Lake Gaston Stakeholders Group Meeting February 21st , 2023

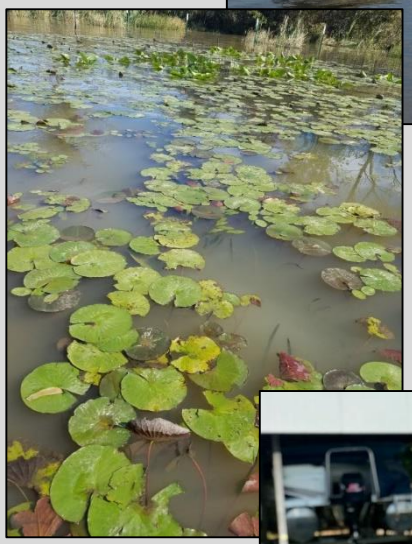
Jessica R. Baumann

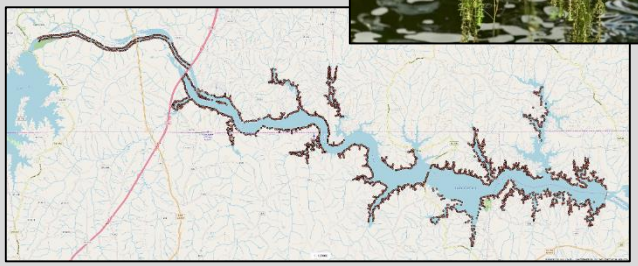
Extension Associate, Lake Gaston

Aquatic Plant Management Program

Outline

1. Overall Monitoring Efforts
2. Monitoring & Treatment Efforts
   - Hydrilla
   - Lyngbya
3. Revegetation Efforts
   - Native Vegetation Cages
   - Drone monitoring
4. Upcoming Research Plans
5. 2023 TAG Recommendations





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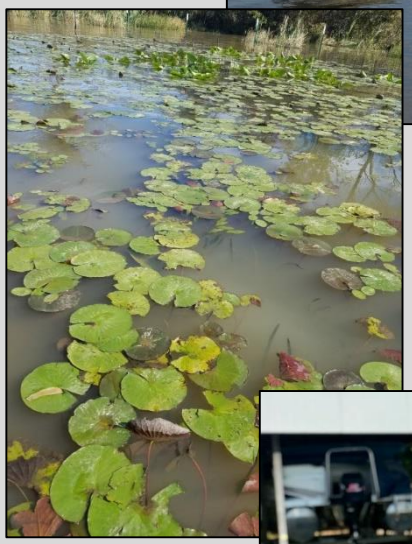
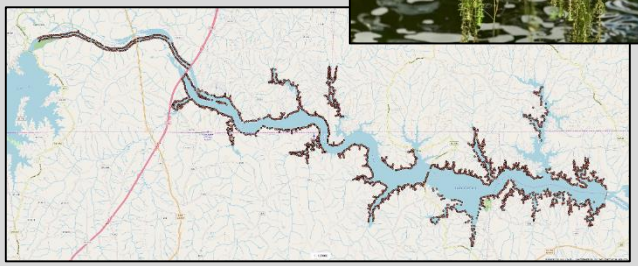
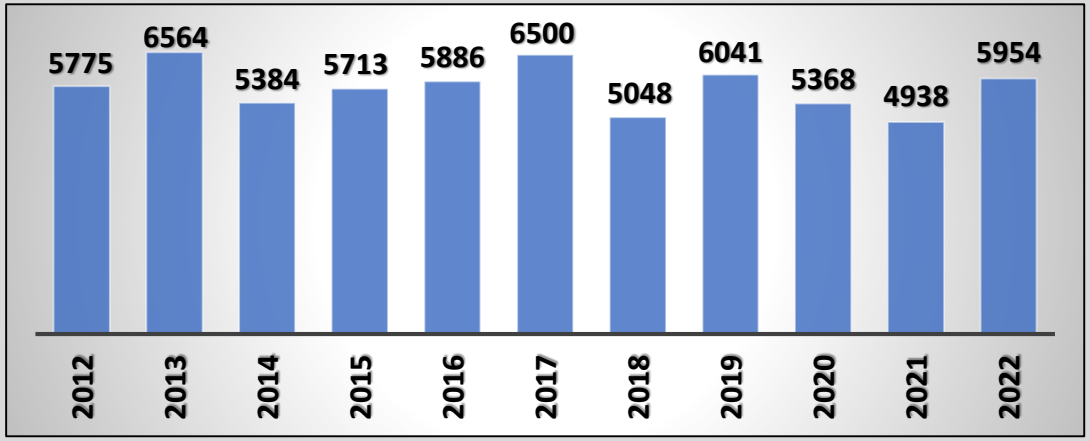


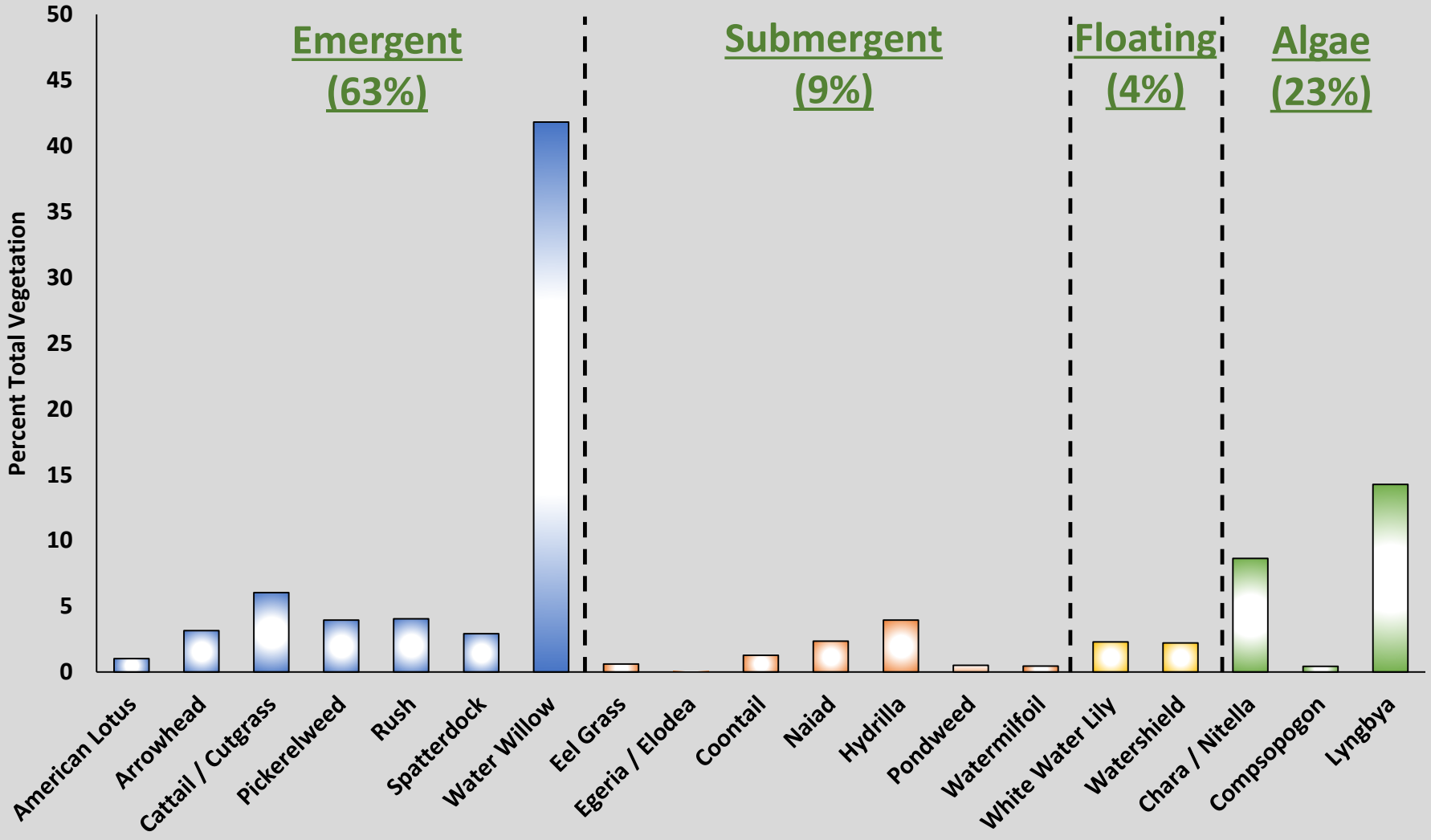


Fall Volunteer Survey

- 60+ Volunteers
- Conducted from Sept. 1st to Nov. 11th
- 5,954 Points Collected
  - Goal Every 200 ft
- 75% of sites contained vegetation
- Increased kayaking efforts



2022 Aquatic Plant Community



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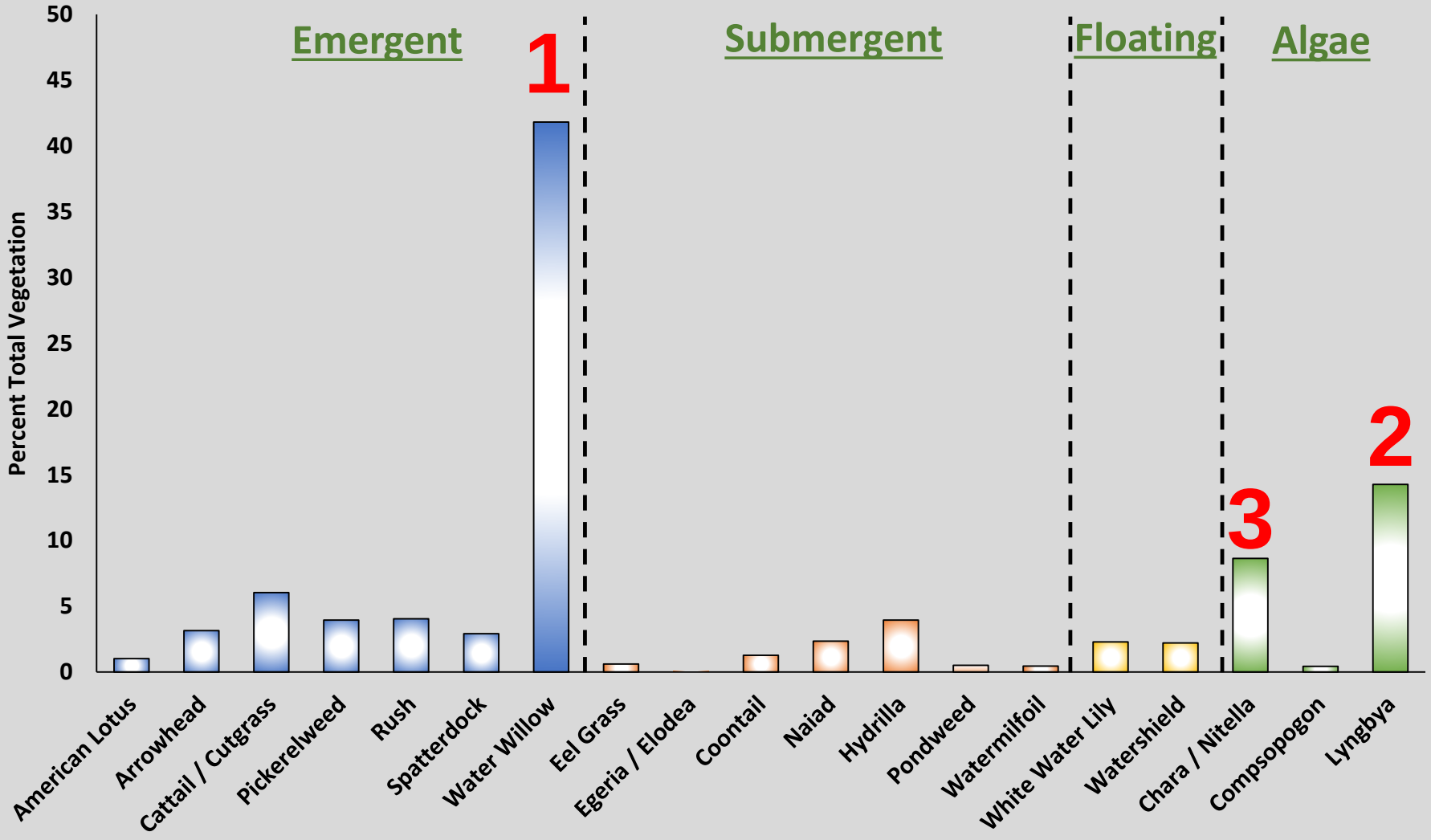

