

Lake Gaston Weed Control Council Meeting July 30th, 2020



Jessica R. Baumann

Extension Associate, Lake Gaston
Aquatic Plant Management Program



Lyngbya Management Update

Outline

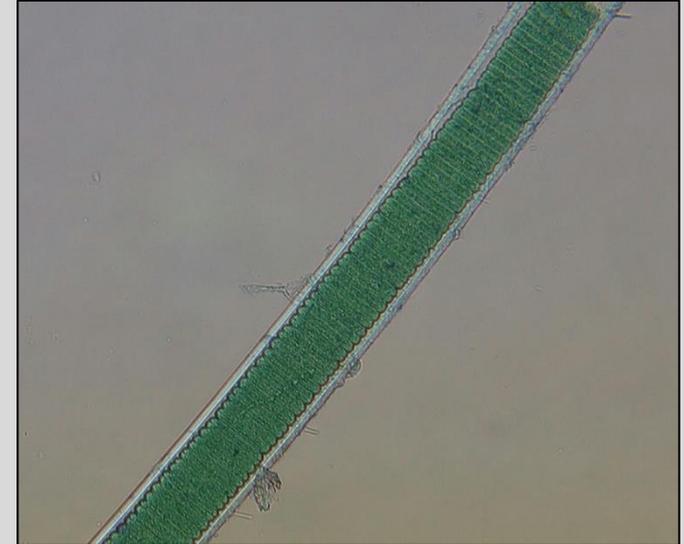
- Background
- Previous Treatment Years
- 2020 Treatment Year



Lyngbya Management Update

Background

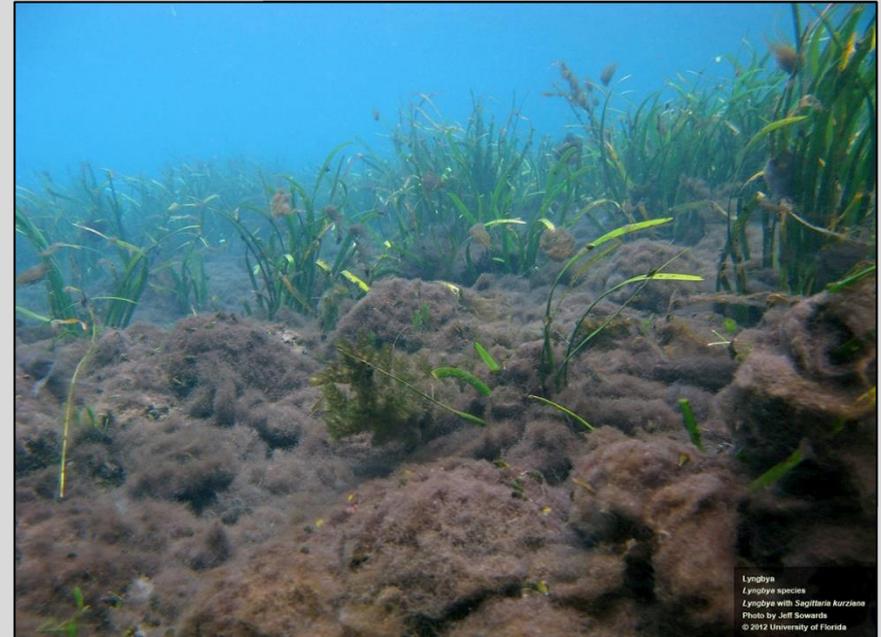
- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native



Lyngbya Management Update

Background

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



Lyngbya Management Update

Background

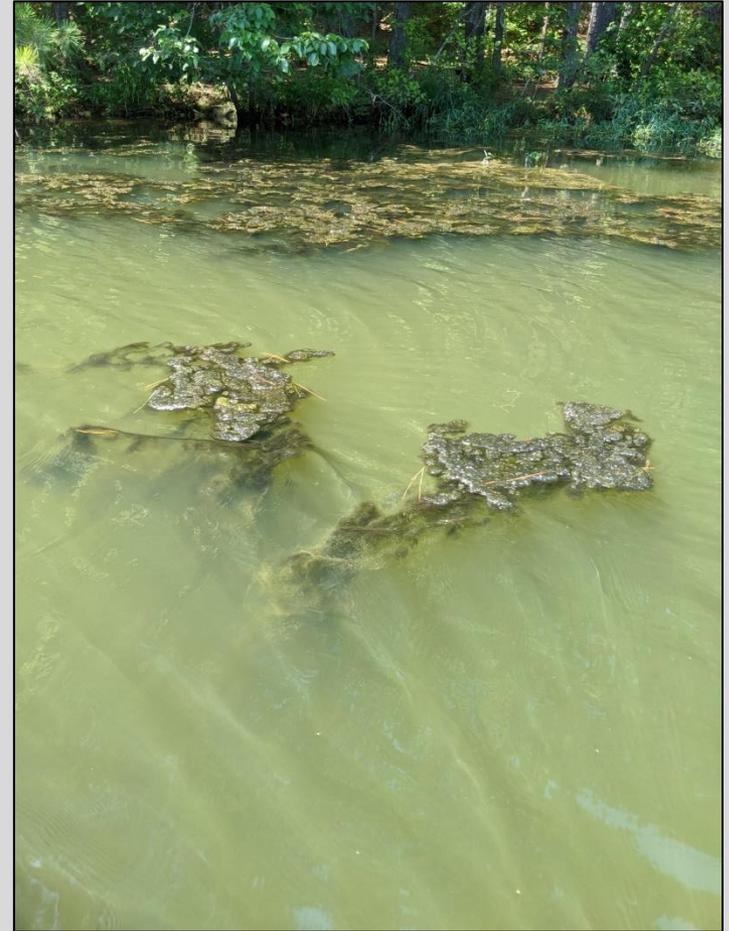
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- Colder Winter Months – Benthic



Lyngbya Management Update

Background

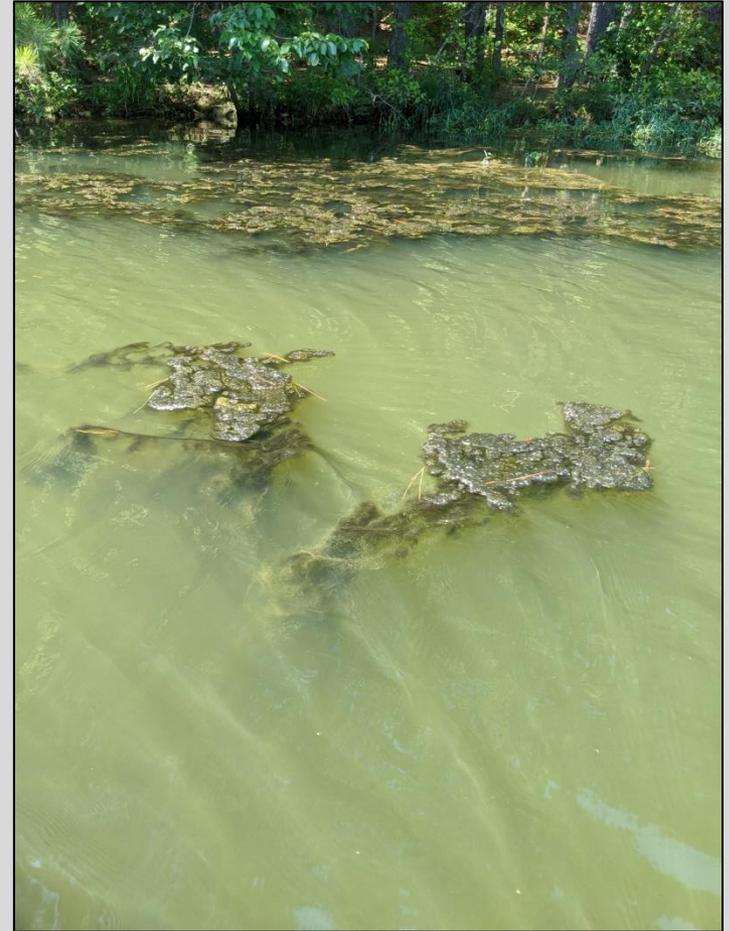
- Filamentous, Cyanobacteria (Blue/Green Alga)
- Native
- Colder Winter Months – Benthic
- Warmer Summer Months – Surface



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

All Images Shopping News Videos More Settings Tools

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 ...](#)

About Featured Snippets Feedback

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? ▾

Feedback

www.platinumlakemanagement.com › blog › the-soluti...
[The Solution for Lyngbya Algae / Platinum Ponds & Lake ...](#)
 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 ...

thepondshop.com › pages › lyngbya
[Lyngbya – The Pond Shop®](#)
 Lyngbya. **Lyngbya Control** Guide. Lyngbya is a large-celled, filamentous, mat-forming algae. Lyngbya can grow to be several inches thick, covering large areas ...

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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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PLATINUM PONDS & Lake Management

Blog

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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 **bio-actives Aquasticker**. **What makes this biological attacking 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.

Lyngbya Management Update

Google Lyngbya Control

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To aid the herbicides and algaecides that kill the Lyngbya, Naturalake Biosciences developed the **biological Aquasticker**. **What makes this biological attacking 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.

Lyngbya Management Update

Google Lyngbya 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.

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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*.

PLATINUM POND
Water Management

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Solution for *Lyngbya* Algae

Naturalake
Biosciences

PURCHASE INDUSTRIES TREATMENT SUPPORT EDUCATION & EVENTS LAB

Beating *Lyngbya*

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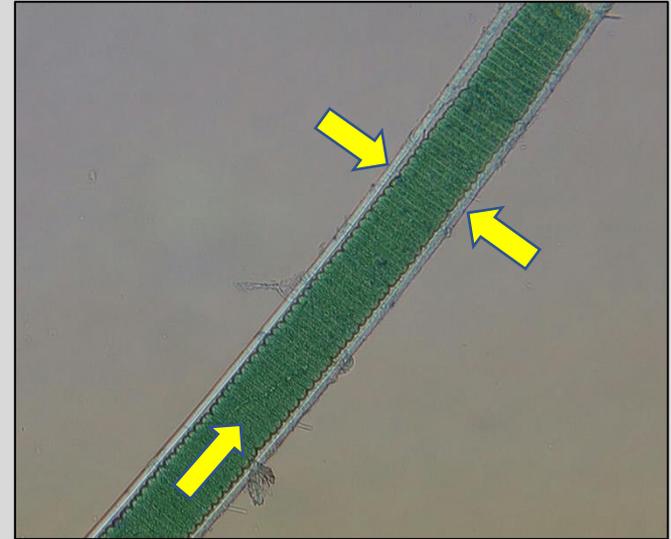
mechanisms
ek
barrier that
an
biota, that
microbiota
nces for
and chemical



L yngbya Management Update

Why so difficult??

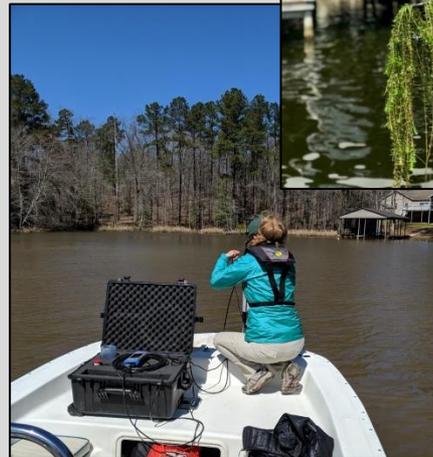
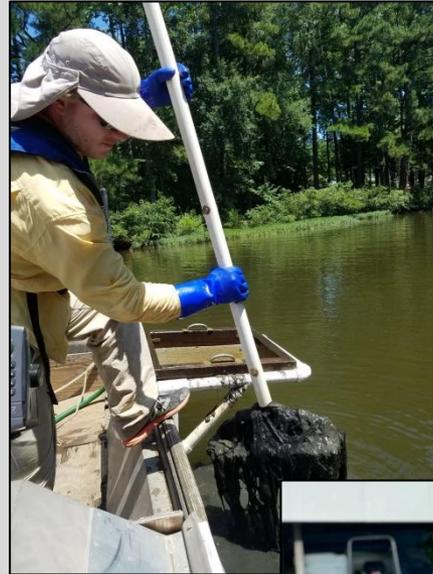
- **Physical**
 - Sheath
 - Thick mats
 - Gliding motility
- **Genetics**
 - Different strains behave differently
- **Different Systems = Different Responses**
- **Many gaps in the research**



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



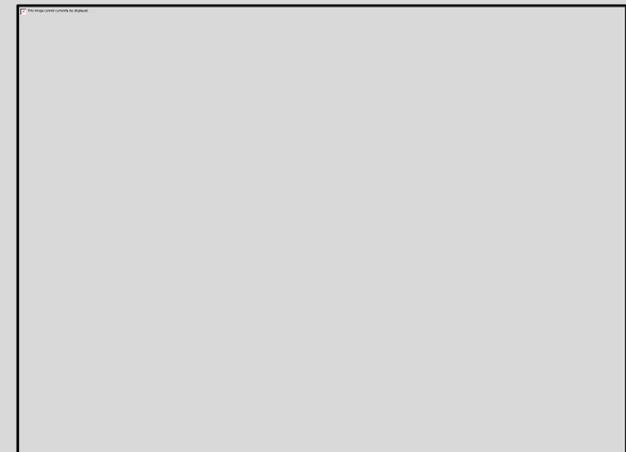
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 - **Sampling Methods**
 - Biomass
 - Biosonics



