategy 3: Enhance monitoring
- Strategy 4: Practices for public drinking water supplies



Where does the phosphorus come from?



Presentation Outline

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  - Root causes
  - **Actions for homeowners and lake associations**

What can a homeowner do?[1]

1. Vegetate shorelands
2. Reduce erosion
3. Maintain septic system
4. Share your story

[1] Webinar with additional details about actions that homeowners can take: https://www.youtube.com/watch?v=7idHxzK2rO0&list=PLzaaFQKgZ-FioCCxV22Mul9cG3H7qgFnG&index=2

What can a lake association do?

1. Protect shorelands
2. Inventory sites with erosion
3. Maintain septic systems
4. Share your story
5. Coordinate with your town
6. Recruit homeowners
7. Gather water quality data

1. Lake Associations: Protect shorelands

- Conserve land
- Reforest/revegetate land
- Recruit homeowners to take action on their land

- Policy engagement:
  - Shoreland buffer zones[1]
  - Shoreland permit enforcement
  - Legislative advocacy

[1] More information and case studies: https://www.youtube.com/watch?v=OPQJfFF_NsE&list=PLzaaFQKgZ-FioCCxV22Mul9cG3H7qgFnG&index=8

1. Homeowners: Vegetate shorelands

- Help water infiltrate:
  - Mulch or pea gravel
  - Deep rooted plants
  - No bare ground
- Can be done in ways that maintain viewshed and enjoyment

- Native plants:
  - Increase infiltration
  - Reduce nutrient runoff
  - Reduce ice damage
  - Reduce erosion/wake damage
  - Eliminate the need for fertilizer
  - Support biodiversity

Shoreland native plants list: https://nhlakes.org/wp-content/uploads/native-shoreland-plants.pdf
Design concepts: https://nhlakes.org/wp-content/uploads/Landscaping-at-the-Waters-Edge.pdf

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2. Lake Associations: Inventory sites with erosion

- Identify trouble spots:
  - Shoreline roads
  - Boat ramp(s)
  - Tributaries
  - Undersized culverts
  - Roadside ditches
  - Overgrown catchment basins
  - Sandy beaches
- Look across the watershed, not just near the lake


wood

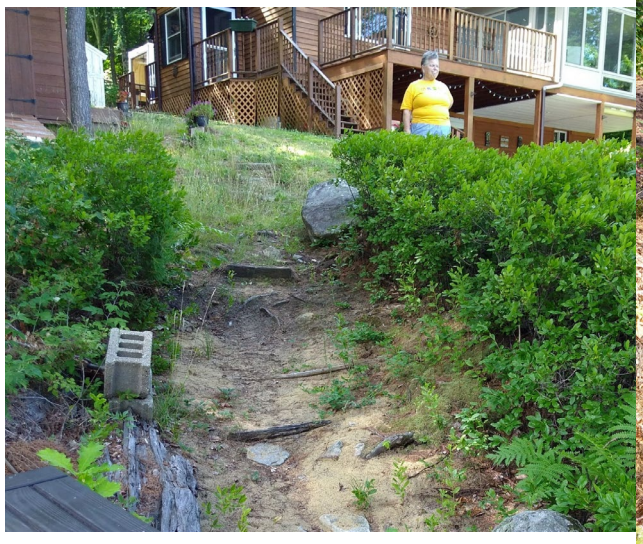

Deformation of pipe

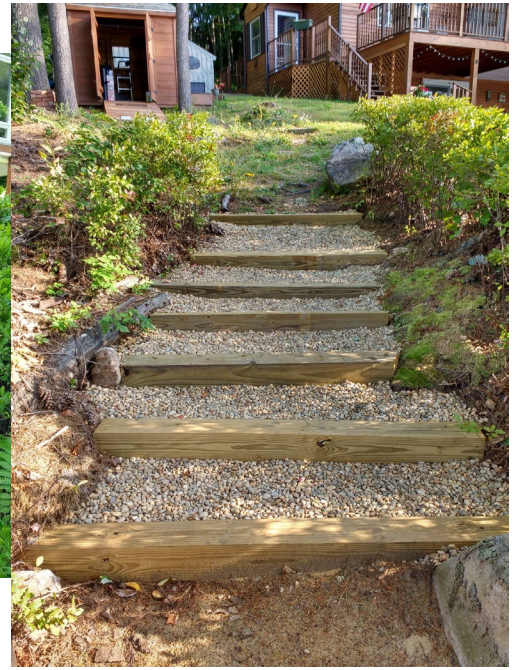

Wood material


Sediment with vegetation

2. Homeowners: Prevent erosion

- Identify trouble spots: where does the water go?
- Install:[1]
  - Rain barrels
  - Rain gardens
  - Permeable pavers
- Replant bare areas
- Use mulch

