

# Lake Gaston

## Aquatic Vegetation Survey and Treatment Results 2025

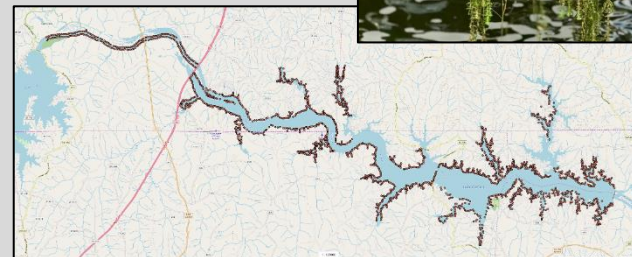
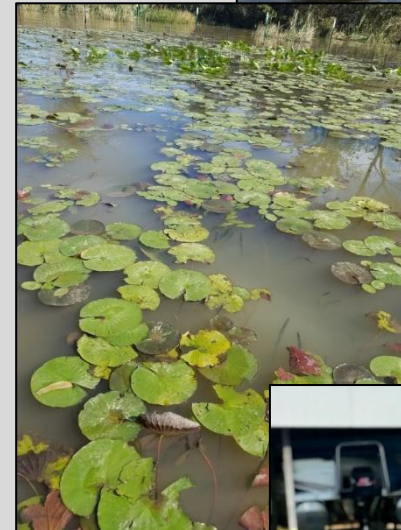


**Jessica R. Baumann and Dr. Rob J. Richardson**

Aquatic Plant Management Program  
North Carolina State University

# Outline

1. ***Overall Monitoring Efforts***
  - **Vegetation Survey**





# Fall Volunteer Survey

- Conducted from August 16<sup>th</sup> to October 29<sup>th</sup>
- 100+ Individual Volunteers
  - 530 Active Survey Volunteer Hours
  - 54 Teams
- LGA Environmental Committee
  - Big Push to Recruit Volunteers
    - Months of Prep and Multiple Coordinators
- 6,204 Points Collected
  - 5,637 volunteer collected

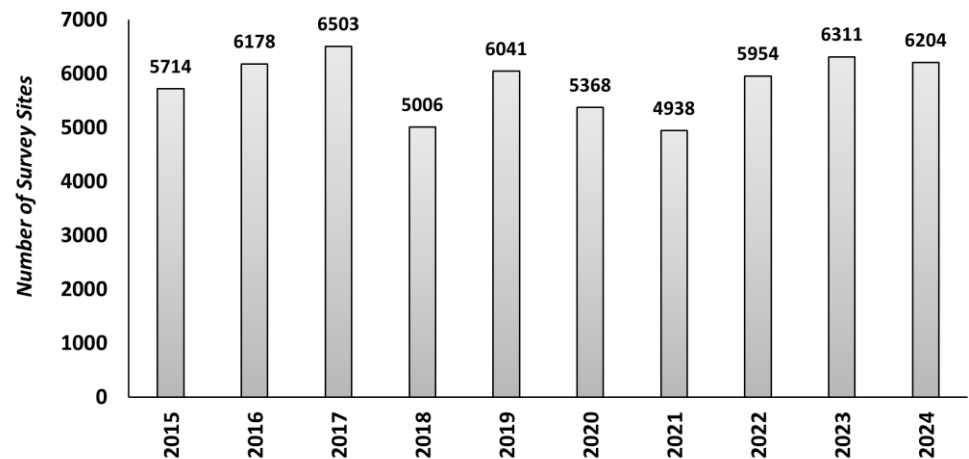


# Fall Volunteer Survey

- Conducted from August 16<sup>th</sup> to October 29<sup>th</sup>
- 6,204 Points Collected
  - Goal Every 200 ft
- 81% of sites contained vegetation

