

Lake Gaston

Weed Control Council Meeting

July 30th, 2020



Jessica R. Baumann

Extension Associate, Lake Gaston
Aquatic Plant Management Program



Lyngbya Management Update

Outline

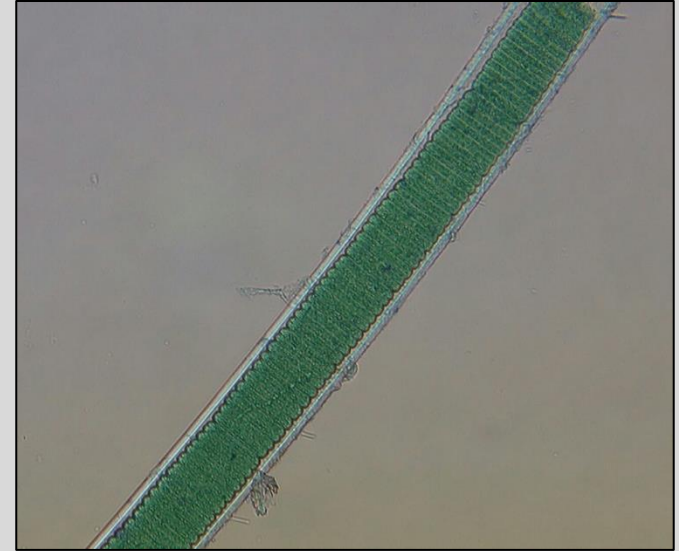
- Background
- Previous Treatment Years
- 2020 Treatment Year



Lyngbya Management Update

Background

- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native



Lyngbya Management Update

Background

- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native



Lyngbya Management Update

Background

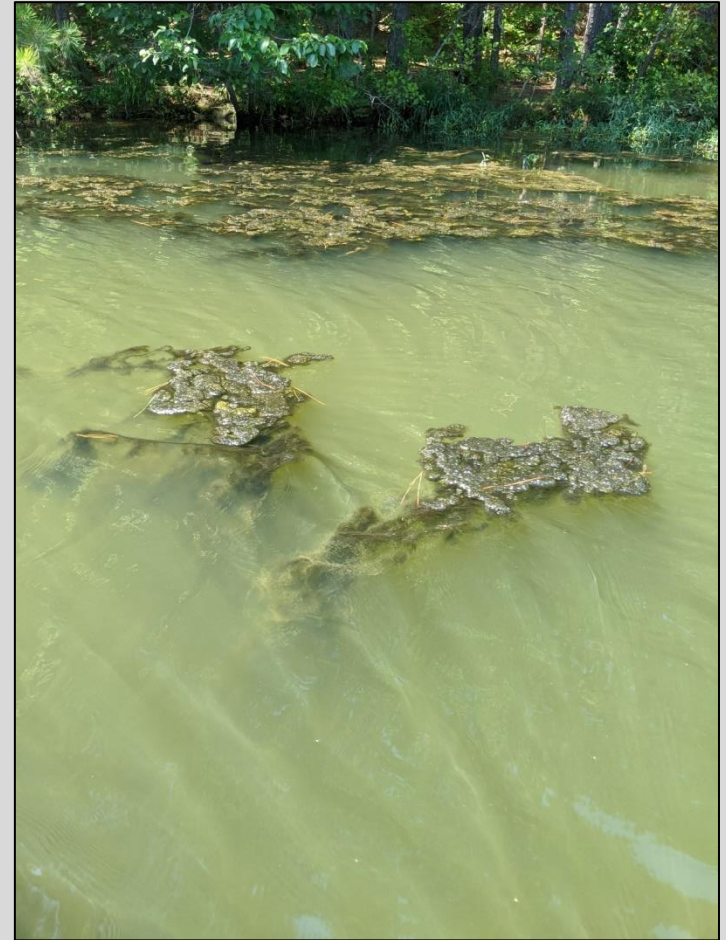
- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native
- Colder Winter Months – Benthic



Lyngbya Management Update

Background

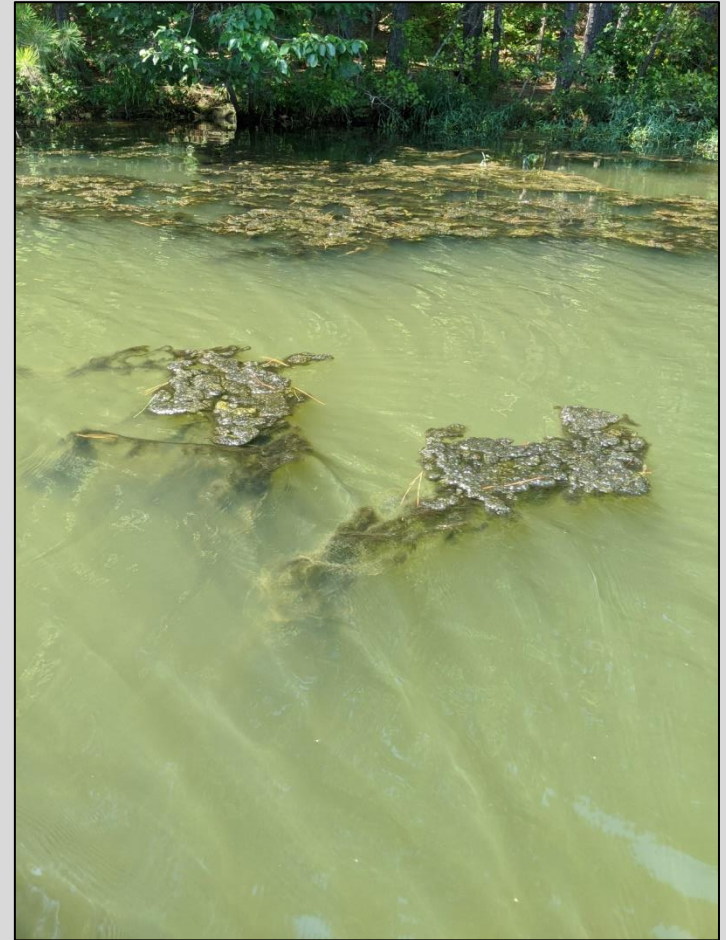
- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native
- Colder Winter Months – Benthic
- Warmer Summer Months – Surface



Lyngbya Management Update

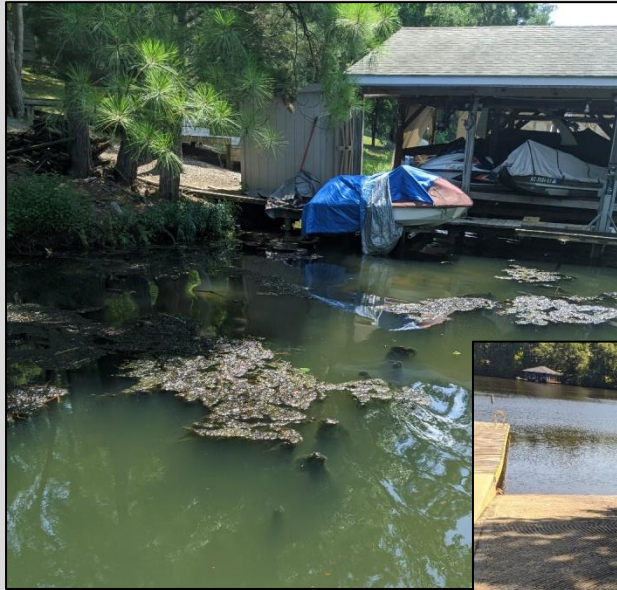
Background

- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native
 - *But, Behaving like an Invasive*
- Colder Winter Months – Benthic
- **Warmer Summer Months – Surface**
 - Thick Hairlike Mats
 - Throughout Water Column
 - Strong Odor



Lyngbya Management Update

Background



Lyngbya Management Update


Google

Lyngbya Control

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About 126,000 results (0.43 seconds)

Many herbicides and algaecides, or combinations of them, have been used to try and **control Lyngbya**. The most common method is using a chelated copper algaecide and / or endothall herbicide. ... The **Lyngbya** and its microbiota adapt and shift until the surrounding environment becomes more favorable.



naturalake.com › beating-lyngbya ▾
[A Scientific Solution to Beating Lyngbya | Naturalake ...](#)

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People also ask

How can filamentous algae be controlled? ▾

How do you kill Chara algae? ▾

Does hydrogen peroxide kill pond algae? ▾

How long does it take for copper sulfate to kill algae? ▾

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 Apr 11, 2016 - **Lyngbya** is a blue-green algae, or cyanobacteria, that grows in thick mats. ... It's easiest to **control Lyngbya** if it's caught early, but we'll treat it at ...

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[Lyngbya – The Pond Shop®](#)
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[Controlling Lyngbya wollei in three Alabama, USA reservoirs ...](#)
 Oct 14, 2019 - Large-scale **Lyngbya wollei** (Cyanobacteria, Oscillatoriales) infestations are increasing throughout the USA and globally and causing ...

Lyngbya Management Update

Google Lyngbya Control

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The Solution for Lyngbya Algae

Naturalake Biosciences

ABOUT PRODUCTS PURCHASE INDUSTRIES TREATMENT SUPPORT EDUCATION & EVENTS LAB

A Scientific Solution to Beating Lyngbya

What is Lyngbya?

In the scientific world, it is a filamentous cyanobacteria with long unbranching filaments inside a mucilaginous sheath. In the real world, **Lyngbya** is an aquatic professional's worst nightmare. It is aggressive and difficult to control.

How to Control Lyngbya

The first step to controlling **Lyngbya** is preparing for a long battle. The second step is to make sure you have the proper combination of weapons and technology. The third step is implementing a strategy that fits your water body and being prepared to adjust the strategy as needed.

Many herbicides and algaecides, or combinations of them, have been used to try and control **Lyngbya**. The most common method is using a chelated copper algaecide and / or endothall herbicide. When used alone, the chemicals have shown limited results, especially when it comes to preventing regrowth. The **Lyngbya** and its microbiota adapt and shift until the surrounding environment becomes more favorable.

To aid the herbicides and algaecides that kill the **Lyngbya**, Naturalake Biosciences developed the **Naturalake Aquasticker**. What makes this biological sticking agent different is that it increases contact time and temporarily disrupts the microbiota on the **Lyngbya**, fostering competitive microbial growth. Upsetting the natural balance breaks the mutualistic relationship and enhances chemical uptake by the **Lyngbya**.

Using Aquasticker with the traditional chemical treatments improves treatment efficacy and results. See Aquasticker Real Results.

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Lyngbya Management Update

Google Lyngbya Control

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To aid the herbicides and algaecides that kill the **Lyngbya**, Naturalake Biosciences developed the **Naturalake Aquasticker**. What makes this biological sticking agent different is that it increases contact time and temporarily disrupts the microbiota on the **Lyngbya** fostering competitive microbial growth. Upsetting the natural balance breaks the mutualistic relationship and enhances chemical uptake by the **Lyngbya**.

Using Aquasticker with the traditional chemical treatments improves treatment efficacy and results. [See Aquasticker Real Results](#)

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Lyngbya Management Update

Google Lynbya Control

How to Control *Lyngbya*

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To aid the herbicides and algaecides that kill the *Lyngbya*, Naturalake Biosciences developed the biocatalyst *AquaSticker*. *What makes this biological sticking agent different is that it increases contact time and temporarily disrupts the microbiota on the Lyngbya fostering competitive microbial growth.* Upsetting the natural balance breaks the mutualistic relationship and enhances chemical uptake by the *Lyngbya*.

Using AquaSticker with the traditional chemical treatments improves treatment efficiency and results. Use AquaSticker. Beat *Lyngbya*.

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Solution for *Lyngbya* Algae

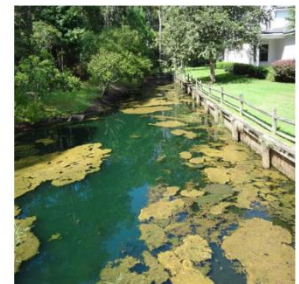
Naturalake
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PURCHASE INDUSTRIES TREATMENT SUPPORT EDUCATION & EVENTS LAB

Beating *Lyngbya*

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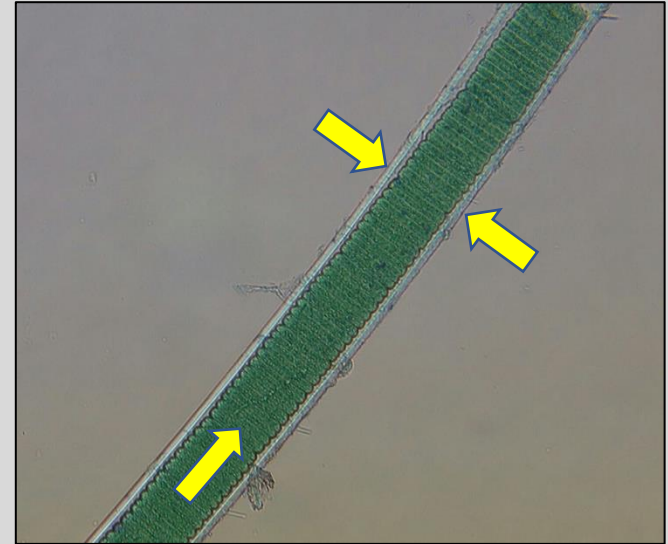
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Lyngbya Management Update

Why so difficult??