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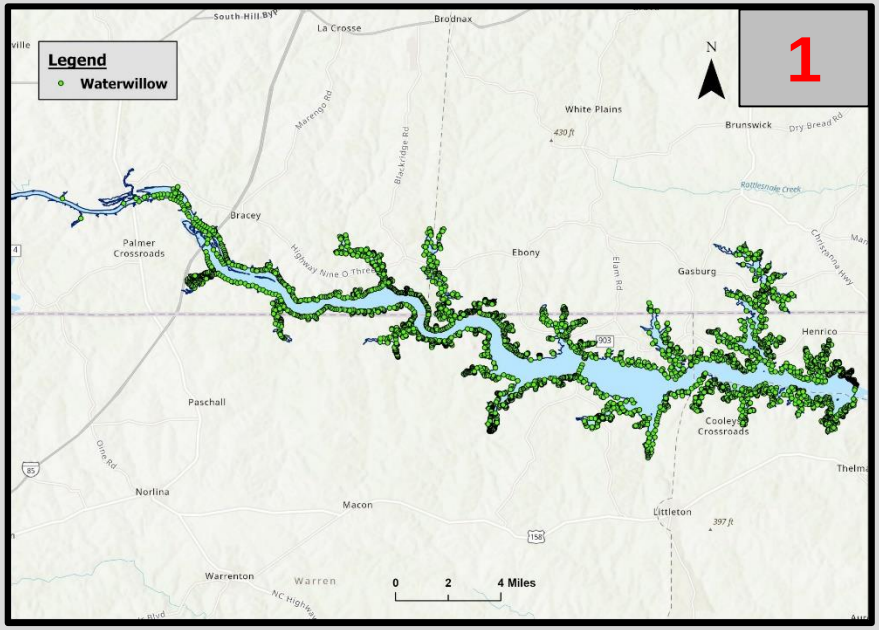

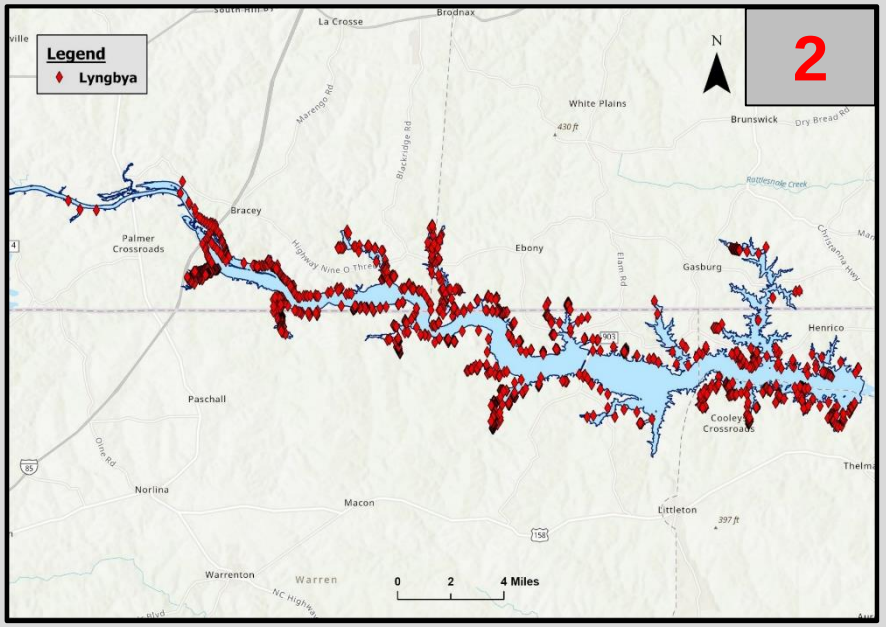

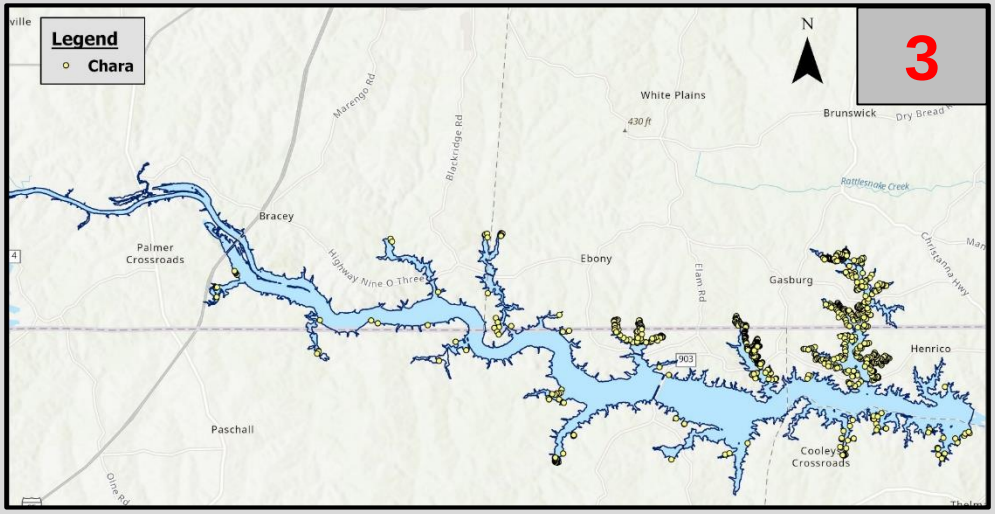

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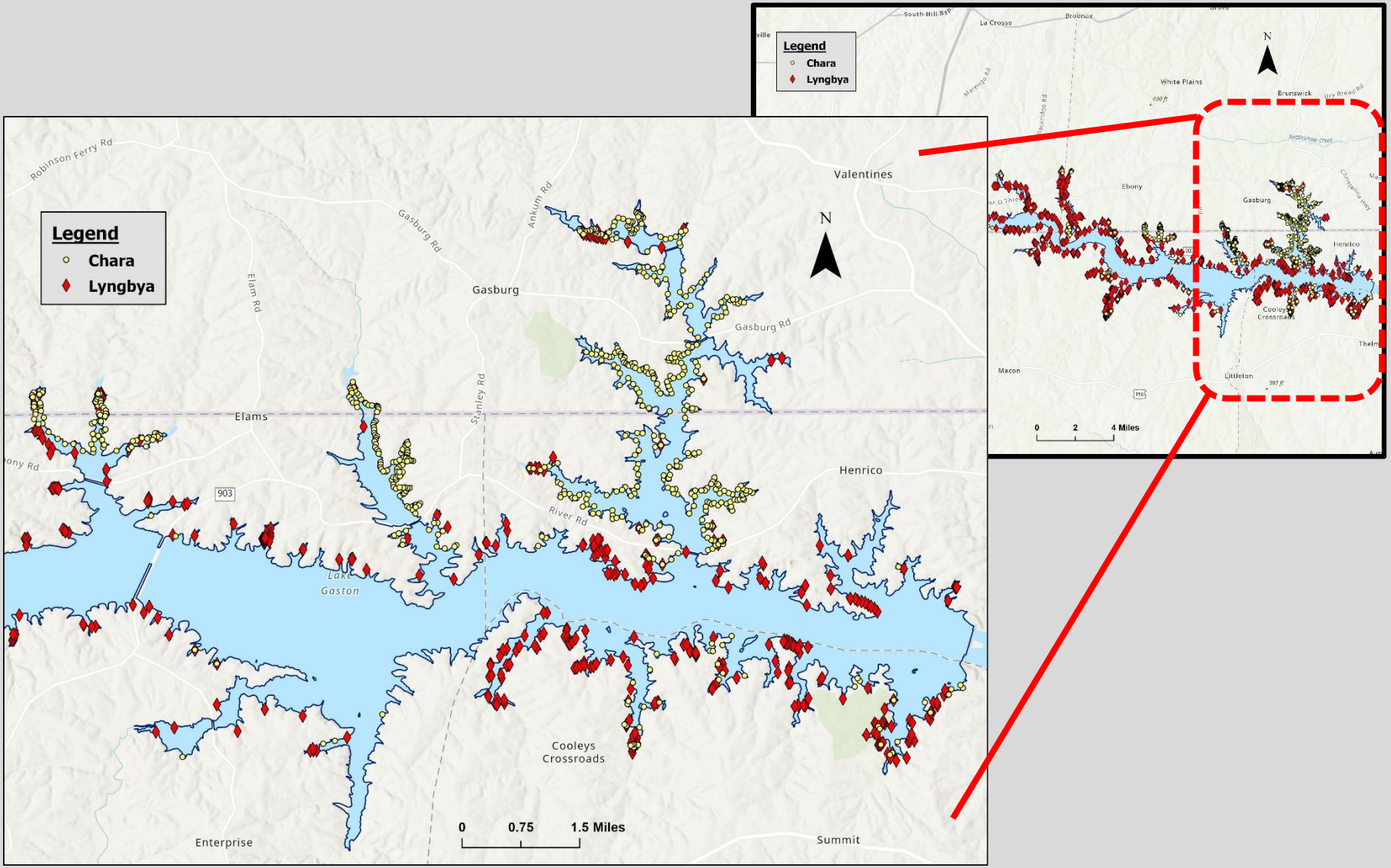

Fall Volunteer Survey

Yearly Volunteer Effort

- 60+ Volunteers
- 400+ hours
- 5,000 – 6,000 sampling points

Fall Volunteer Survey

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- 60+ Volunteers
- 400+ hours
- 5,000 – 6,000 sampling points

LGA Official Request

- Challenge to encourage participation
  - Retired volunteers
  - Survey growing in effort intensity
    - Hydrilla locations
    - Lyngbya biomass

Fall Volunteer Survey

Yearly Volunteer Effort

- 60^{+} Volunteers
- 400^{+} hours
- 5,000 – 6,000 sampling points

LGA Official Request

- Requesting
  - Reduced sampling in areas of low vegetation (main lake)
  - Extend survey period
  - Promote use of kayaks to improve shallow water surveys

2023 Recommendation

- Continue funding and supporting volunteer survey
- Reduce overall efforts to align more with NCSU monitoring protocols
- Extend survey period for area of least concern
- Promote use of kayaks to improve shallow water surveys