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Lyngbya Treatments

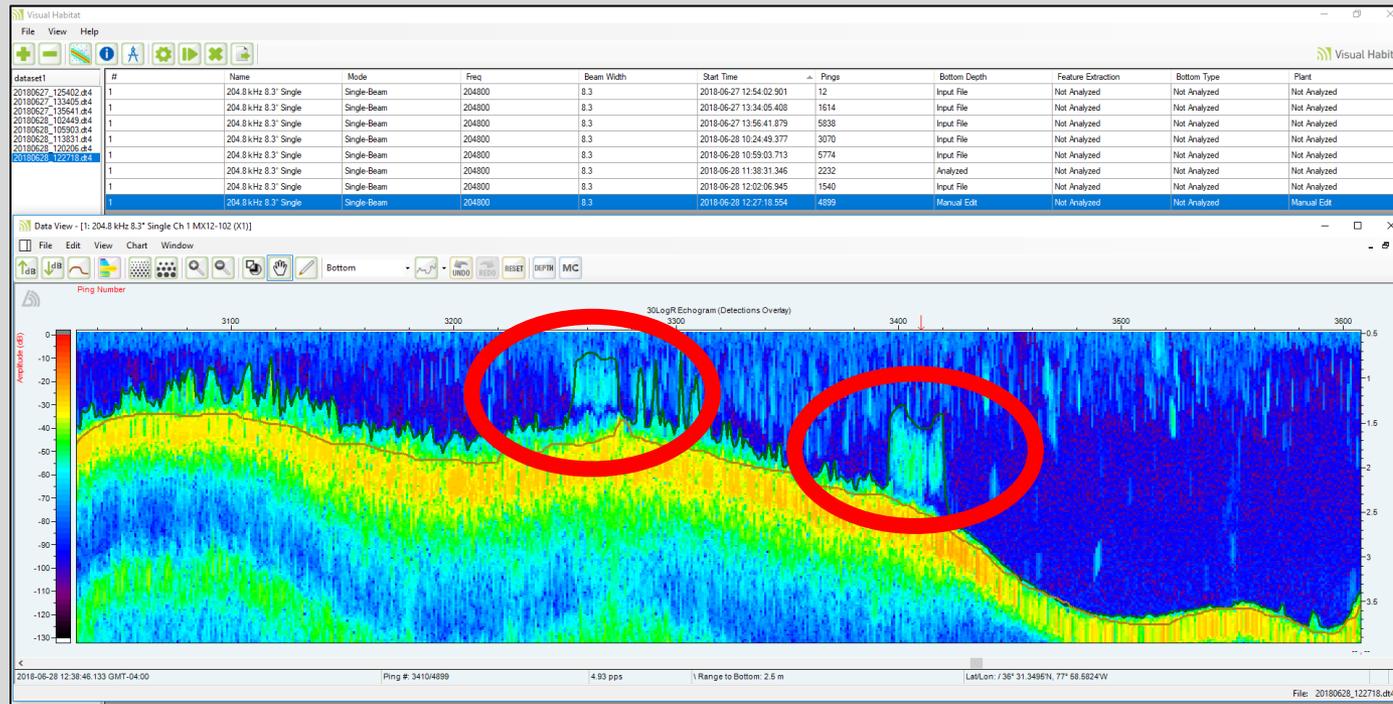
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Lyngbya Treatments

Sampling Methods

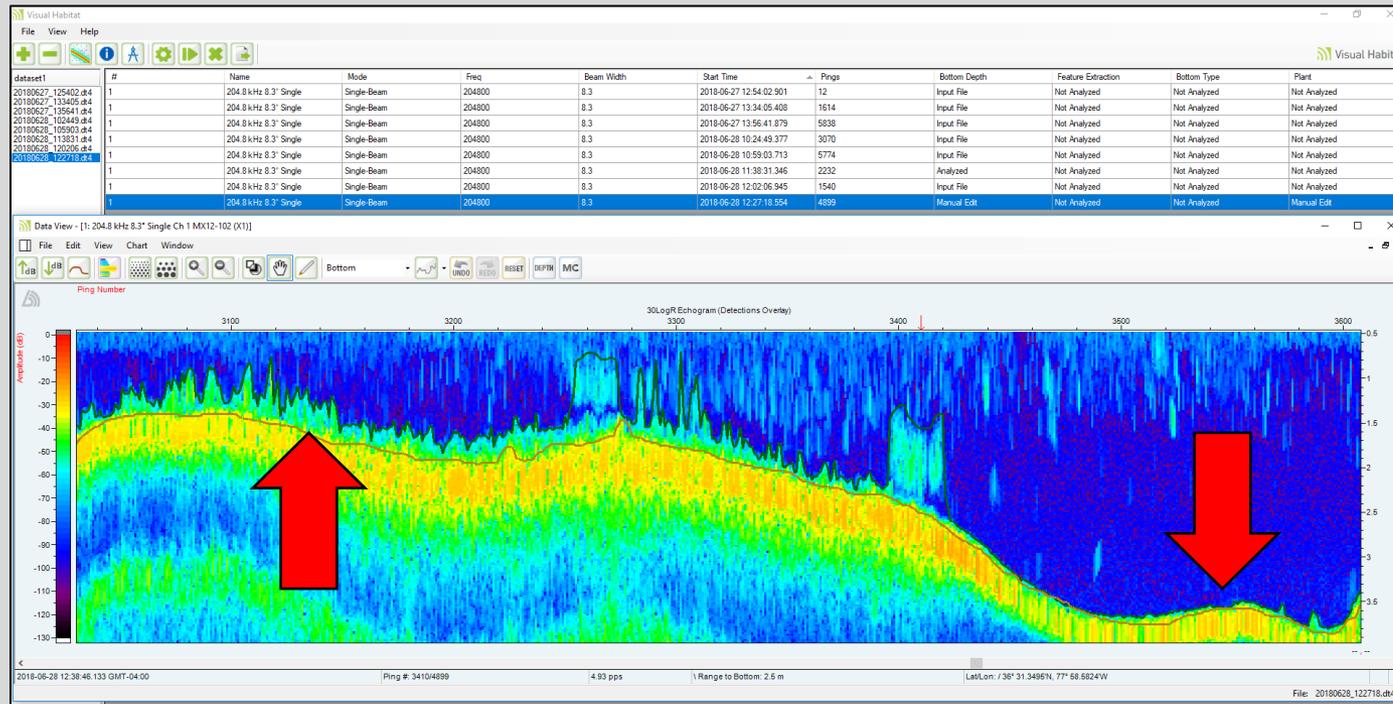
- ***Biosonics***
 - Better idea of the makeup of the whole mat



Lyngbya Treatments

Sampling Methods

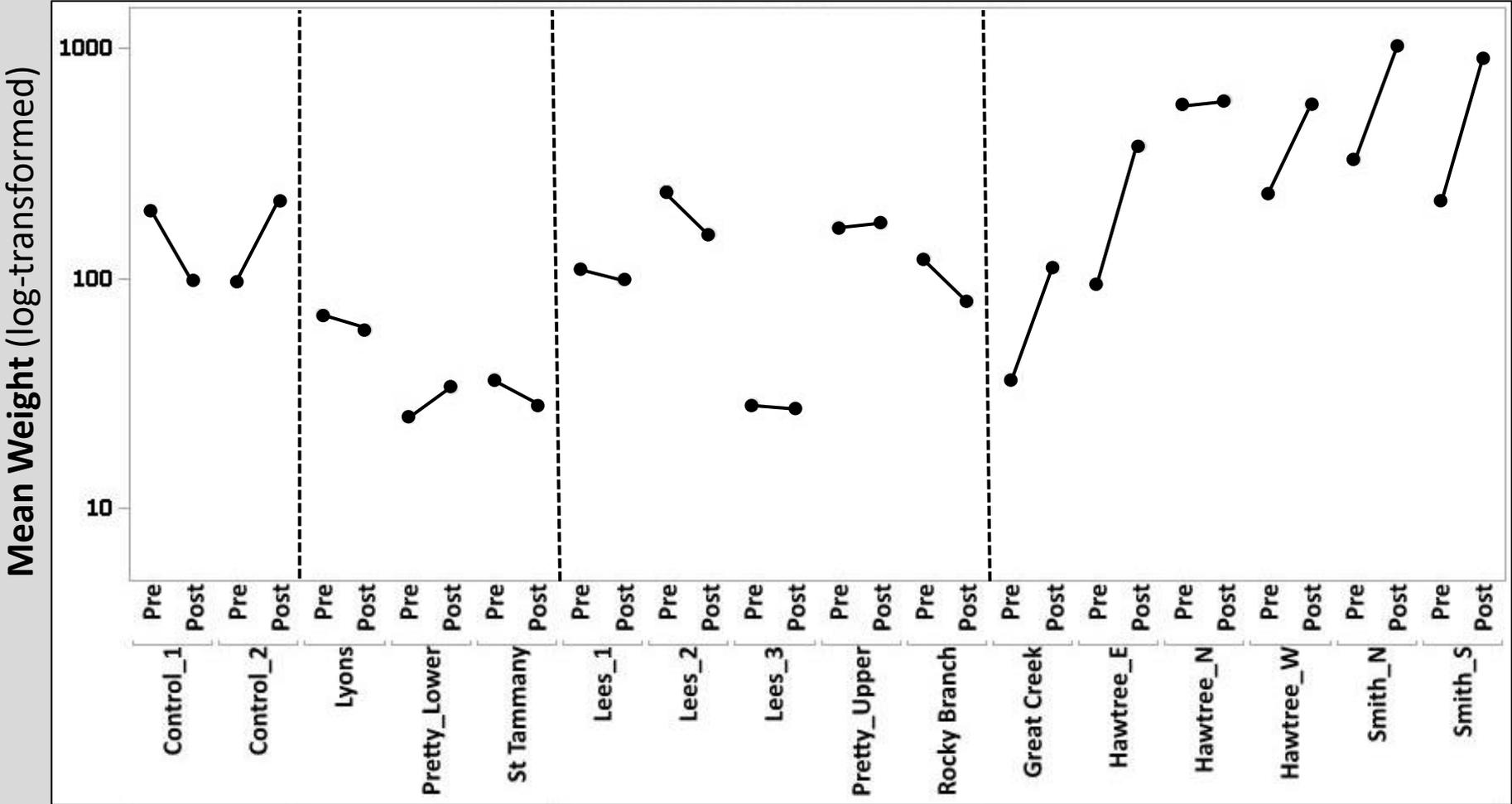
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Results of 2019 Treatment

Biomass Sampling (2019)