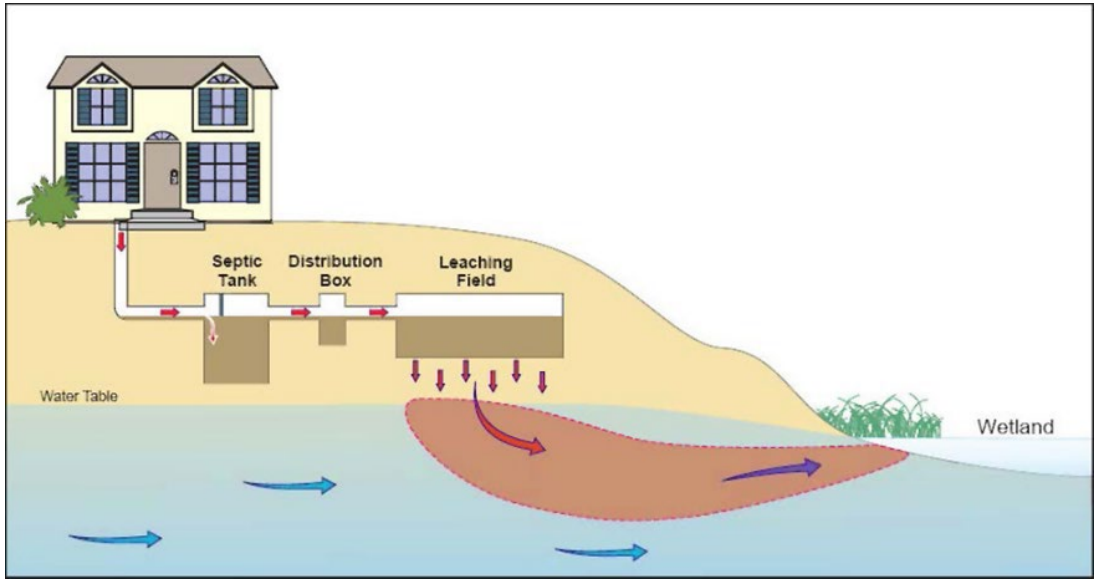




[1] How-to guides: https://www4.des.state.nh.us/SoakNH/resources-2/diy-fact-sheets/

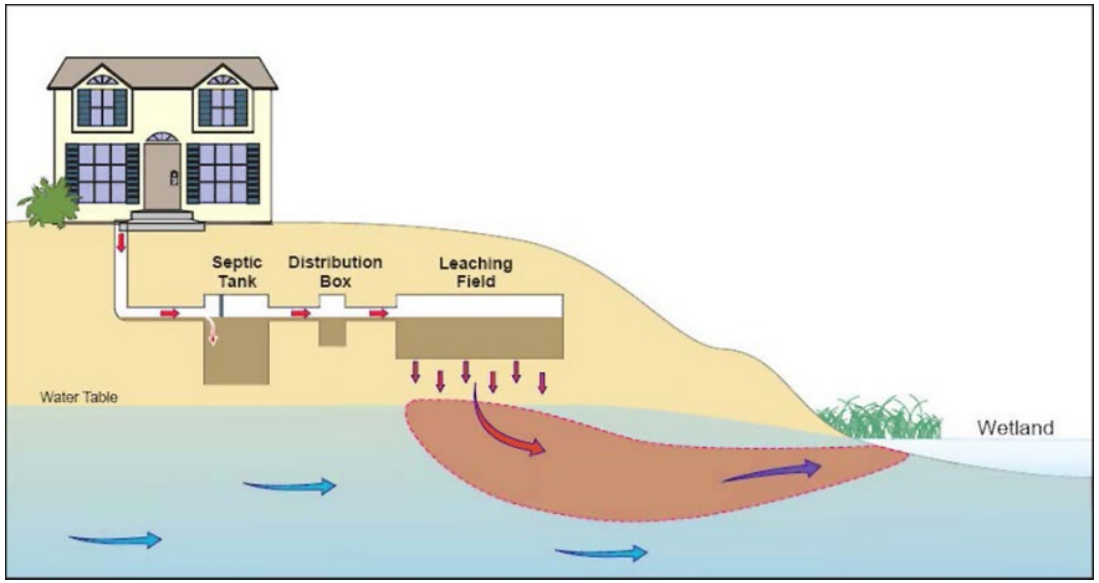
3. Homeowners: Upgrade/maintain septic systems