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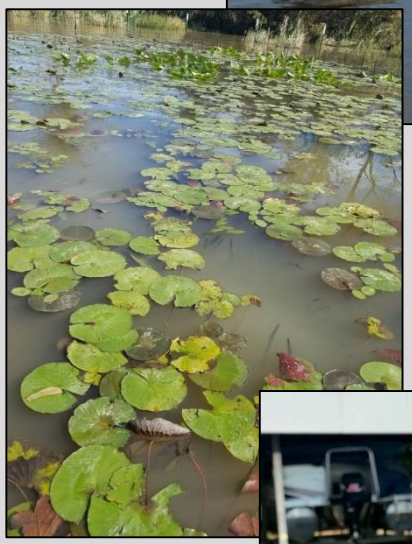
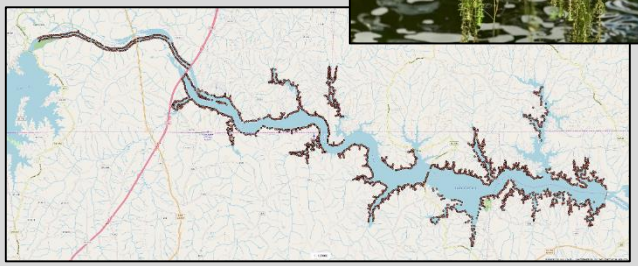




Hydrilla Management

Hydrilla Treatments

2021 Survey Results

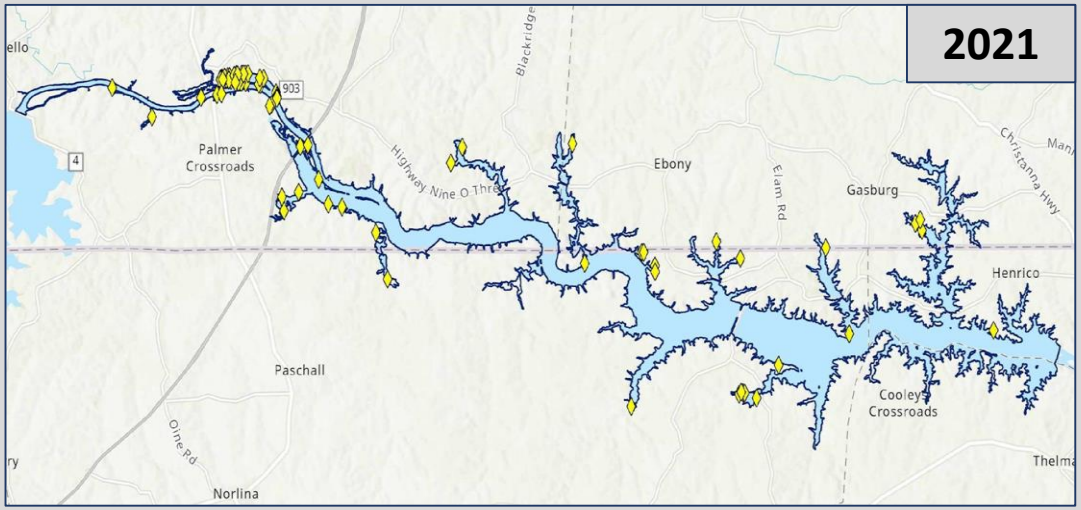
Total Vegetation: 1.4 %

Estimated Hydrilla Acreage: 154 acres

2022 Recommendations

Maximum Treatment Acres: 154 acres

Grass Carp to be Stocked: 0



2022 Hydrilla Treatments

Total Treated Acres: 0 acres

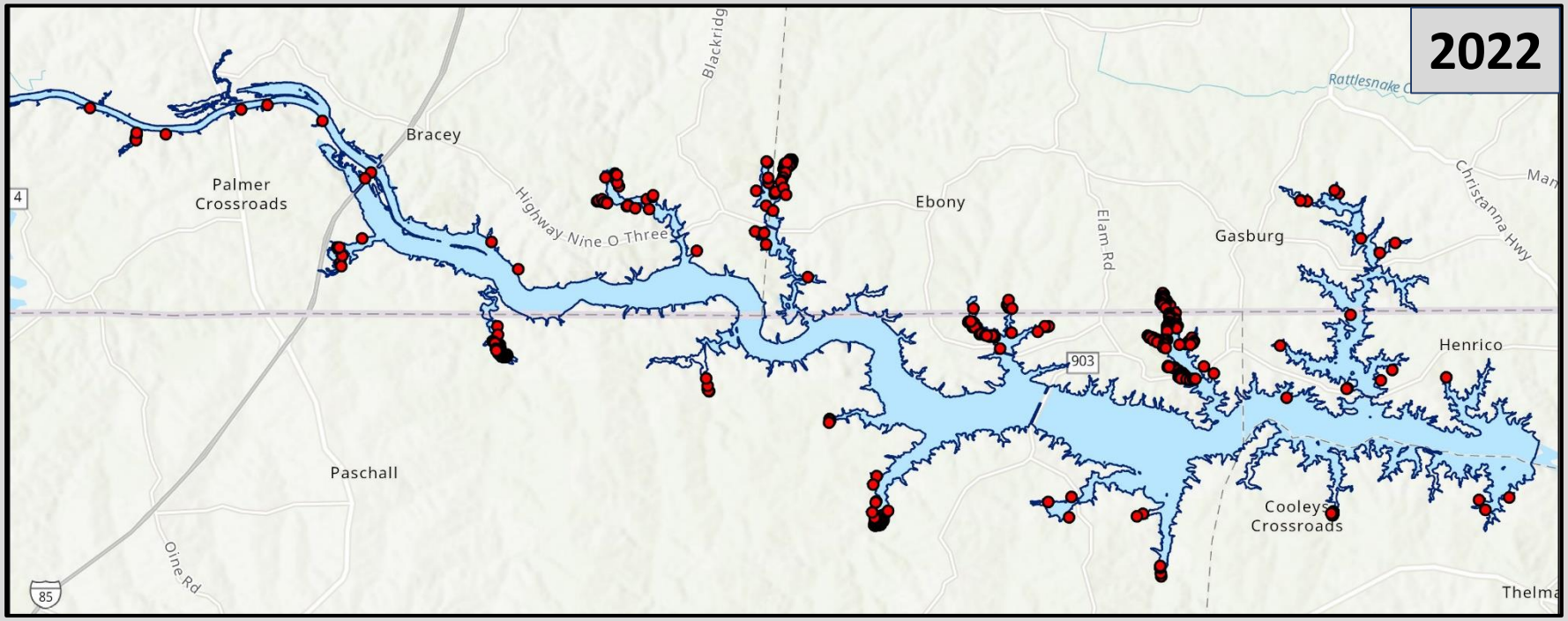
Grass Carp Stocked: 0

Hydrilla Survey

2022 Survey Results

Total Vegetation: 7 %

Estimated Hydrilla Acreage: 166 acres



Hydrilla Survey

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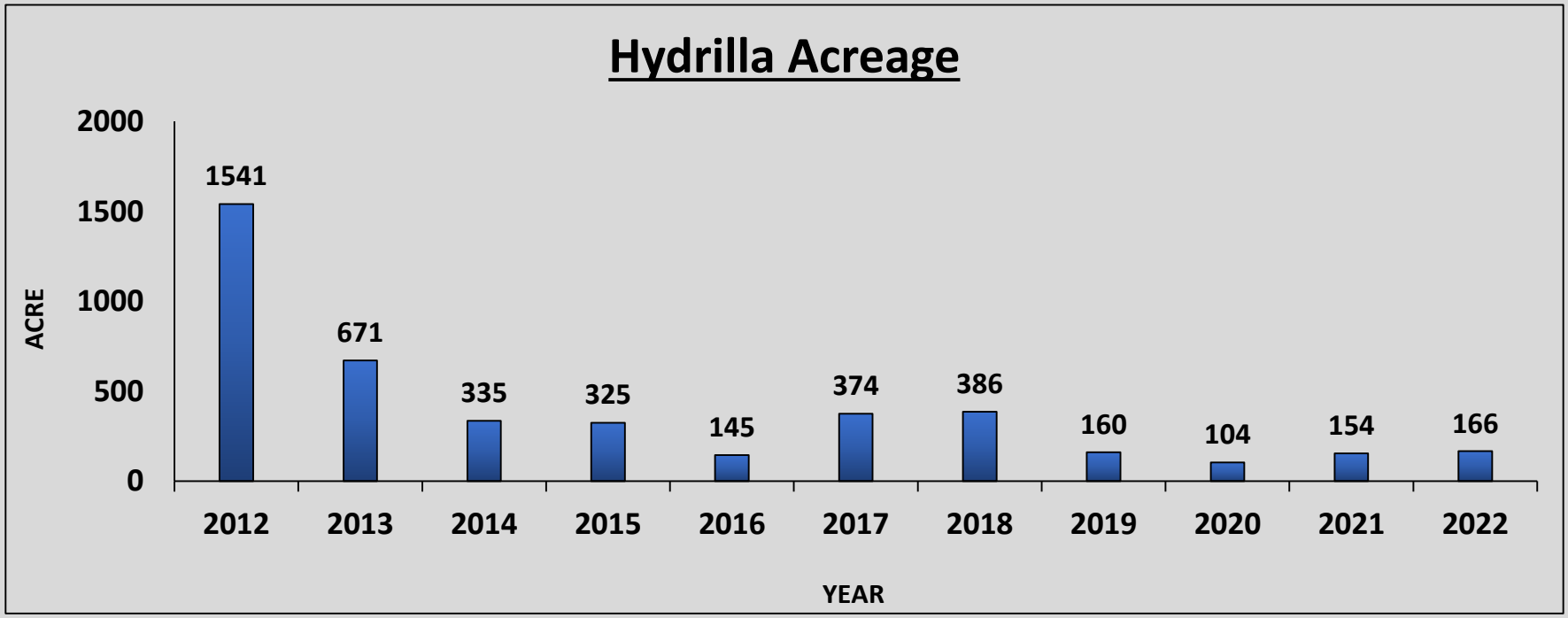

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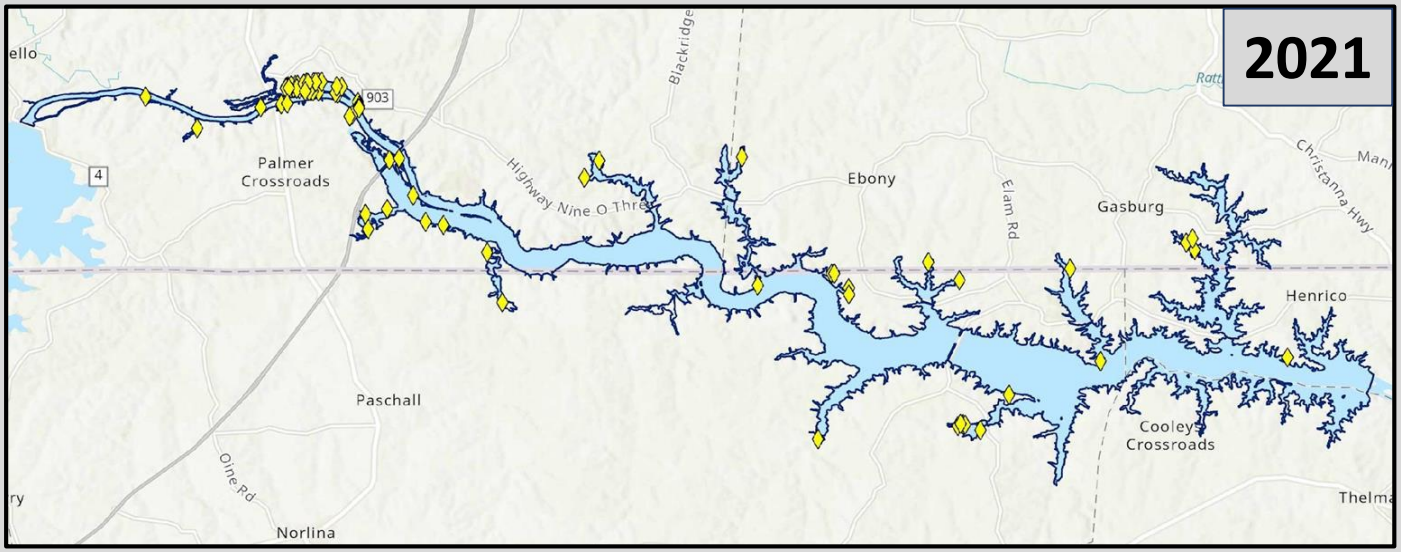

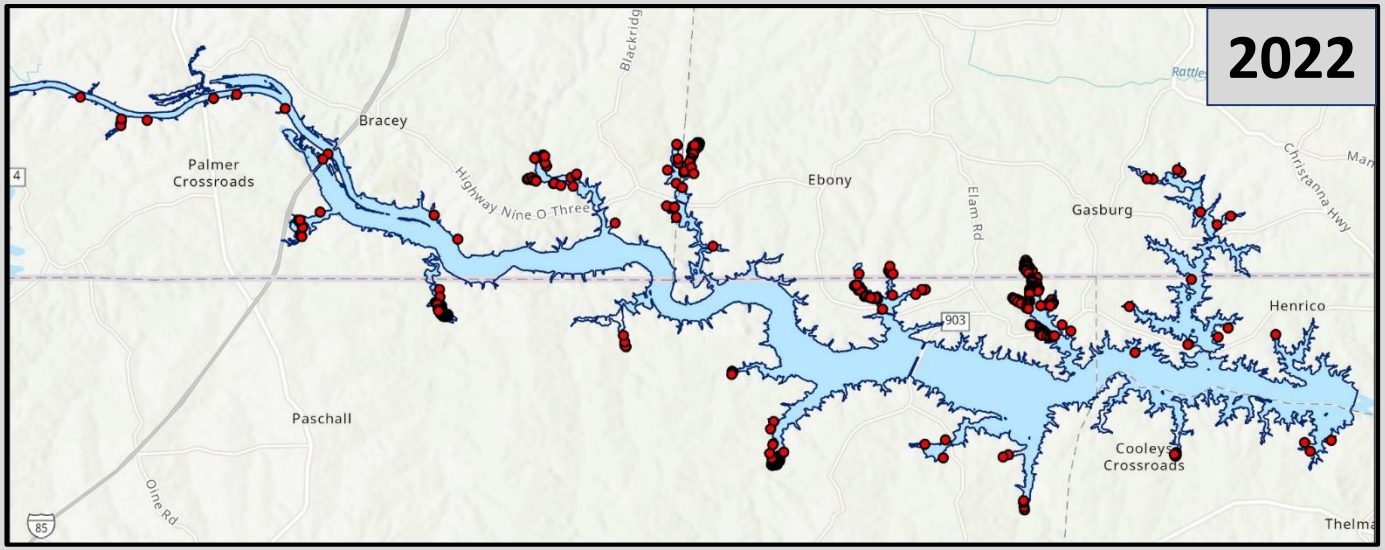

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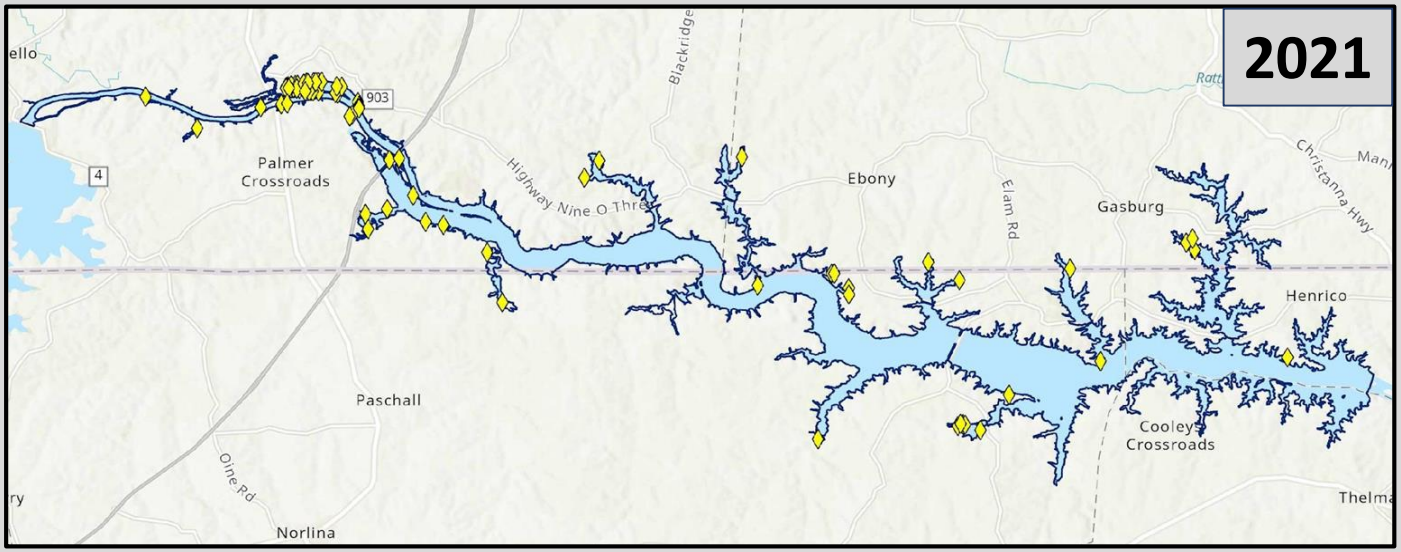
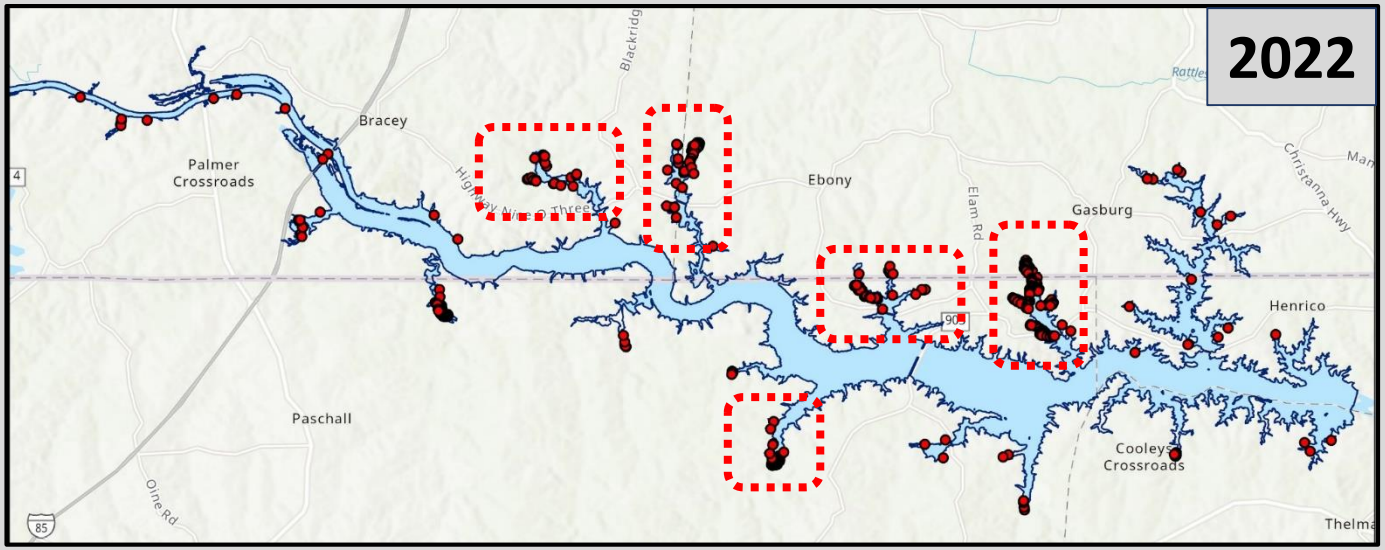




Hydrilla Treatments

2022 Survey Results

Total Vegetation: 7 %

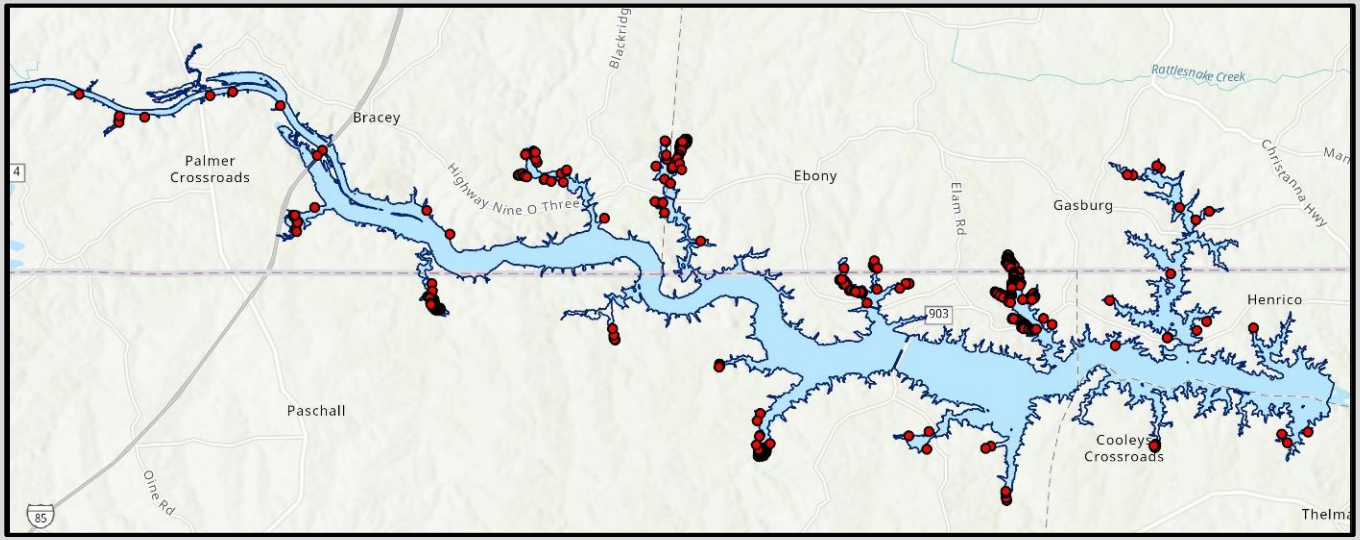
Estimated Hydrilla Acreage: 166 acres

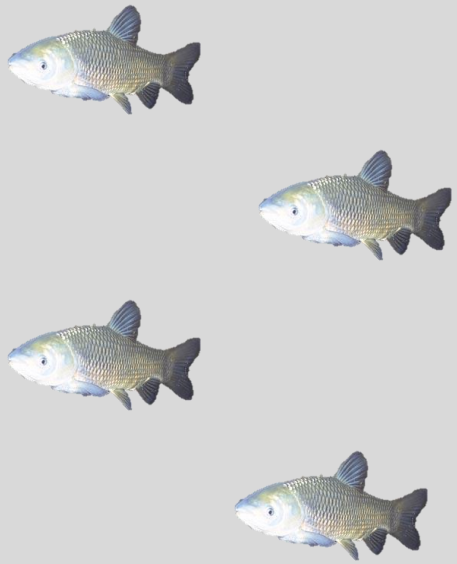
Low Tuber Density in 2021

2023 Recommendation

Maximum Treatment Acres: 166 acres

Grass Carp Stocking Number: 0





Lyngbya Management

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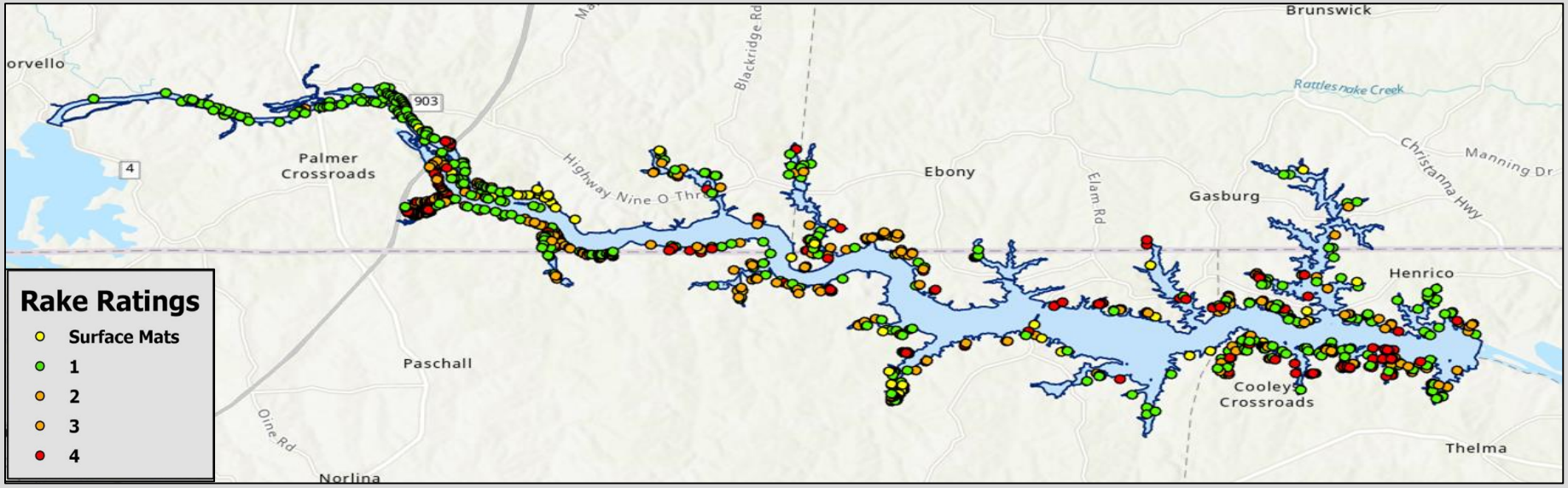
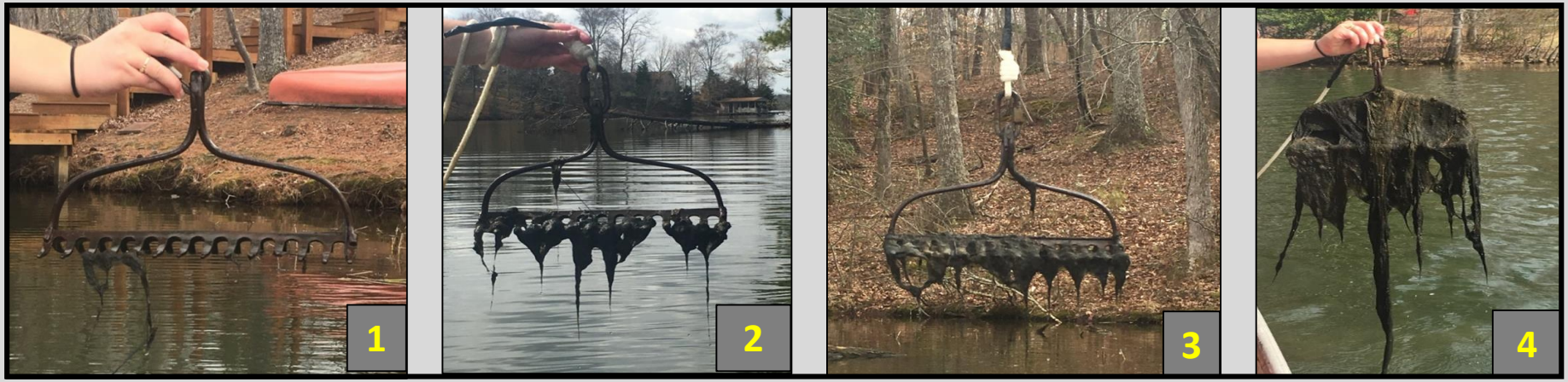


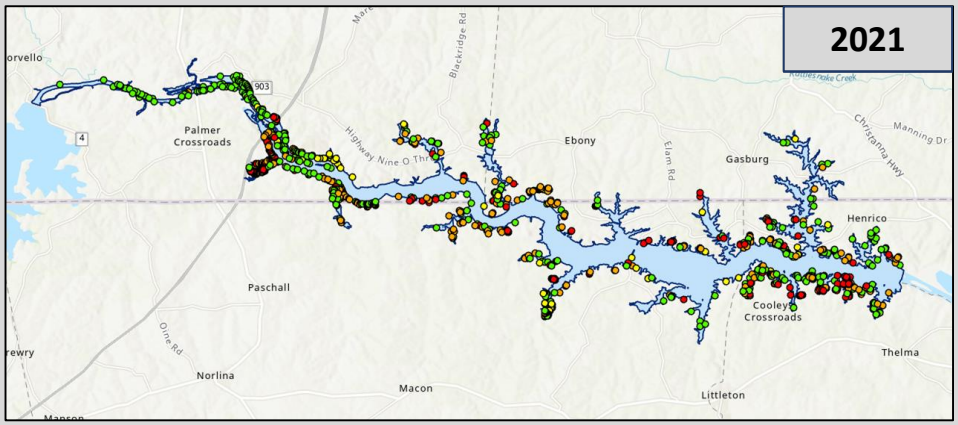


Lyngbya Management

2021 Survey Results

Total Vegetation: 27 %

Estimated Lyngbya Acreage: 1,317 acres



2022 Recommendations

Maximum Treatment Acres: 500 acres

2022 Lyngbya Treatments

Total Treated Acres: 375 acres

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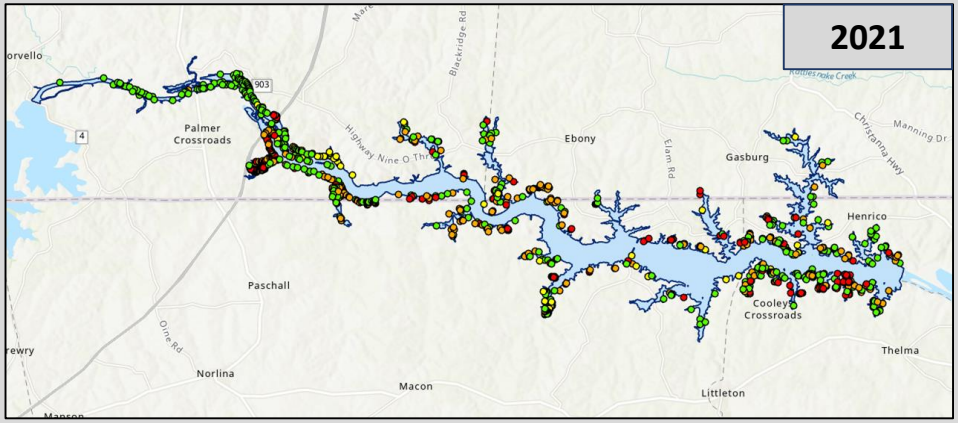

2022 Recommendations

Maximum Treatment Acres: 500 acres

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Total Treated Acres: 375 acres

2022 Recommendations

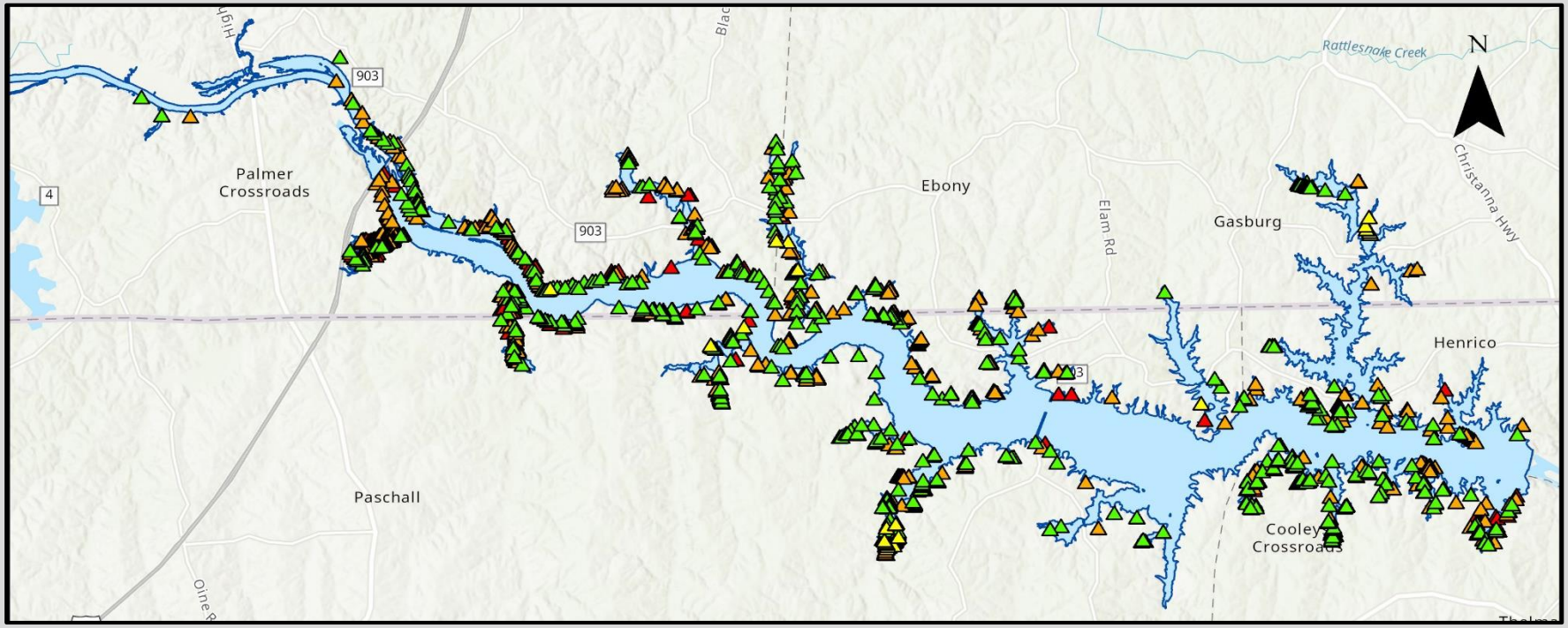
- **Expanded Treatment Sites/Area**
- **Minimized Impacts to Tidewater Muckets**
- **Protocols included Captain XTR and AMP**

