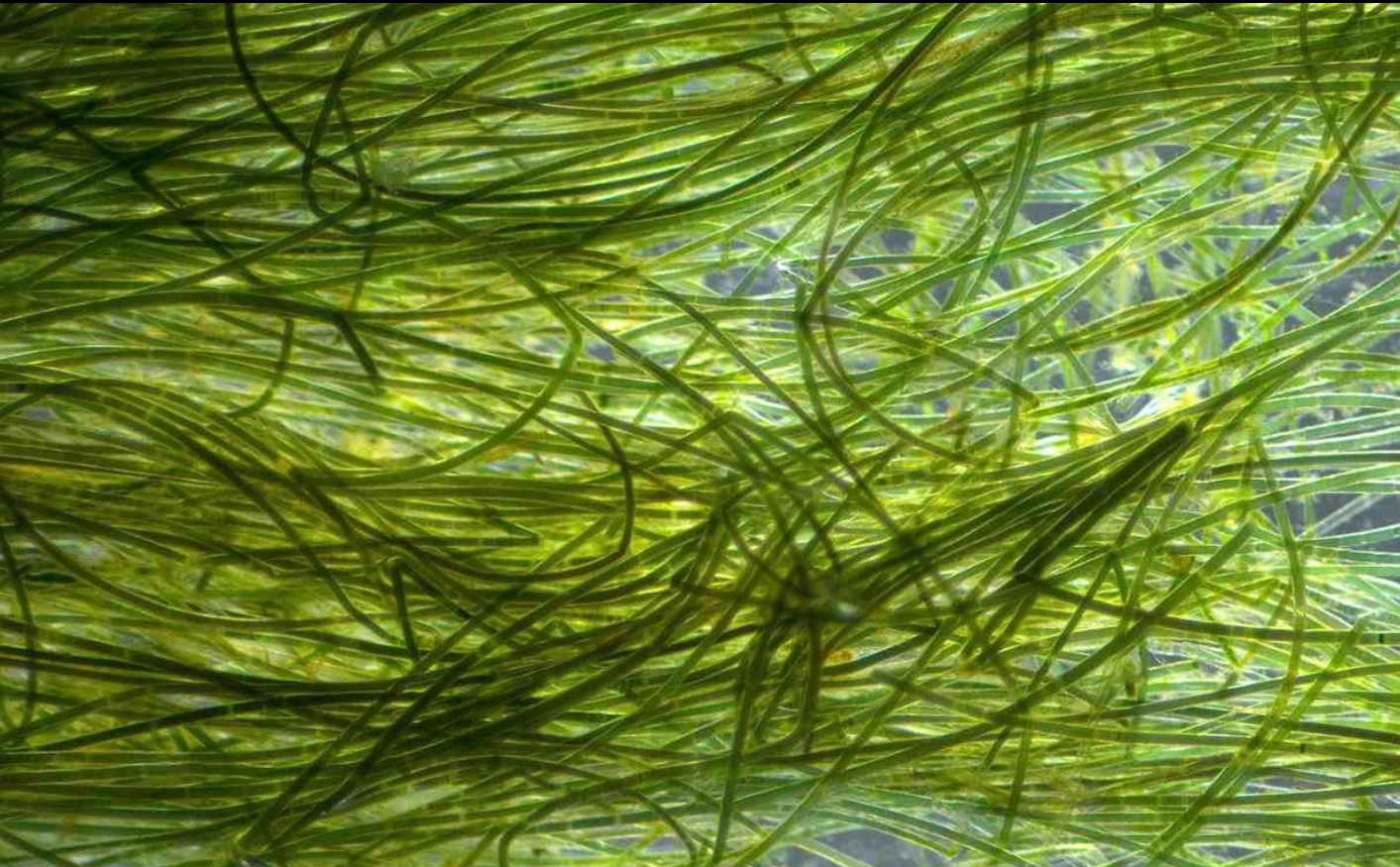


NCSU Research Updates

July 2026



Jessica R. Baumann and Dr. Rob J. Richardson

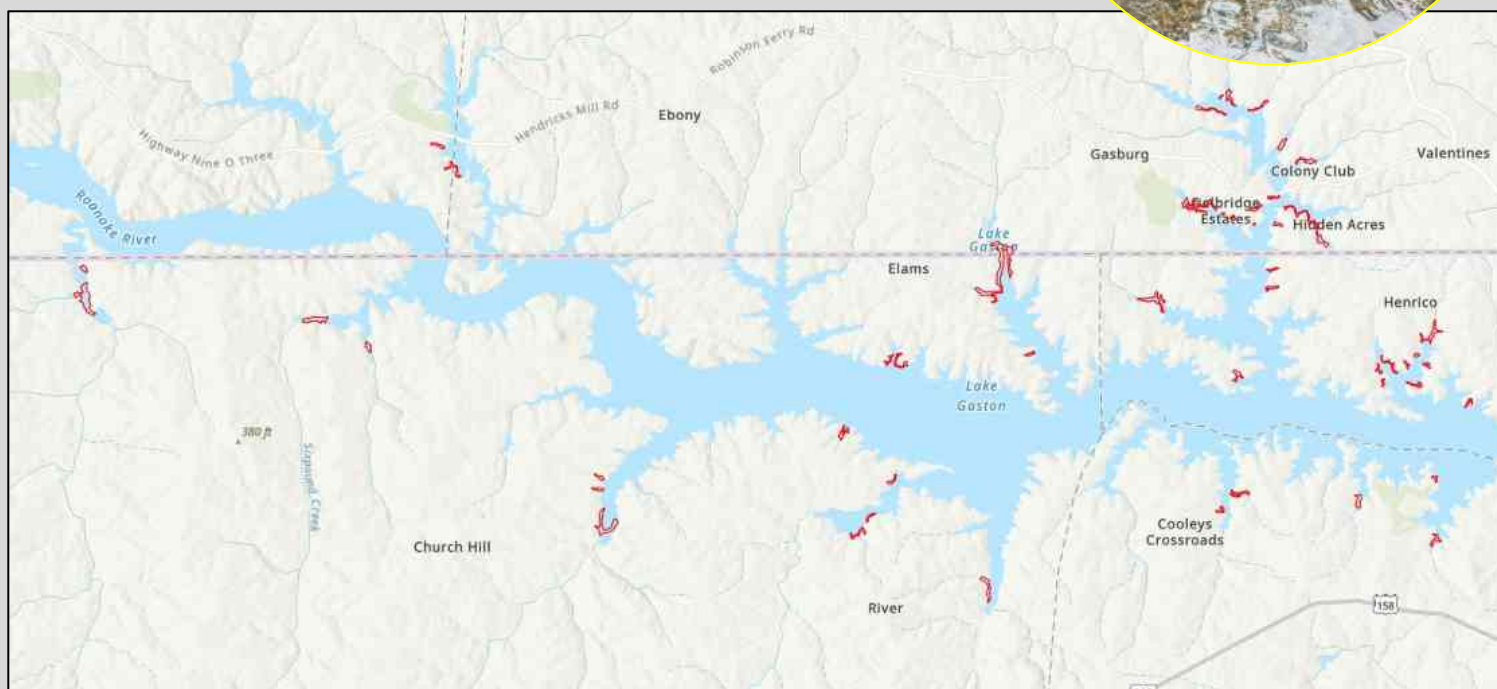
Aquatic Plant Management Program

North Carolina State University

Management Activities

Hydrilla Treatments

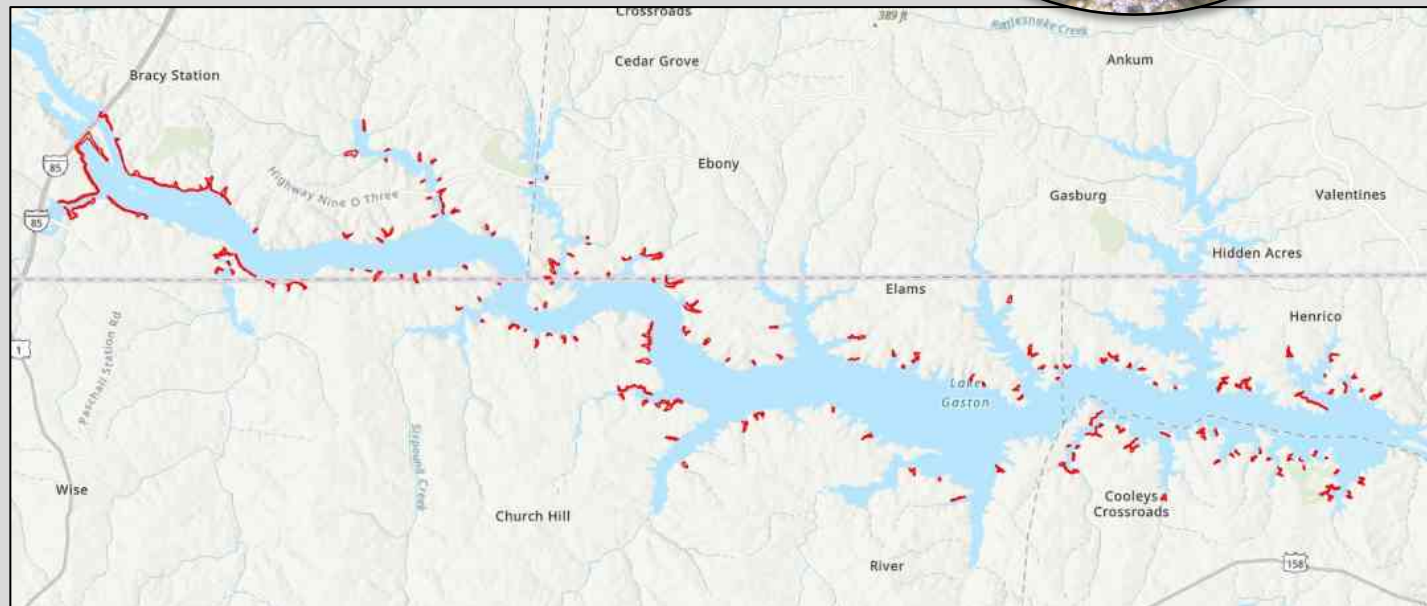
- Applicator – PLM
- 326 acres
- May, June, July



Management Activities

Lyngbya Treatments

- Applicator – AquaServices
- 499 acres
- Completed: April, May, June, July
- Upcoming: August, September



Public Reporting Tool

Public Comments

- **171 reports**
 - *178 total in 2025*
- **Excessive Aquatic Plant Growth**
 1. **Native Species!**
 2. **Hydrilla**
 3. **Lyngbya**



Public Reporting Tool

Lake Gaston - Aquatic Plant Reporting Tool

Please fill out the following information to report any issues regarding aquatic plant species at Lake Gaston, NC/VA. Reported issues will be evaluated by NC State's Extension Associate and considered in any future management plans conducted by the Lake Gaston Weed Control Council.

Due to Dominion's Shoreline Management Plan, management of native species is currently restricted. However, by adding your information to the database you will be considered if management actions are permitted in the future.

First Name*

Last Name*

Email Address*

Phone Number

Full Street Address of Property*

Aquatic Plant Species*

Please identify all reported plants:
To assist in plant identification: [Plant ID Site](#)

☐ Hydrilla

☐ Lyngbya

☐ Other

Photo of Plant

These are required to validate the need for future management actions.