- Inspect/pump at least every 3 years



3. Lake Associations: Facilitate septic maintenance

- Educate homeowners about the need
- Coordinate local pump-out days
- Pass local regulations requiring modern systems and/or regular maintenance[1]



[1] Webinar recording with more information and case studies: https://www.youtube.com/watch?v=OPQJfFF_NsE&list=PLzaaFQKgZ-FioCCxV22Mul9cG3H7qgFnG&index=8

4. Everyone: Share your love of the lake

- Informal conversations: small talk!
  - “I went for a lovely paddle around the cove this morning, and I’m so happy to live near the lake.”
  - “My grandkid just learned to swim. I just hope there aren’t any cyanobacteria blooms again this summer.”

Photo Credit: New Hampshire State Parks

- Formal
  - Educate your town officials: why does the lake matter to you? Is the lake the reason you live where you do?
  - Tell your story to your legislators: why do you care about preventing cyanobacteria? How have blooms affected you personally?
  - NH LAKES advocacy emails for specific bills

5. Lake Associations: Coordinate with your town

- Introduce the lake association and why its work is important to the town

- Educate about the risks of cyanobacteria blooms
  - Public health
  - Lost tourism revenue (affects local businesses!)
  - Lower property values mean lost property tax revenues

- What repairs are already in the town's plans that could be done in ways to reduce runoff?
  - Culvert replacements
  - Road, municipal driveway or parking lot repairs
  - Road grading
  - Boat ramp work
  - …

5. Coordinate with your town

- **Road Agent**
  - Implements infrastructure projects that affect stormwater: roads, culverts, drainage ditches, etc.
- **Conservation Commissioners**
  - Often have shared values/goals and can help navigate town politics; reviews wetlands permit applications.
- **Planning Board members**
  - Municipal development strategy; planning ordinances.
- **Selectmen**
  - Funding priorities; municipal ordinances.
- **Heath Officer**
  - Can post cyanobacteria warning signs at public access points; responds to septic failures.
- **Building Inspector**
  - Enforces local septic or development ordinances, sometimes Shoreland Act violations.

6. Lake Associations: Recruit homeowners

- Recognize LakeSmart homes at your annual meeting
- Organize fun and educational events
- Host a Soak Up the Rain event
- Invite people to use their strength(s) to help:
  - Understanding the science
  - Talking with others
  - Hosting events
  - Writing newsletters
  - Designing fliers
  - …

Photo credit: NH LAKES


Photo credit: Duncan Lake Association, Ossipee

7. Lake Associations: Gather water quality data

- Report observed cyanobacteria blooms
- Collect basic baseline water quality data:
  - If your lake participates in VLAP or UNH Lay Lakes Monitoring Program: **DONE** (for now)
  - If your lake does not:
    - Coordinate with NHDES
    - Contract for basic water quality data collection

Why?

- Supports future funding applications
- Helps identify where phosphorus is coming from
- Needed to select appropriate management options

What can a lake association do?

1. Protect shorelands
2. Inventory sites with erosion
3. Maintain septic systems
4. Share your story
5. Coordinate with your town
6. Recruit help
7. Gather water quality data

DES has programs to help!
Contact us anytime.

Short term
(Immediate)

Bloom response: Keep safe!