Lyngbya Survey

2022 Survey Results

Total Vegetation: 26 %

Estimated Lyngbya Acreage: 1,285 acres



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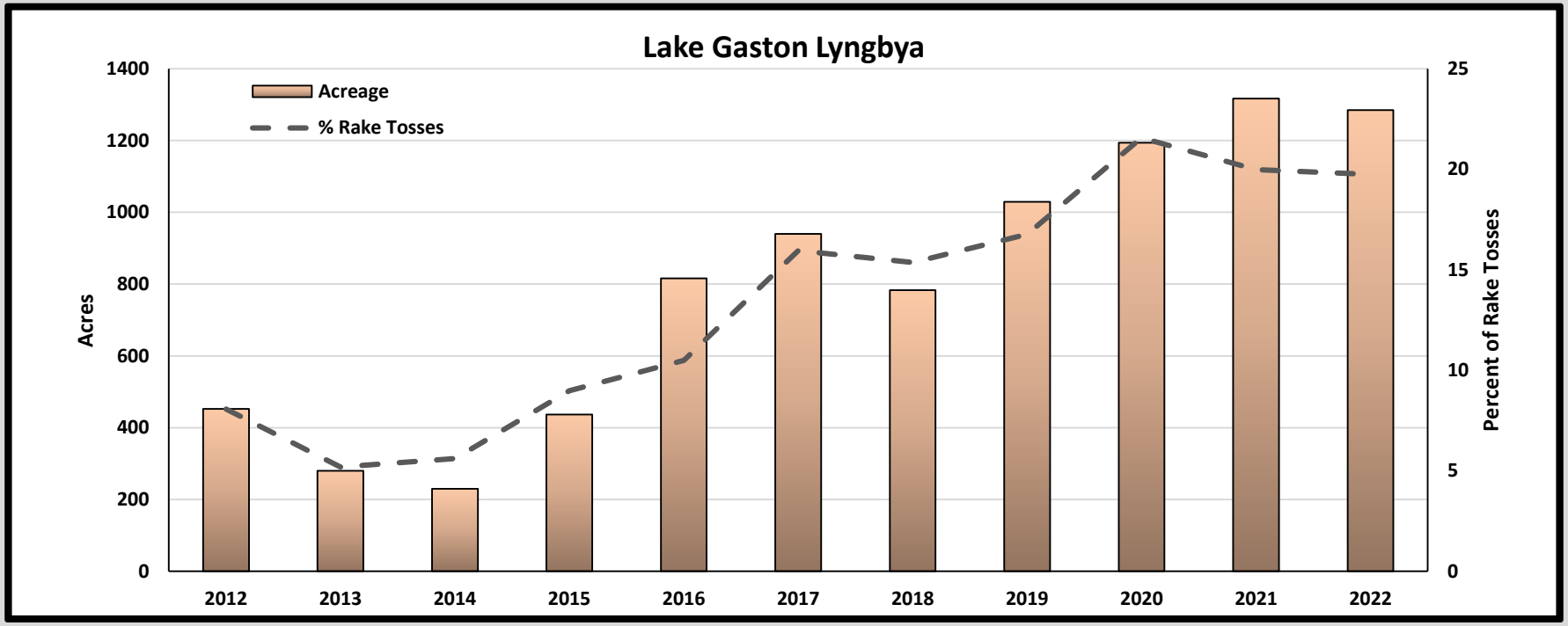

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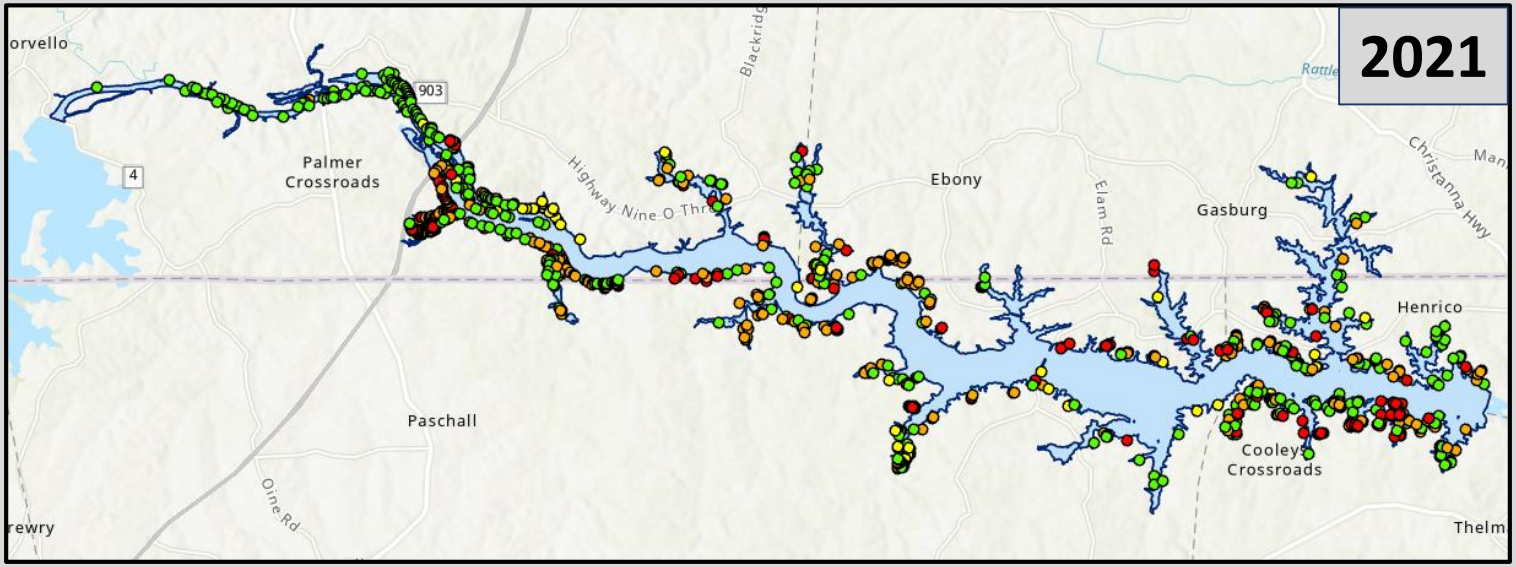