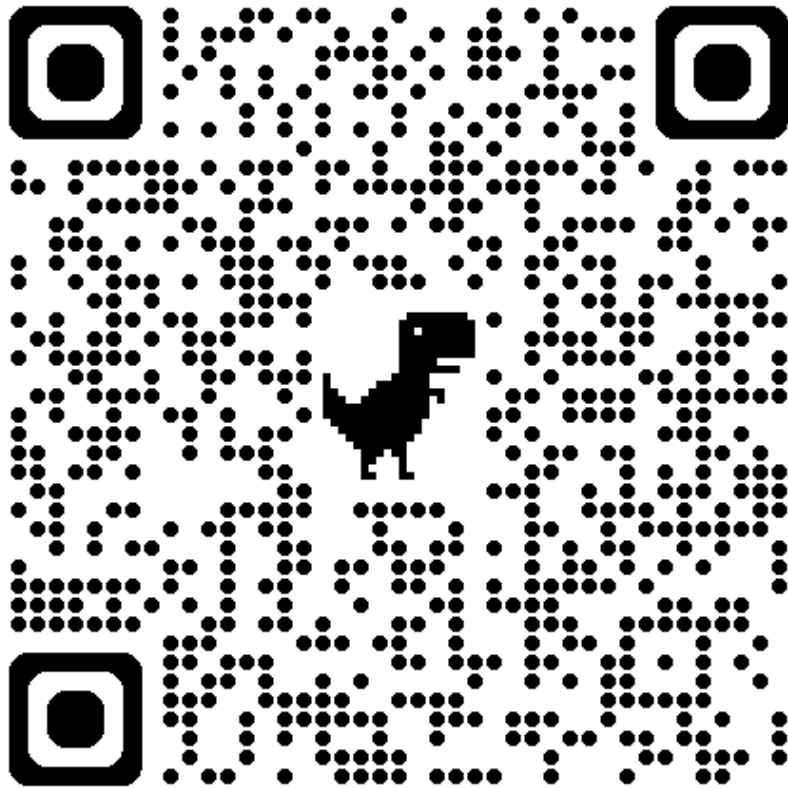


Total Number of Survey Sites - By Year





# 2025 Volunteer Survey

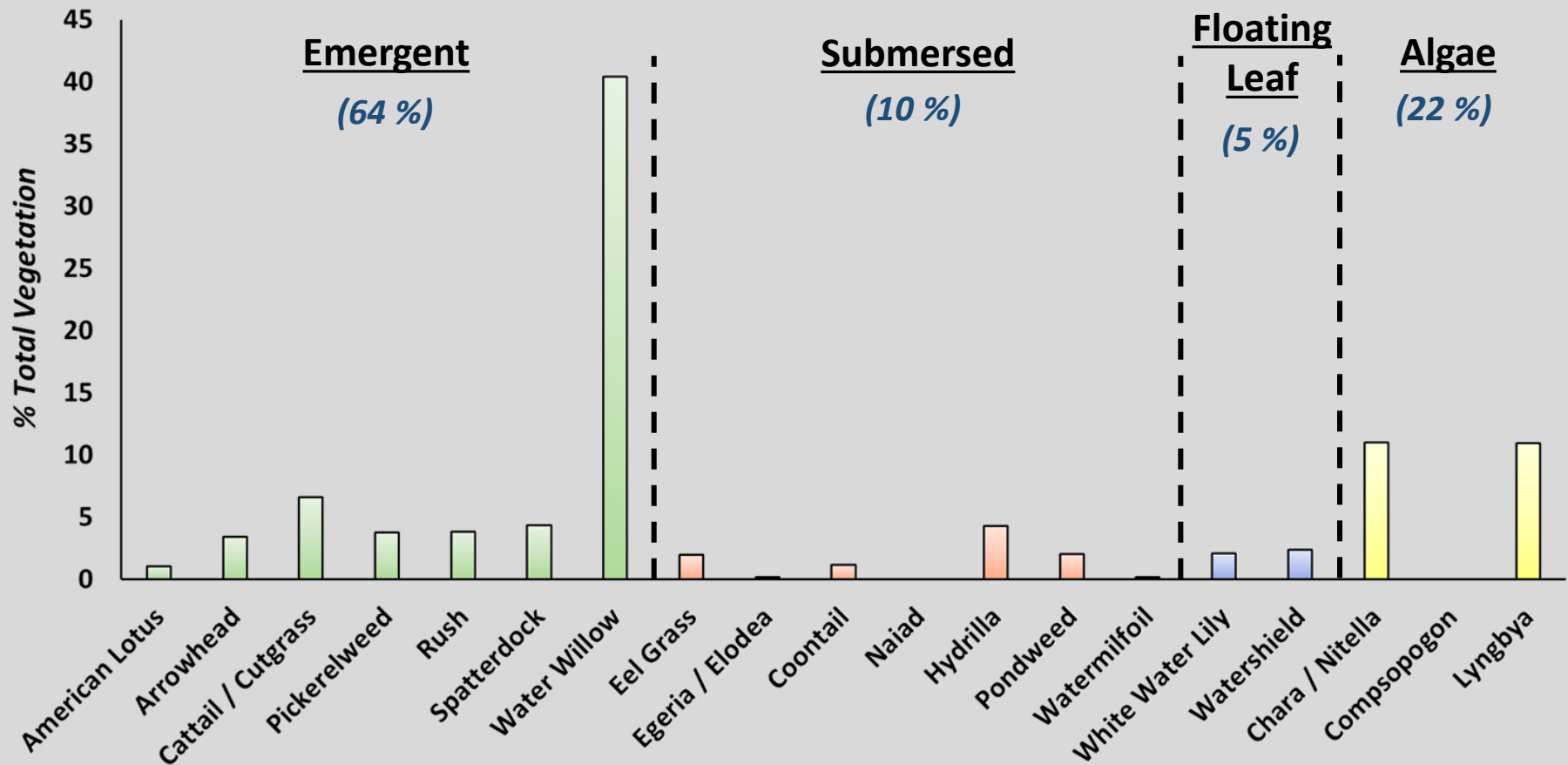


*Sign up form for 2025 Volunteer Survey*



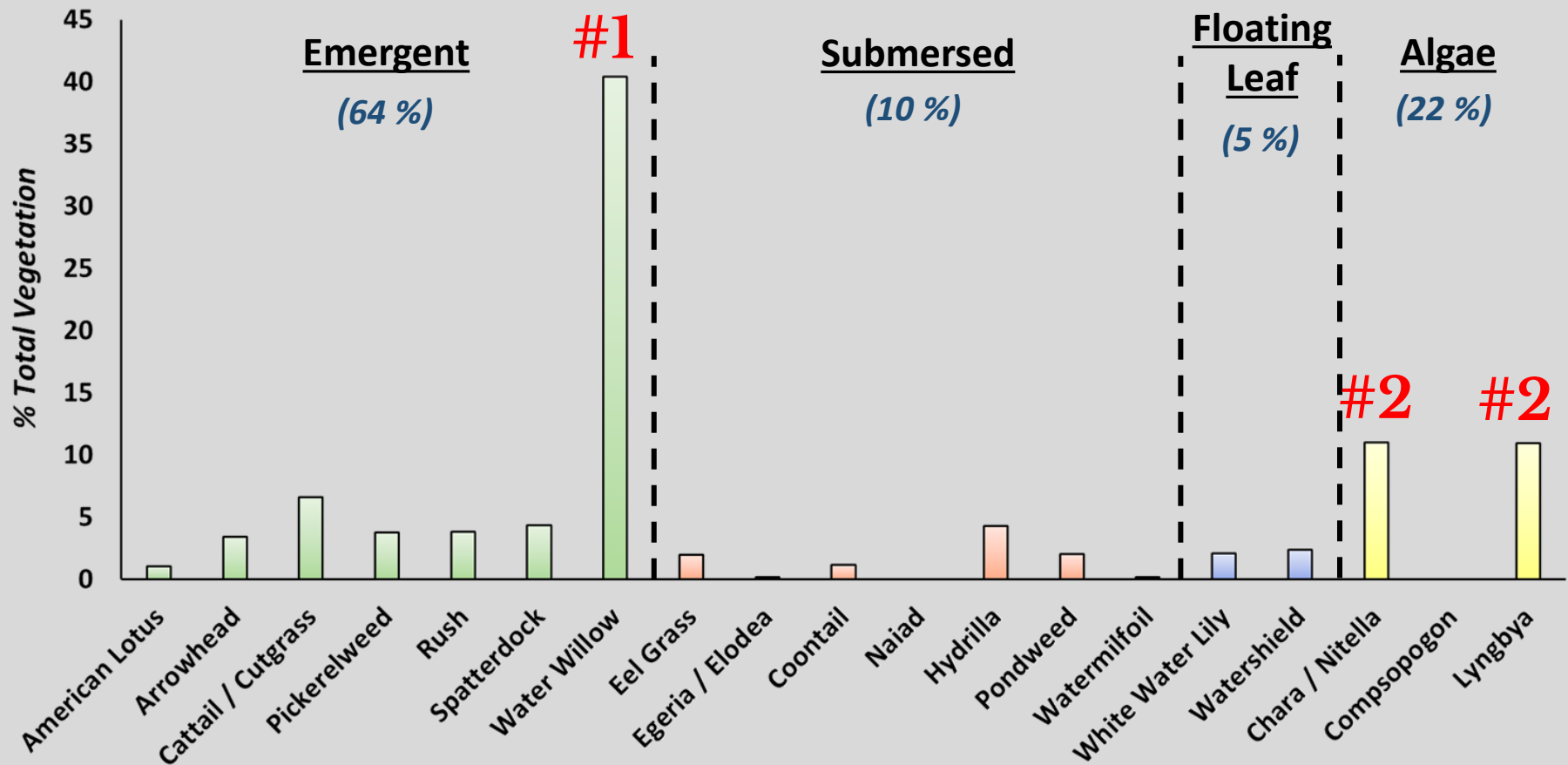
# Aquatic Plant Community

## Lake Gaston Aquatic Plant Community - 2024

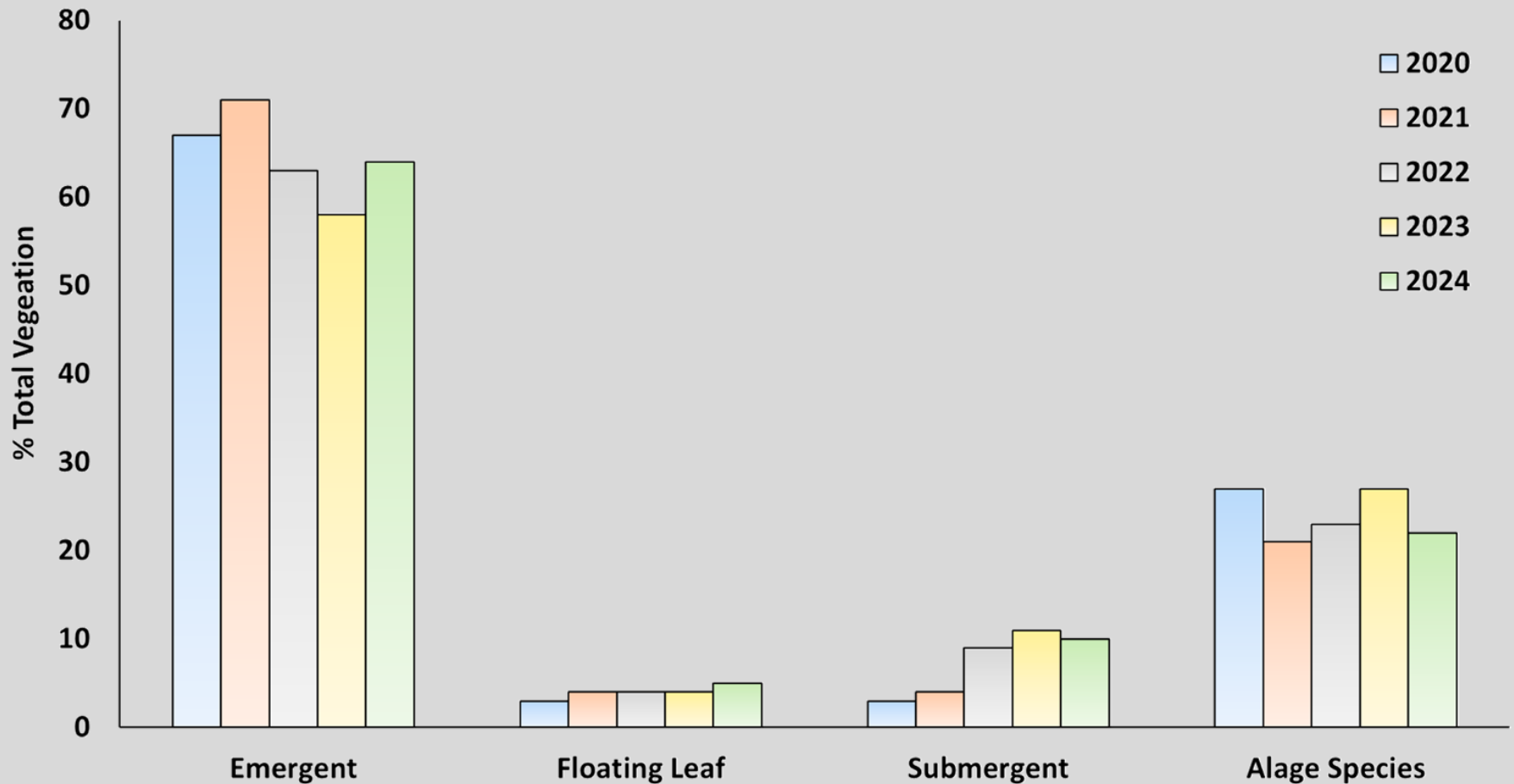


# Aquatic Plant Community

## Lake Gaston Aquatic Plant Community - 2024

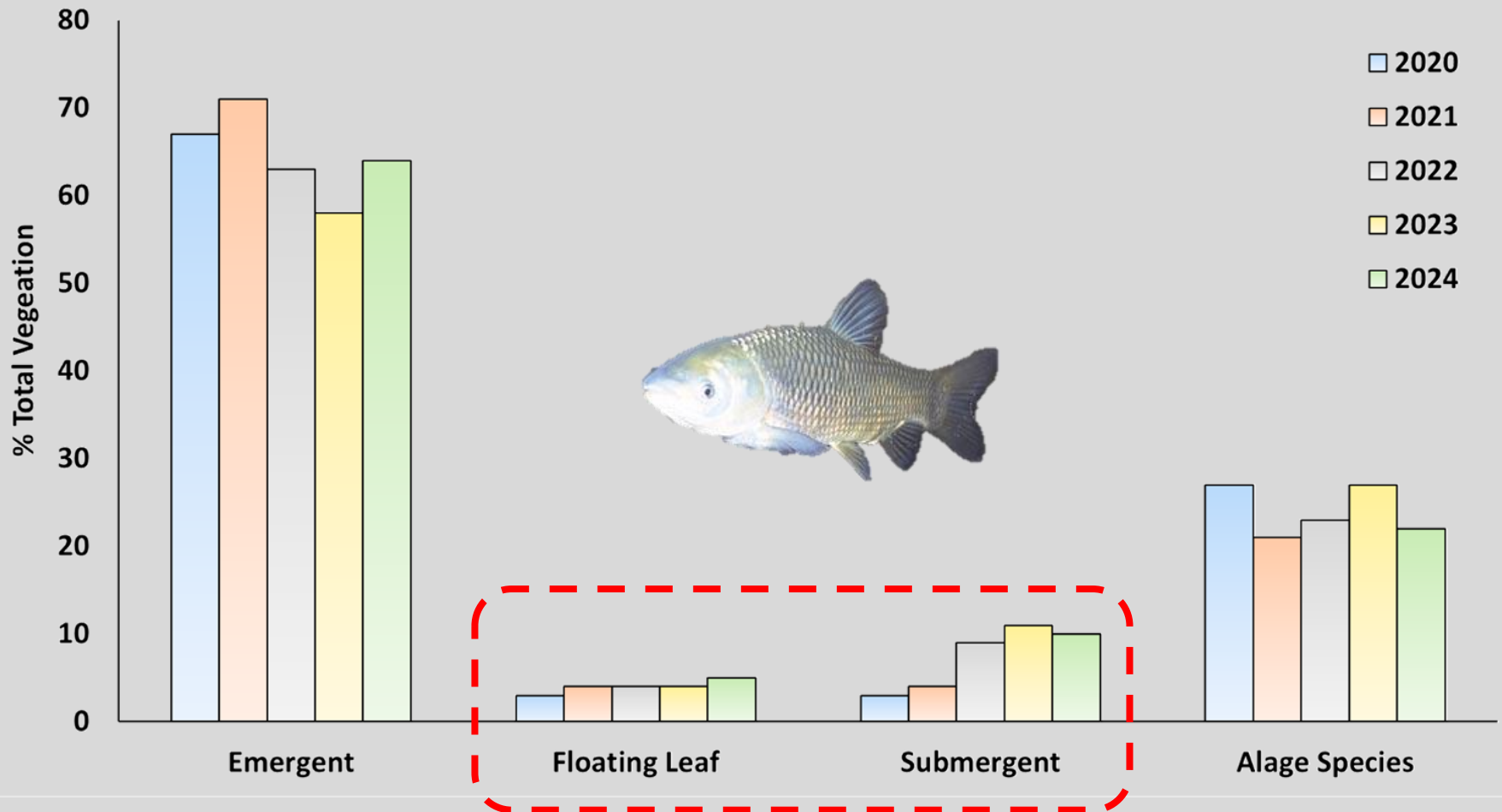


# Aquatic Plant Community



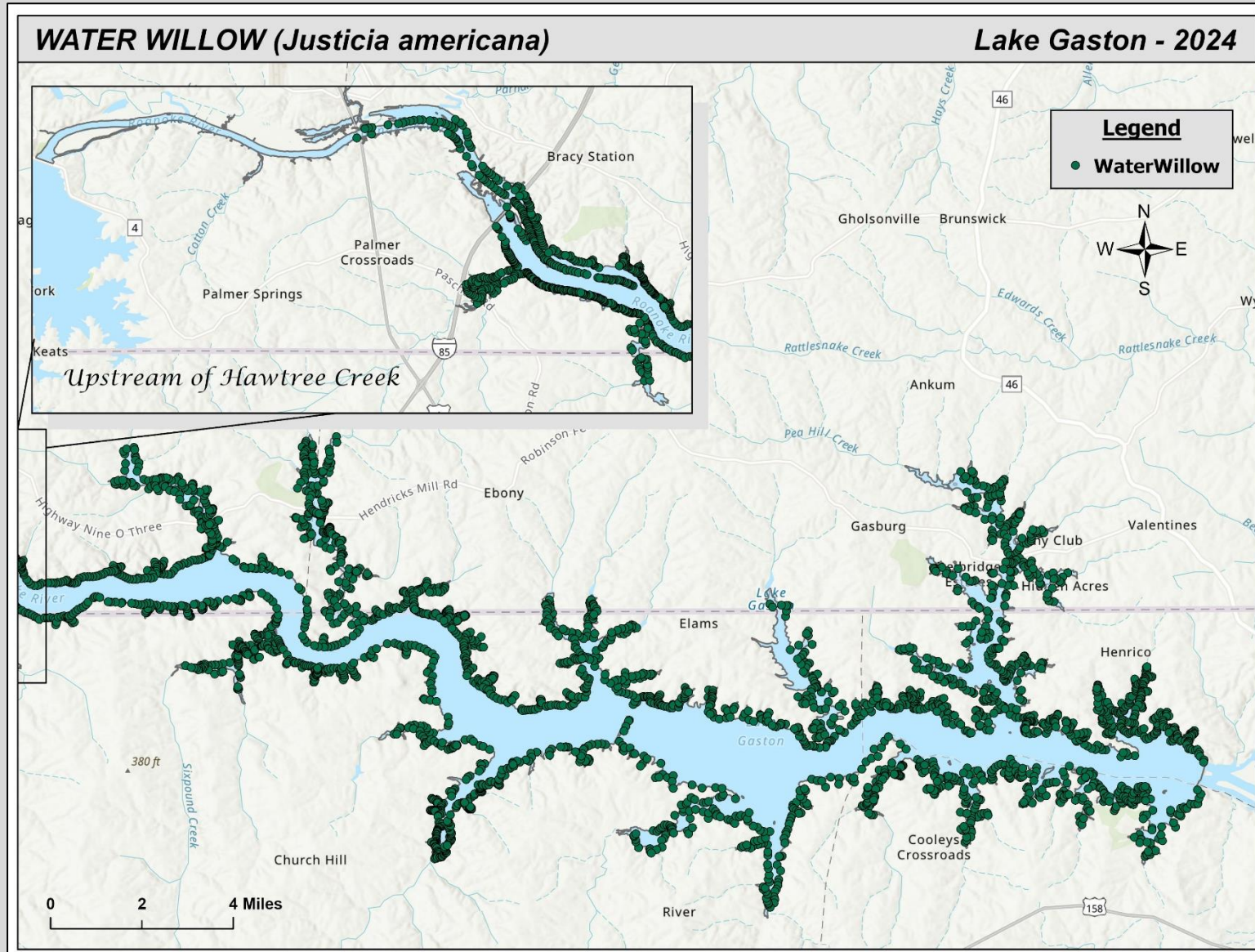


# Aquatic Plant Community



# 2024 Aquatic Plant Community

#1