- Visually check the water
- Check the Healthy Swimming Map
- Report blooms

Medium term
(0 – 5 years)

Water quality protection: Incremental improvements

- Diagnose the problem(s)
- Prepare to apply for funding
- Address easy projects to help the lake

Long term
(2 – 10+ years)

Bloom prevention: Watershed planning & implementation

- Quantify phosphorus inputs
- Prioritize and implement restoration projects

Consider watershed-based planning

- A comprehensive, prioritized to-do list for how to protect/restore your specific lake

- Identifies sources of nutrients and pollutants
- Describes specific actions to address nutrient sources
- Supports funding applications

Remember Why:

Too much phosphorus → Too many cyanobacteria (blooms)

Protecting water quality protects property values and our enjoyment of lakes

Key Takeaways

- Land use choices by each of us affect water quality
  - Vegetate shorelines
  - Reduce erosion
  - Be smart about fertilizer
  - Maintain septic systems
- Nutrient reduction work is slow, but necessary. You won't see a reduction in blooms right away.
- No one quick, easy, cheap, effective solution to eliminate blooms, **BUT**…
- …Lots of programs exist to help: reach out!

Resources for Homeowners

- NHDES Soak Up the Rain

Soak up the Rain New Hampshire

https://www4.des.state.nh.us/SoakNH/

- NH LAKES LakeSmart Program

LakeSmart
NH LAKES
Award for lake-friendly living
www.nhlakes.org

https://nhlakes.org/lakesmart/

- Both are free, voluntary, and non-regulatory

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Thank you! Questions?

Photo Credit: Little Island Pond Association

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Healthy Swimming Mapper:
https://www.des.nh.gov/water/healthy-swimming/healthy-swimming-mapper

Report a bloom:
https://arcg.is/1e8Tfy

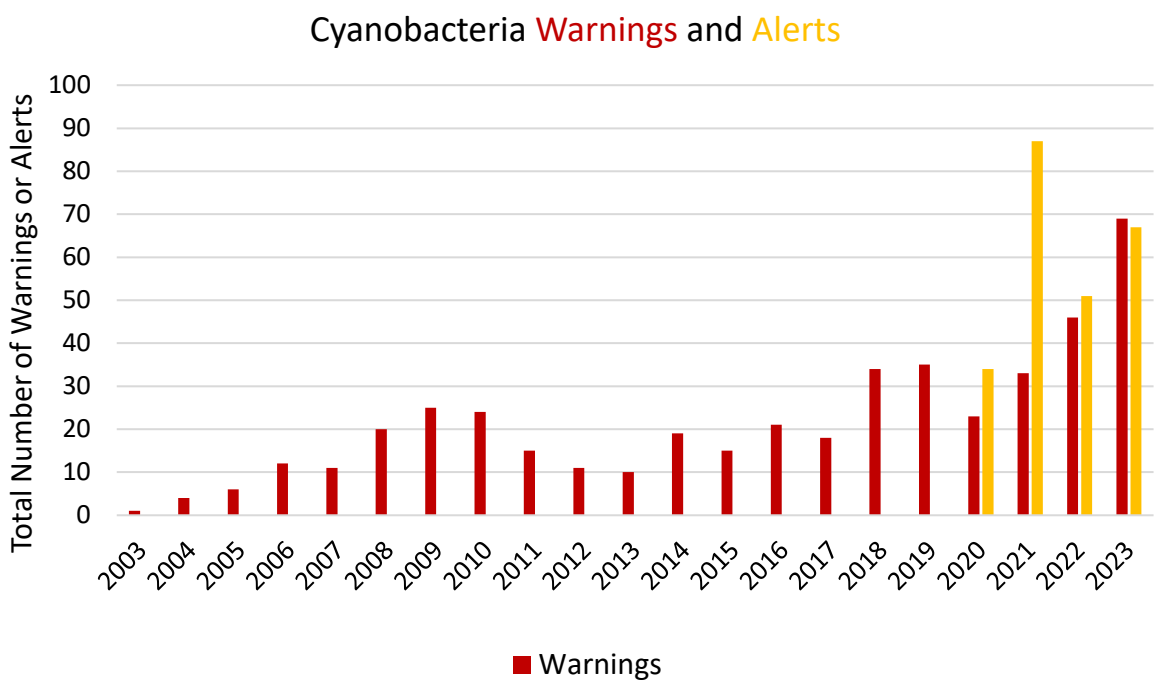
Cyanotoxins

- Affect people, pets and wildlife
- Exposure through ingestion
  - Drinking water
  - Swimming
  - Food
- Exposure through inhalation
- Acute and chronic toxicity

- Documented symptoms:
  - Skin irritation
  - Eye and nose irritation
  - Fatigue
  - Fever
  - Nausea, vomiting, diarrhea
  - Tingling, numbness, seizures
  - Nervous system and organ failure
  - Death

When in doubt, stay out!