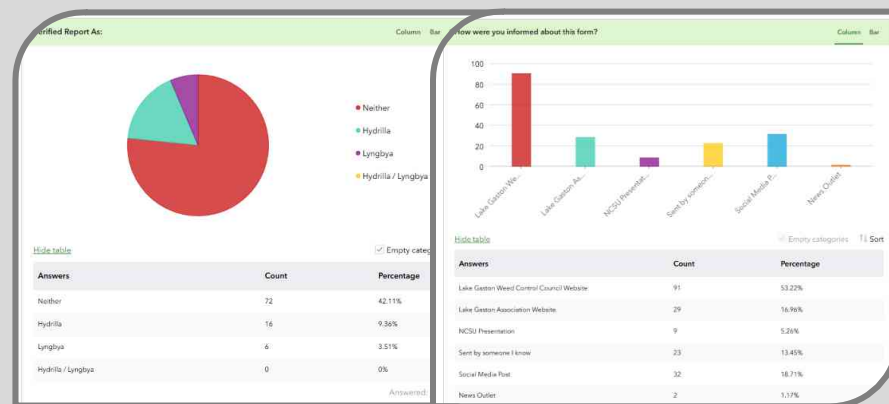
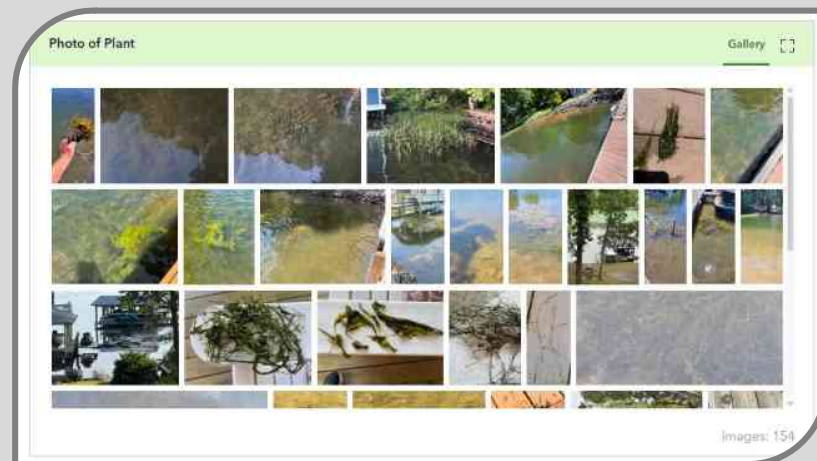
Some tips for taking great pictures:

- Take a clear photo of the plant outside of the water.
- If possible, separate a single stem out of a bunch.
- Take a clear photo of the impacted shoreline.

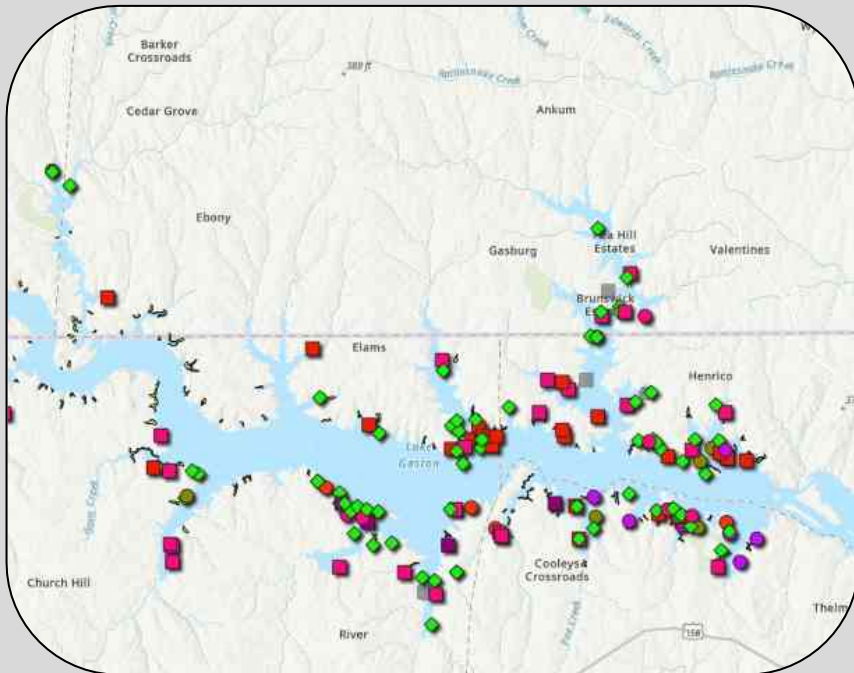
1 Drop image here or select image (maximum number of files allowed: 3)

Additional Comments

You can provide a short summary of the issue you are encountering. It would be helpful to include location of issue in reference to your dock.