**CHARA (Chara sp.)**

## Lake Gaston - 2024

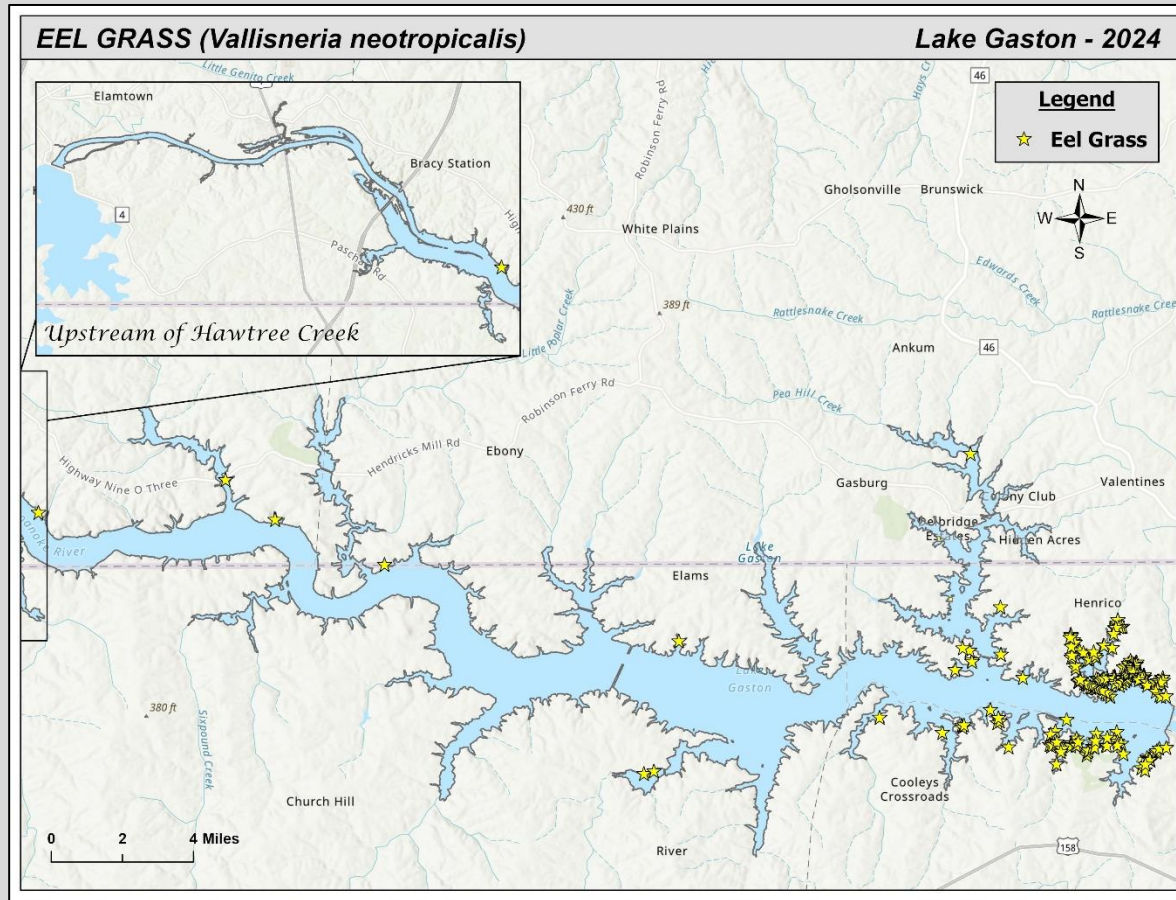




# 2024 Aquatic Plant Community

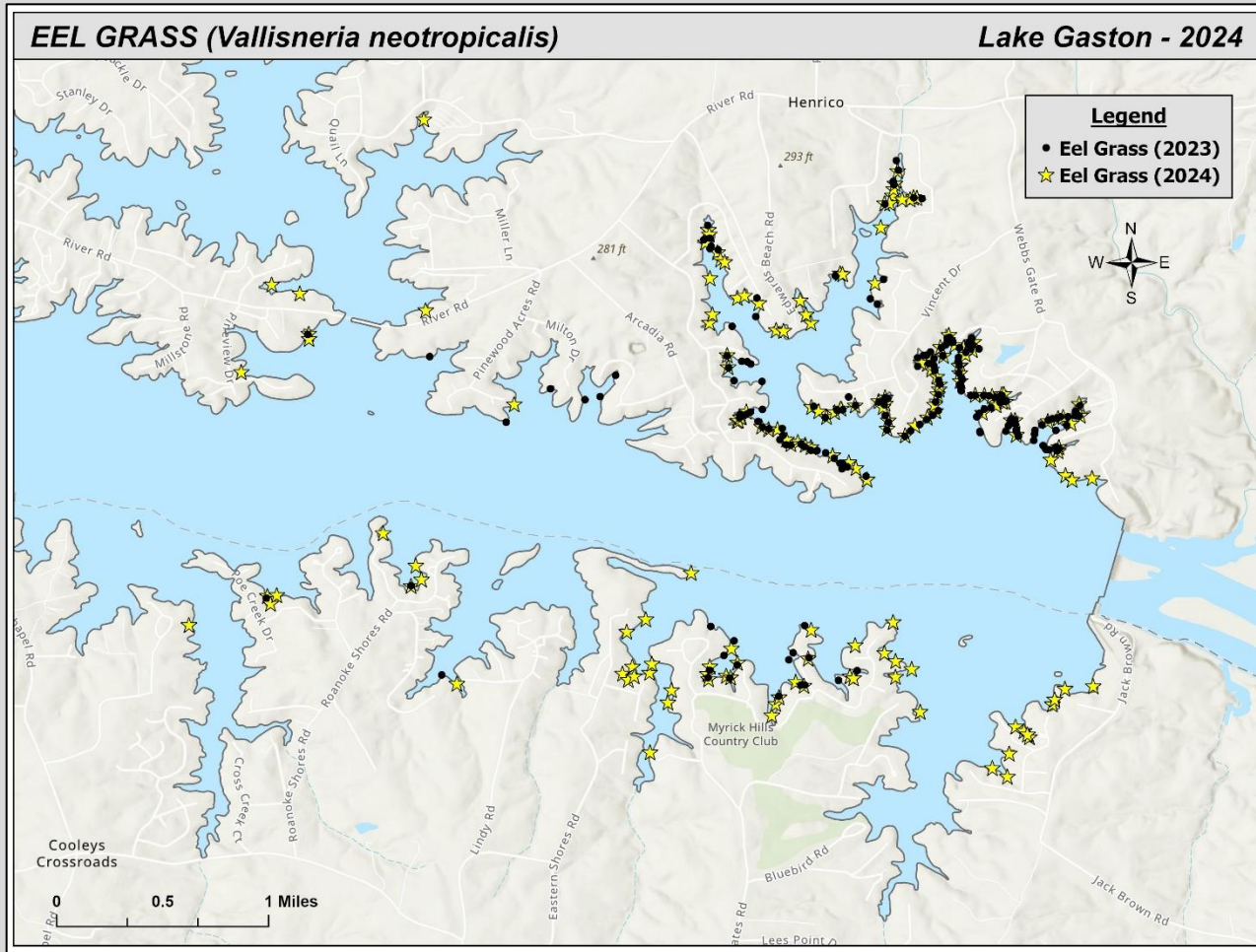
## Eel Grass

- 2% Vegetation Community
- Protected by Dominion's Shoreline Management Plan
- Issues with invasive/hybrid species across southeast
- Genetic testing confirmed Gaston has *V. neotropicalis* (native)

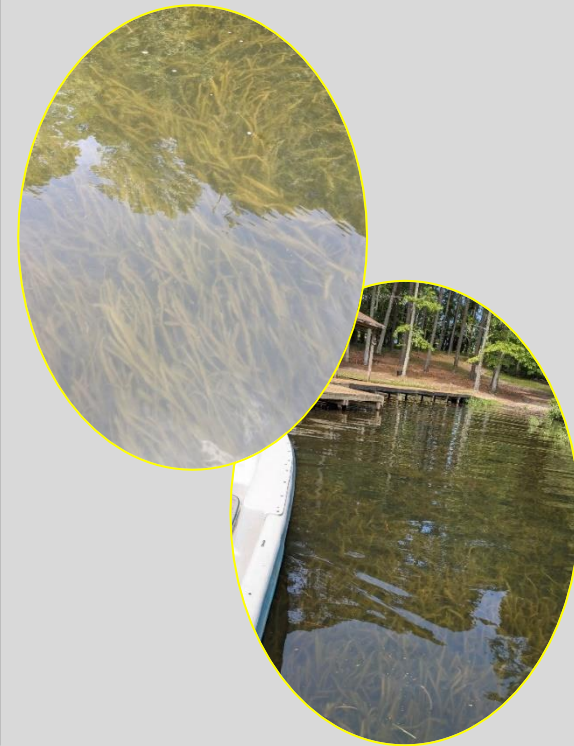


# 2024 Aquatic Plant Community

## Eel Grass



**2023** → **2024**  
104 acres → 123 acres

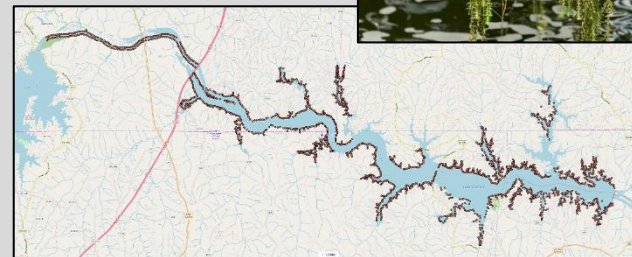
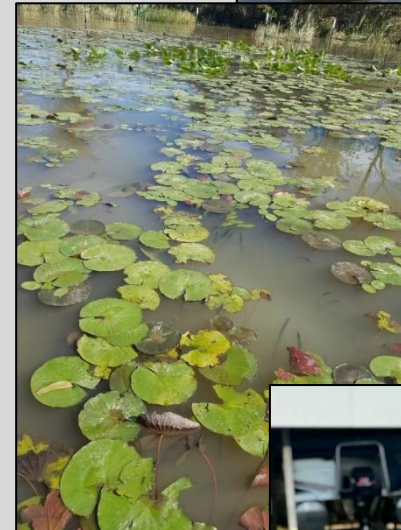