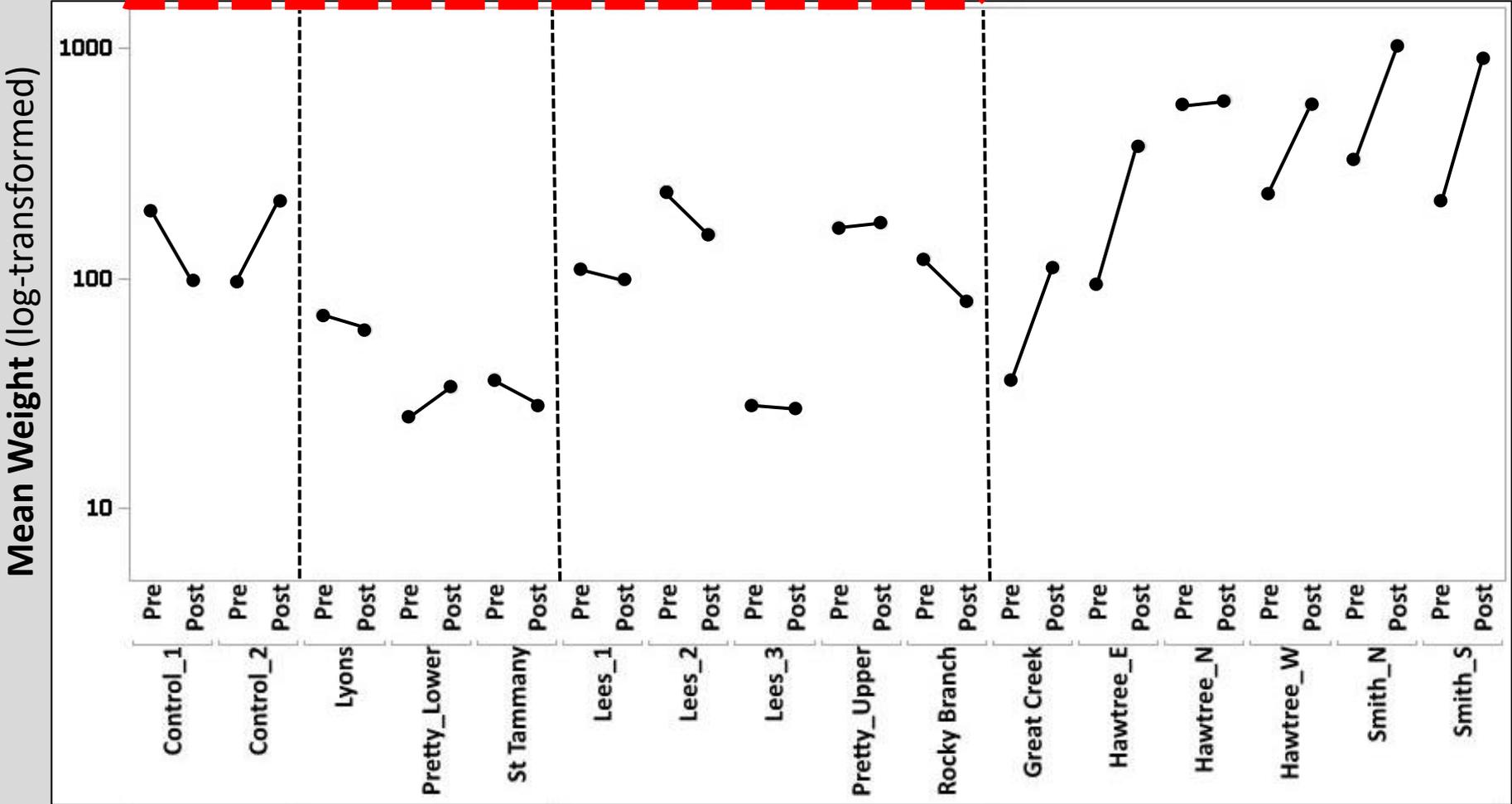
Control SePRO Applied Biochemist UPL



Biomass Sampling (2019)

Control SePRO Applied Biochemist

UPL



Biomass Sampling (2019)

Control

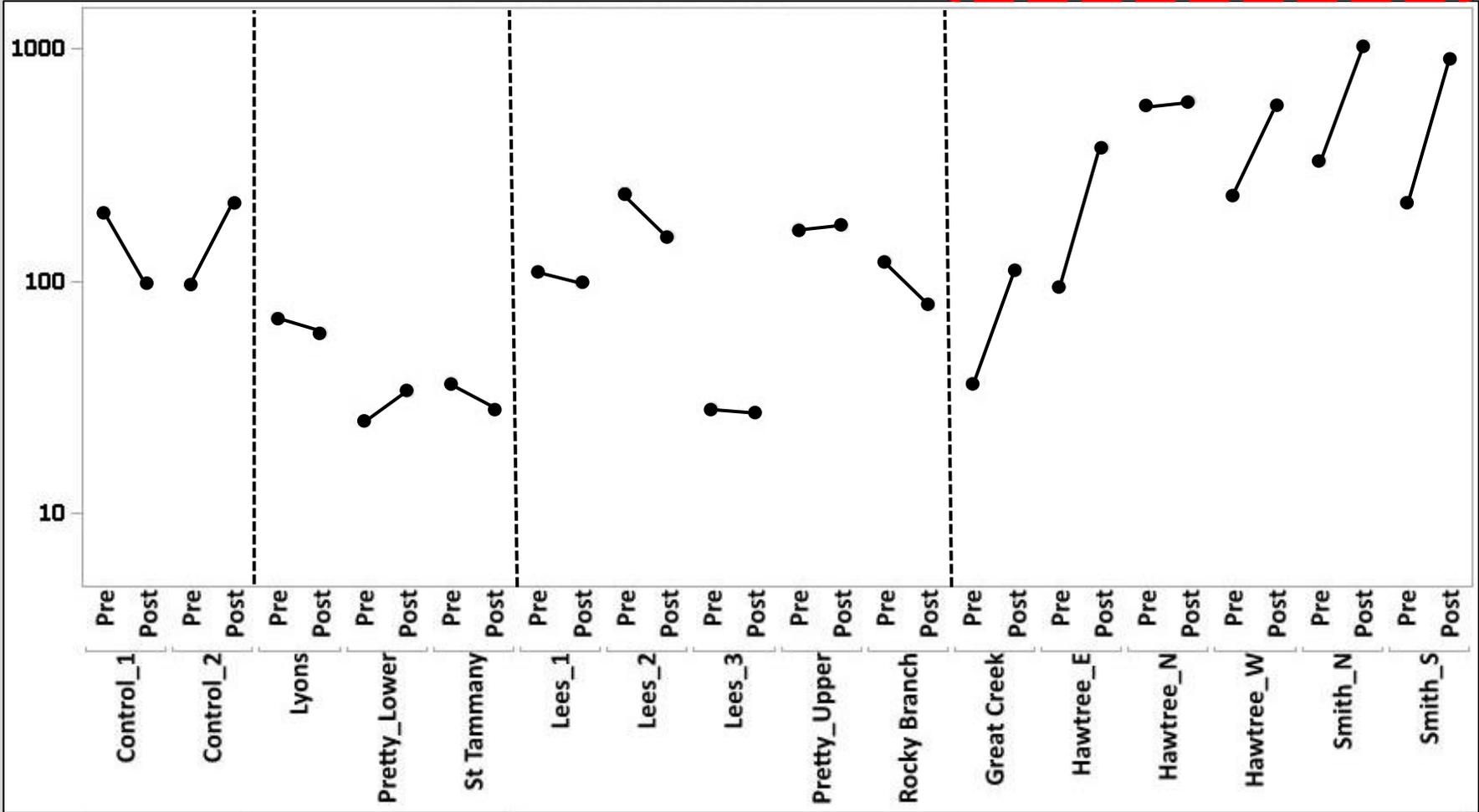
SePRO

Applied Biochemist

UPL



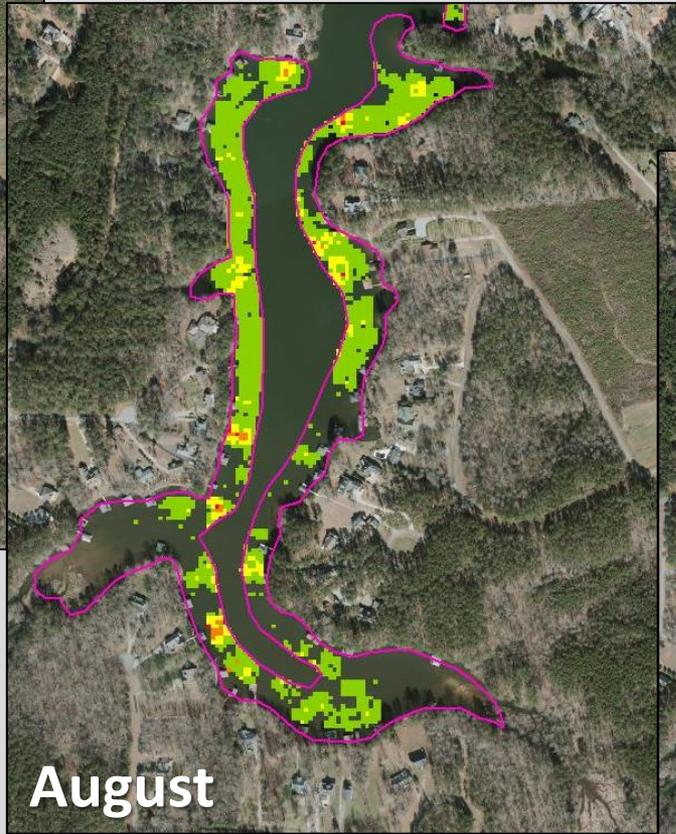
Mean Weight (log-transformed)



Pretty Creek SePRO



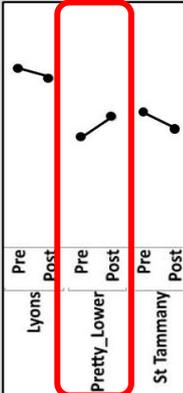
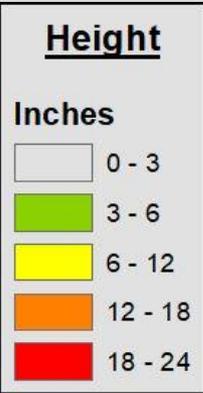
April



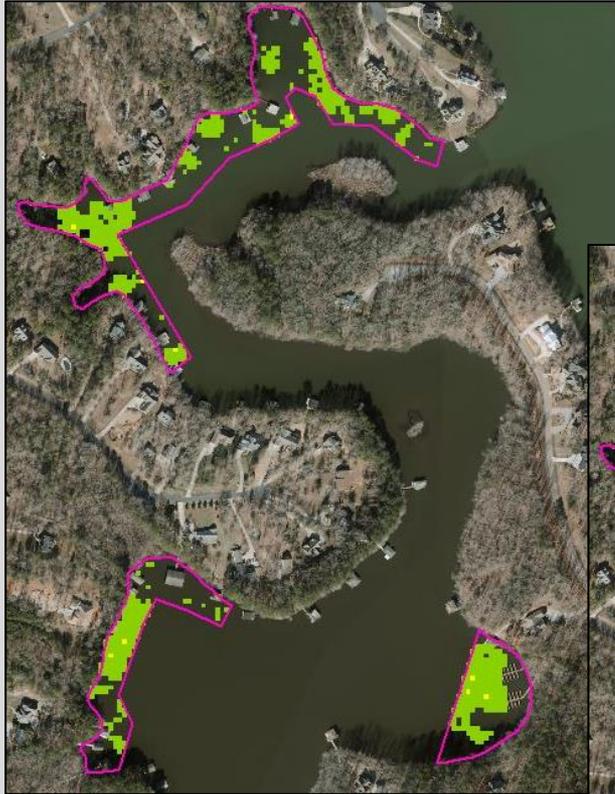
August



November



April



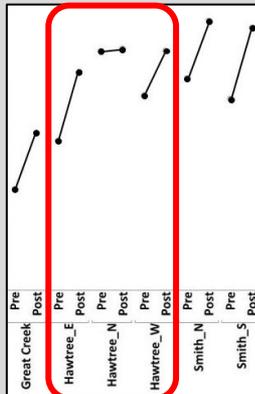
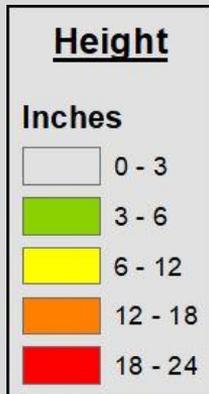
Hawtree– N, E, W