Public Reporting Tool



Each Site

Lake Gaston - Aquatic Plant Reporting
Tool_results:

Table Edit Get directions Zoom to

First Name	
Last Name	
Full Street Address of Property	
Phone Number	
Email Address	
Aquatic Plant Species	Hydrilla
Other Species	
Further Comments	Mostly Naiald in picture, but a few strands of hydrilla noted
Reported As:	Hydrilla, Lyngbya
Verified Report As:	Hydrilla
Additional Comments	It's really bad!
Followed Up?	Yes
Followed Up By:	
Followed Up By:	NCSU
Emailled or Called	Email
Site Visit	
How were you informed about this form?	Sent_by_someone_i_know
Not Public Entry - Thank you for filling out the Public Report for Nuisance Aquatic Species Form! Your entry is a very important part of Lake Gaston's Aquatic Plant Management program.	
Other - Other Species	
Thank you for filling out the Public Report for Nuisance Aquatic Species Form! Your entry is a very important part of Lake Gaston's Aquatic Plant	Yes

Lake Gaston - Aquatic Plant Reporting
Tool_results:

Table Edit Get directions Zoom to

** Collected Information Not Shared Publicly*

- Collects Address, Comments, and Pictures
- Indicates if Follow-Up was Completed
- **All Information In One Location!**
 - **Quicker Response Time**

Websites

- **Aquatic Plant Species:**
<https://arcg.is/0Kibfi2>

Managed Species

These species are targeted by Lake Gaston Weed Control Council's treatment programs.

Hydrilla

- Federally Listed Noxious Weed
- Submerged plant
- Robust stem and small leaves in whorls of 3 - 8
- Leaves have serrated edges
- Can form dense mats
- Commonly confused with: Chara and Southern Naiad



Hydrilla

Lyngbya

- Native, but a nuisance
- Filamentous cyanobacterium
- Denses, dark-colored mat formation
- Mats can be along the lake bottom or at the surface
- Wool-like texture
- Musty Odor
- Commonly confused with: Spirogyra



Lyngbya




Lake Gaston's Aquatic Plant Species

Here are some of the aquatic plant species found at Lake Gaston, NC / VA

Jessica Baumann
April 27, 2026

Managed Species Native Species

Lake Gaston Weed Control Council LGWCC Treatment Programs Aquatic Plant Reporting Tool

Native Aquatic Plants

Refer to *Domination SMP* for management options

Native Naiads and Pondweed

- Submersed
- Small, slender leaves
- Robust stems
- Easily confused for one another
- A) Southern Naiad (opposite leaves)
- B) Slender Pondweed (alternates, ribbonlike leaves)
- C) Horned Pondweed (horn shaped fruit)
- Commonly confused with: Hydrilla



Native Naiads and Pondweeds

American Lotus

- Large waxy leaves (repels water)
- Leaves can float or stand slightly above the surface
- Large white / light yellow flowers
- Large round brown seed pods



American Lotus

Websites

- **LGWCC Management Program:**
<https://arcg.is/1vq18T0>

[Lake Gaston APM](#) [Hydrilla Management](#) [Lyngbya Management](#)

Lake Gaston APM

Lake Gaston, NC/VA has two aquatic nuisance species, hydrilla (*Hydrilla verticillata*) and lyngbya (*Microcystis wollei*), that are currently established within the system. Both species produce robust monoculture formations along the shoreline that can negatively impact the aquatic ecosystem, impede recreational activities, and depreciate the aesthetic value of waterfront properties.

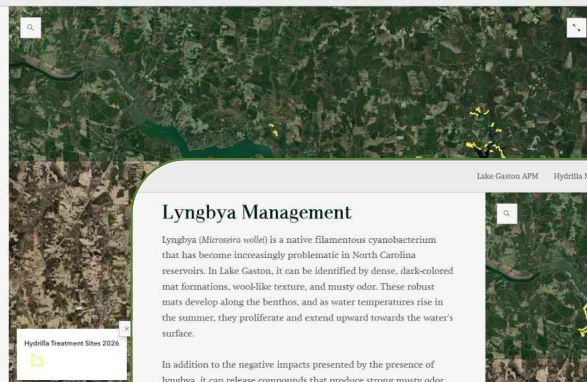
Map titled "Distribution of Lake Gaston's Noxious Species - 2026" displays locations of both hydrilla and lyngbya that were identified during a 2025 shoreline vegetation survey.