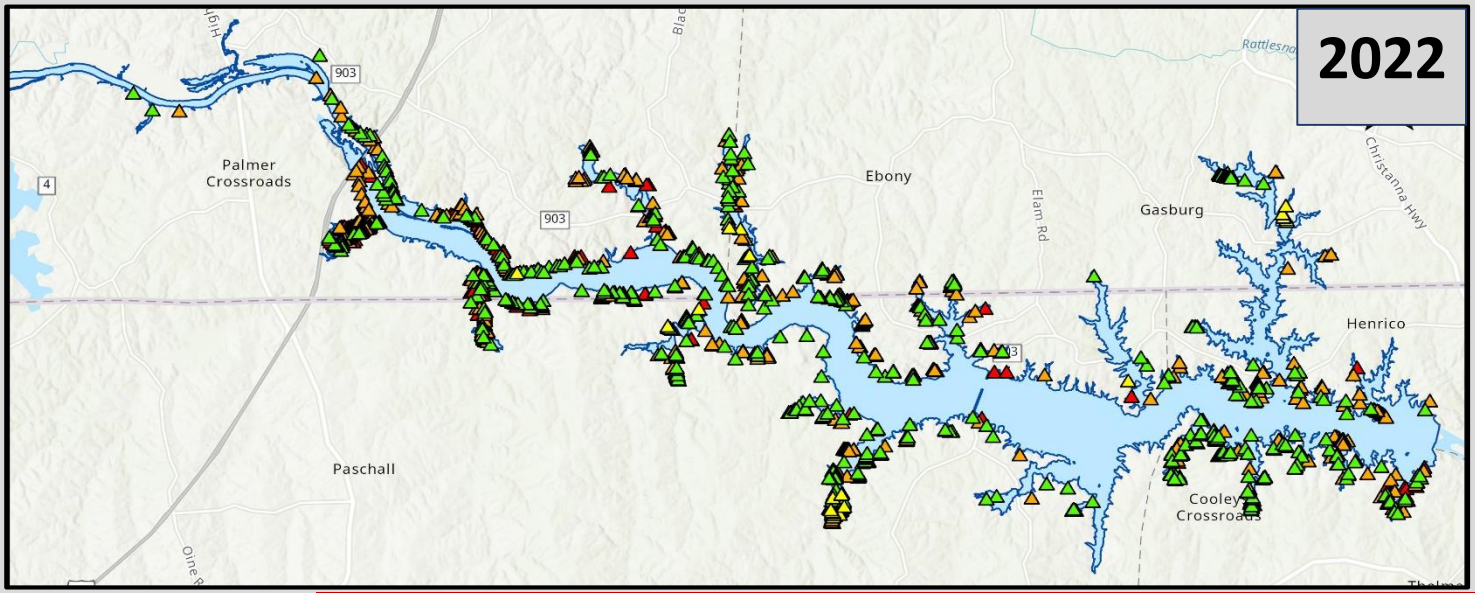

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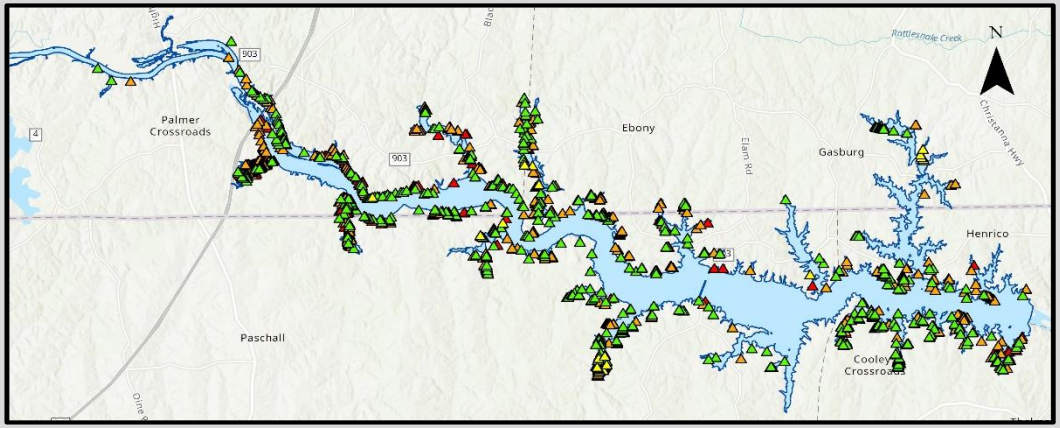
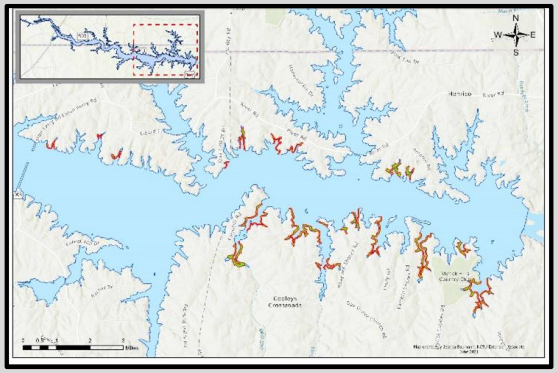
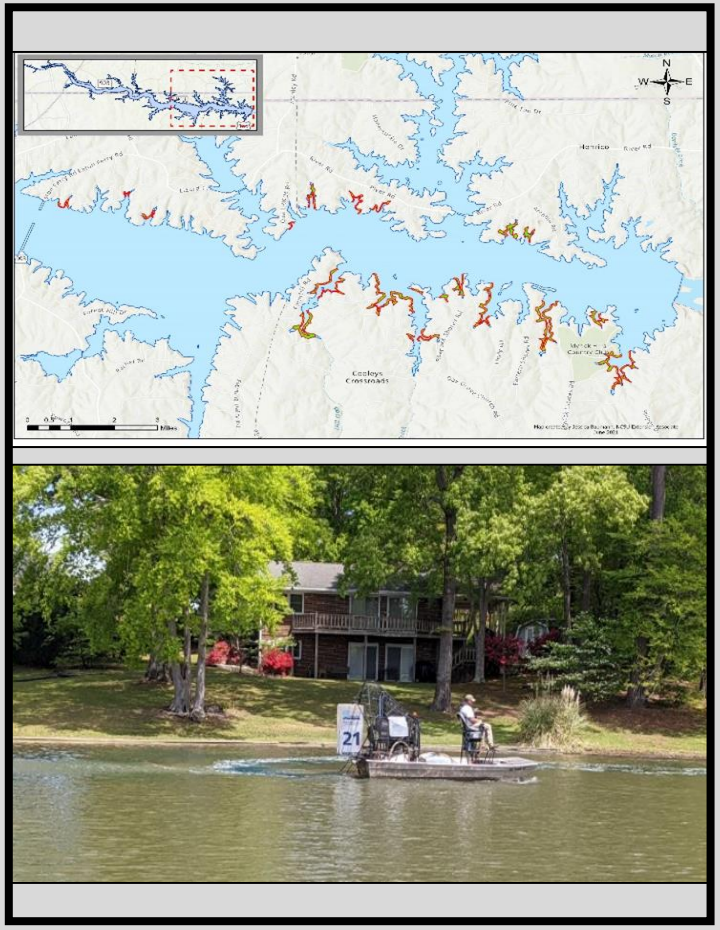


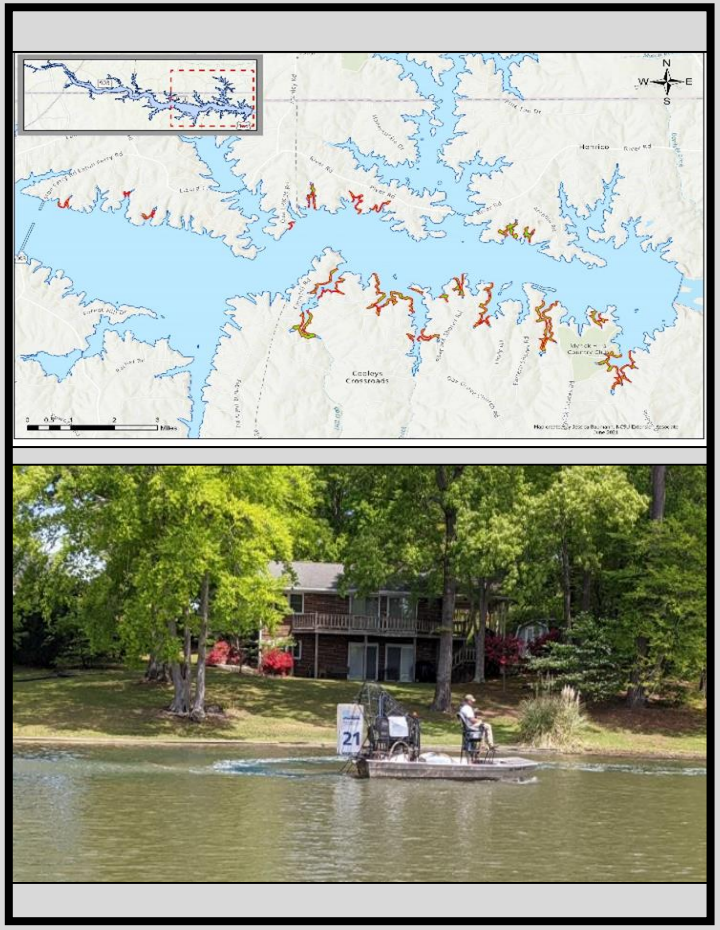


Lyngbya Treatments



Lyngbya Treatment Sites - 2022

Lyngbya Treatments

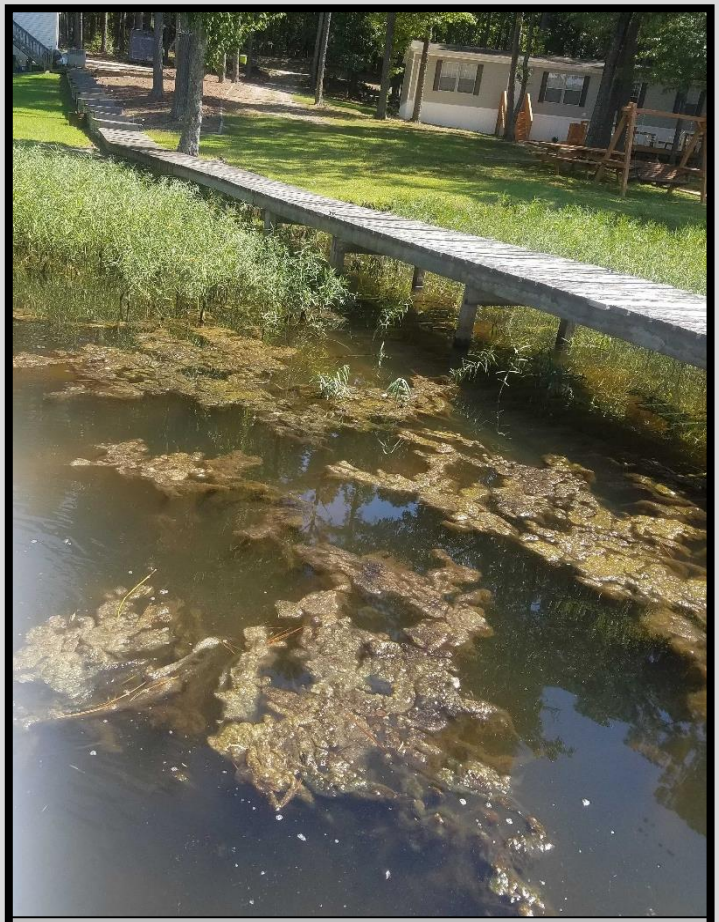


Lyngbya Treatment Sites - 2022

Sites treated 1 year: 16% reduction in acreage

Sites treated 2 years: 30% reduction in acreage

Lyngbya Treatments



9/2018

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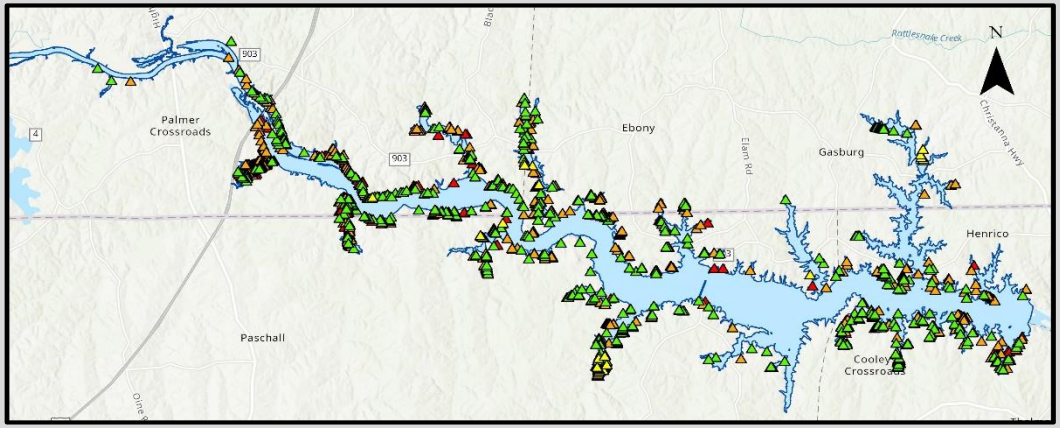

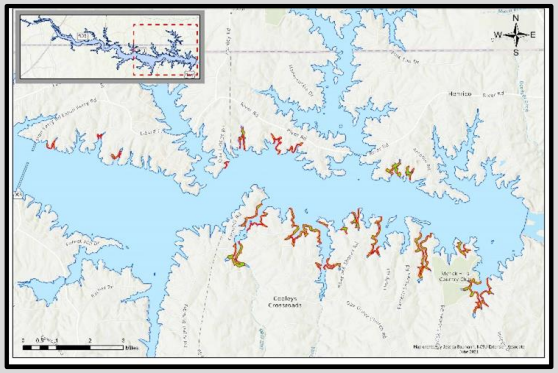

2023 Additional Recommendations

- Explore Cold Water Applications
- Explore New Chemical Treatment Protocols
- Continue to minimized Impacts to Tidewater Muckets
- Expand Understanding of Interactions between Lyngbya and Tidewater Muckets

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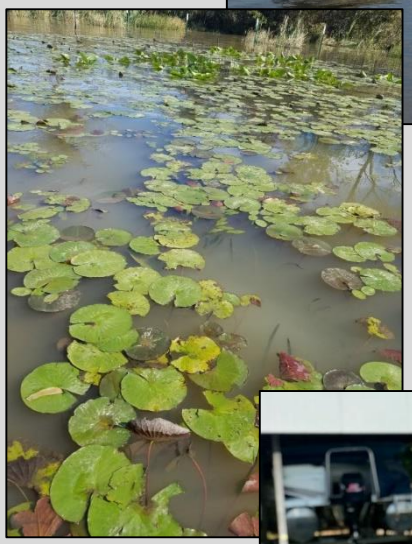