UPL

August



November



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

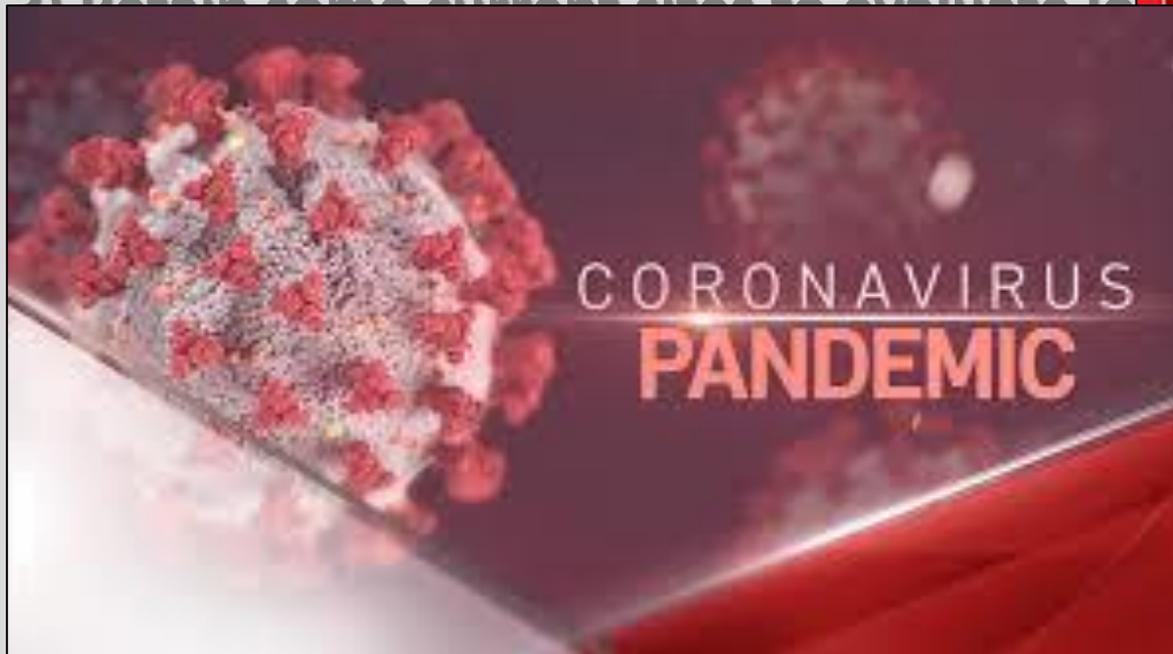
Lyngbya

- 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 Proposed Treatment

Lyngbya

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





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

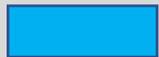
Experimental Plots



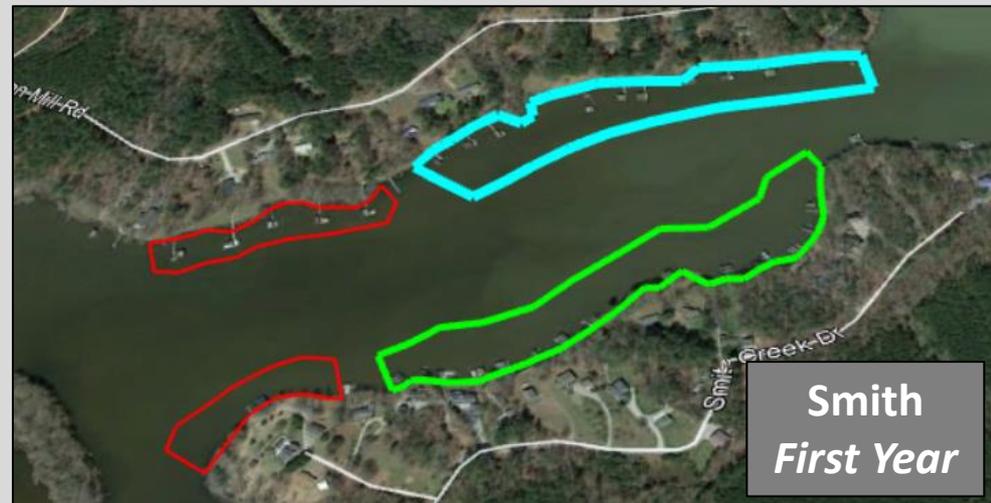
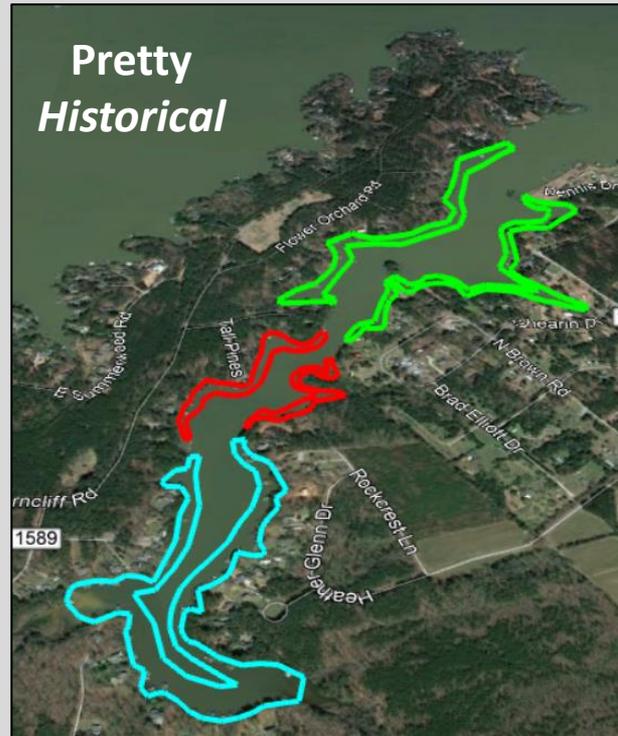
Control



Applied
Biochemist



SePRO



Experimental Plots



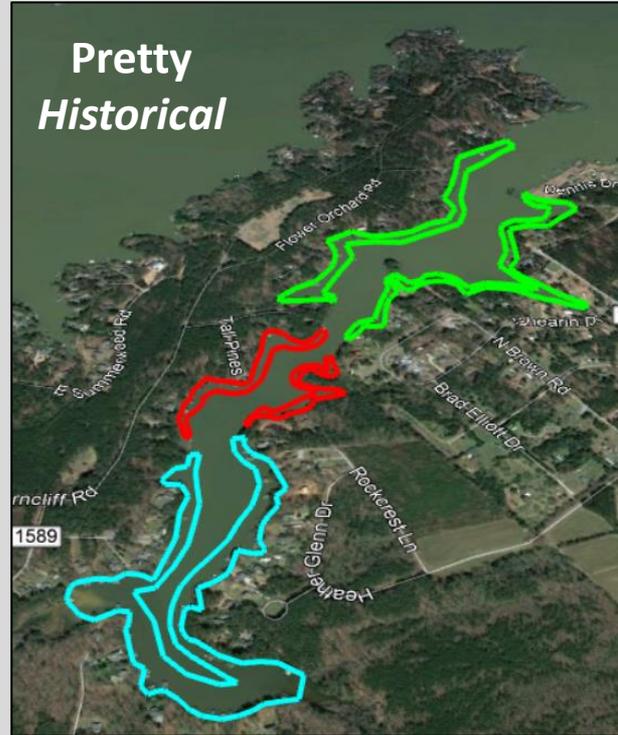
Control



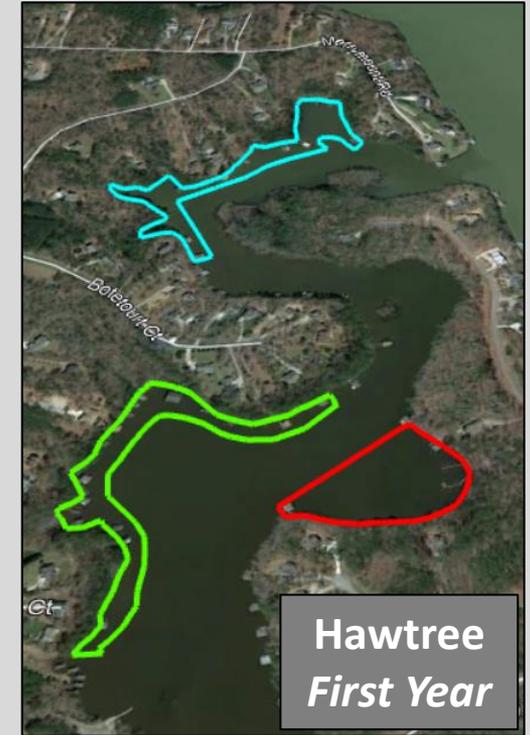
Applied Biochemist



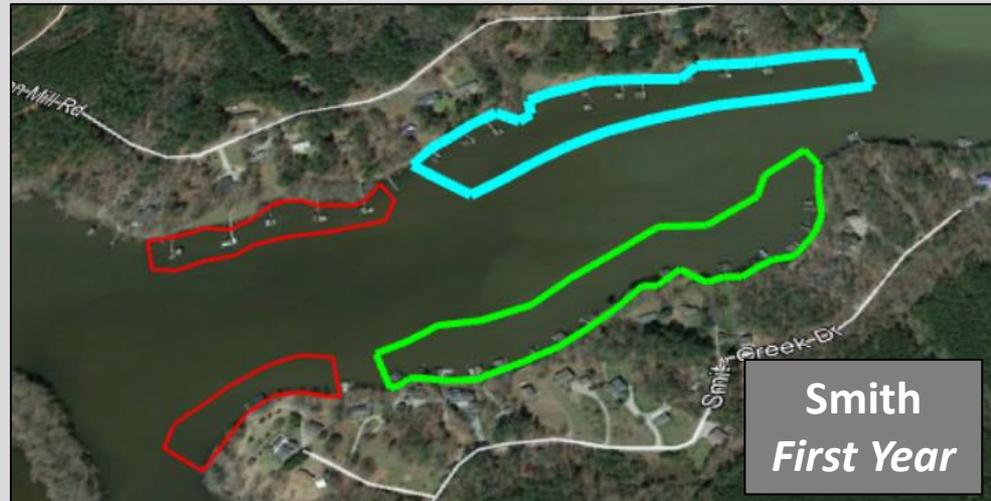
SePRO



Pretty Historical



Hawtree First Year



Smith First Year

**Applied Biochemist product
Citrine Ultra applied to
Hawtree and Smith**

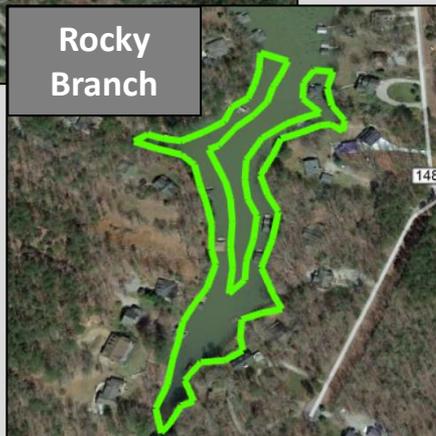
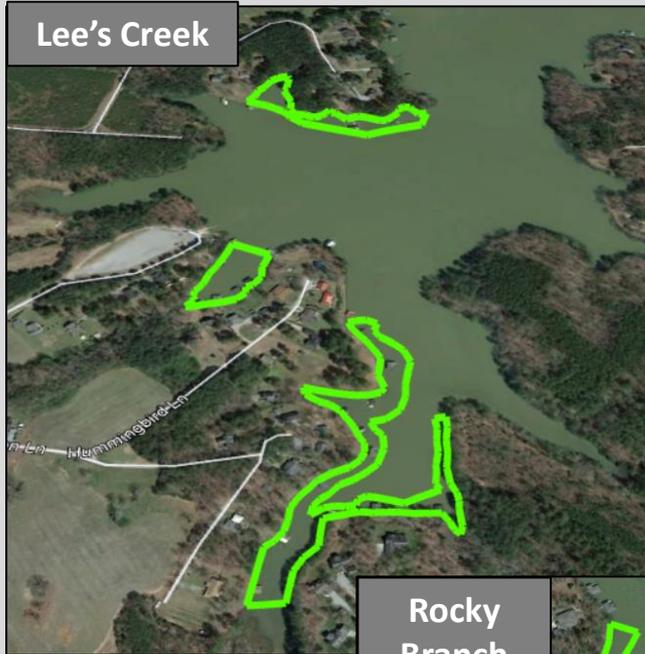
2020 Treatment Plan

Lyngbya

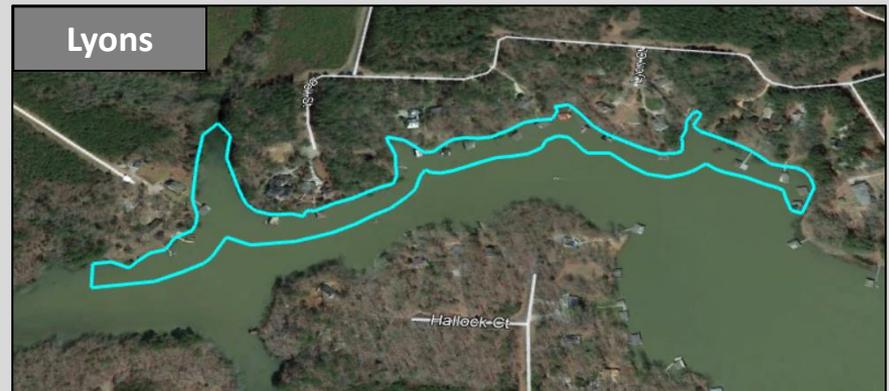
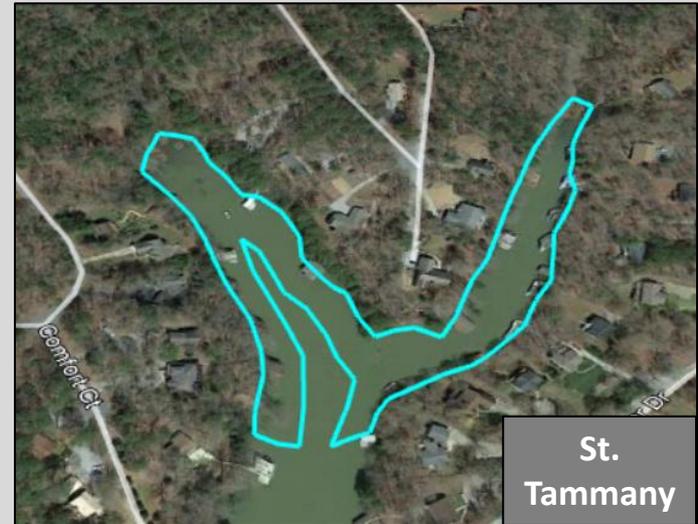
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- 2) Create experimental plots with both products and control
- 3) Retain some current sites to evaluate long-term treatment
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- 5) Begin monthly treatments in March

Historical Plots

Applied Biochemist



SePRO



2020 Treatment Plan

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)~~
 - 2021 Treatment Period
 - Have a running database with public complaints
- 5) Begin monthly treatments in March