NH Cyanobacteria Warnings Over Time

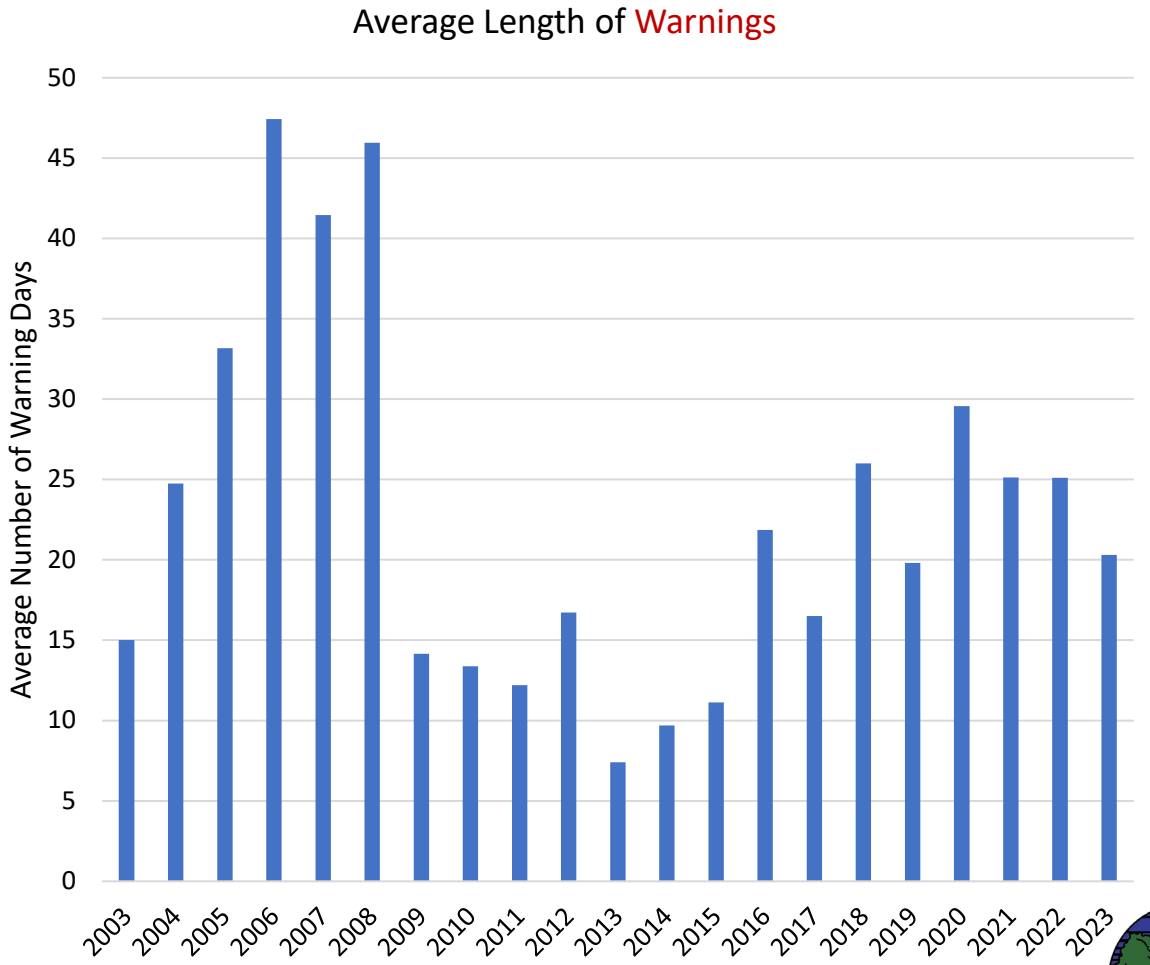


(2023, 69 advisories, 47 waterbodies)

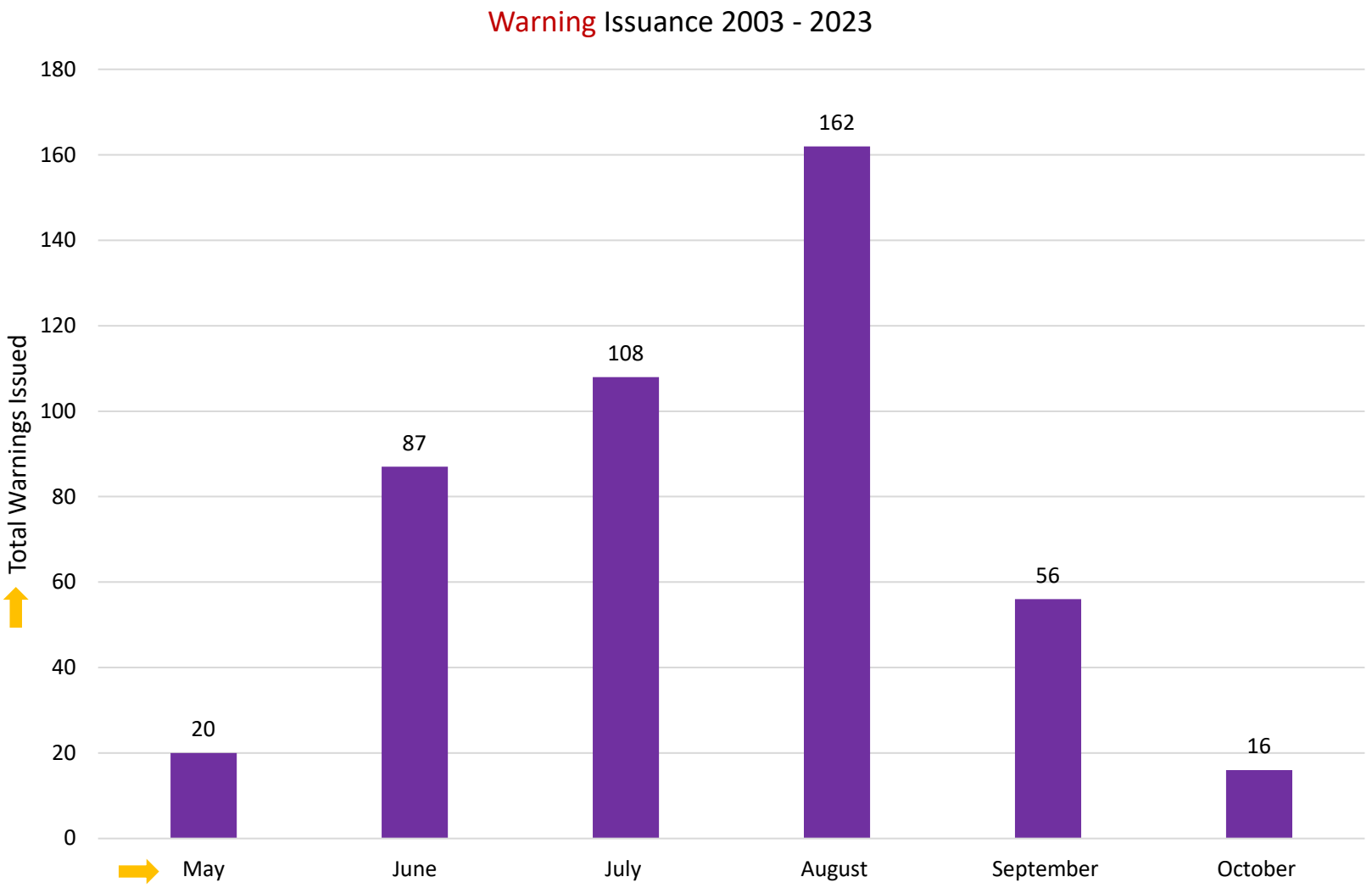
- Increasing number of warnings
  - 2023 broke previous record
  - 2022 broke the record before that
- Reaction-based program
  - Increased public awareness
  - More reports = more advisories

"How long is this bloom going to last?"

- Depends on many factors
  - Water body, nutrient inputs, weather, etc.
- In the last four years:
  - Shortest advisory was 2 days
  - Longest advisory was 132 days
  - 24 days on average



Seasonality of Warnings



Seasonality

- NHDES has issued cyanobacteria Warnings from May through October
  - Most Warnings issued during peak summer
  - Colder temperatures mean less recreation, and fewer reports
  - They can bloom under ice!