Hydrilla and lyngbya within Lake Gaston are currently being targeted by active management programs. Annual herbicide treatments are facilitated by the Lake Gaston Weed Control Council, with guidance from the Technical Advisory Council (TAG) and the Pete Deschenes Stakeholders group. TAG is composed of subject matter experts from North Carolina State University, NC and VA state agencies, and Dominion Energy. The stakeholders group



Hydrilla Management

Hydrilla (*Hydrilla verticillata*) is a submersed, federally listed noxious weed that has been actively managed within the system for over 20 years. Hydrilla possess the ability to establish itself from just a single fragment of viable material and also produces reproductive propagules that can lay dormant in the sediment for up to 7 years before germinating. Together, these two factors contribute to making hydrilla very difficult to control, especially in large systems such as Lake Gaston.



Lyngbya Management

Lyngbya (*Microcystis wollei*) is a native filamentous cyanobacterium that has become increasingly problematic in North Carolina reservoirs. In Lake Gaston, it can be identified by dense, dark-colored mat formations, wool-like texture, and musty odor. These robust mats develop along the benthos, and as water temperatures rise in the summer, they proliferate and extend upward towards the water's surface.

In addition to the negative impacts presented by the presence of lyngbya, it can release compounds that produce strong musty odor, which may negatively affect the taste of drinking water. It can also produce lyngbya-specific cyanotoxins that commonly result in skin irritation and rashes for those that come in contact with surrounding waters.

Lake Gaston's Aquatic Plant Management

Lake Gaston Weed Control Council's management of two aquatic nuisance species found in Lake Gaston, NC/VA.

Jessica R. Roumann
April 24, 2026



[Lake Gaston APM](#) [Hydrilla Management](#) [Lyngbya Management](#)

Research Projects - Completed



Determining Potential of Lyngbya Toxin Production

Project Objectives:

- 1) Characterize Toxins Produced
- 2) Standard toxin sampling methods and detection of lyngbya toxins
- 3) Timing of toxin release following stress inducing situations.



Determining Potential of Lyngbya Toxin Production

Results

- Toxins Reported
- First to report sampling LWTs with SPATT technology
- Detected LWT-1
 - Dermatoxins
- Detected LWT-5
 - Degrade to dcSTX (*increases toxicity*)
- Detected dcSTX
- Found increased ambient release when injured vs undisturbed
- Golden standard of sampling (water) didn't produce good results



Research Projects - Upcoming



Aerial Drone Survey of Native Vegetation Establishment Exclosures

Part of the 2022 TAG Recommendation



Aerial Drone Survey of Native Vegetation Establishment Enclosures

Part of the 2022 TAG Recommendation

Objectives

- 1) Document growth within establishment sites**
- 2) Calculate percent water surface coverage**
- 3) Document plant expansion beyond enclosure boundaries**

2022 results will be compared to images collected in 2026



Aerial Drone Survey of Native Vegetation Establishment Enclosures

Part of the 2022 TAG Recommendation



Research Projects - Proposed



Lyngbya Toxin Production Potential

COMPLETED PROJECT

- 2 of 3 reps analyzed
- LOTS of variability in data

PROPOSED PROJECT

Run 3rd analysis of samples

- Better understanding of the concentration levels and timing of toxin release
- Increase scientific rigor for publication



Literature Review

- Identifying **environmental conditions** that are created through the **aging process** of reservoirs and impoundments
- Identifying if those **conditions** potentially influence the **proliferation of cyanobacteria and aquatic plant communities**
- Identifying the **management implications and costs** associated with increased expansion in those communities.



Native Vegetation Expansion

1. Community Mapping and Distribution Trends

1. Multi-Year Data Analysis to Determine Community Trends
2. Improved Survey Techniques to Capture Emergent and Floating Leaf Species

2. Environmental Conditions

1. Environmental Factors Contributing to Native Growth and Expansion
2. High-Resolution Hydrosol Mapping

3. Management

1. Manage Native Community with Selective Suppression
2. Evaluate Impacts of Lyngbya Presence on Native Communities



Questions?

Jessica R. Baumann

Extension Associate, Lake Gaston
Aquatic Plant Management Program

Email: Jessica_Baumann@ncsu.edu

Report Gaston Aquatic Plant Issues:

