New Hampshire's Cyanobacteria Plan:

Implications for Rivers and River Users

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Cyanobacteria

- Formerly known as blue-green algae
- Native
- Ubiquitous

- Thousands of species, hundreds of toxins

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

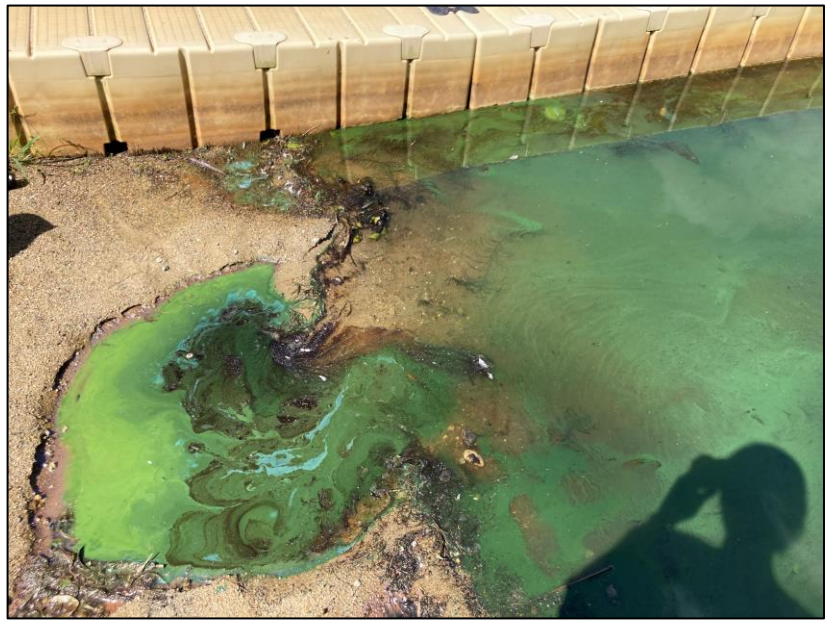
When in doubt, stay out!

Blooms in Rivers vs. Lakes

- Predominantly in lakes, but do occur in rivers
- Tend to be in low-flow areas
- Same species in rivers as in lakes
- Same basic biology
- Toxicity may differ
  - But unknown why
- Many research needs about causes, toxicity, frequency and distribution in rivers
- Fewer management techniques in rivers

Why prevent blooms?

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



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

Strategies to reduce, manage, and monitor cyanobacteria blooms

1) Reduce the nutrient inputs that cause blooms.
2) Increase education and outreach.
3) Enhance cyanobacteria monitoring and the communication of bloom occurrences.
4) Protect public drinking water.

Blue text for items most relevant to rivers

Bloom Prevention

Sunlight + More Nutrients (P) + Warm Water

=

Cyanobacteria Bloom

Bloom Prevention

Sunlight + More Nutrients (P) + Warm Water

=

Cyanobacteria Bloom

1. Reduce the Nutrient Inputs that Cause Blooms

- Identify and implement state and local policies that will control nutrients, especially with respect to stormwater.
  - Local:
    - Stormwater utilities
    - Municipal overlay districts
  - Voluntary:
    - Fund voluntary stormwater management programs (Soak up the Rain)
  - Regulatory:
    - Contracted review of NHDES regulations
    - Various state bills this year

1. Reduce the Nutrient Inputs that Cause Blooms

- Identify ways to increase capacity and financial support for watershed planning and in-lake management efforts.
- Develop laws, rules and guidance that define the permitting requirements for in-lake management.

2. Increase Education and Outreach

- Promote self risk assessment
  - Informational signage at public access points
  - Strengthen partnerships
  - Instructional videos, written materials, etc.
- “When in doubt, stay out”

3. Enhance monitoring and communication of bloom occurrences

- Enhance monitoring, and sample submission and processing efficiency
  - Additional staff person
  - Sample mailing system
  - Sample submission kits
  - Regional sample delivery sites
  - Training opportunities for volunteers
- Improve bloom notification tools *(done in 2023)*
  - *Weekly emails*
  - *Healthy Swimming Map*
  - *Bloom report form*

4. Protect public drinking water sources

- Develop cyanobacteria action plans by public water suppliers

  Action plans should include:

  - Bloom prevention efforts
  - Risk monitoring
  - Bloom response protocols

37 surface waters serve as public water supplies in NH

12 have had documented cyanobacteria blooms

Arlington Mill Pond, Salem

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What you can do to help

1. Advocate
2. Spread the word
3. Report blooms: https://arcg.is/1e8Tfy

Thank you! Questions?

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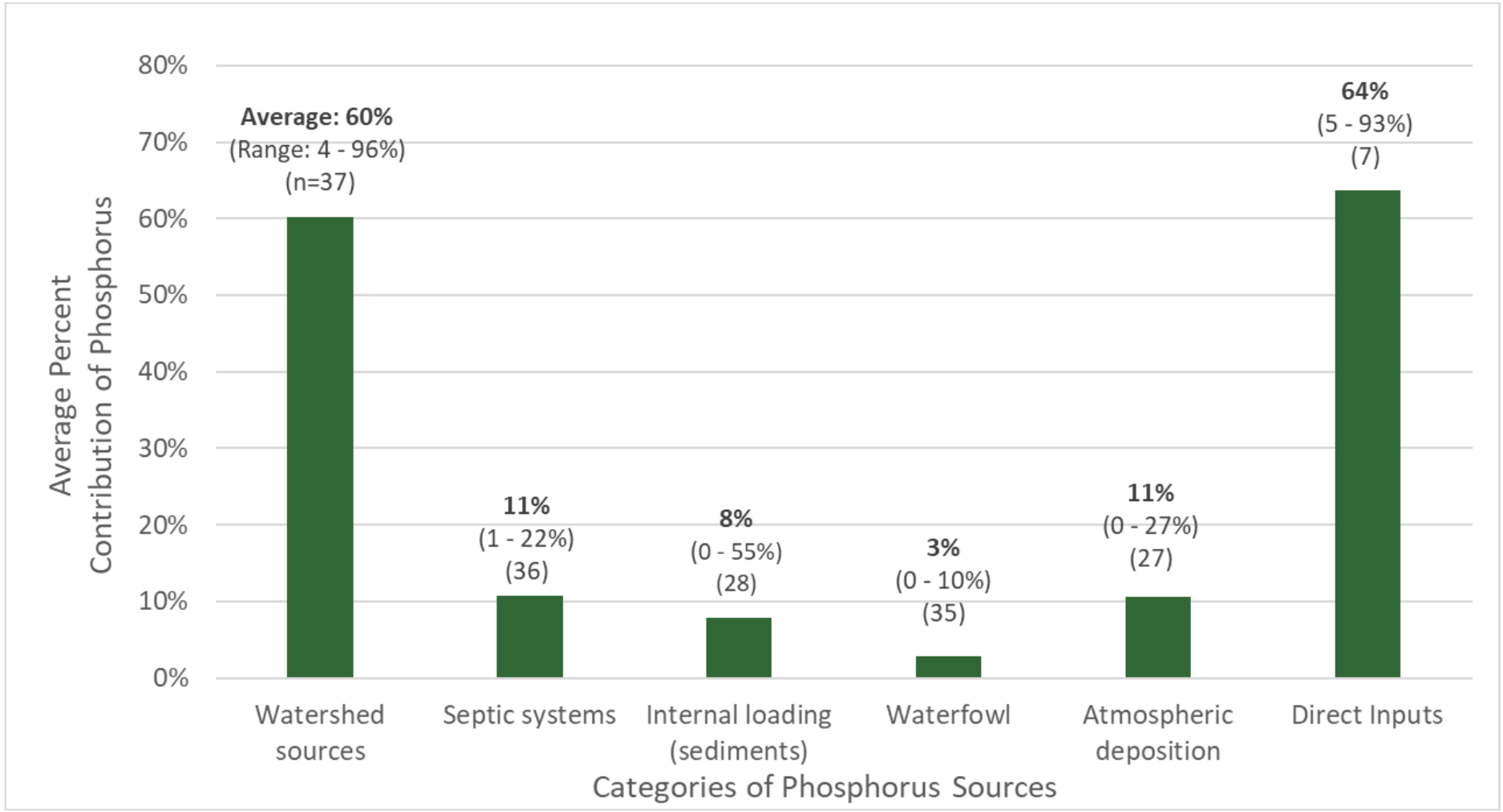
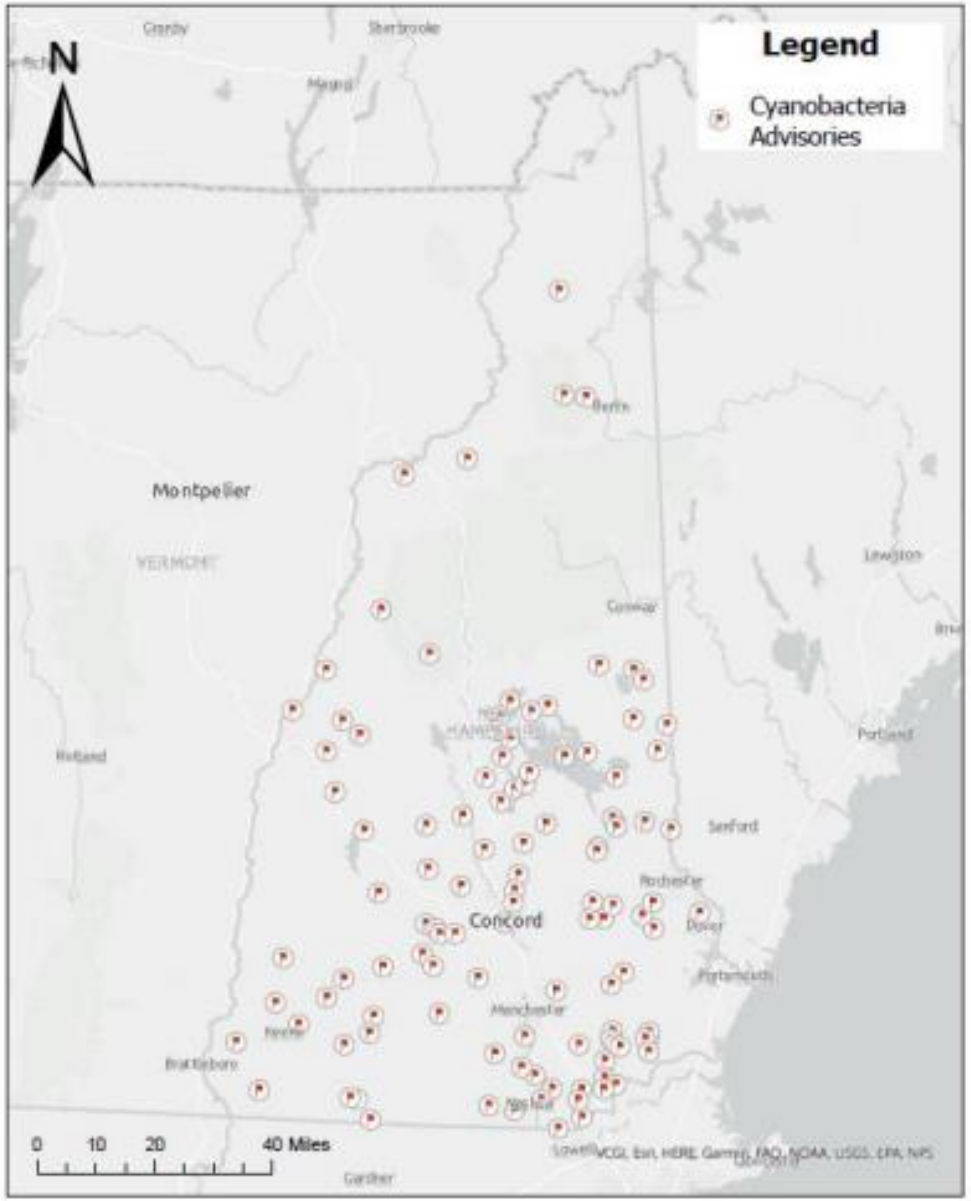
Report a bloom:
https://arcg.is/1e8Tfy

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

Nutrient sources in NH



Cyanobacteria in New Hampshire's Inland Surface Waters



- From 2004 to 2020, cyanobacteria advisories have been issued for 113 waterbodies and have occurred statewide.
- There are currently 64 waterbodies impaired by cyanobacteria in New Hampshire.
- Some waterbodies bloom every year, others occur only occasionally, and each year blooms occur on waterbodies where they were not previously reported.

Cyanobacteria in New Hampshire's Inland Surface Waters (con't)

- Bloom warnings have increased over time.
- 69 warnings is 2023.
- Blooms last 25-days on average; some only a few days; others over 100-days.
- Earliest bloom date is May 18, latest is December 7; most occur in summer months.