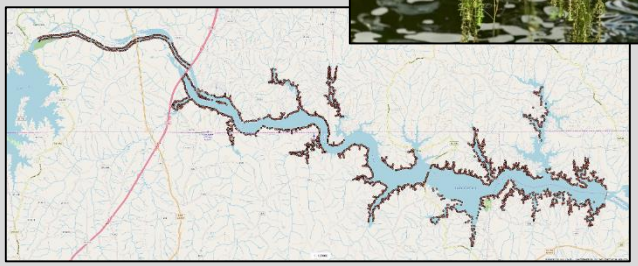

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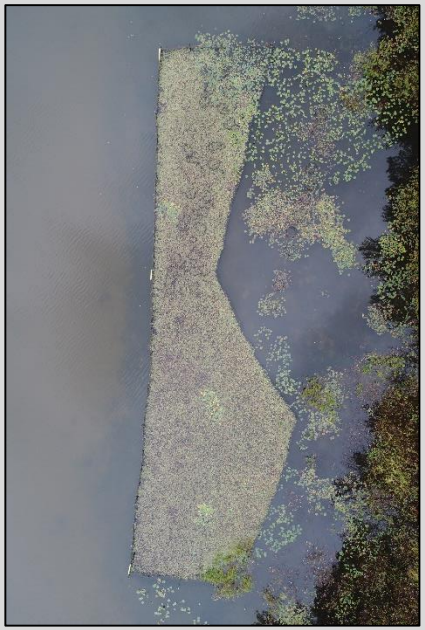
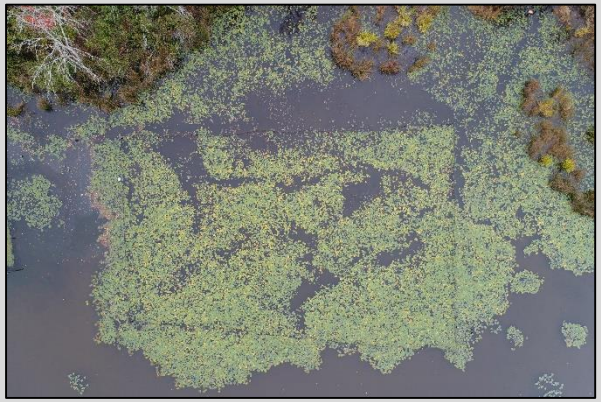
Revegetation Efforts

2022 TAG Recommendations

Drone survey of revegetation cages to incorporate into 5 year management plan





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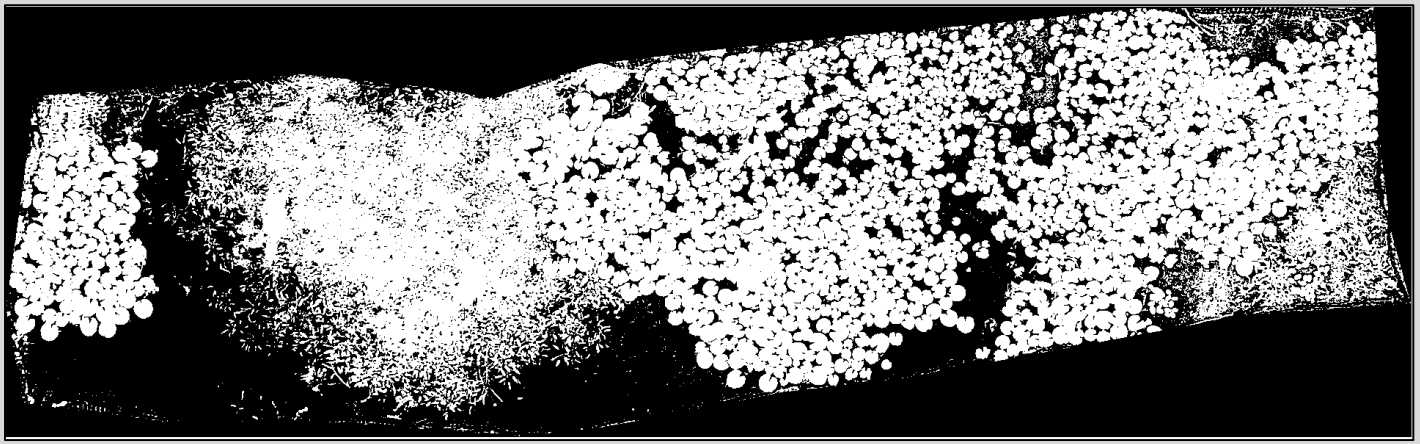

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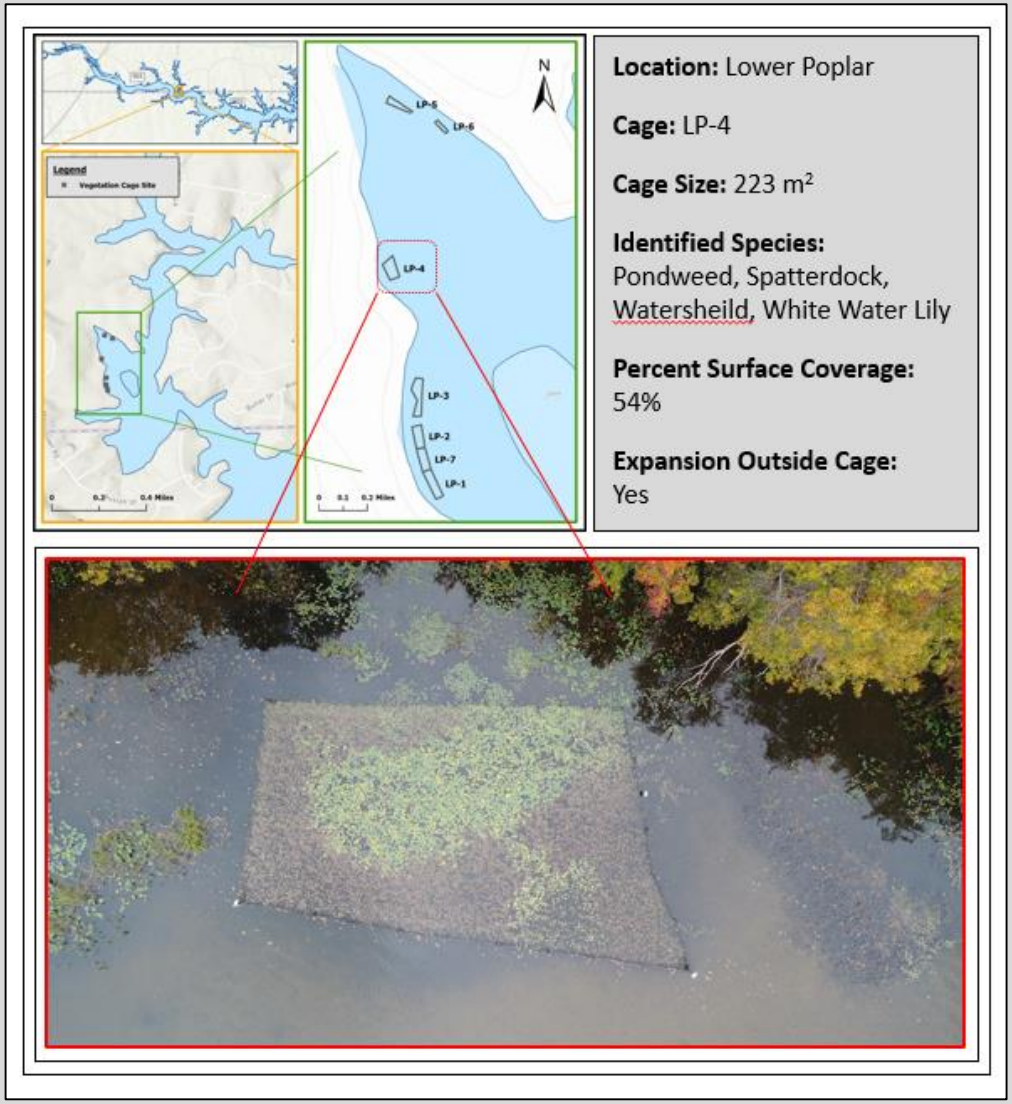

Final Report

- Surface Area Coverage
  - Repeatable Method
- Species Diversity
  - Not including submersed species
- Expansion Outside Cages

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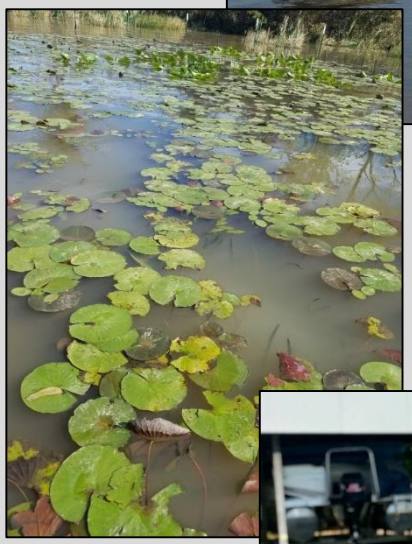

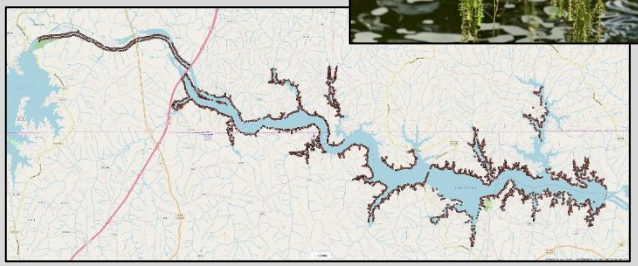

Upcoming Research Plans

Proposed Research – Tidewater Muckets

Objective

- To increase the understanding of Tidewater Mucket distribution, abundance, and habitat preference in Lake Gaston
- Use that knowledge to develop a more effective lyngbya treatment protocol that will minimize negative impacts to native mussel species while increasing the efficacy of the treatment design.

Upcoming Research Plans

Proposed Research – Lyngbya Cyanotoxin Production

Need

- Better understand the environmental and human health risks posed by lyngbya in freshwater environments

Objective

- Address various factors that promote growth or increase stress for lyngbya could help increase our understanding of the environmental and physiological factors that drive toxin production and release for this species.



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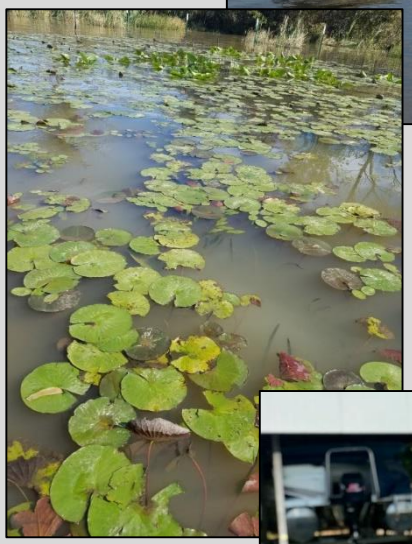

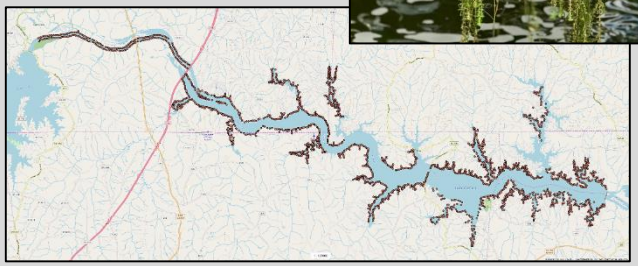

2023 TAG Recommendation

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- Continue funding and supporting volunteer survey
- Reduce overall efforts to align more with NCSU monitoring protocols
- Extend survey period for area of least concern
- Promote use of kayaks to improve shallow water surveys

2. Monitoring & Treatment Efforts

- Hydrilla
  - Treat no more than 166 acres
  - Do not stock Grass Carp
- Lyngbya
  - Treat no more than 500 acres
  - Explore Cold Water Applications
  - Explore New Chemical Treatment Protocols
  - Continue to minimized Impacts to Tidewater Muckets
  - Expand Understanding of Interactions between Lyngbya and Tidewater Muckets

3. Revegetation Efforts

- Continue funding and supporting revegetation efforts