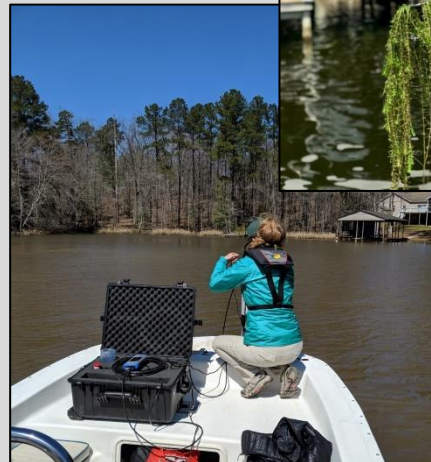
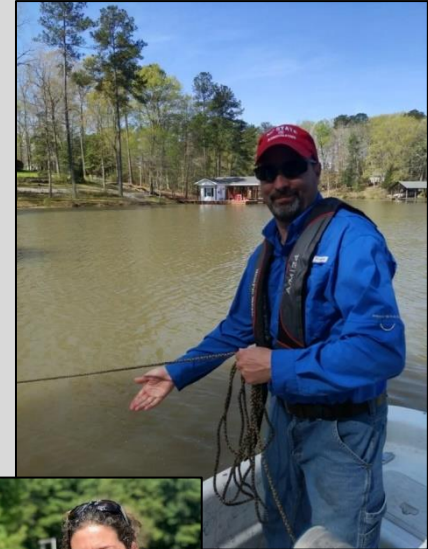
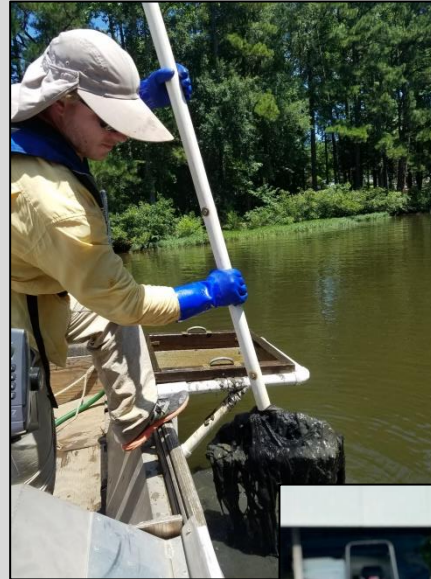
- **Physical**
 - Sheath
 - Thick mats
 - Gliding motility
- **Genetics**
 - Different strains behave differently
- **Different Systems = Different Responses**
- **Many gaps in the research**



Lyngbya Management Update

NCSU Research Project

- *Lyngbya Management*
- Water Quality
- Improved Surveys
- Improved Revegetation
- Hydrilla Management



Lyngbya Management Update

NCSU Research Project

- 2017 – Pilot Study
- 2018 – Project Scheduled to Begin
 - Late July Start Date
- 2019 – First Successful Treatment
 - Early June Start Date
- 2020 – Second Successful Treatment
 - Late April Start Date
- 2021 – Third Treatment Planned



Lyngbya Treatments

- **2019 Treatments**
 - **Products / Method**
 - SePRO
 - Lyons / Pretty / St. Tammany
 - Applied Biochemist
 - Lees / Pretty / Rocky Branch
 - UPL / Biosafe
 - Smith / Hawtree / Great



Lyngbya Treatments

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 - **Sampling Methods**
 - Biomass
 - Biosonics



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Lyngbya Treatments

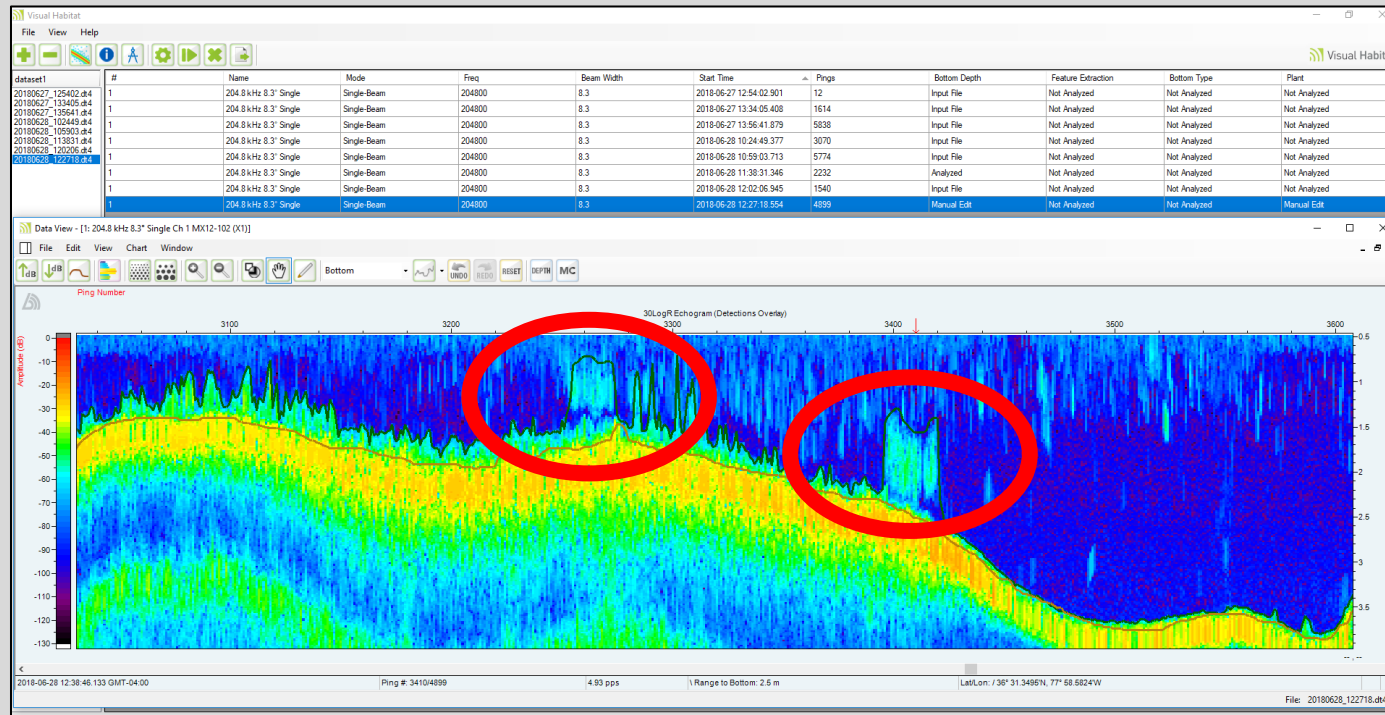
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Lyngbya Treatments

Sampling Methods

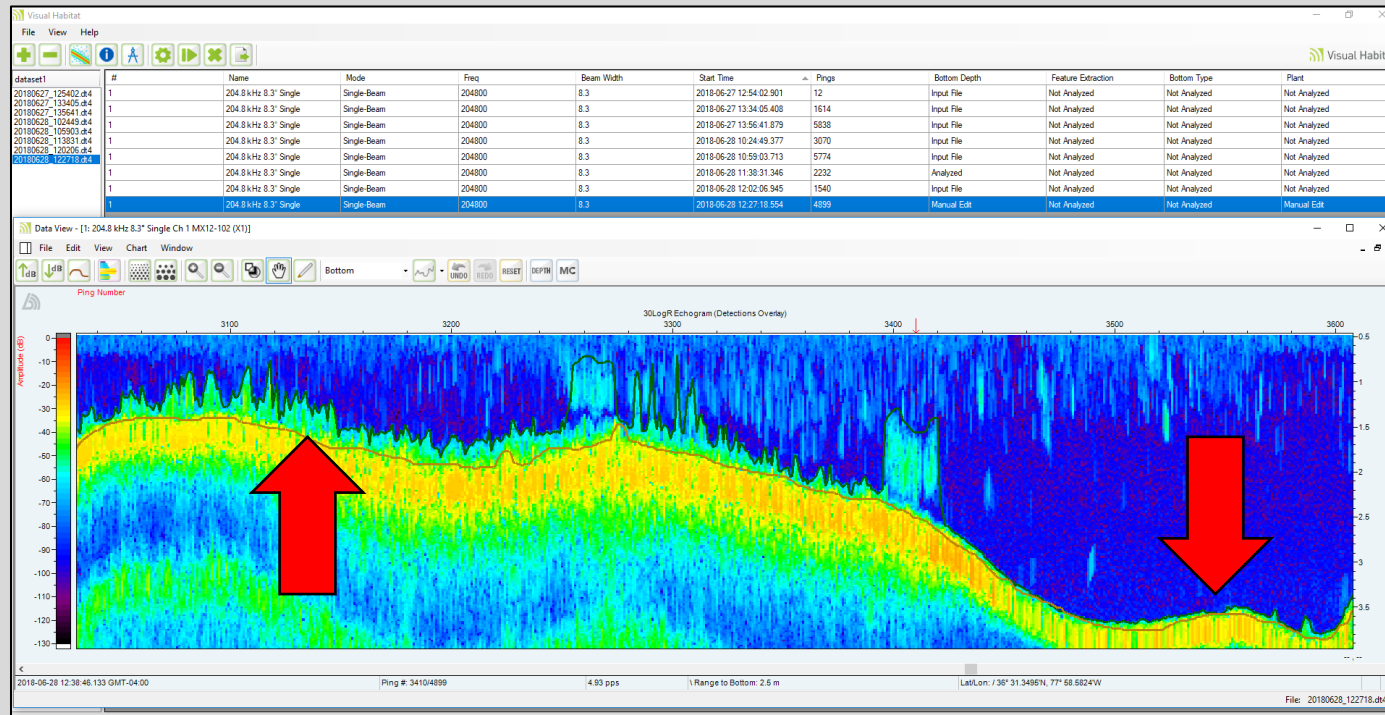
- ***Biosonics***
 - Better idea of the makeup of the whole mat



Lyngbya Treatments

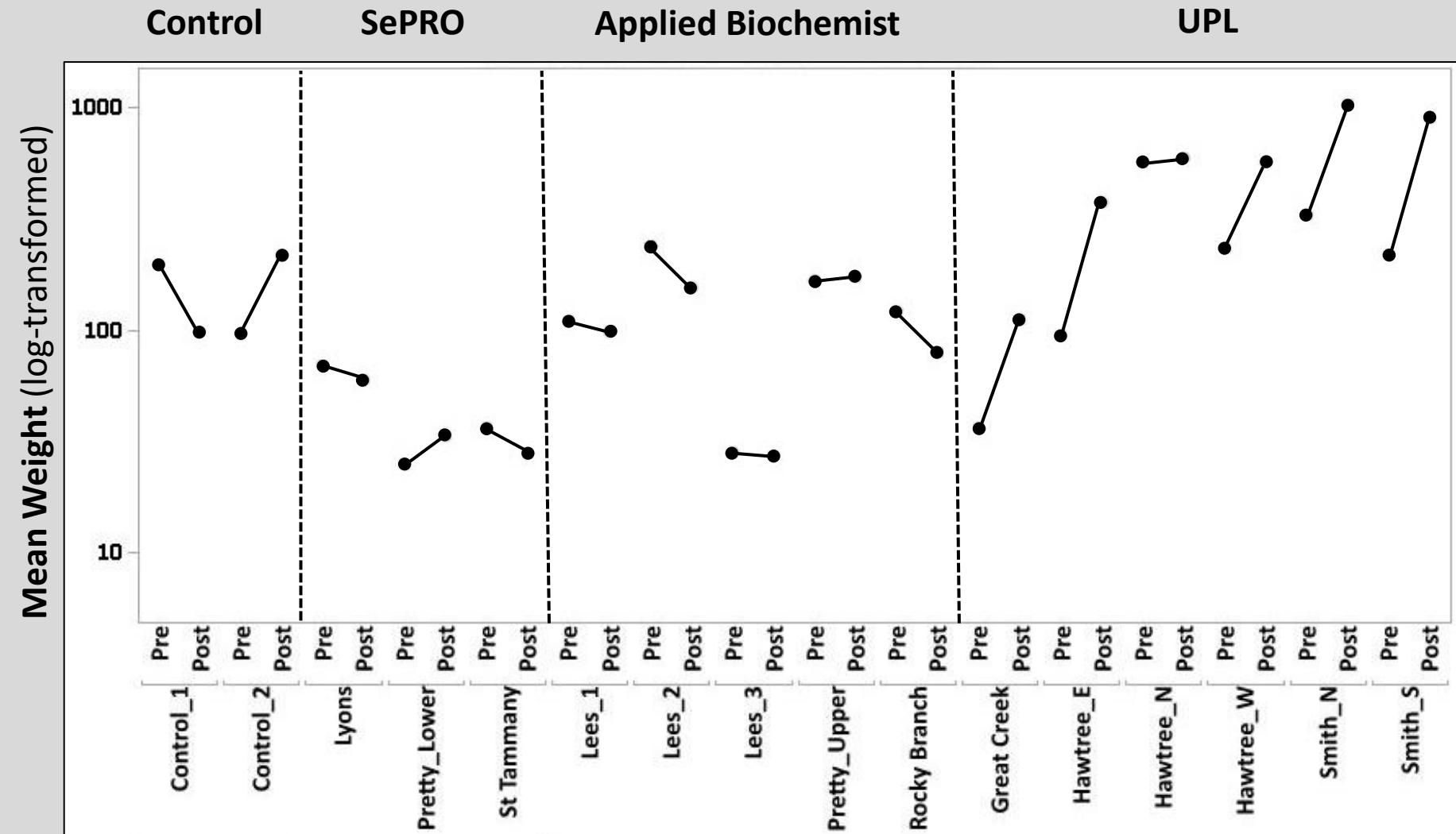
Sampling Methods

- ***Biosonics***
 - Better idea of the makeup of the whole mat

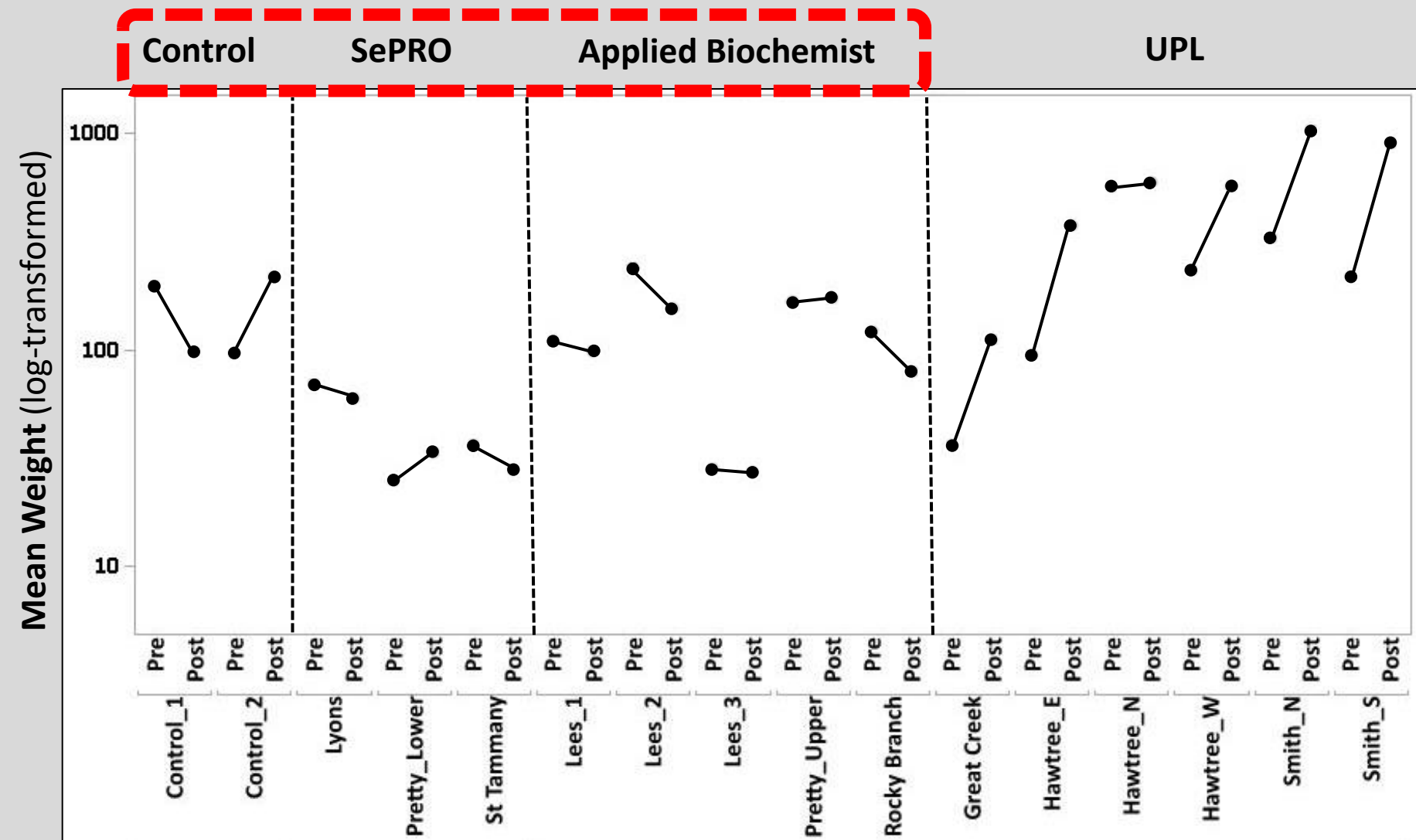


Results of 2019 Treatment

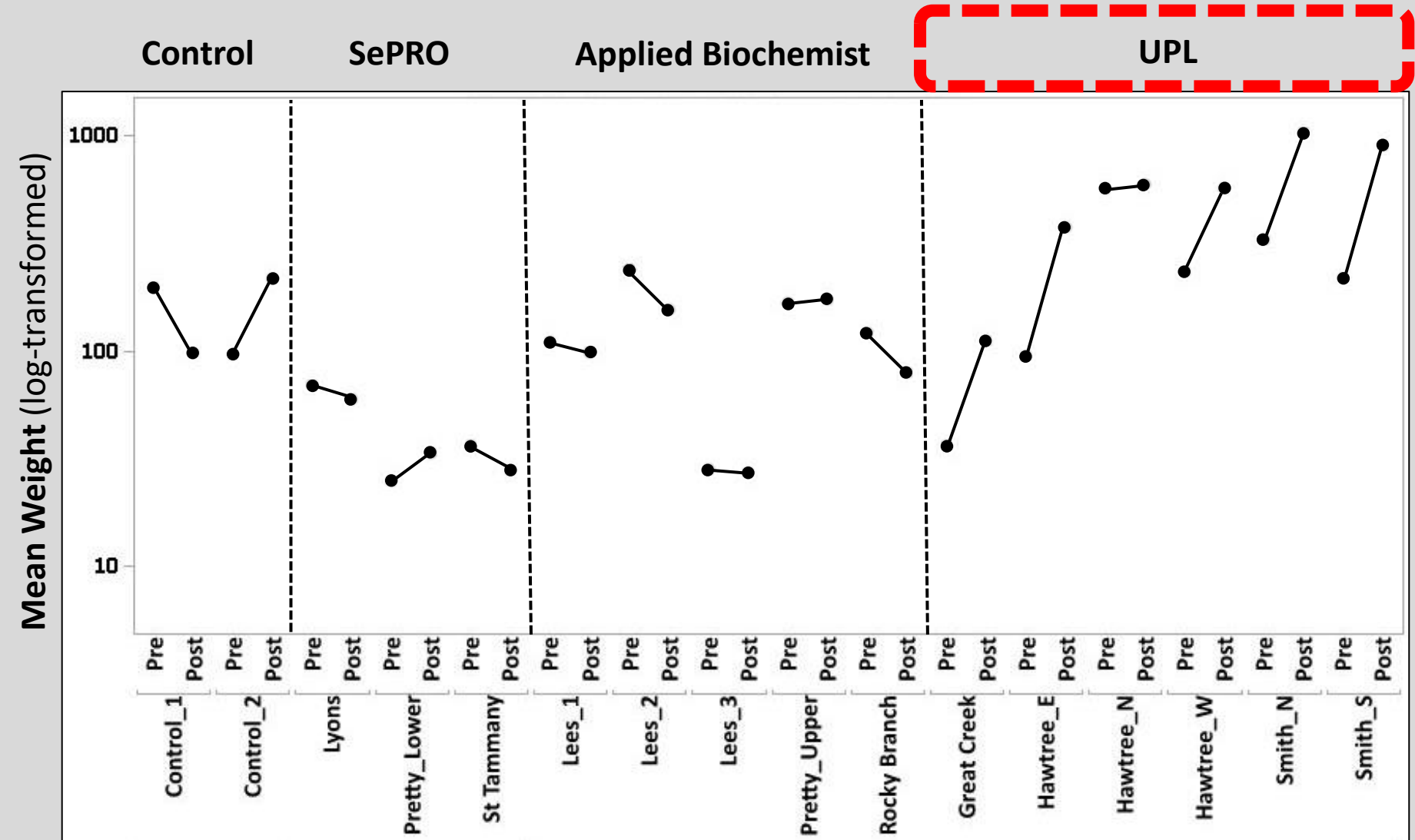
Biomass Sampling (2019)



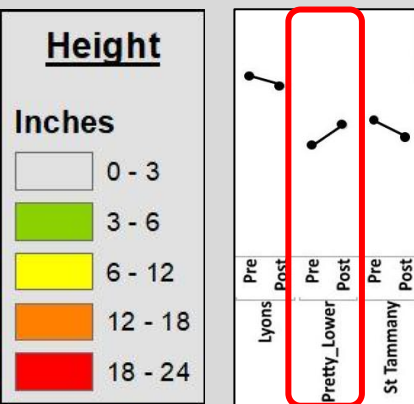
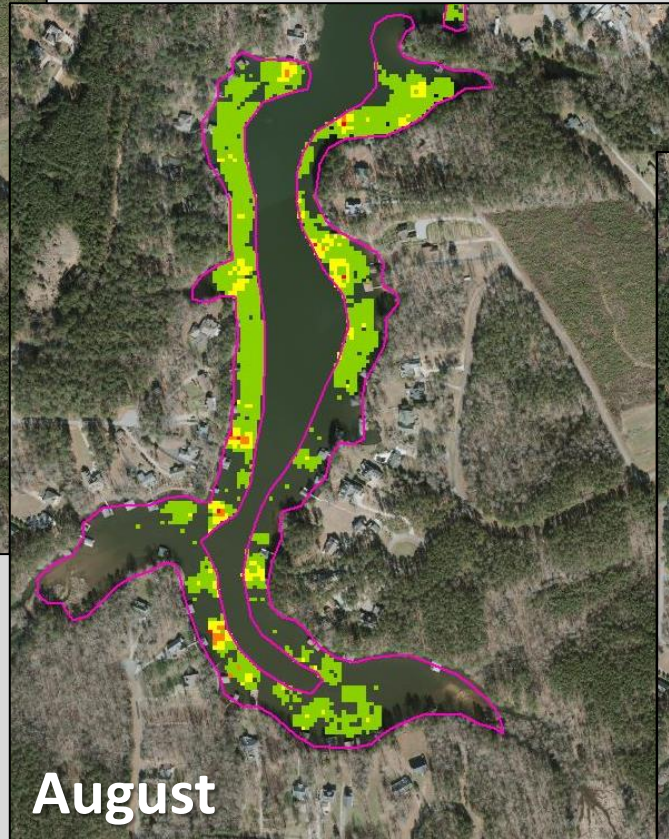
Biomass Sampling (2019)



Biomass Sampling (2019)



Pretty Creek SePRO



April



Hawtree– N, E, W

UPL

August

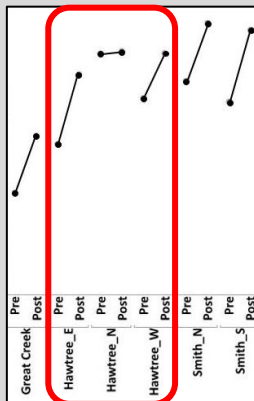
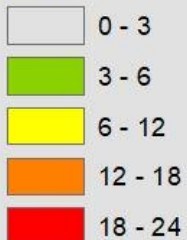


November



Height

Inches



2019 Treatment Conclusions

Biomass

- UPL treatment areas increased over treatment period
- SePRO and Applied Biochemist produced varied results
- Significant difference for changes in biomass between UPL and SePRO / Applied Biochemist

Biosonics

- Maps support trends observed in biomass analysis

2020 Proposed Treatment

Lyngbya

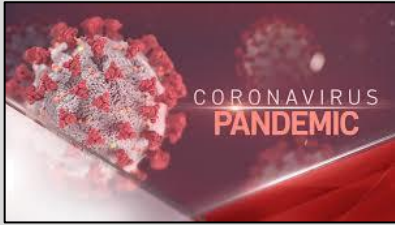
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- 2) Create experimental plots with both products and control**
- 3) Retain some current sites to evaluate long-term treatment**
- 4) Expand into operational treatments (20+ acres)**
- 5) Begin monthly treatments in March**

2020 Proposed Treatment

Lyngbya

- 1) Move forward with SePRO and Applied
- 2) Create experimental plots with both products
- 3) Retain some current sites to evaluate long-term





2020 Covid-19 Restrictions

**NC STATE
UNIVERSITY**

NC State University Restricted Research

- **April, May, and June: Only university approved research**
 - **Weed Control Lab: One approved team of 2 for all field work**
- **July: Expanded approved research**

2020 Treatment Plan

Lyngbya

- 1) Move forward with SePRO and Applied Biochemist products**
- 2) Create experimental plots with both products and control**
- 3) Retain some current sites to evaluate long-term treatment**
- ~~**4) Expand into operational treatments (20+ acres)**~~
- ~~**5) Begin monthly treatments in March**~~

2020 Treatment Plan

Lyngbya

- 1) Move forward with SePRO and Applied Biochemist products**
 - **Adjusted concentrations**
 - **Addition of Applied Biochemist product**
- 2) Create experimental plots with both products and control**
- 3) Retain some current sites to evaluate long-term treatment**
- 4) Expand into operational treatments (20+ acres)**
- 5) Begin monthly treatments in March**

2020 Treatment Plan

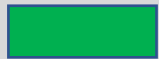
Lyngbya

- 1) Move forward with SePRO and Applied Biochemist products
- 2) Create experimental plots with both products and control
 - Smith, Hawtree, and Pretty
- 3) Retain some current sites to evaluate long-term treatment
- 4) Expand into operational treatments (20+ acres)
- 5) Begin monthly treatments in March

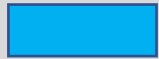
Experimental Plots



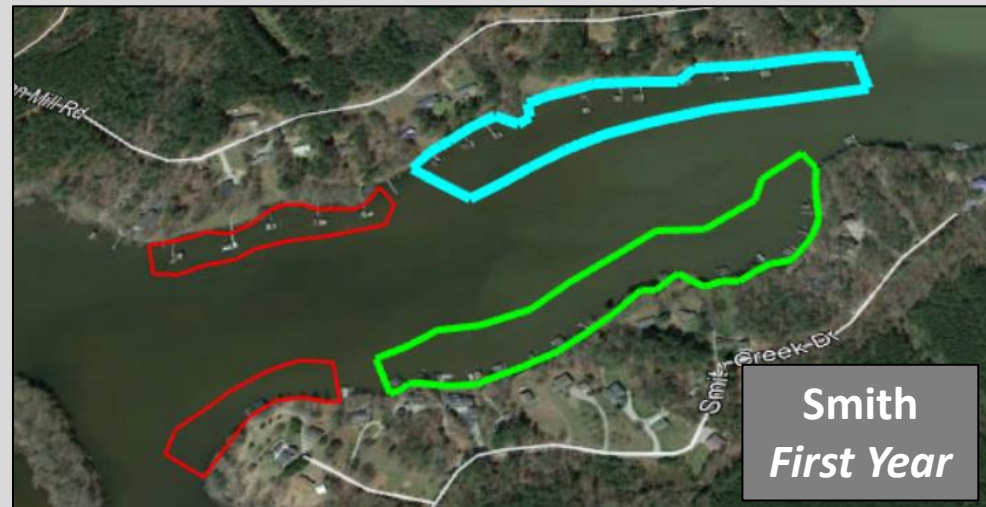
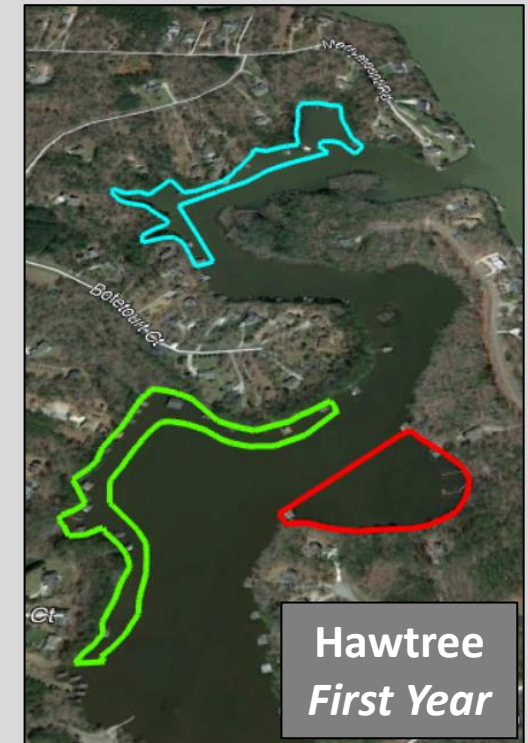
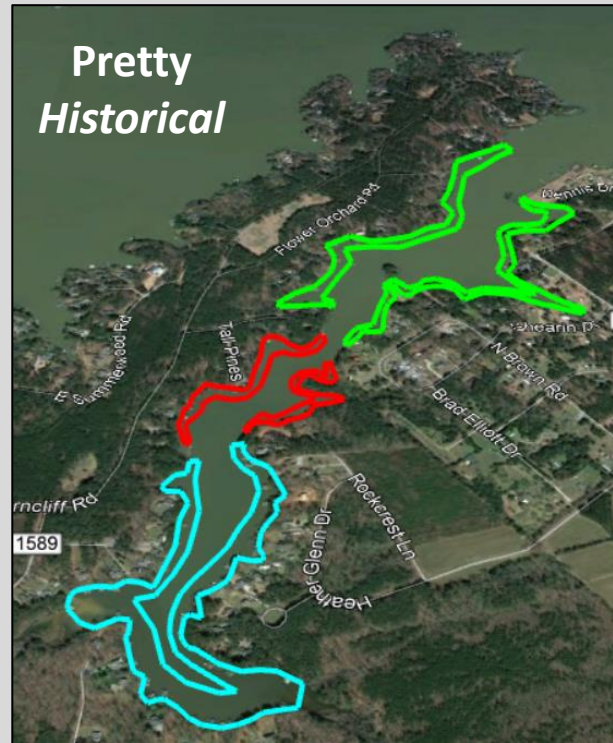
Control



Applied
Biochemist



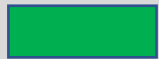
SePRO



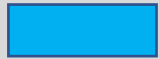
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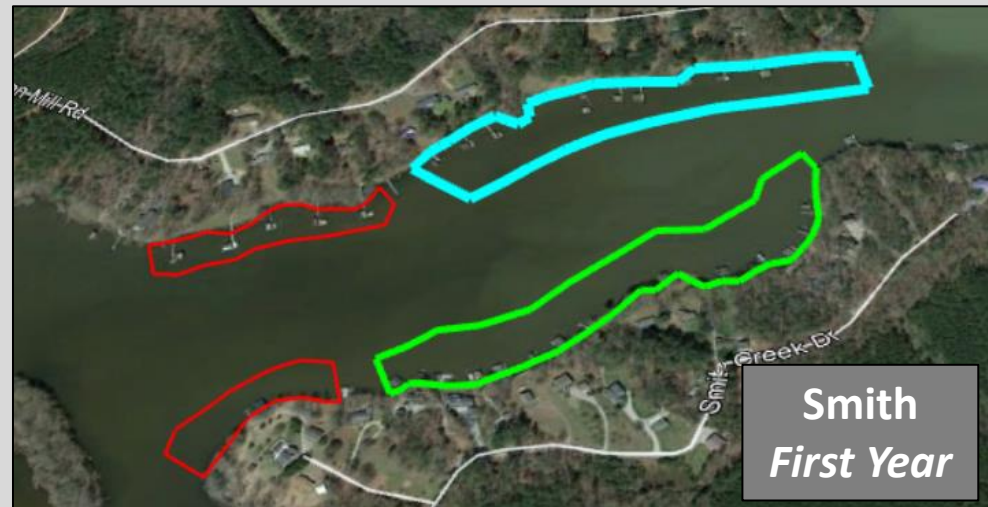
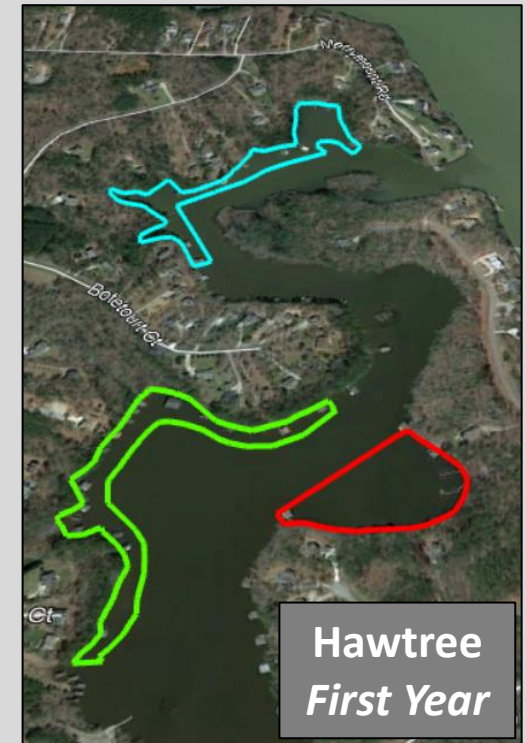
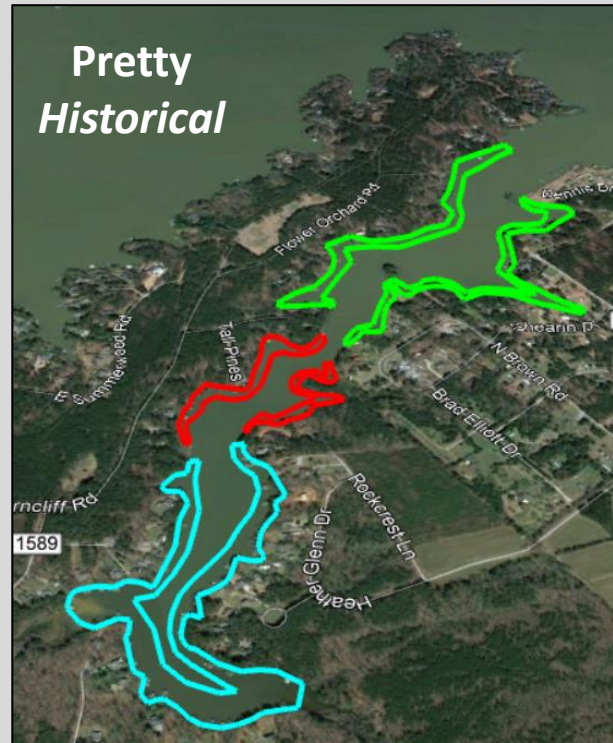
Control



Applied
Biochemist



SePRO



Applied Biochemist product
Cutrine Ultra applied to
Hawtree and Smith

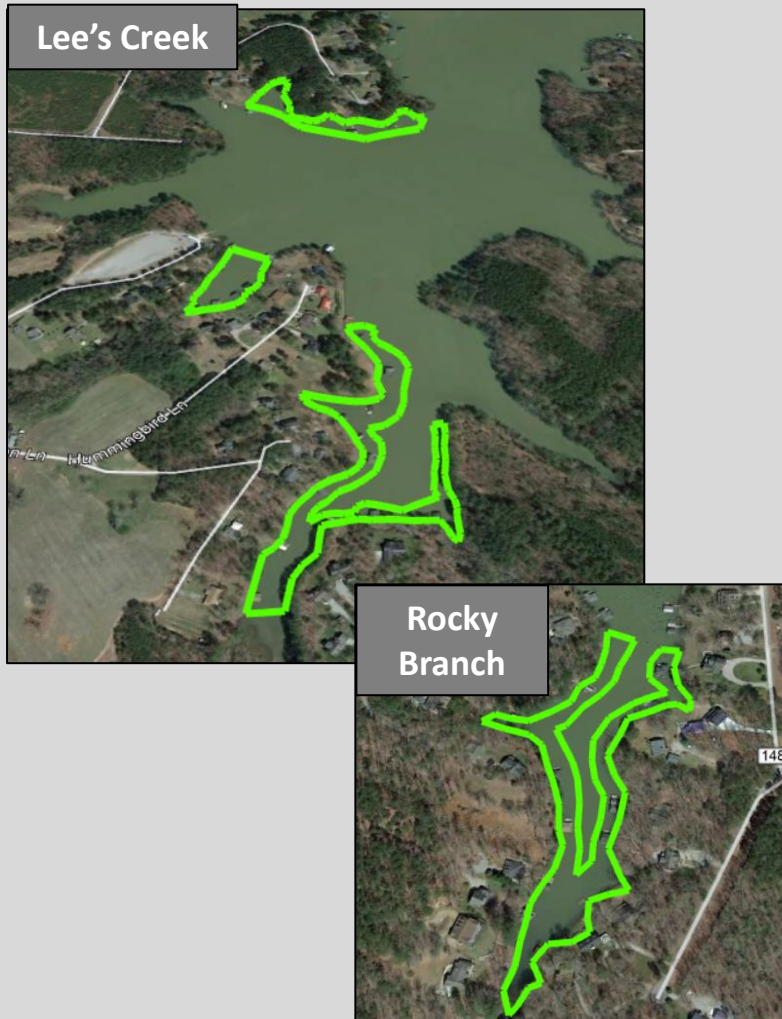
2020 Treatment Plan

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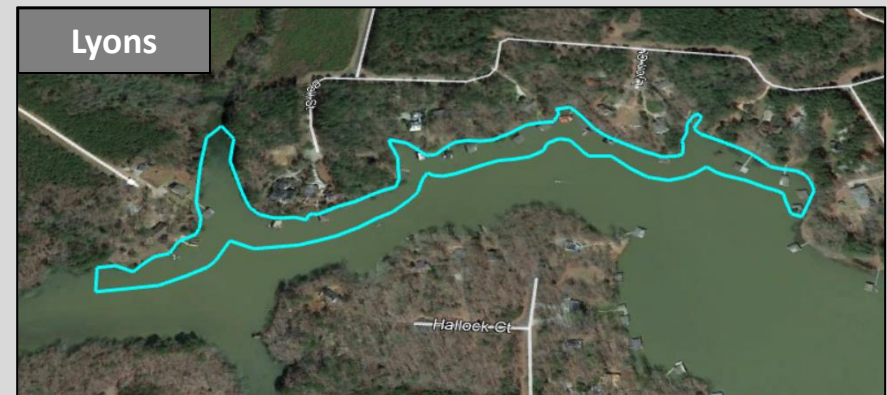
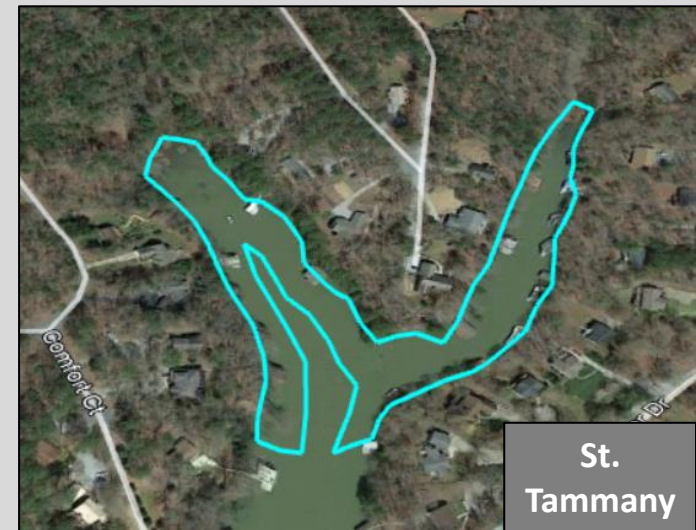
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Historical Plots

Applied Biochemist



SePRO



2020 Treatment Plan

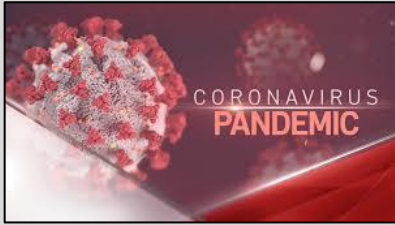
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- ~~4) Expand into operational treatments (20+ acres)~~
 - 2021 Treatment Period
 - Have a running database with public complaints
- 5) Begin monthly treatments in March

2020 Treatment Plan

Lyngbya

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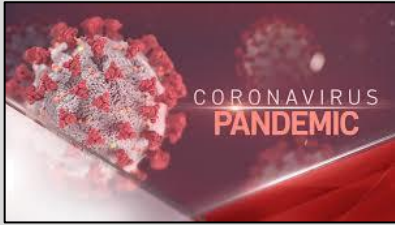


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Lyngbya Research

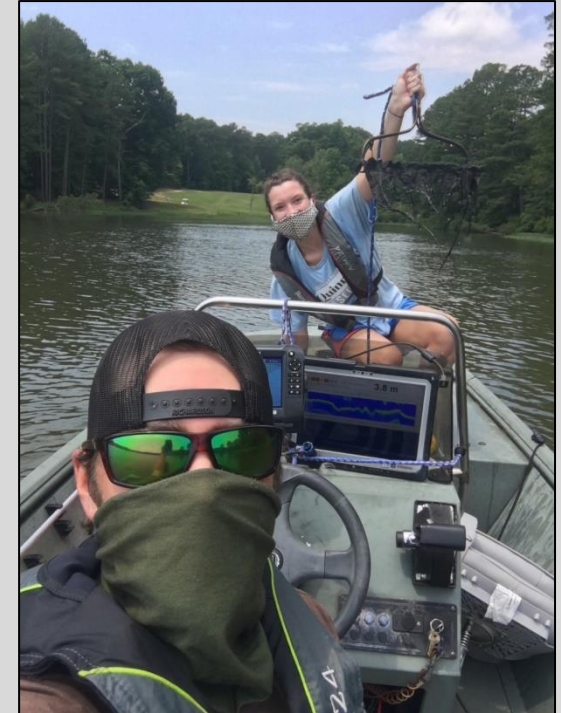
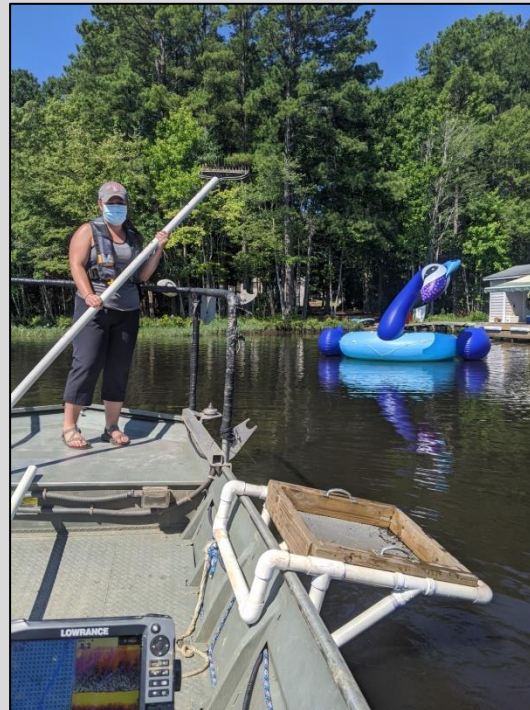


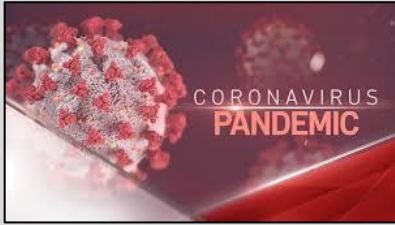
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Lyngbya Research





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Lyngbya Research

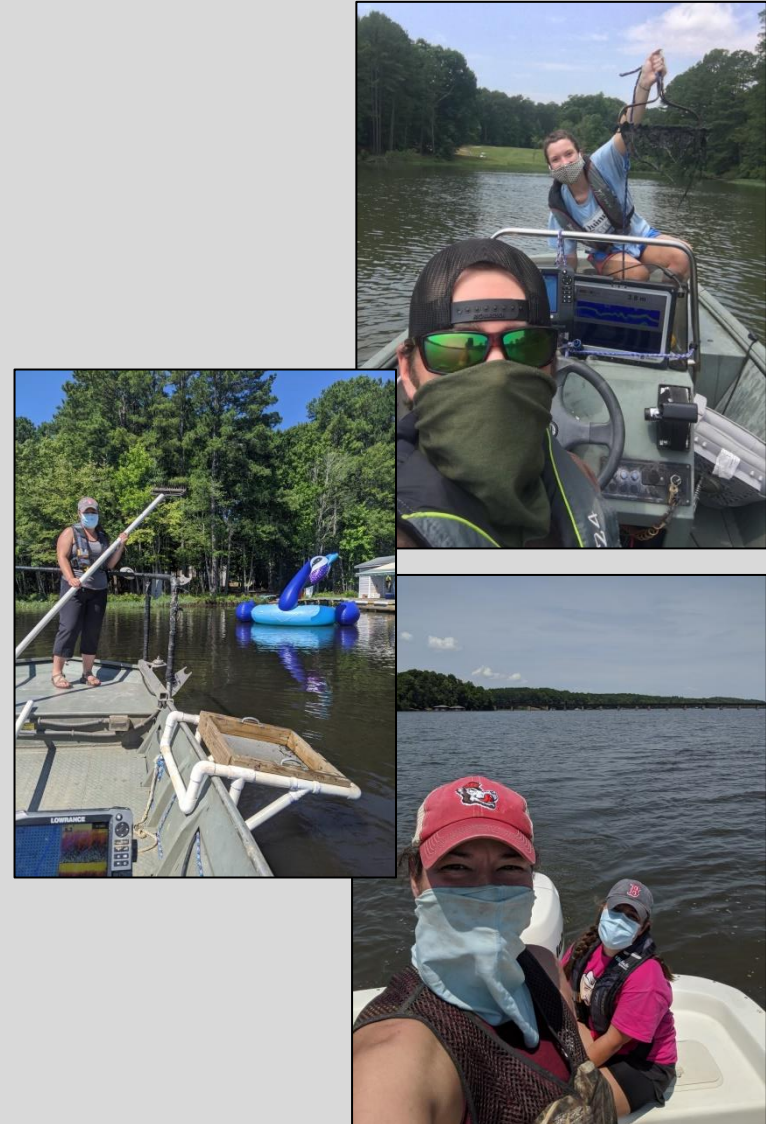
- *Biosonics* – April, May, June, July
- *Biomass* – July



Lyngbya Management Update

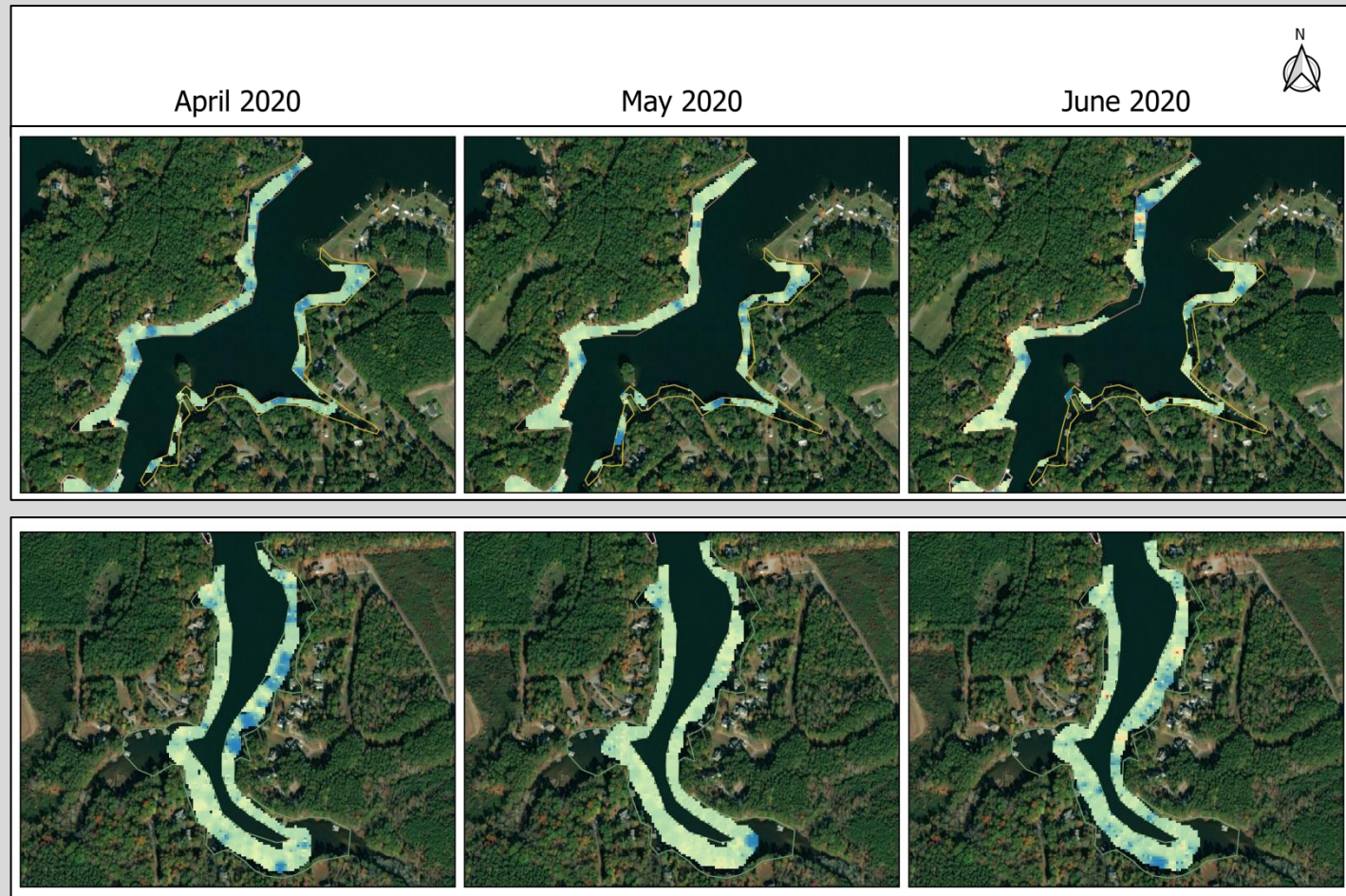
Preliminary Findings

- *Biosonics (April – June)*



Lyngbya Management Update

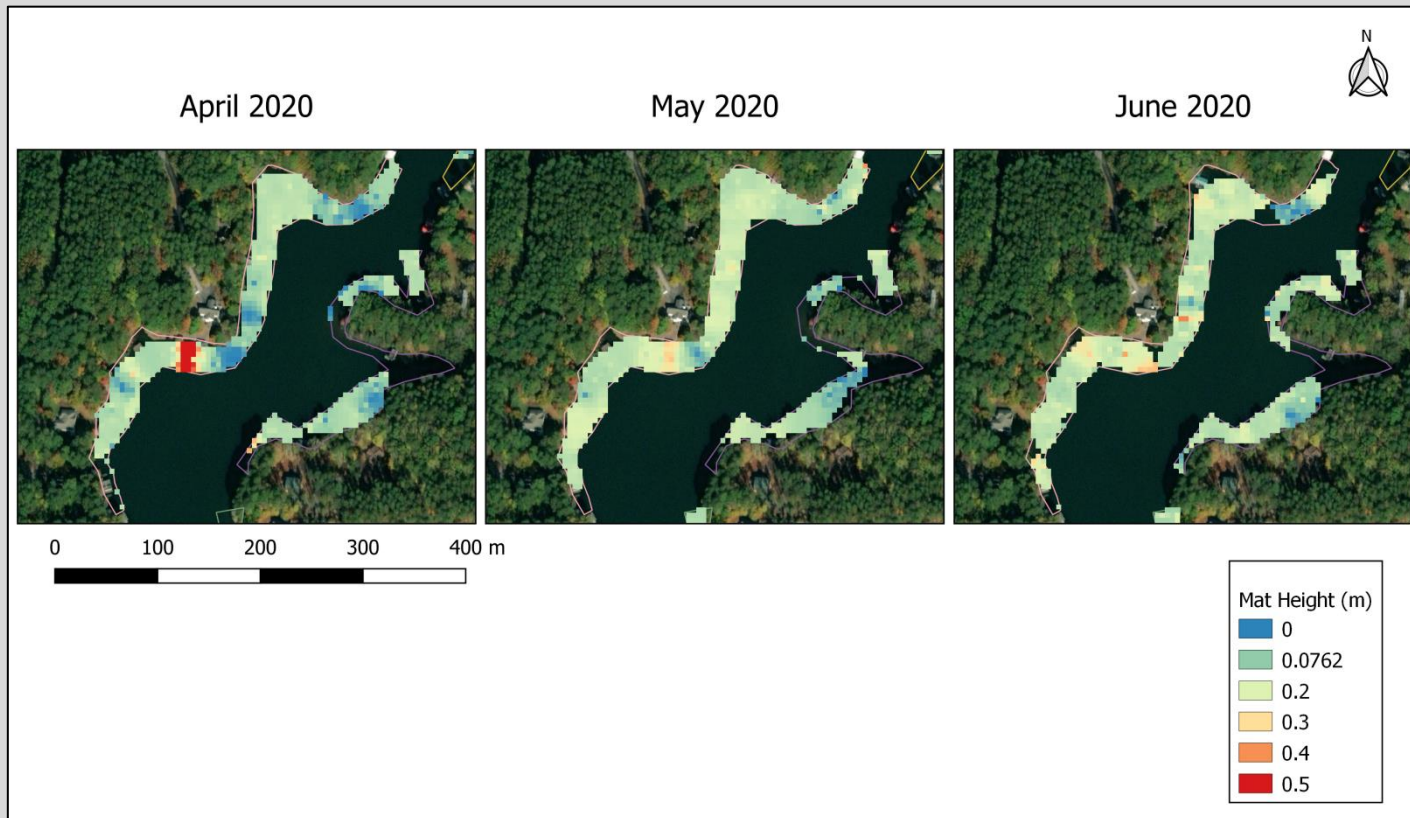
Preliminary Findings - Pretty



Lyngbya Management Update

Preliminary Findings - Pretty

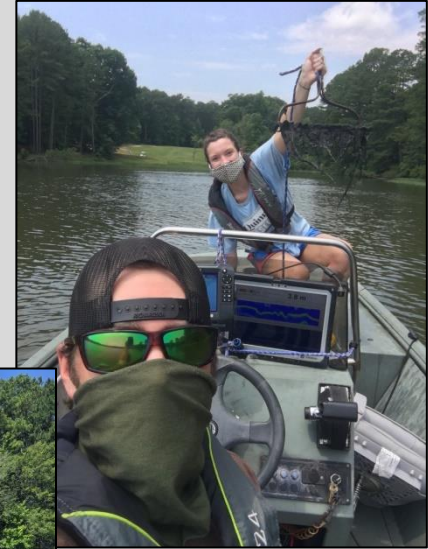
Untreated
Control



Lyngbya Management Update

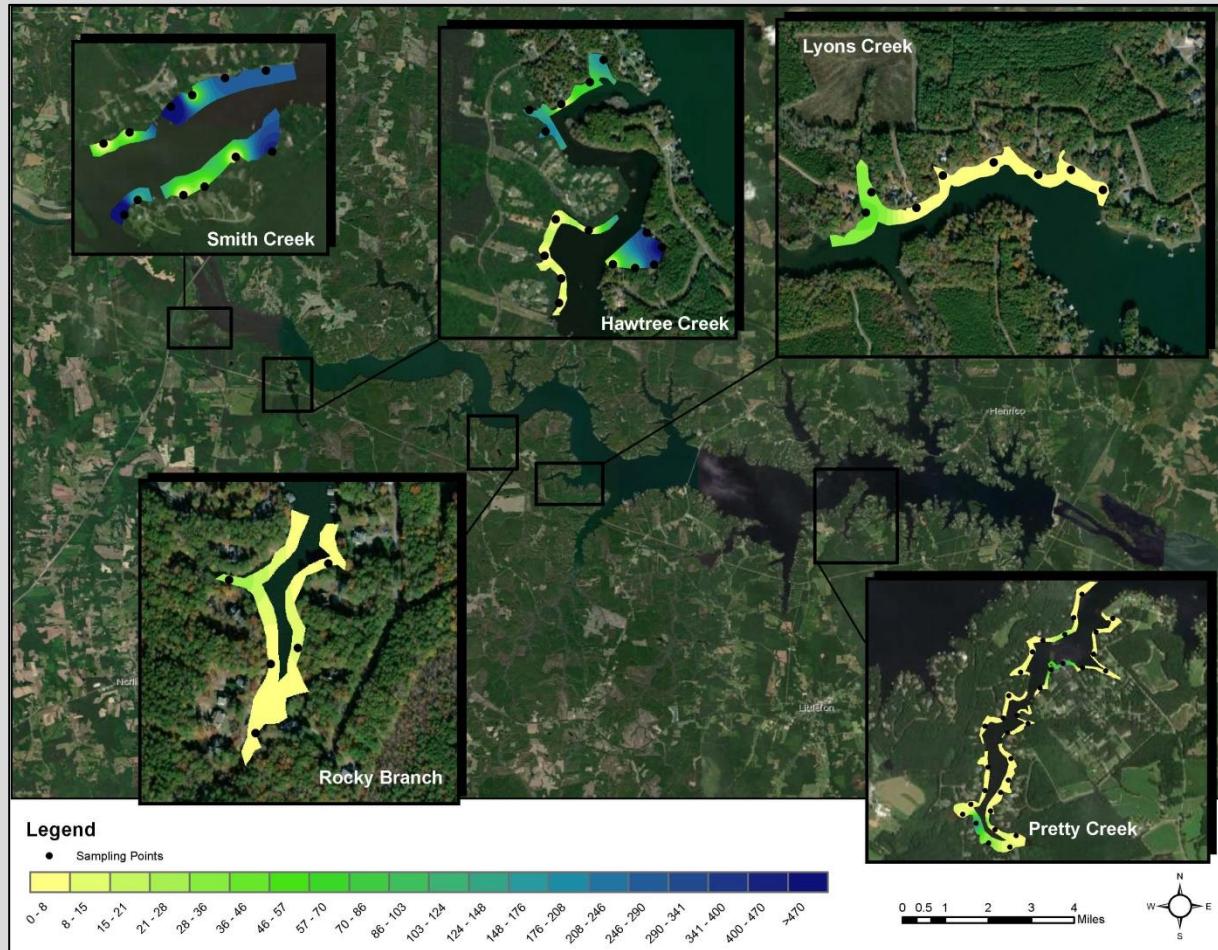
Preliminary Findings

- ***Biomass - July***



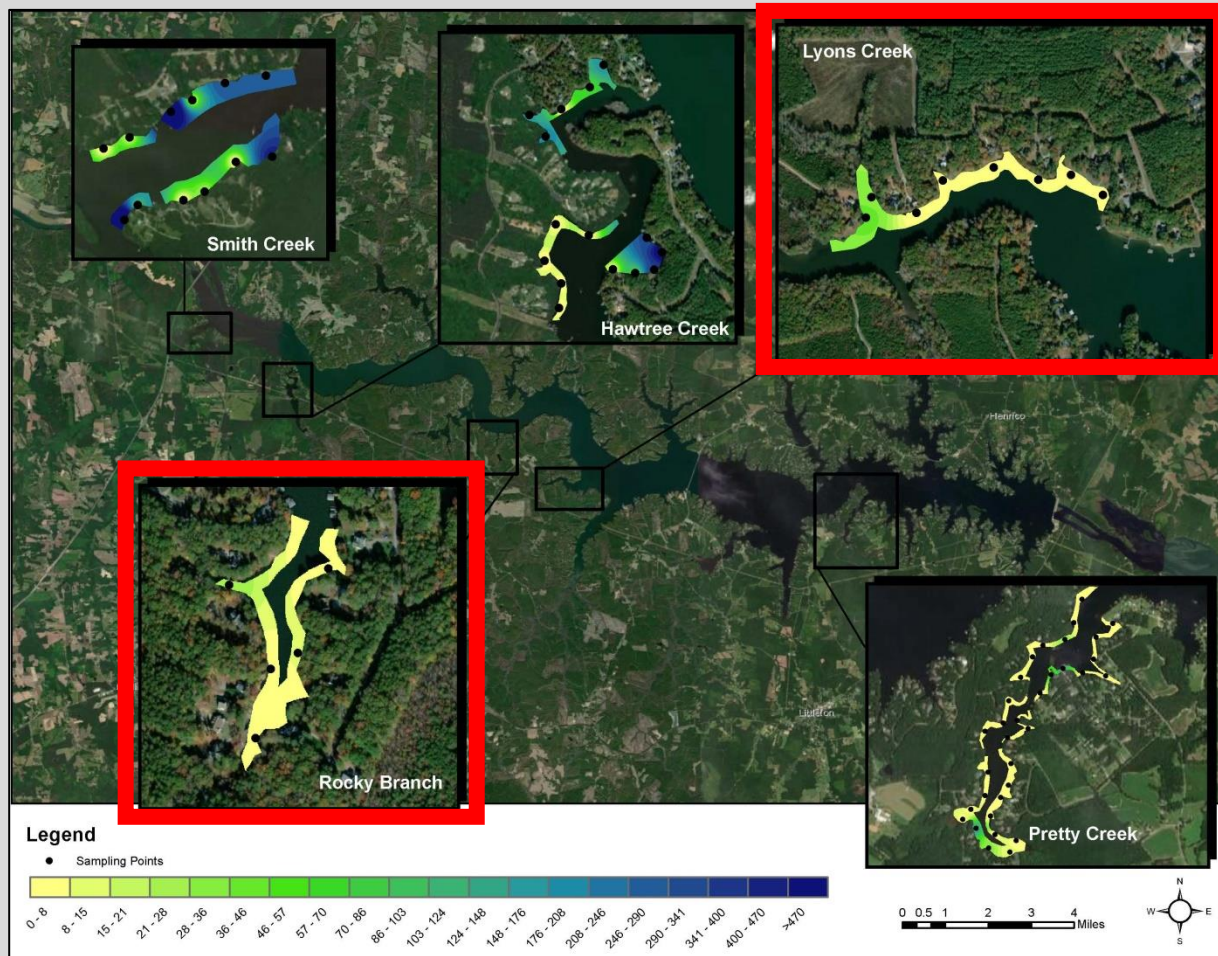
Lyngbya Management Update

Preliminary Findings



Lyngbya Management Update

Preliminary Findings

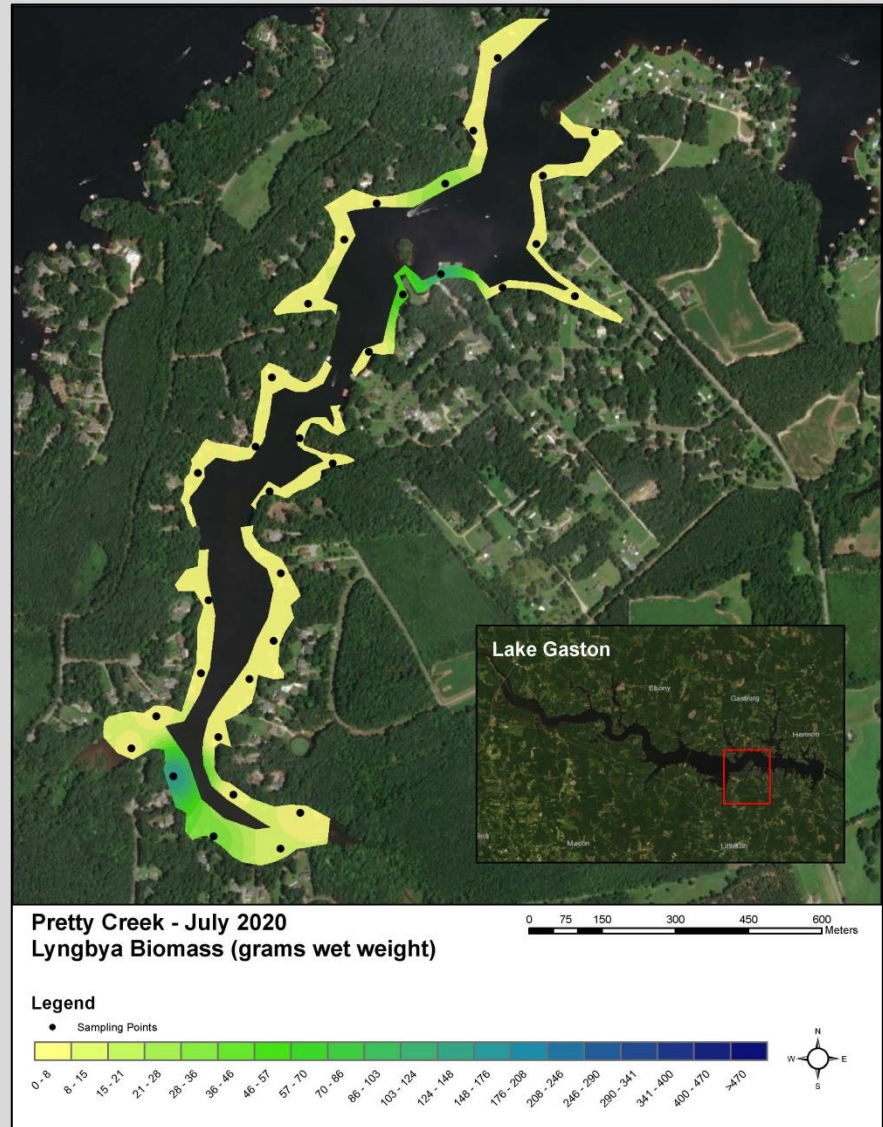


Lyngbya Management Update

Preliminary Findings

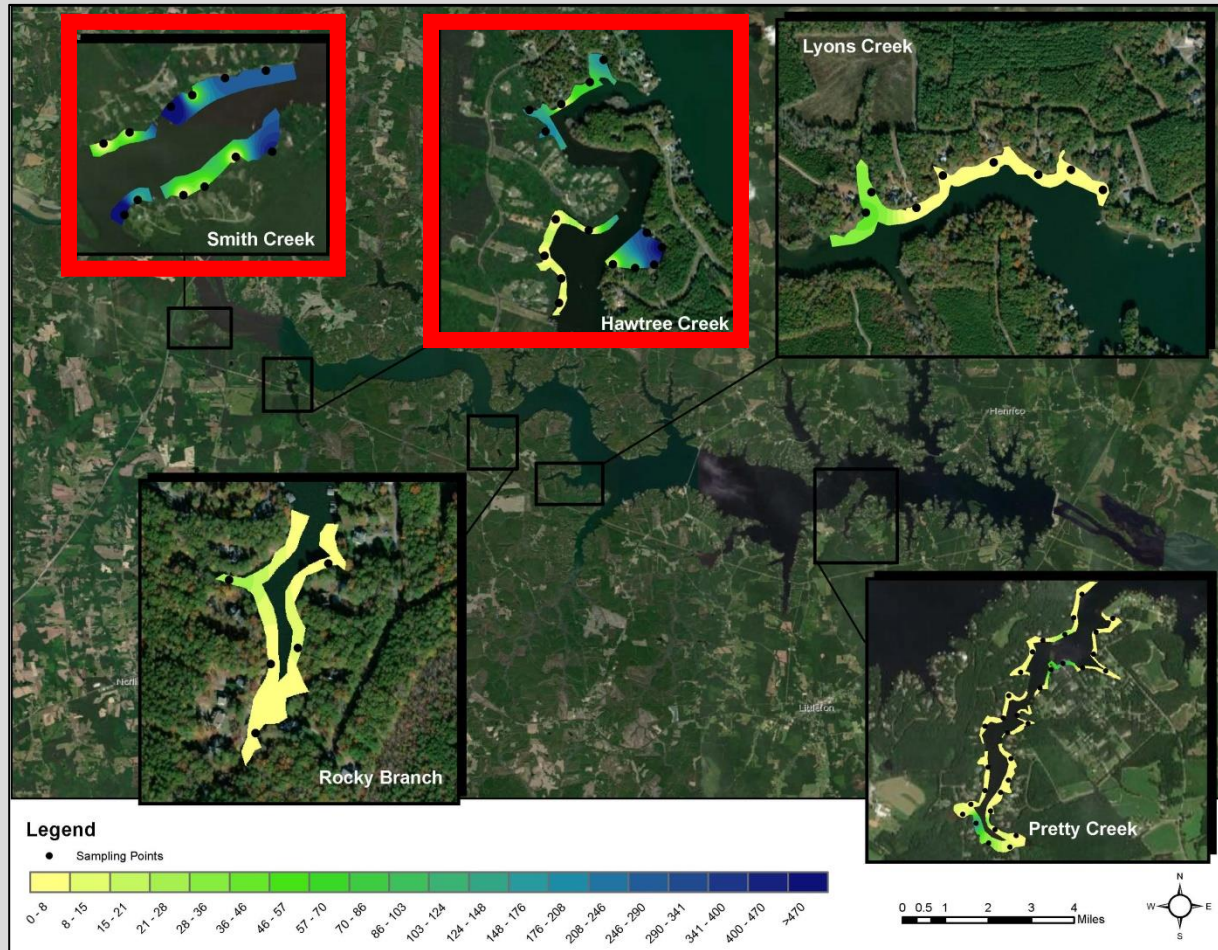
Pretty Creek

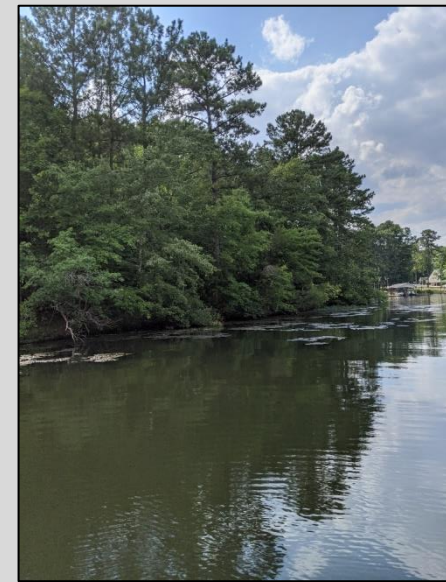
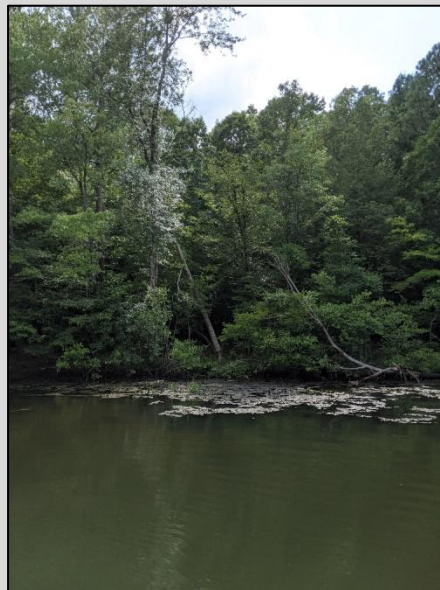
- *Historical Site*

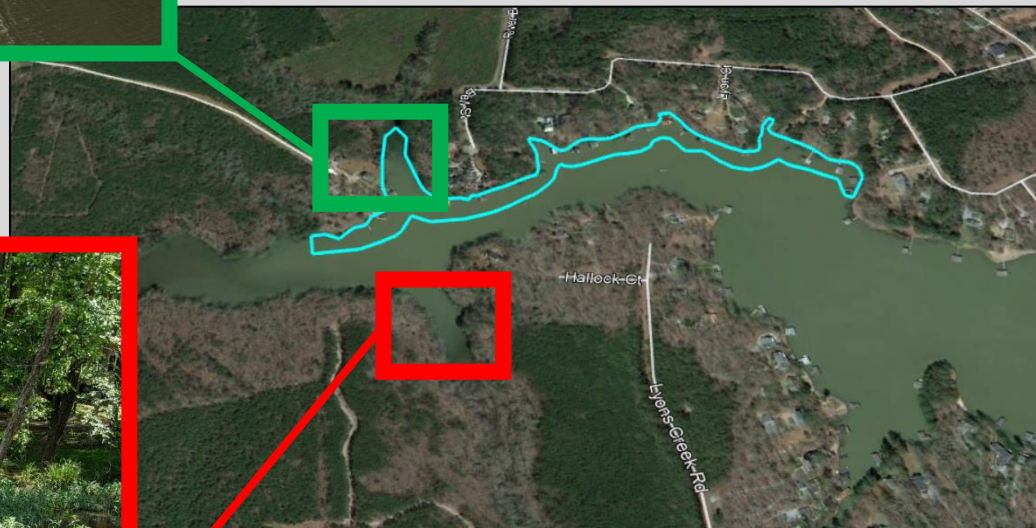


Lyngbya Management Update

Preliminary Findings



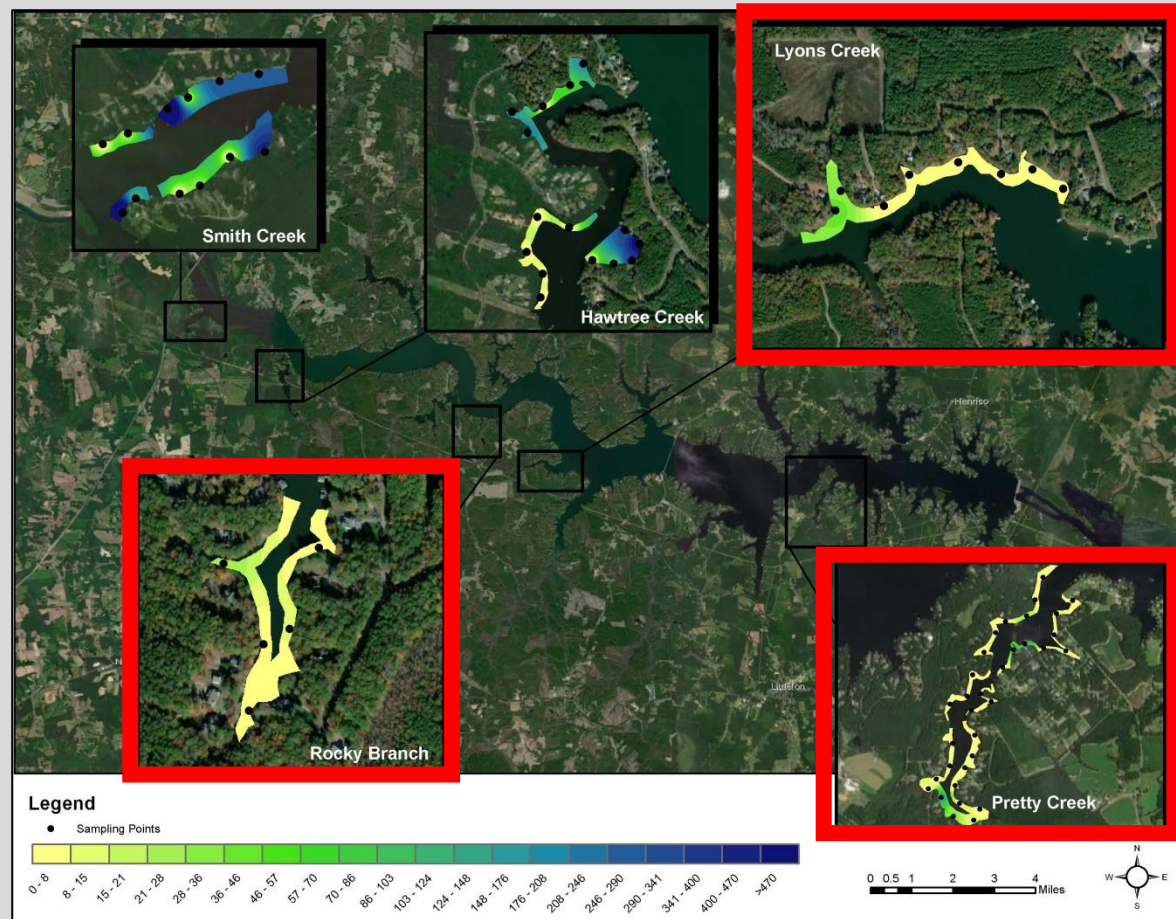




July 2020 - Lyons

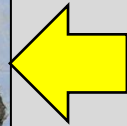
Lyngbya Management Update

Preliminary Findings

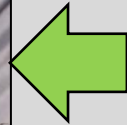
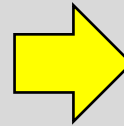


Lyngbya Management Update

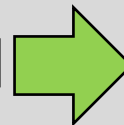
Preliminary Findings



Treated



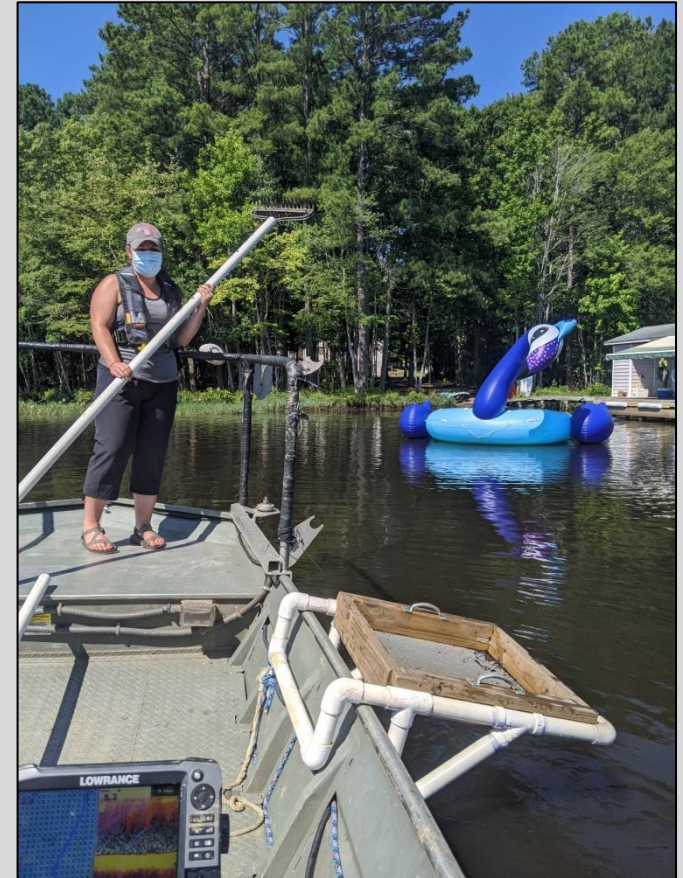
Untreated



2020 Treatment Year

NCSU Research Project

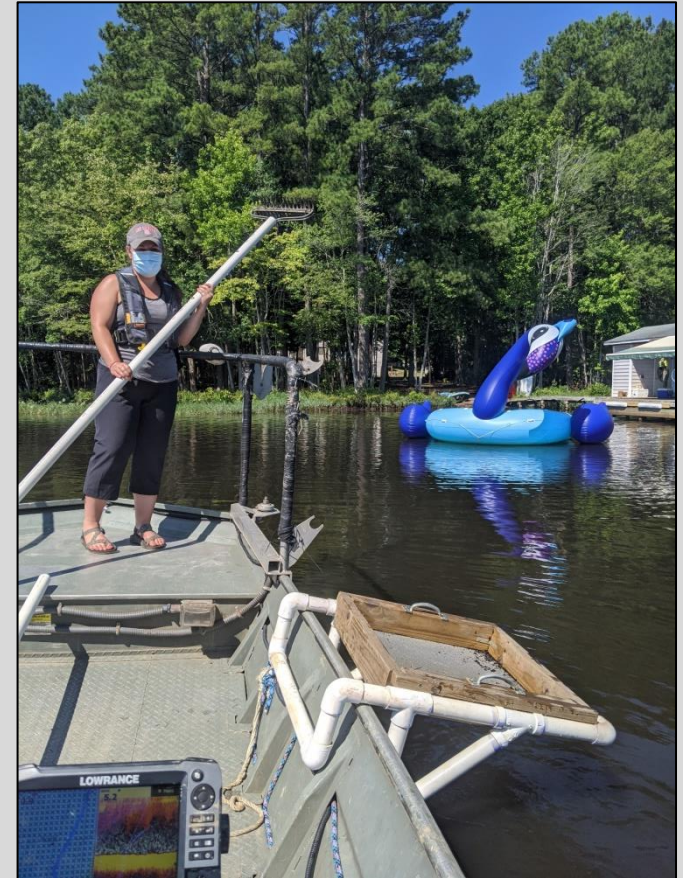
- 2017 – Pilot Study
- 2018 – Project Scheduled to Begin
 - Late July Start Date
- 2019 – First Successful Treatment
 - Early June Start Date
- 2020 – Second Successful Treatment
 - Late April Start Date
- 2021 – Third Treatment Planned