# Outline

## 2. *Monitoring & Treatment Efforts*

- Hydrilla
  - Survey and Treatments
- Lyngbya
  - Survey and Treatments





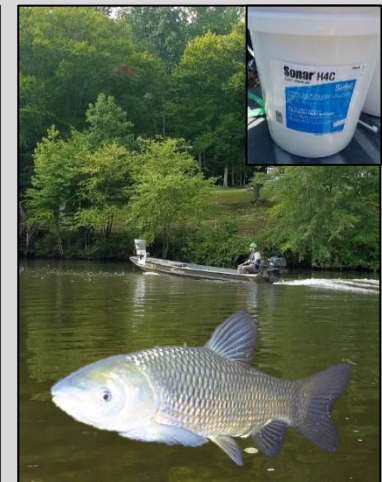
# Hydrilla Management



# Hydrilla Management

## Management History

- First documented in 1980's
- Problematic in 1990's
  - Over 3,000 acres by 1995
- NCSU more active role in management - 2005
- Integrated Management (Herbicide / Biological)



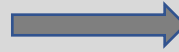


# Hydrilla Treatments

## 2023 Survey Results

Total Vegetation: 4 %

Estimated Hydrilla Acreage: **329 acres**



## 2024 Recommendations

Maximum Treatment Acres: **198 acres**

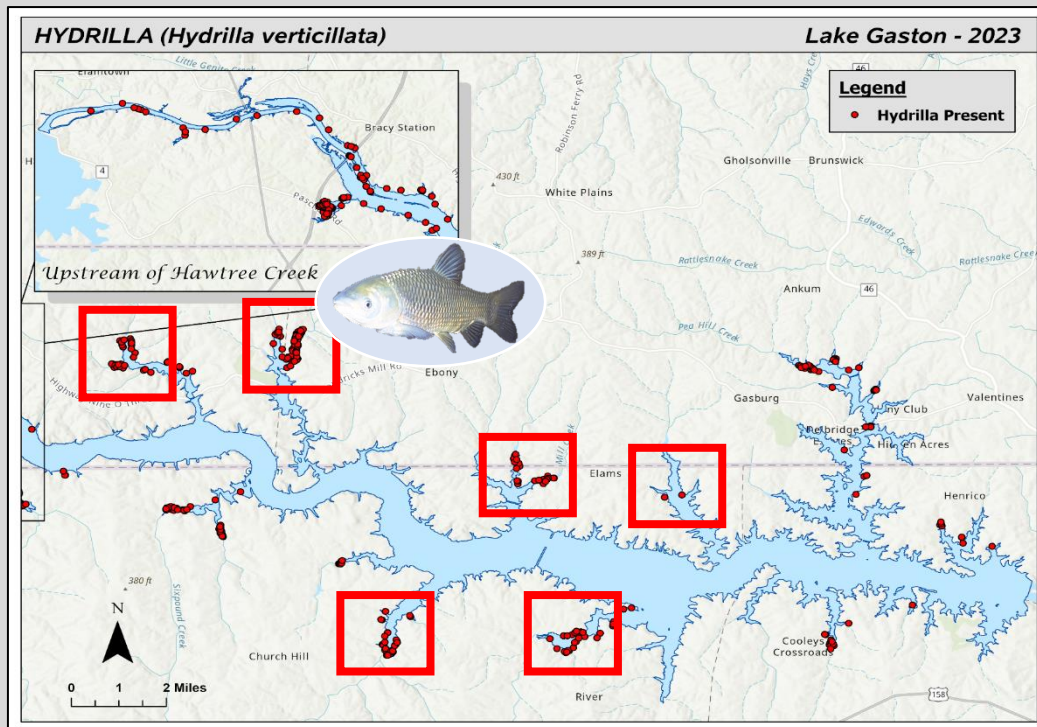
Grass Carp to be Stocked: **1,385**



## 2024 Hydrilla Treatments

Total Treated Acres: **197 acres**

Grass Carp Stocked: **1,385**





# Hydrilla Management

## 2024 Survey Results



- Sonar/Vegetation Surveys
  - Current Hydrilla Situation

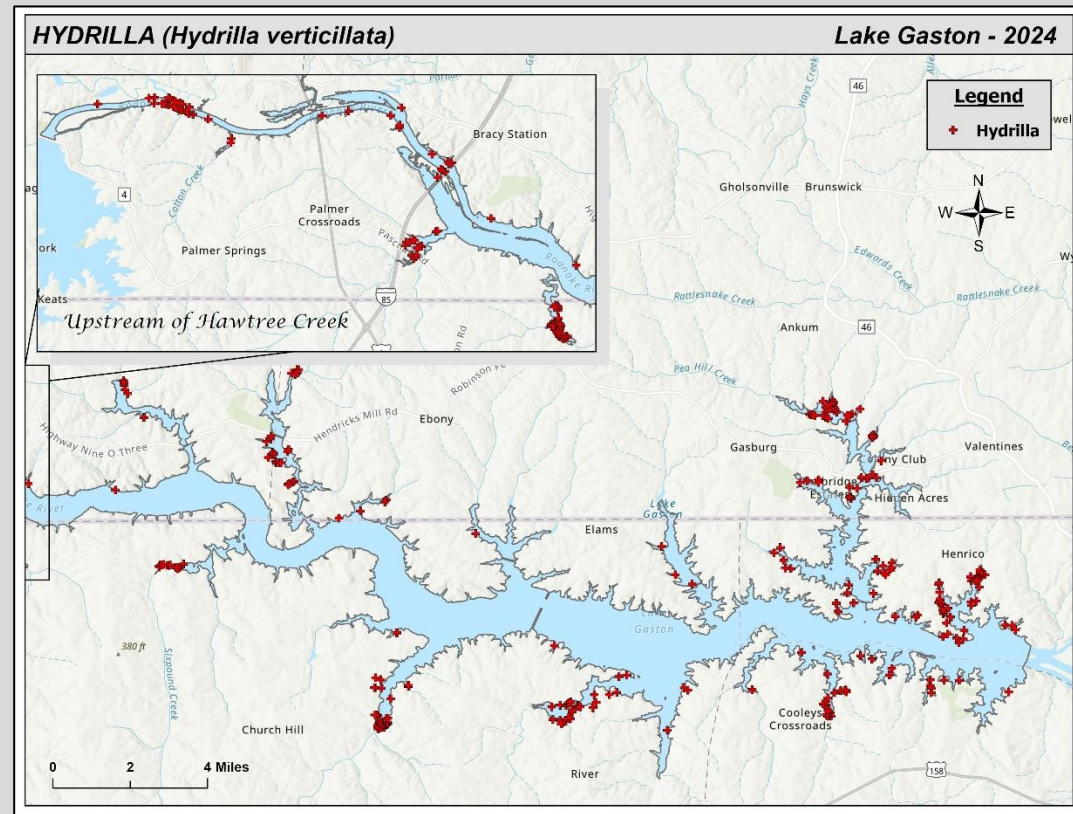


# Hydrilla Survey

## 2024 Survey Results

Total Vegetation: 8 %

Estimated Hydrilla Acreage: **289 acres**

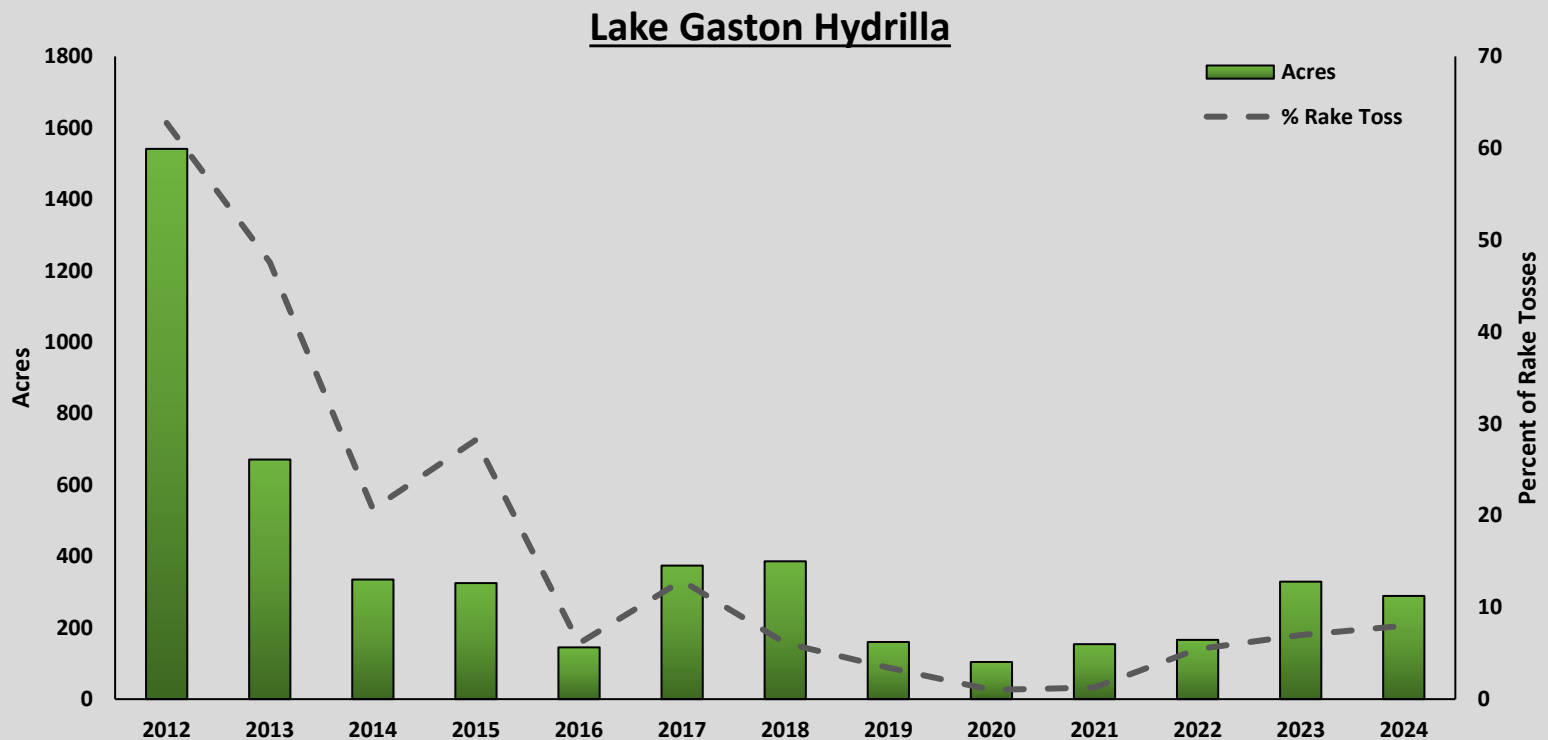


# Hydrilla Survey

## 2024 Survey Results

Total Vegetation: 8 %

Estimated Hydrilla Acreage: **289 acres**





# Hydrilla Management

## Tuber Surveys



- Tuber Surveys
  - Future Hydrilla Situation

# Tuber Survey

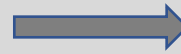


## LAKE GASTON HYDRILLA TUBER BANK ESTIMATES

|                               | Years<br>Since Last<br>Tuber<br>Detection | Starting<br>Bank<br>Density<br>(2012) | 2019   | 2020  | 2021  | 2022  | 2023  | 2024  |
|-------------------------------|---|---------------------------------------|--------|-------|-------|-------|-------|-------|
| East of Easton's Ferry Bridge |   |                                       |        |       |       |       |       |       |
| <i>Jimmies Creek</i>          | 0   | 36.41                                 | 0      | 0     | 0     | 0.82  | 12.33 | 8.39  |
| <i>Timberline Shores</i>      | 6   | 3.08                                  | 0      | 0     | 0     | 0     | n/a   | n/a   |
| <i>Cold Springs Branch</i>    | 5   | 34.95                                 | .82    | 0     | 0     | 0     | n/a   | 1.64  |
| <i>Lakeview</i>               | 10  | 124.37                                | 0      | 0     | 0     | 0     | n/a   | n/a   |