2020 Treatment Plan

Lyngbya

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2020 Covid-19 Restrictions

**NC STATE
UNIVERSITY**

NC State University Restricted Research

Lyngbya Research

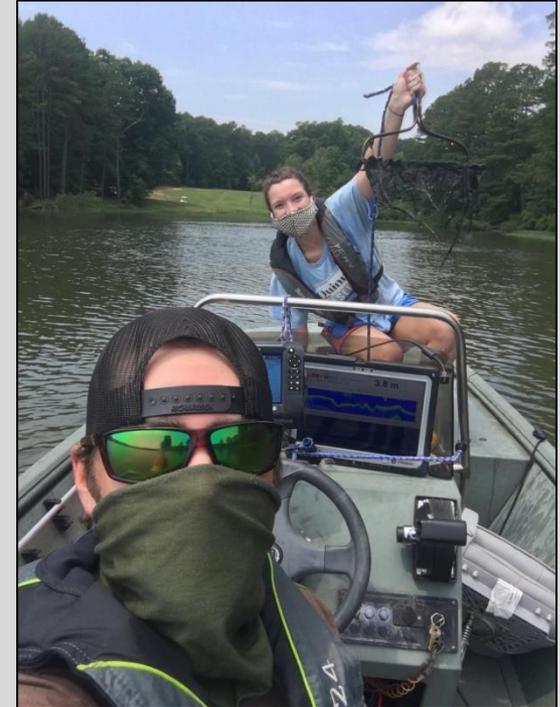


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Lyngbya Research





2020 Covid-19 Restrictions

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Lyngbya Research

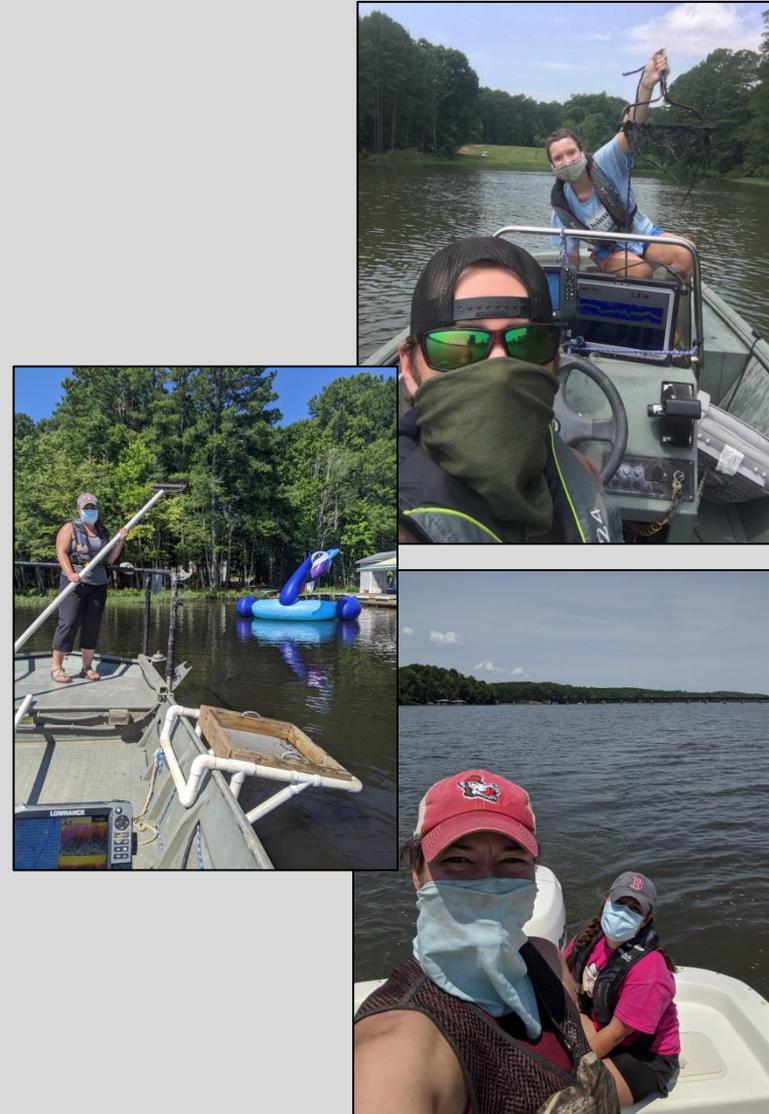
- *Biosonics – April, May, June, July*
- *Biomass – July*



Lyngbya Management Update

Preliminary Findings

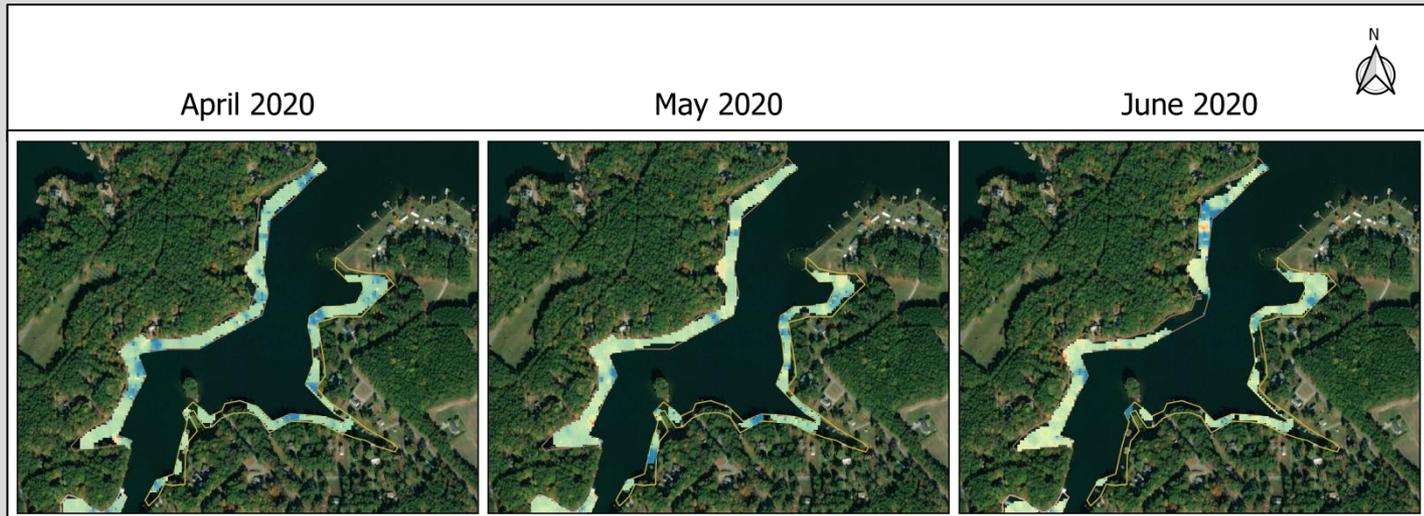
- ***Biosonics (April – June)***



Lyngbya Management Update

Preliminary Findings - Pretty

Applied
Biochemist

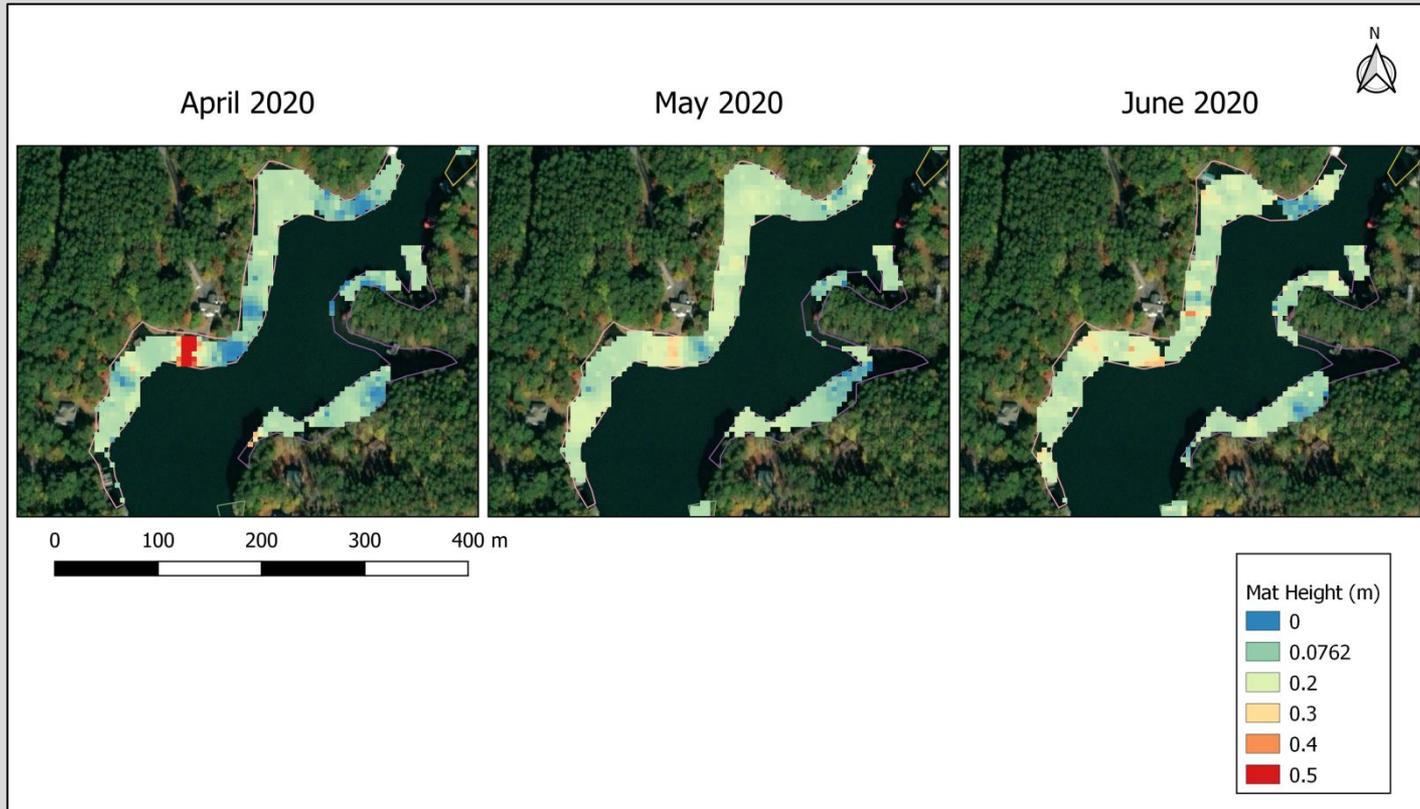


SePRO



Lyngbya Management Update

Preliminary Findings - Pretty

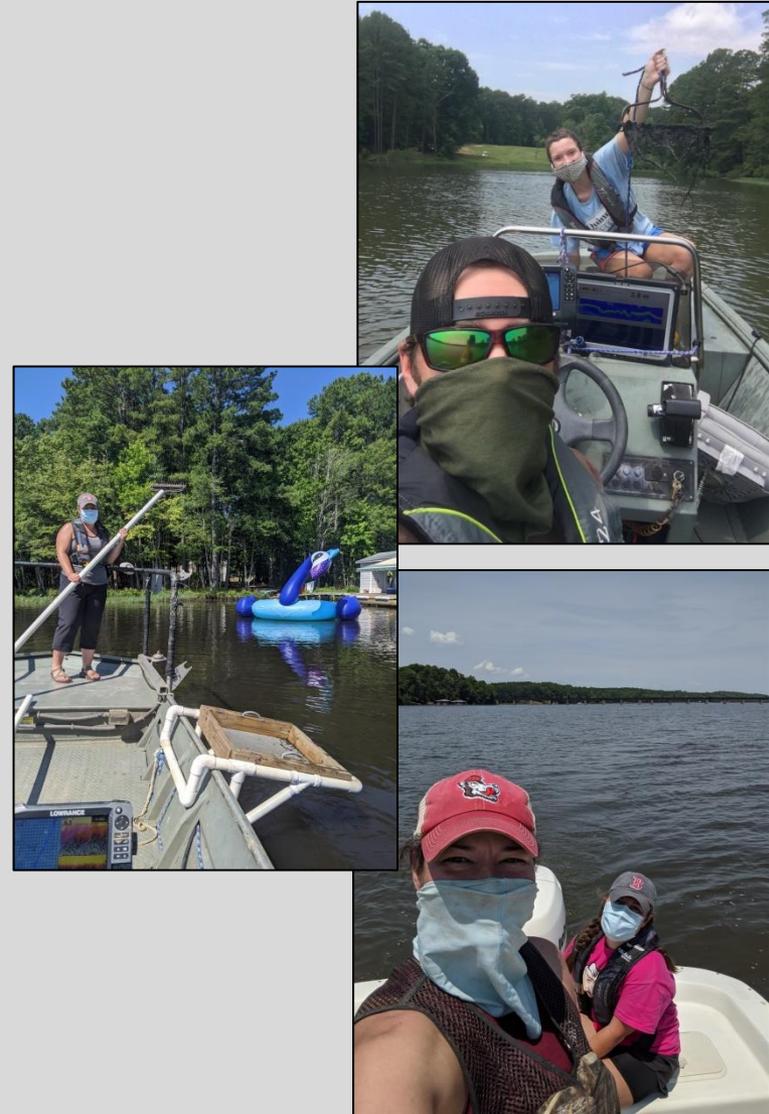


Untreated
Control

Lyngbya Management Update

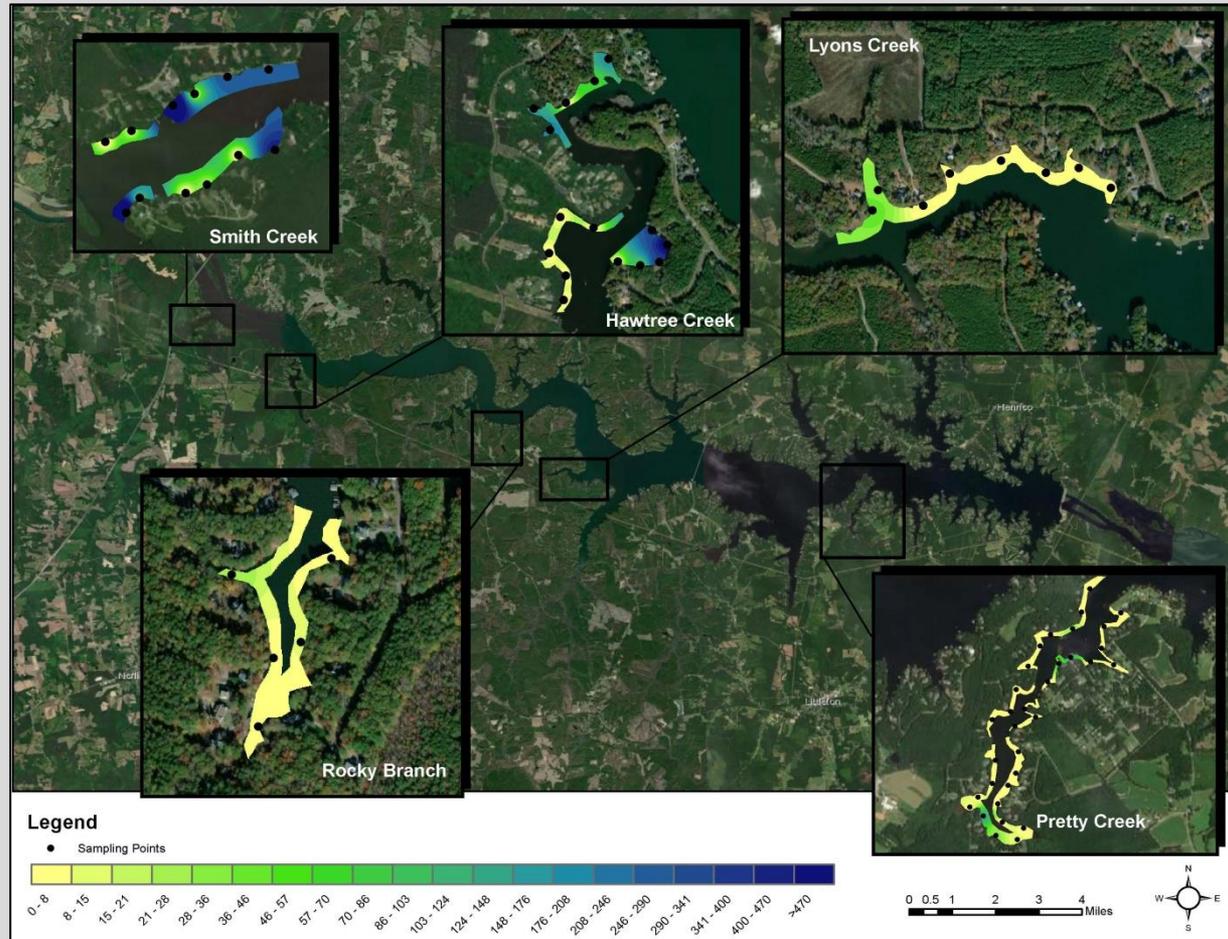
Preliminary Findings

- *Biomass - July*



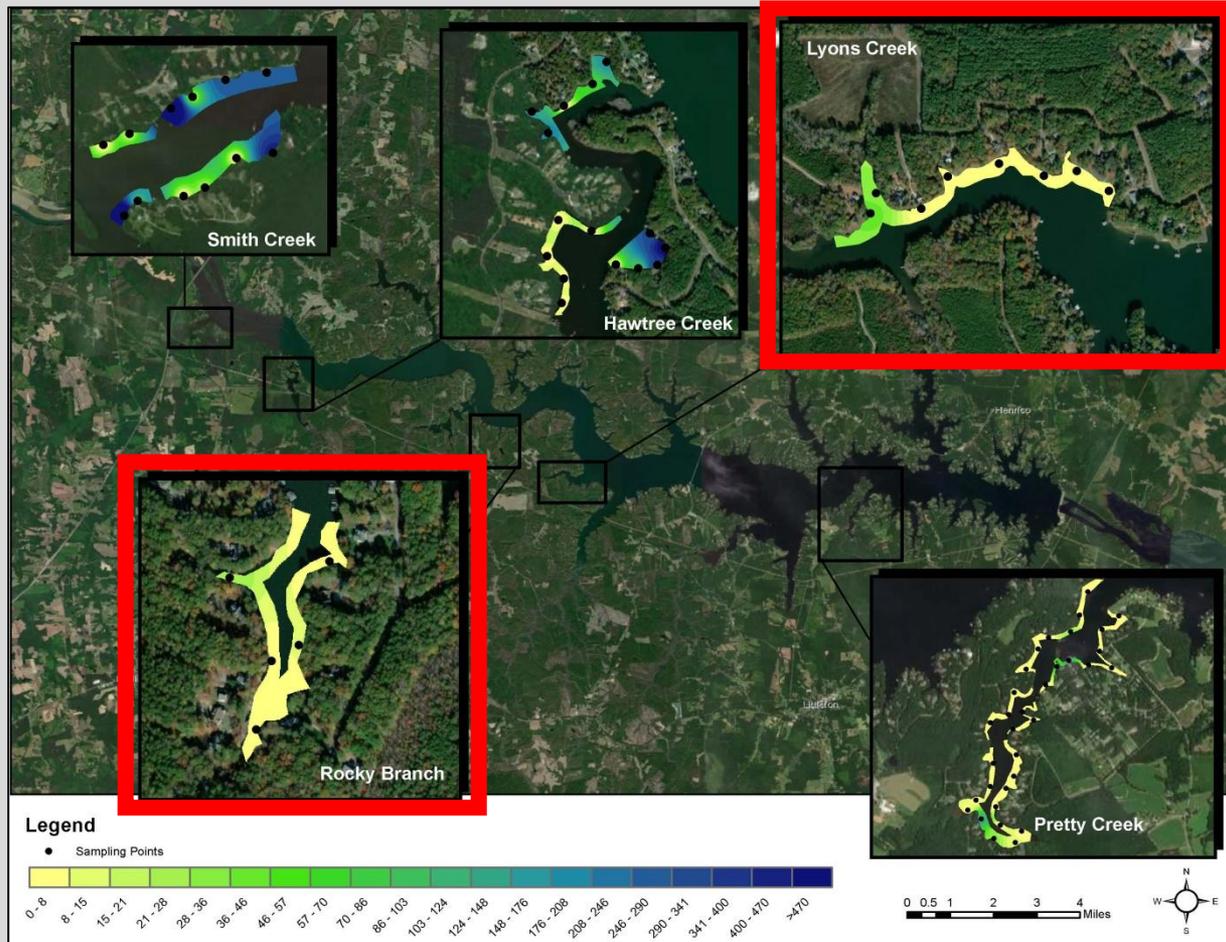
Lyngbya Management Update

Preliminary Findings



Lyngbya Management Update

Preliminary Findings

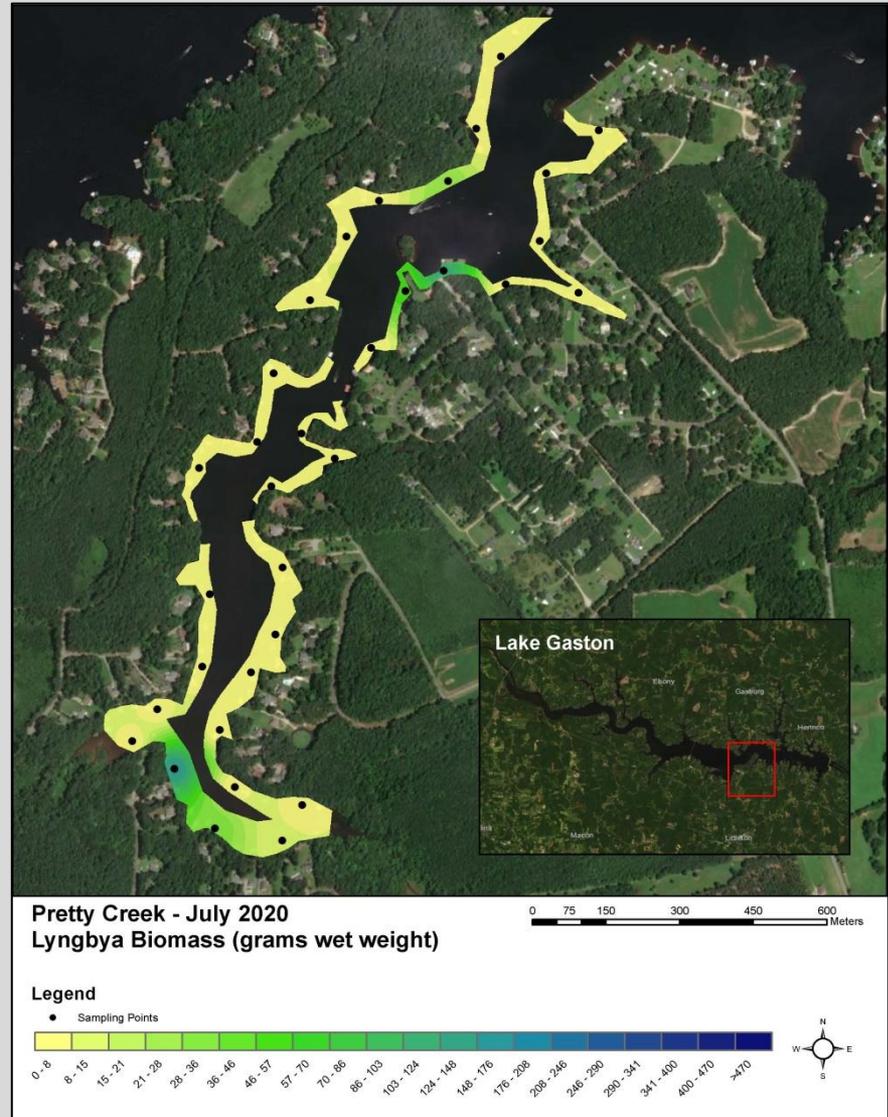


Lyngbya Management Update

Preliminary Findings

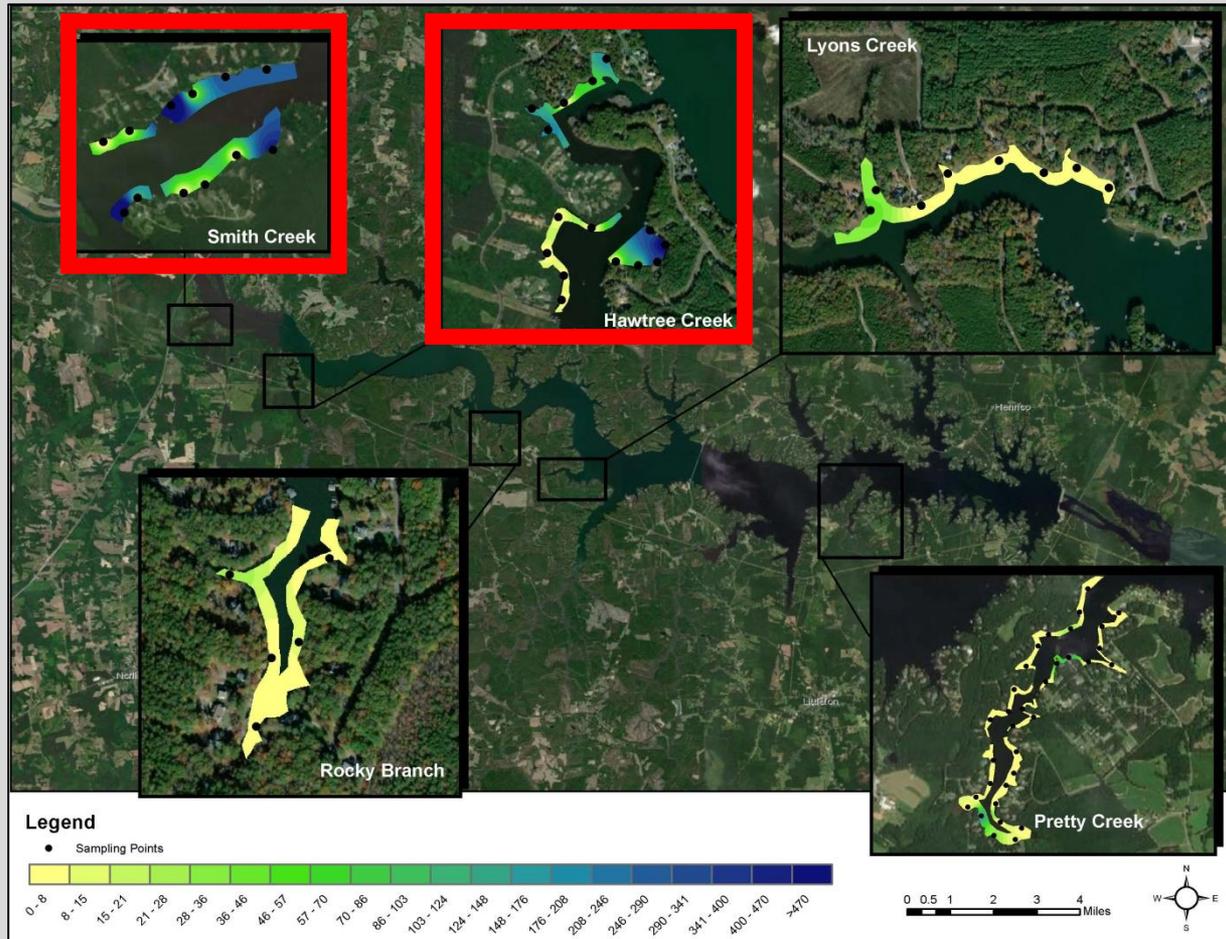
Pretty Creek

- *Historical Site*