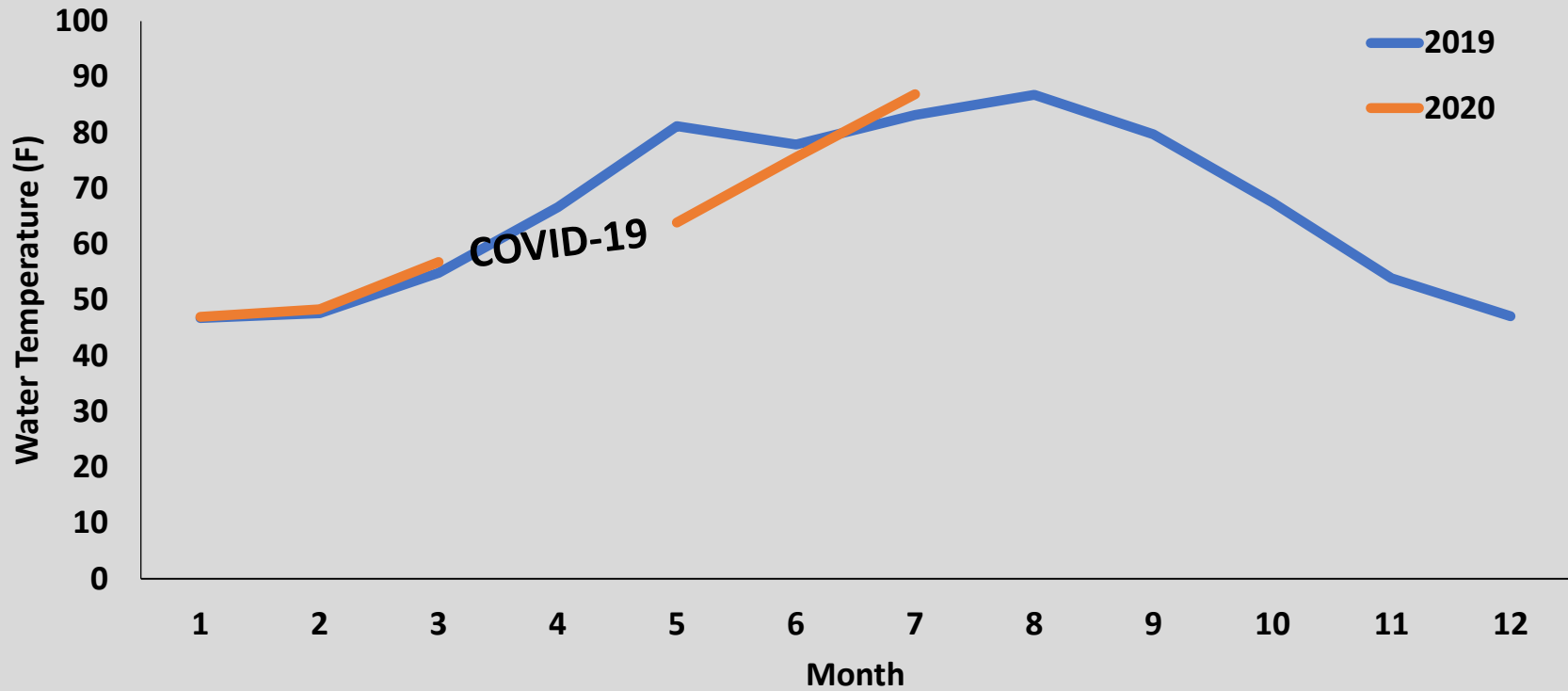
2020 Treatment Year

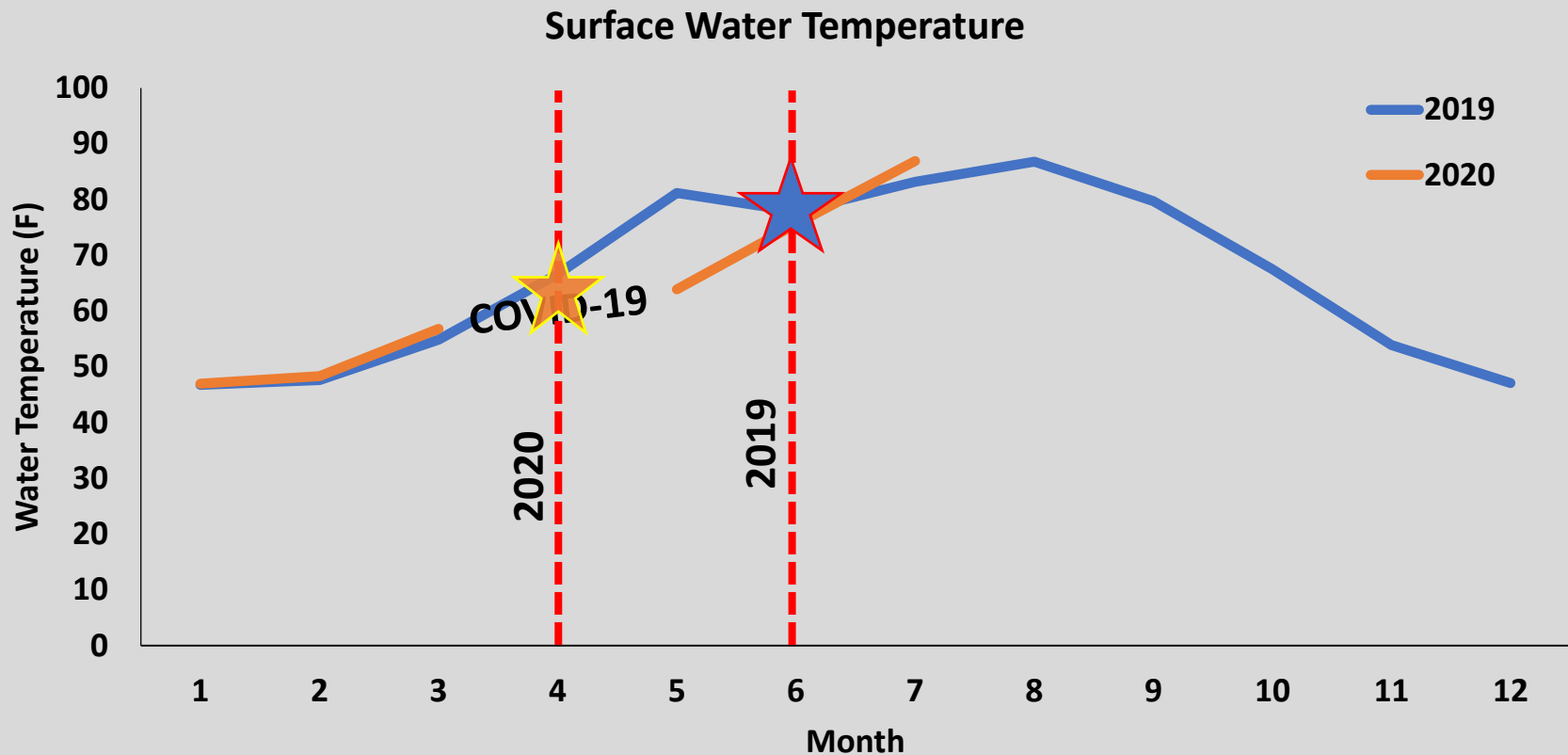
NCSU Research Project

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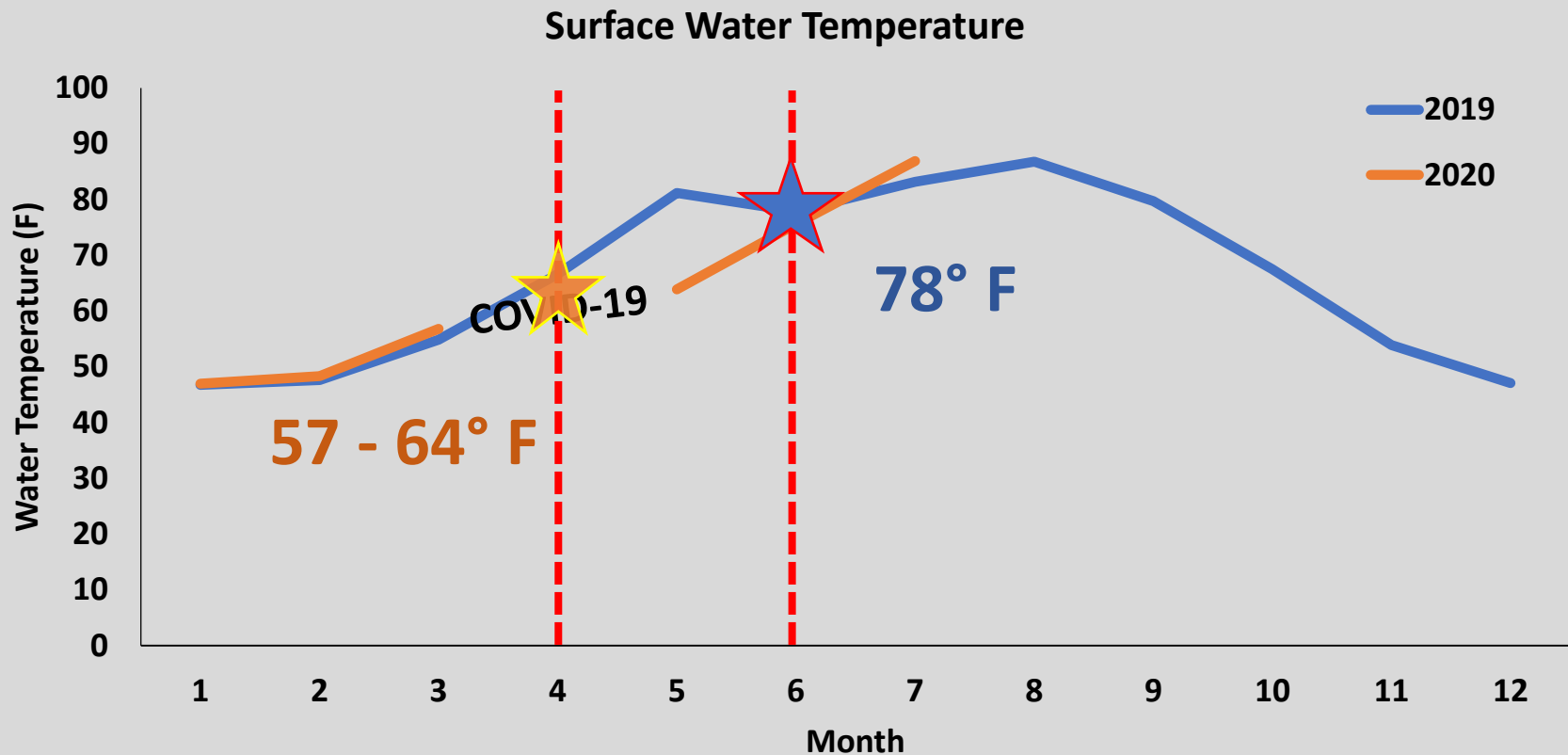
Surface Water Temperature





2019: Treatments began in June

2020: Treatments began in April



2019: Treatments began in June at 78° F
2020: Treatments began in April at 57 - 64° F

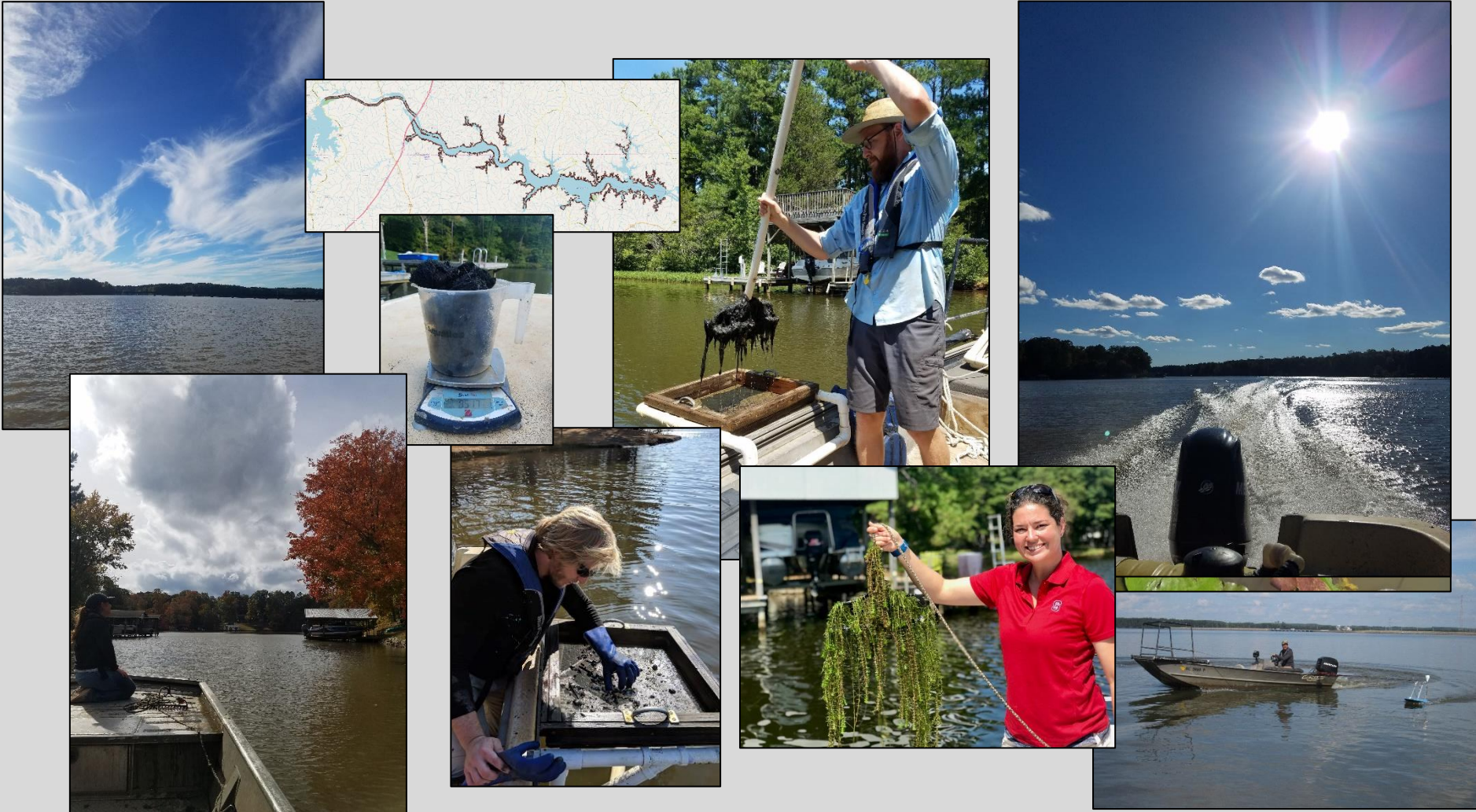
Lyngbya Management Update

Preliminary Findings – Promising!

- *Biosonics*
- *Biomass*
- *Surface Visuals*
- *Lyngbya Appearance*



Questions?



AquaticPlants@ncsu.edu

2020 Re-vegetation Work

- Due to concerns with Covid-19, revegetation work in 2020 was canceled.
- Exclosures at Beachwood Flats were treated with herbicide to reduce competition with Hydrilla.
- Fall Survey will be completed by September.



NORTH CAROLINA
Wildlife Resources Commission