| <i>Lizard Creek</i>           | 0   | N/A                                   | 18.91  | 0     | 24.39 | 53.72 | 15.90 | 7.40  |
| <i>Big Stone House</i>        | 1   | 31.25                                 | 0      | 0     | 0     | 0     | 7.40  | 0     |
| <i>Pretty Creek</i>           | 8   | 38.72                                 | 0      | 0     | 0     | 0     | n/a   | 0     |
| <i>Poe Creek</i>              | 5   | 125.4                                 | 0.82   | 0     | 0     | 0     | n/a   | 0     |
| <i>Woodland Hurst</i>         | 6   | 135.67                                | 0      | 0     | 0     | 0     | 0     | 0     |
| <i>Sledge Creek</i>           | 2   | 8.22                                  | 0      | 0.82  | 0     | 2.47  | n/a   | n/a   |
| <i>Hamlin</i>                 | 5   | 446.08                                | 14.8   | 0     | 0     | 0     | 0     | 0     |
| West of Easton's Ferry Bridge |   |                                       |        |       |       |       |       |       |
| <i>Hubquarter</i>             | 4   | 292.73                                | 1.64   | 1.64  | 0     | 0     | 0     | 0     |
| <i>Lyons Creek</i>            | 5   | 293.96                                | 7.4    | 0     | 0     | 0     | 0     | n/a   |
| <i>Poplar Creek</i>           | 1   | 89.63                                 | 0.82   | 8.22  | 0     | 0     | 31.52 | 0     |
| <i>Hawtree</i>                | 0   | 38.03                                 | 37     | 6.58  | 4.93  | 22.61 | 84.28 | 24.67 |
| <i>Smith Creek</i>            | 1   | 8.22                                  | 0      | 0     | 0     | 3.70  | 0.62  | 0     |
| <i>Flats</i>                  | 6   | 119.23                                | 0      | 0     | 0     | 0     | n/a   | n/a   |
| <i>Cottons Creek</i>          | 0   | 217.9                                 | 115.11 | 42.48 | 0     | 5.76  | 13.16 | 13.16 |

# Hydrilla Treatments

## 2024 Survey Results

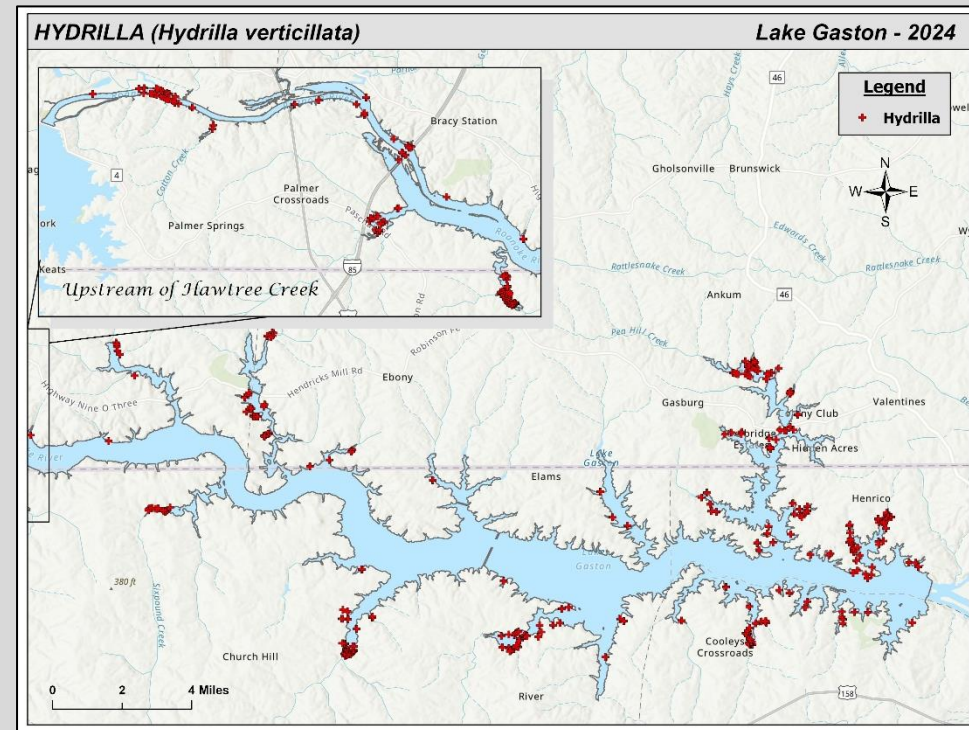


## 2025 Hydrilla Management

Total Vegetation: 8 %

Estimated Hydrilla Acreage: 289 acres

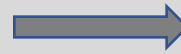
Overall Low Tuber Density in 2024





# Hydrilla Treatments

## 2024 Survey Results



## 2025 Hydrilla Management

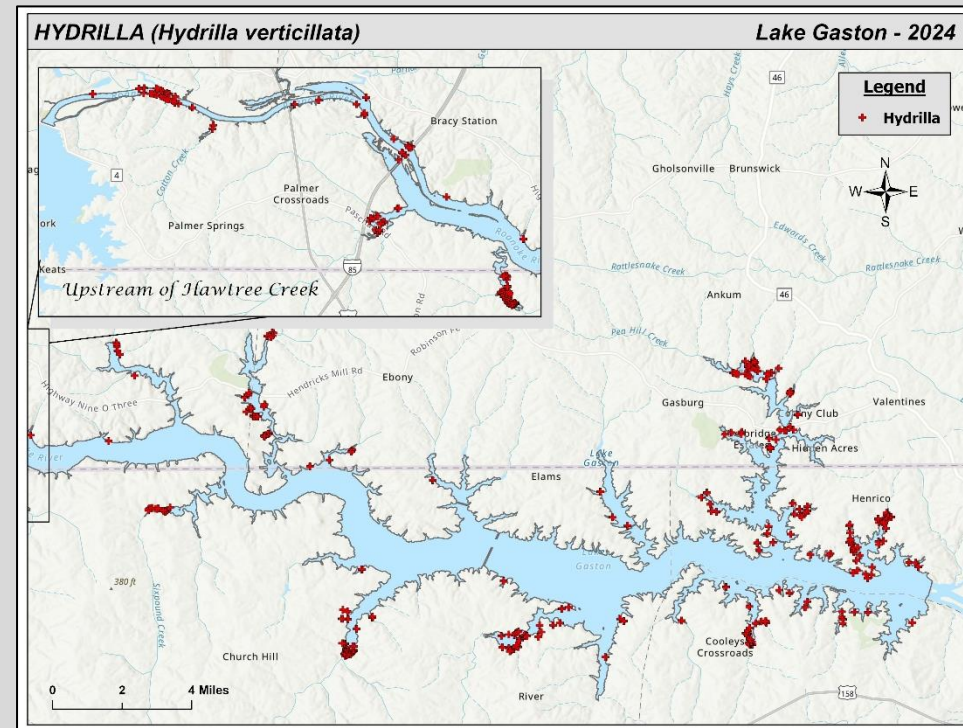
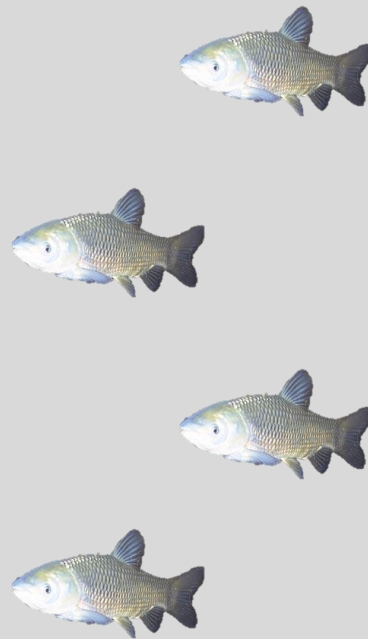
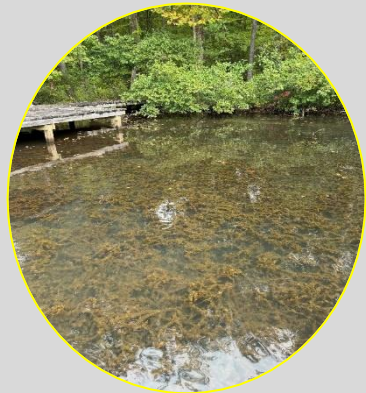
Total Vegetation: 8 %

Maximum Treatment Acres: **200 acres**

Estimated Hydrilla Acreage: 289 acres

Grass Carp Stocking Number: **None**

Overall Low Tuber Density in 2024

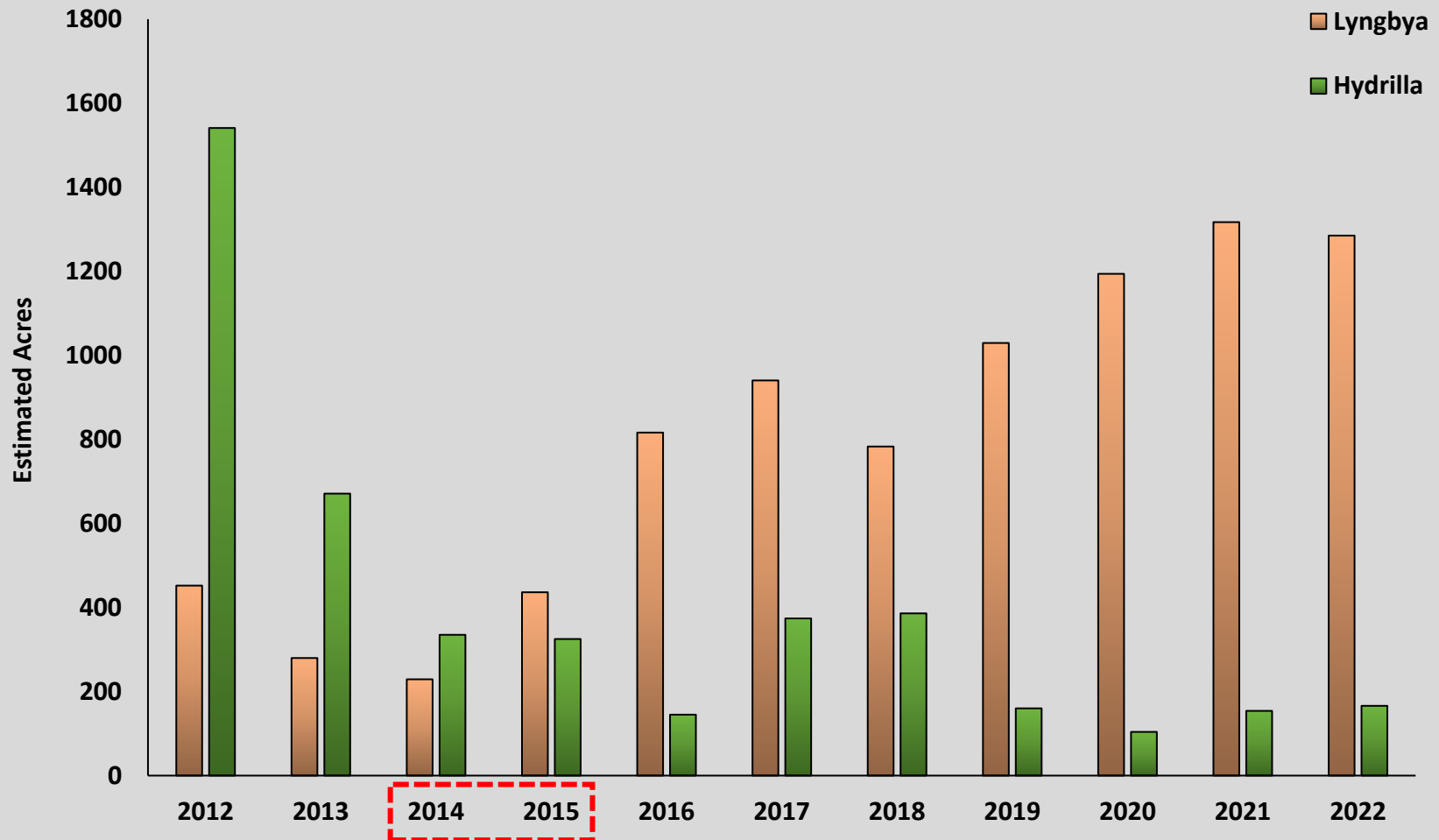




# Lyngbya Management

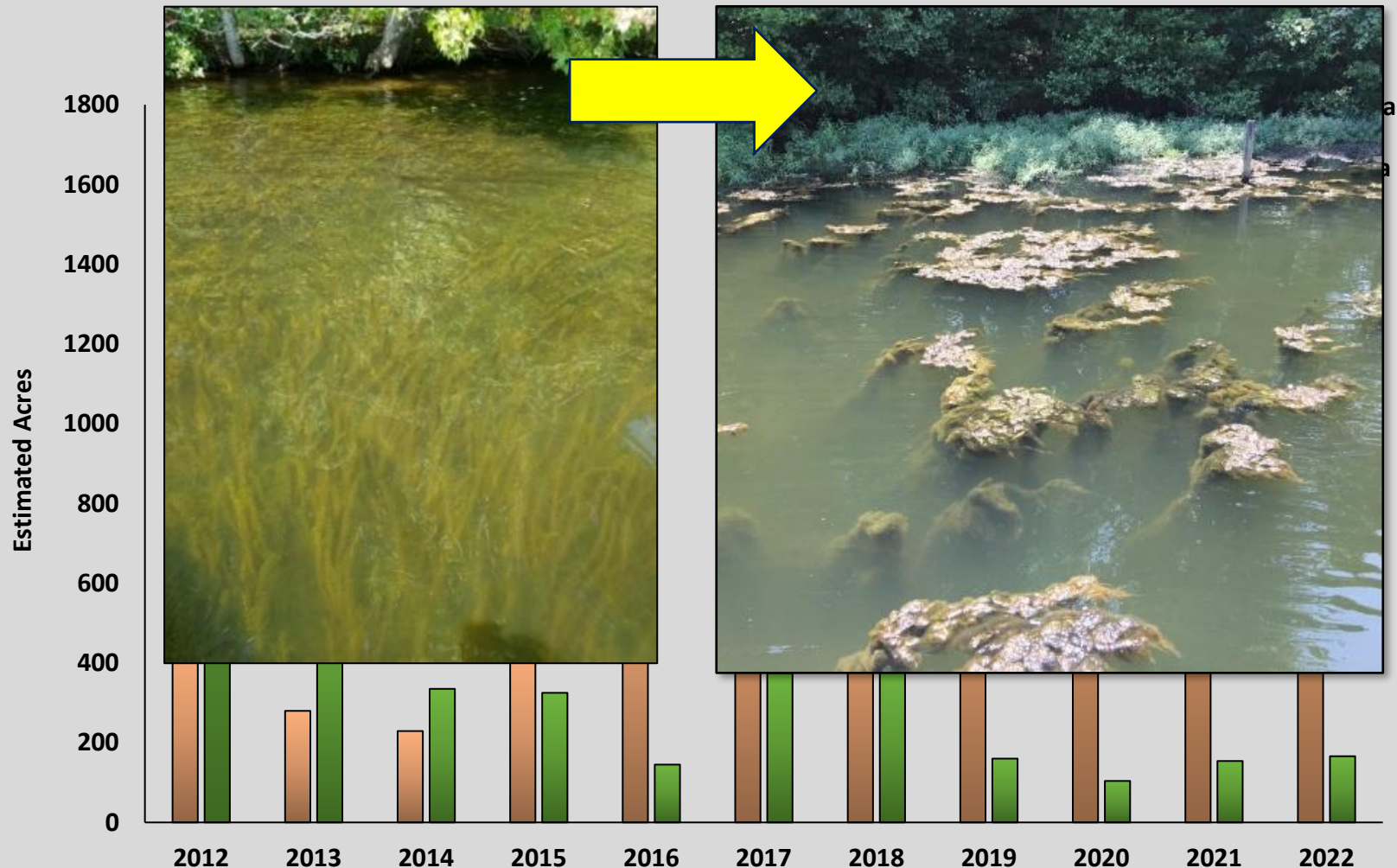


# Gaston Nuisance Species Management



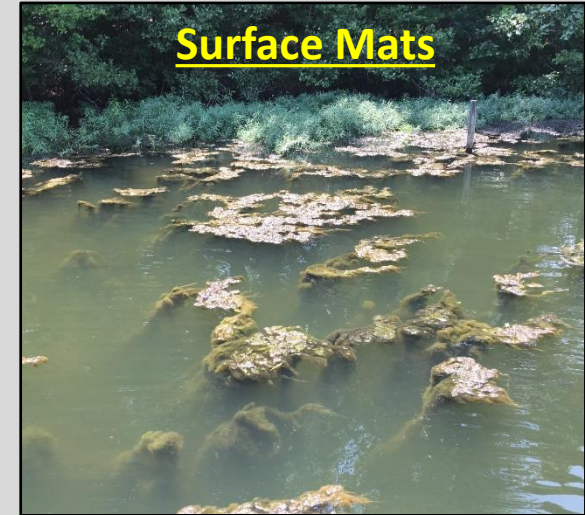


# Nuisance Species Management



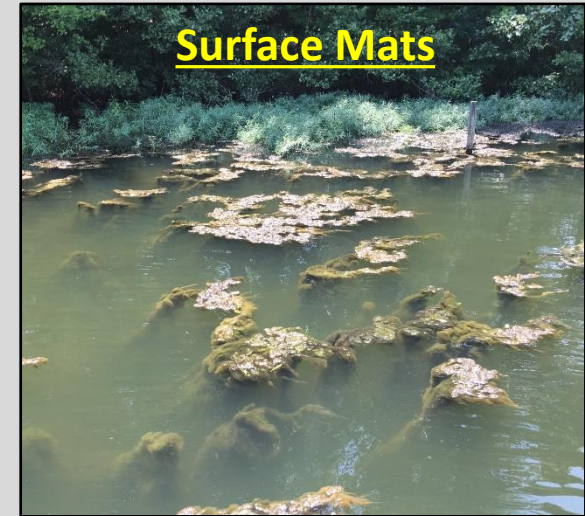
## *Lyngbya (Microseira wollei)*

- Filamentous, Cyanobacteria (Blue-green Alga)
- Native, but nuisance species



## *Lyngbya (Microseira wollei)*

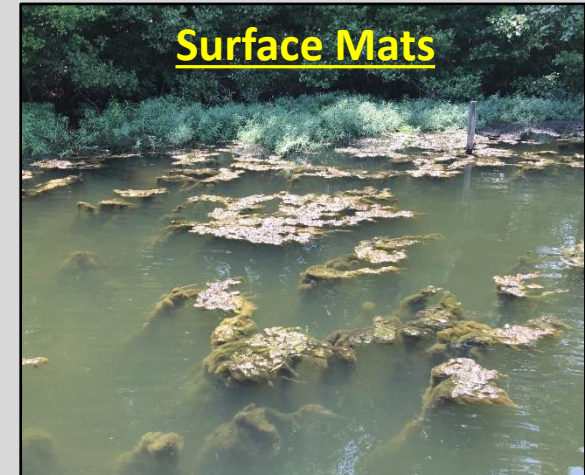
- Filamentous, Cyanobacteria (Blue-green Alga)
- Native, but nuisance species
- Benthic mats persist year round
- Increase in water temperature triggers stratification of benthic mats to produce surface mat formation
- Multiple pathways for acquiring energy





## *Lyngbya (Microseira wollei)*

- Filamentous, Cyanobacteria (Blue-green Alga)
- Native, but nuisance species
- Benthic mats persist year round
- Increase in water temperature triggers stratification of benthic mats to produce surface mat formation
- Multiple pathways for acquiring energy
- Found in water depths of up to 9 feet in Lake Gaston



**Water Depth: 8.2 ft**  
**Mat Height: 1 – 1.5 feet**



# Lyngbya Management

## Management History

- First documented in mid 1990's
- Problematic in mid 2010's
- Filamentous, Cyanobacteria (Blue/Green Alga)
  - Different strategy for management
- Problematic throughout the Southeast



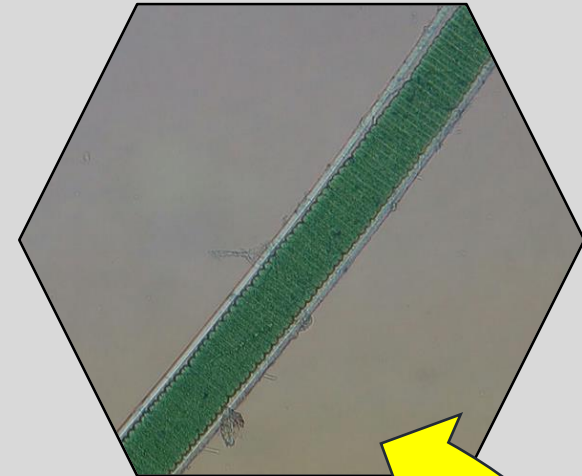


## Lyngbya (*Microseira wollei*)

Lyngbya is difficult to manage!

### General Morphology

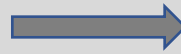
- Individual cells are stacked within **protective sheath**
  - Protects cells from UV light and environmental stressors
  - VERY good at it's job!
- Thick Mat Matrix