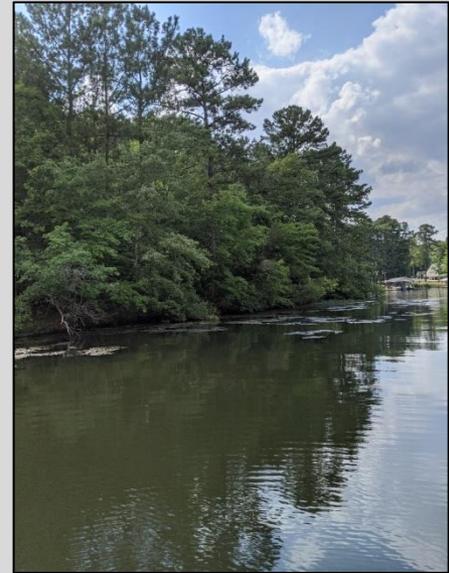
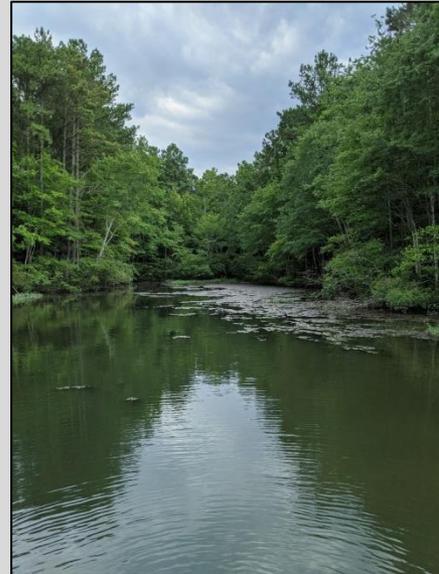
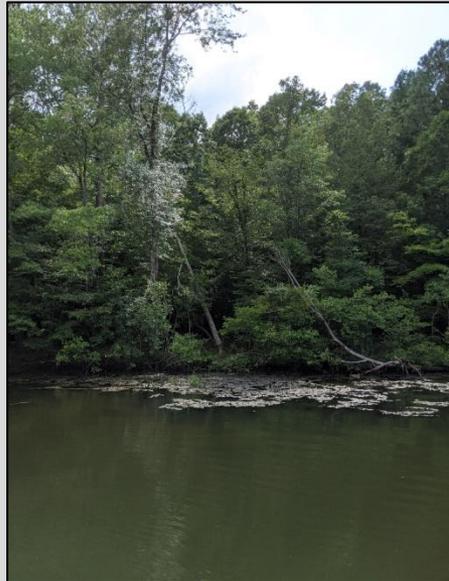
Lyngbya Management Update

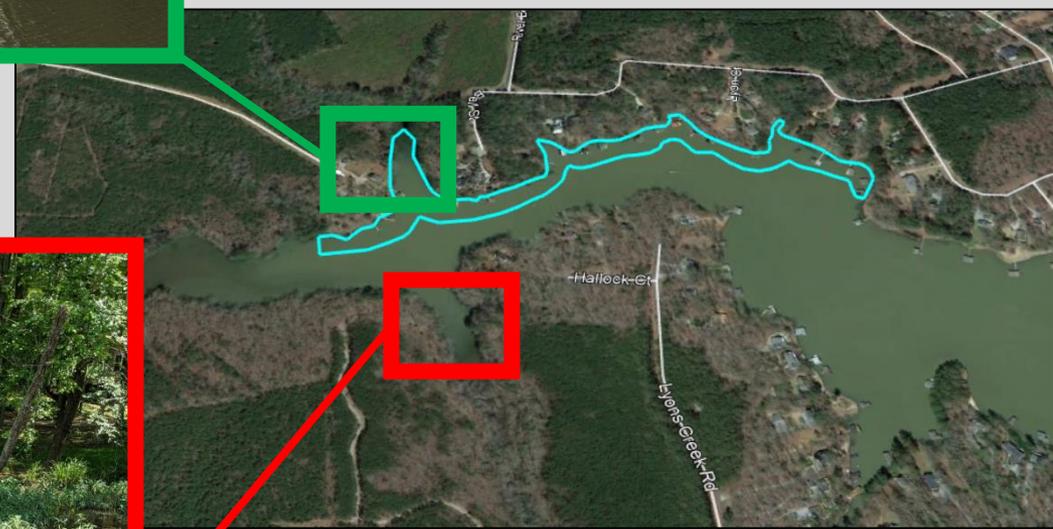
Preliminary Findings





July 2020 - Untreated

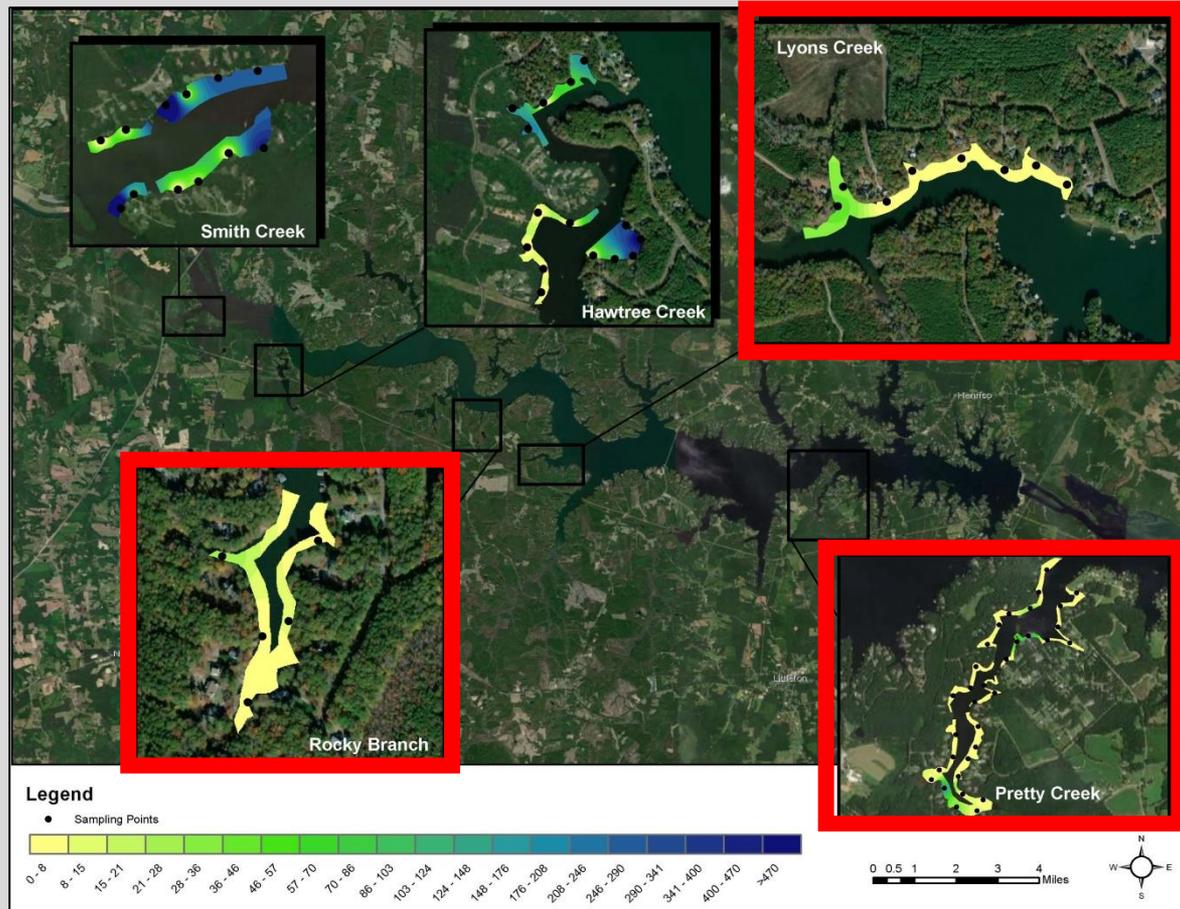




July 2020 - Lyons

Lyngbya Management Update

Preliminary Findings



Lyngbya Management Update

Preliminary Findings



← Treated →

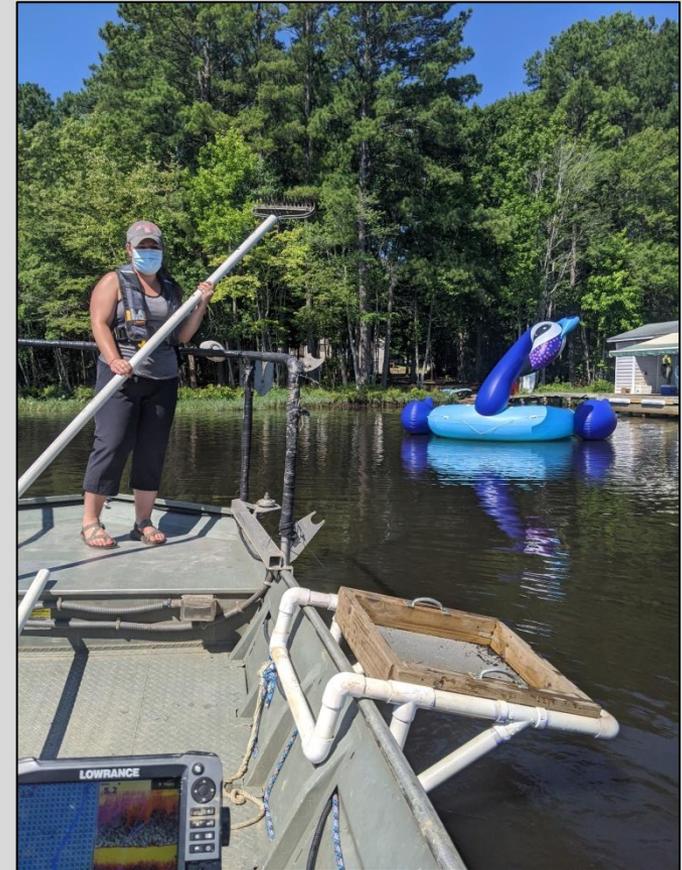


← Untreated →

2020 Treatment Year

NCSU Research Project

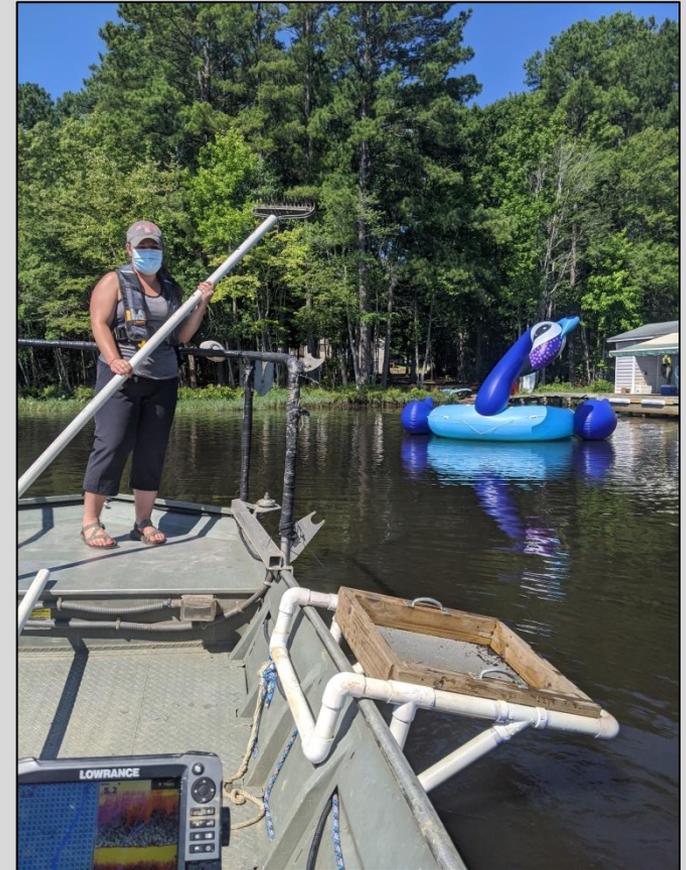
- 2017 – Pilot Study
- 2018 – Project Scheduled to Begin
 - Late July Start Date
- 2019 – First Successful Treatment
 - Early June Start Date
- 2020 – Second Successful Treatment
 - Late April Start Date
- 2021 – Third Treatment Planned



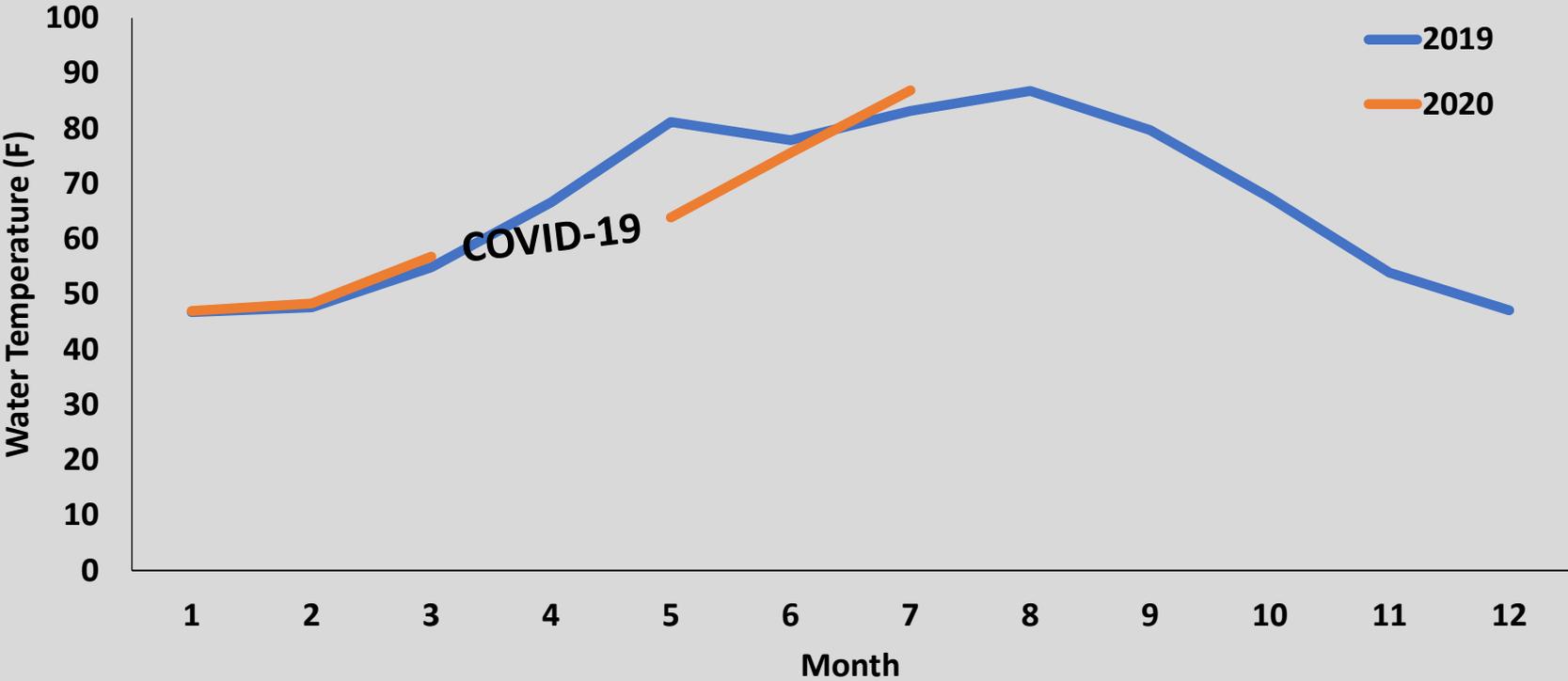
2020 Treatment Year

NCSU Research Project

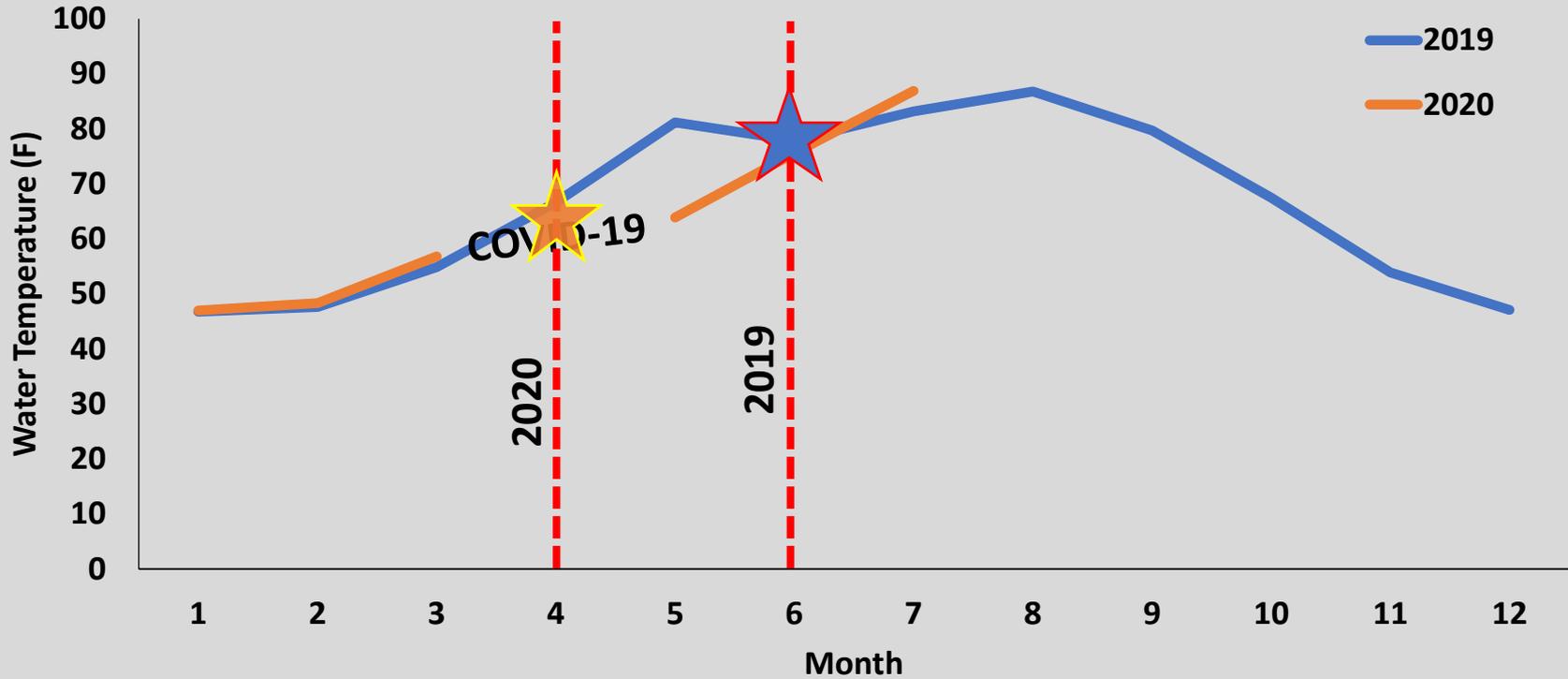
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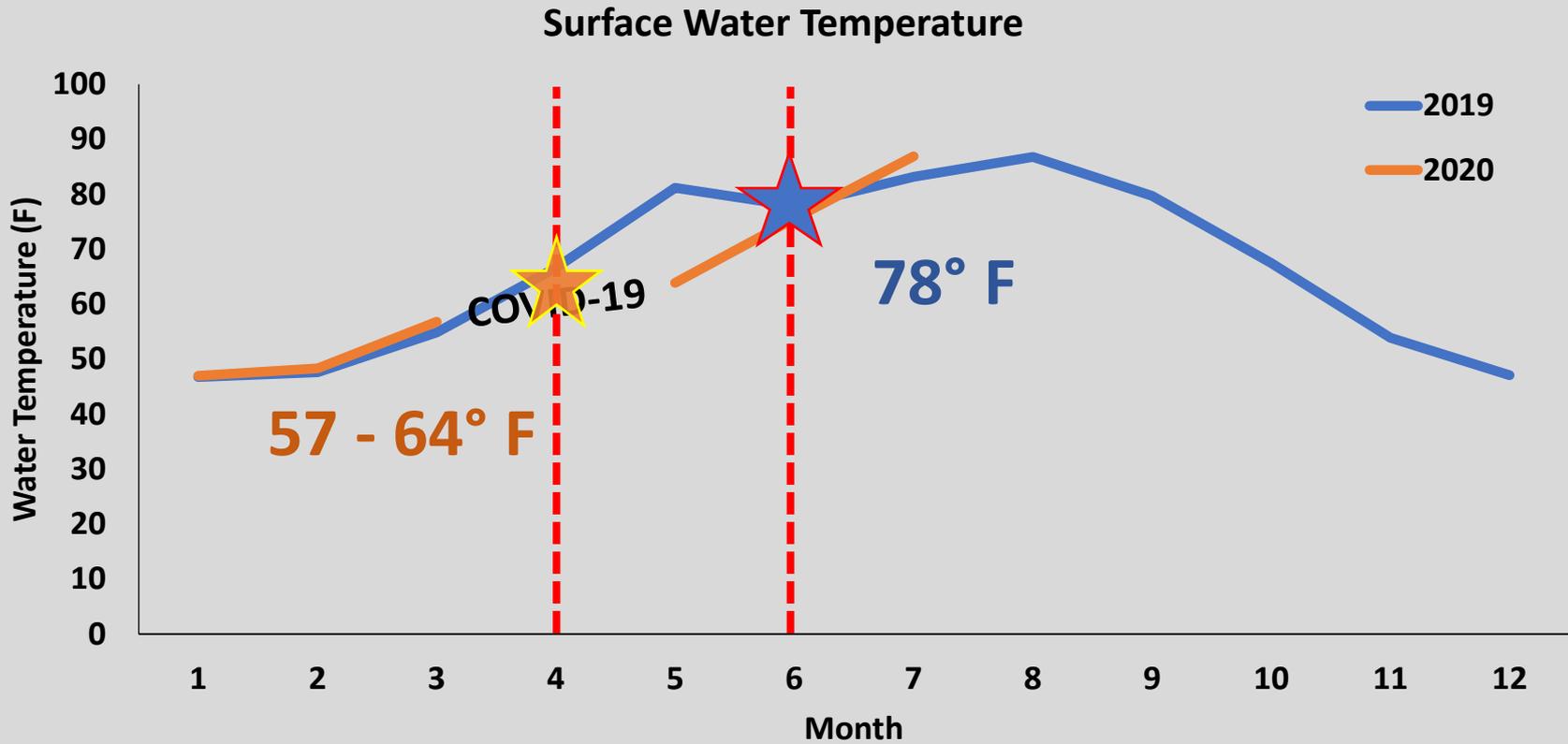
Surface Water Temperature



Surface Water Temperature



2019: Treatments began in June
2020: Treatments began in April

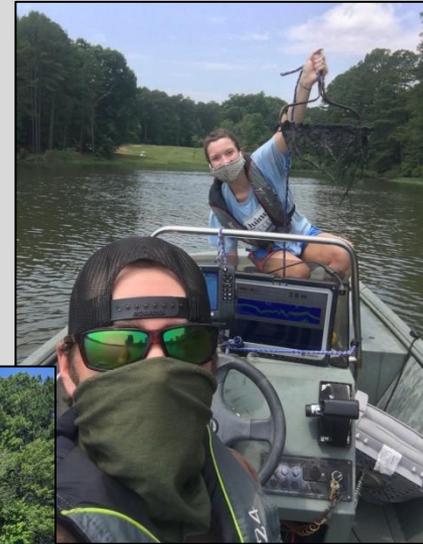


2019: Treatments began in June at 78° F
2020: Treatments began in April at 57 - 64° F

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