# Lyngbya Management

## 2023 Survey Results



## 2024 Recommendations

Total Vegetation: 13 %

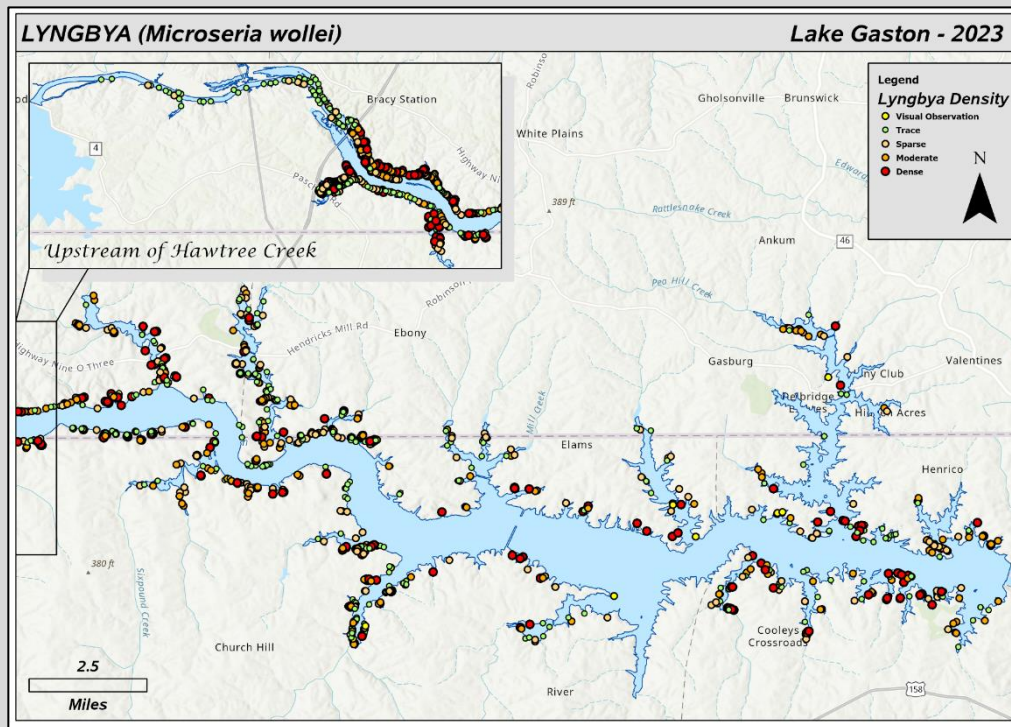
Maximum Treatment Acres: 500 acres

Estimated Lyngbya Acreage: **1,377 acres**



## 2024 Lyngbya Treatments

Total Treated Acres: **500 acres**

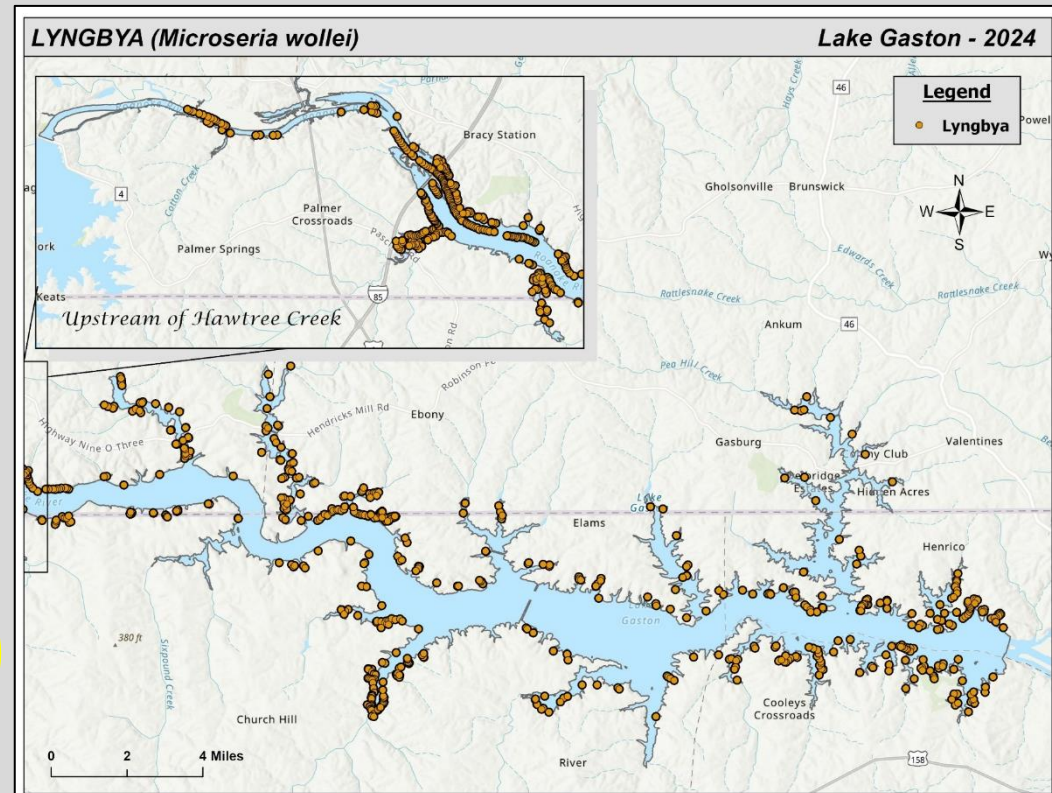
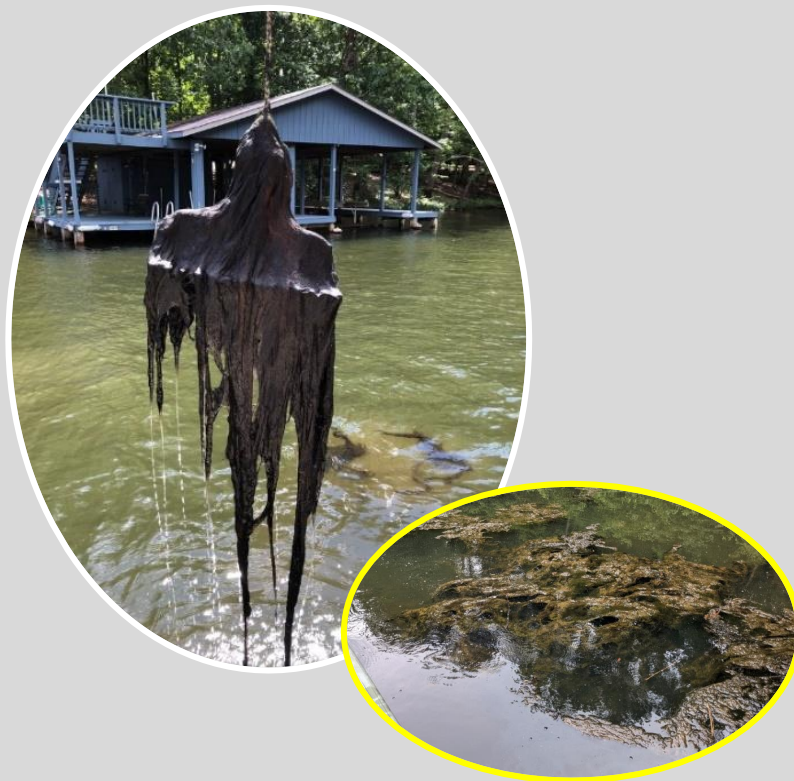


# Lyngbya Survey

## 2024 Survey Results

Total Vegetation: 20%

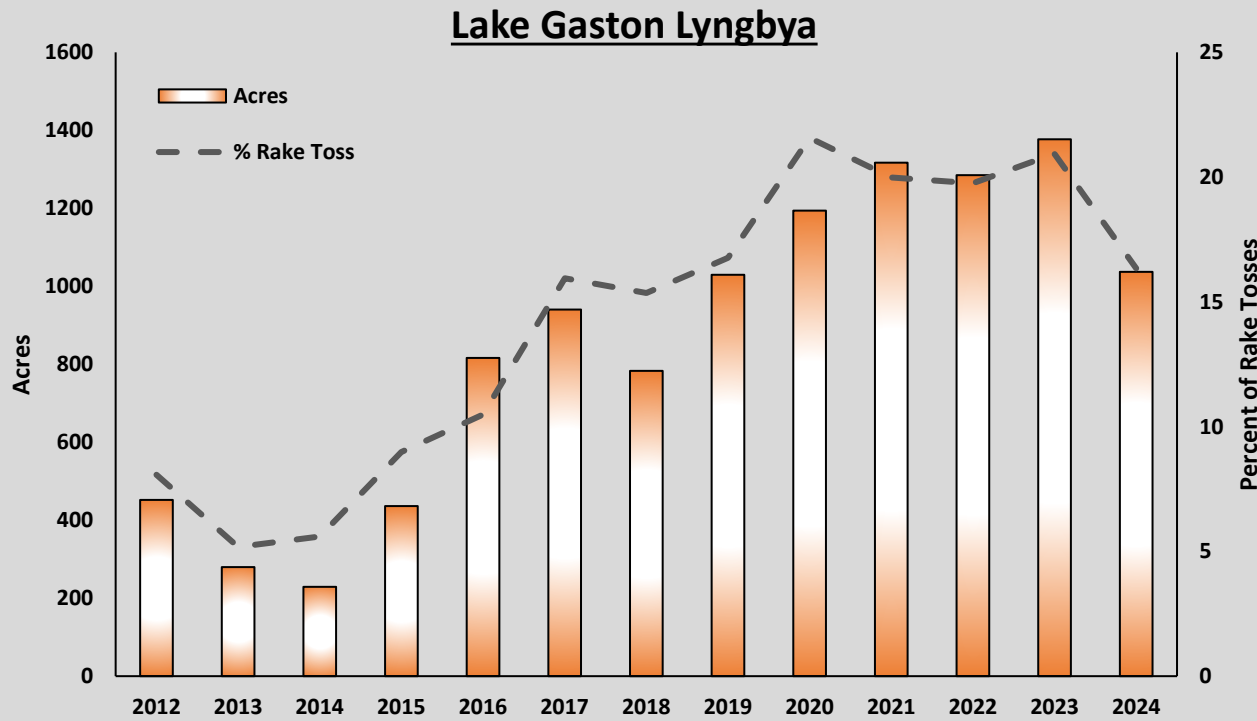
Estimated Lyngbya Acreage: **1,037 acres**



# Lyngbya Survey

## 2024 Survey Results

- Decrease in acreage (2023 – 2024): **340 acres**



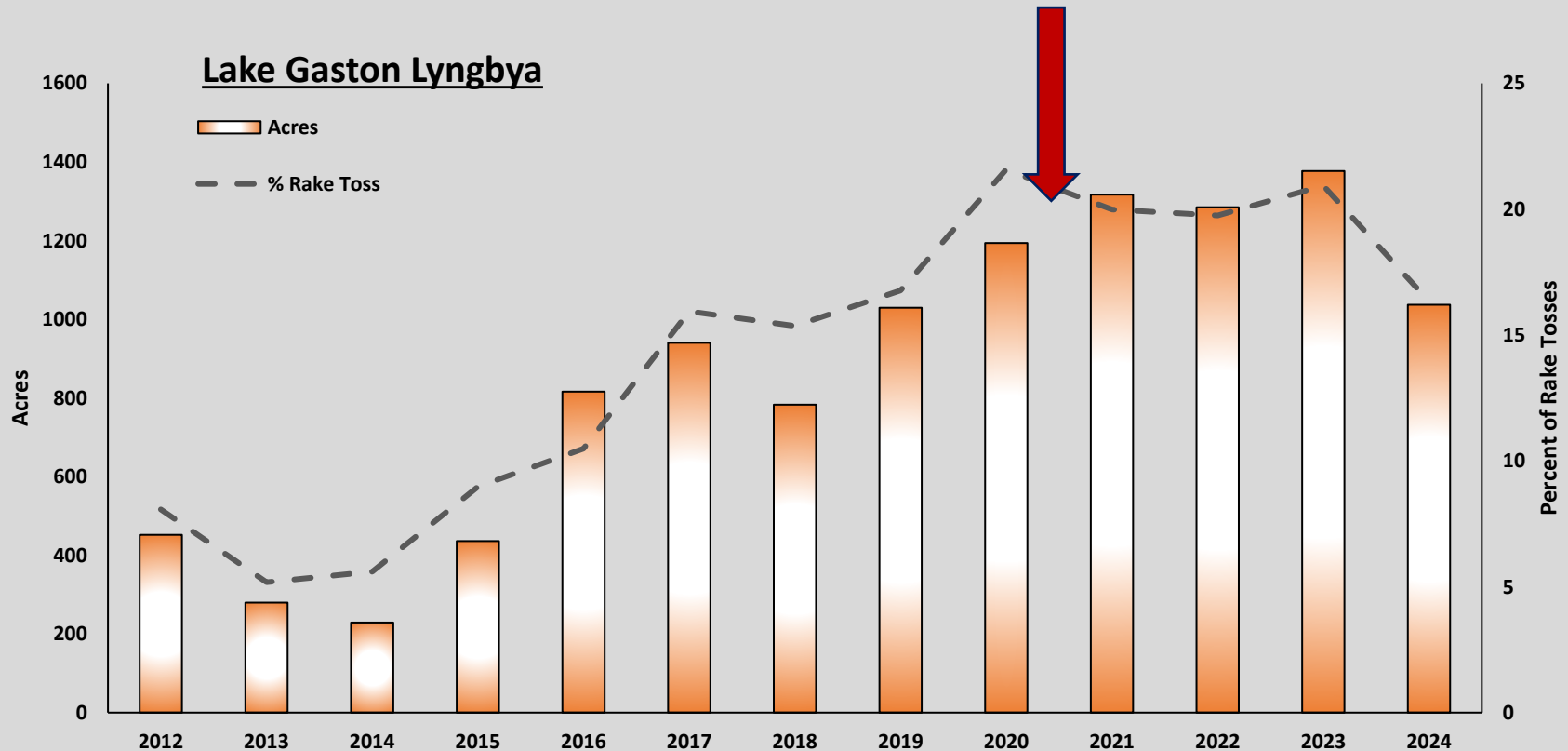
### **Exciting Trend!**

- BUT***, 2024 also displayed decreased growth potential lake wide.
- Possible reflection of decreased detection probability.
- Will need to wait to fully understand this downward trend.



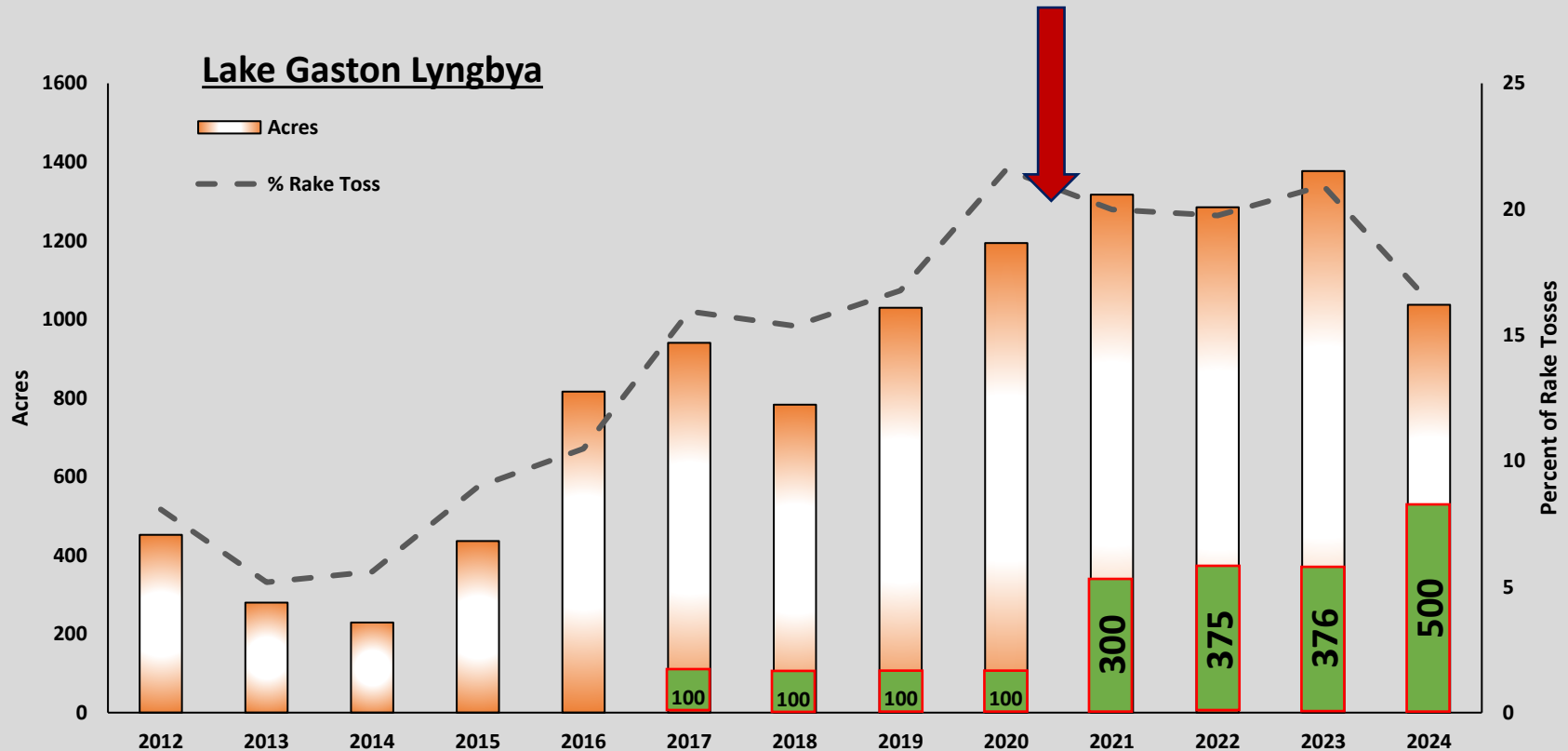
# Lyngbya Management

## *Lyngbya Treatments: Operational Level*

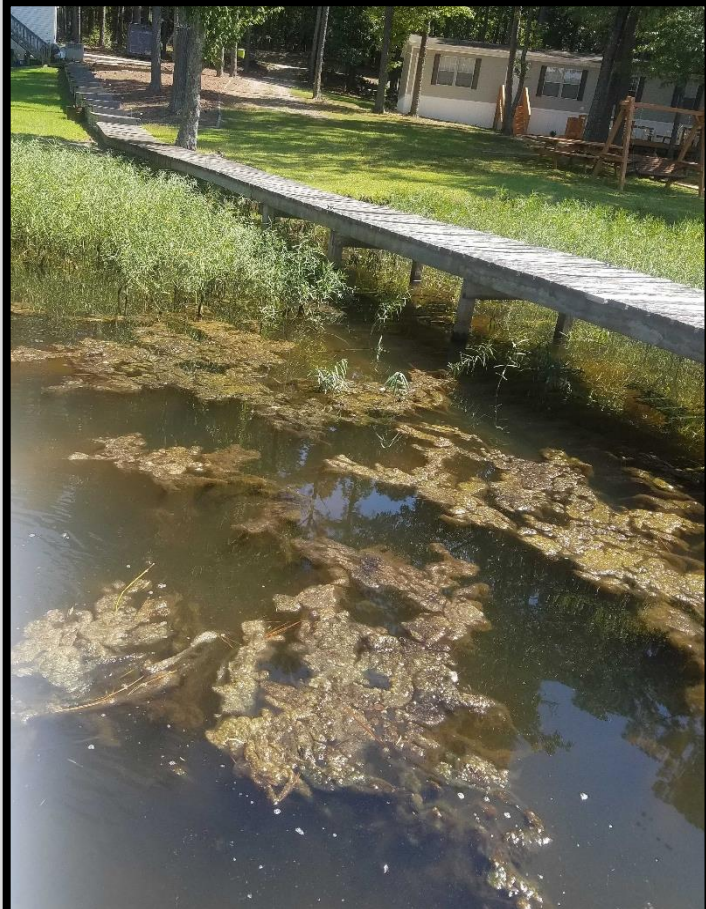


# Lyngbya Management

## *Lyngbya Treatments: Operational Level*



# Lyngbya Management



9/2018



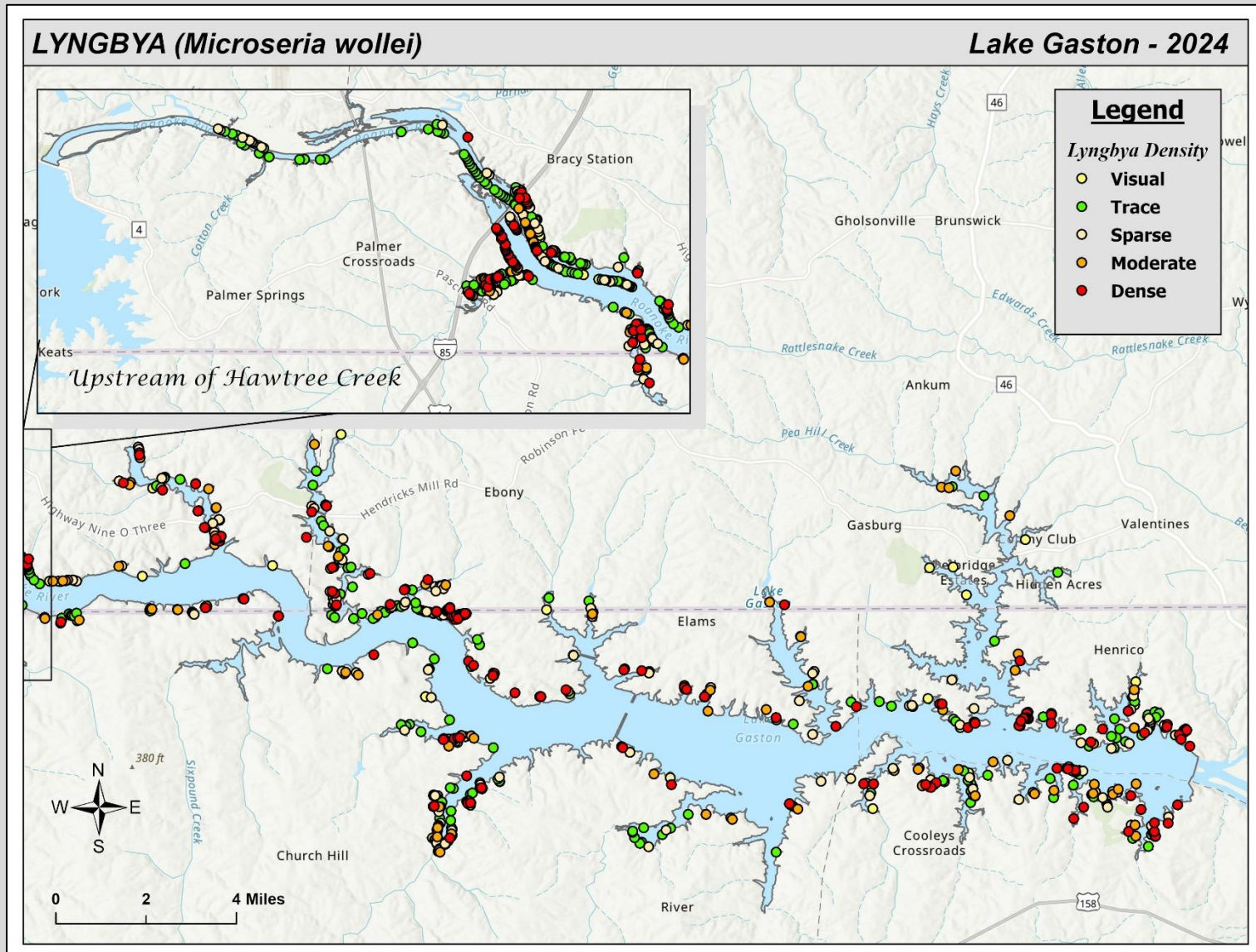
10/2022







# Lyngbya Management

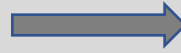


# Lyngbya Management

## 2024 Survey Results

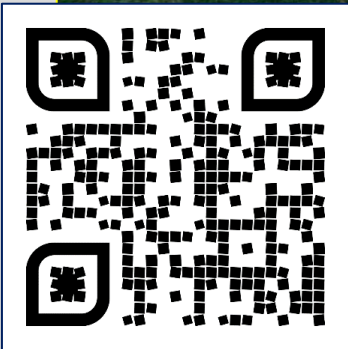
Total Vegetation: 20%

Estimated Lyngbya Acreage: **1,037 acres**



## 2025 Lyngbya Management

Maximum Treatment Acres: 500 acres



*LKG Weed Control Council Website :  
Interactive Treatment Map*

*First Treatments:  
Week of April 14<sup>th</sup>*



# Questions?

**Jessica R. Baumann**

**Extension Associate, Lake Gaston**  
Aquatic Plant Management Program

**Email: [aquaticplants@ncsu.edu](mailto:aquaticplants@ncsu.edu)**

**Report Gaston Aquatic Plant Issues:**

