
Naturalake
Biosciences
Safer Water and Better Lives Through Pioneering Biosciences
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888.757.9575
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The Naturalake Biosciences' researchers have over 30 years of combined industry experience and degrees in the fields of microbiology, chemistry, biology and environmental science.

In our laboratory, at the University of Wisconsin Research Park, our scientists focus on the research and development of biological technologies for the surface water and wastewater industries. Their research in collaboration with major universities and industry experts, furthers the understanding of the relationship microbial communities have with algae and aquatic plants.

Landon Wiet,
Vice President of Aquatics

Naturalake Biosciences' Lab Team

Lisa Phillips,
Customer Service Coordinator

Patrick Goodwin M.S., CLM
Water Resource Scientist

Naturalake Biosciences
Aquatic Research Laboratories
University of Wisconsin Research Park

UNIVERSITY RESEARCH PARK
UNIVERSITY OF WISCONSIN–MADISON

Ordering is easy, production is fast, and the treatments are efficient. Call, email or visit us online for more info or to place an order.

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PondZilla Pro™

Boost Algaecide Performance, Degrade Dead Matter

KEY BENEFITS & HIGHLIGHTS

- Biocatalyst that improves the efficiency of chemical treatments
- Dissolves dead algae or aquatic plants on a cellular level
- Speeds chemical reactions and penetration of algaecides and herbicides
- Aids in hard water applications
- Used as an adjuvant
- Reduces dead biomass
- Less chemical use and safe for the environment

USES & APPLICATIONS

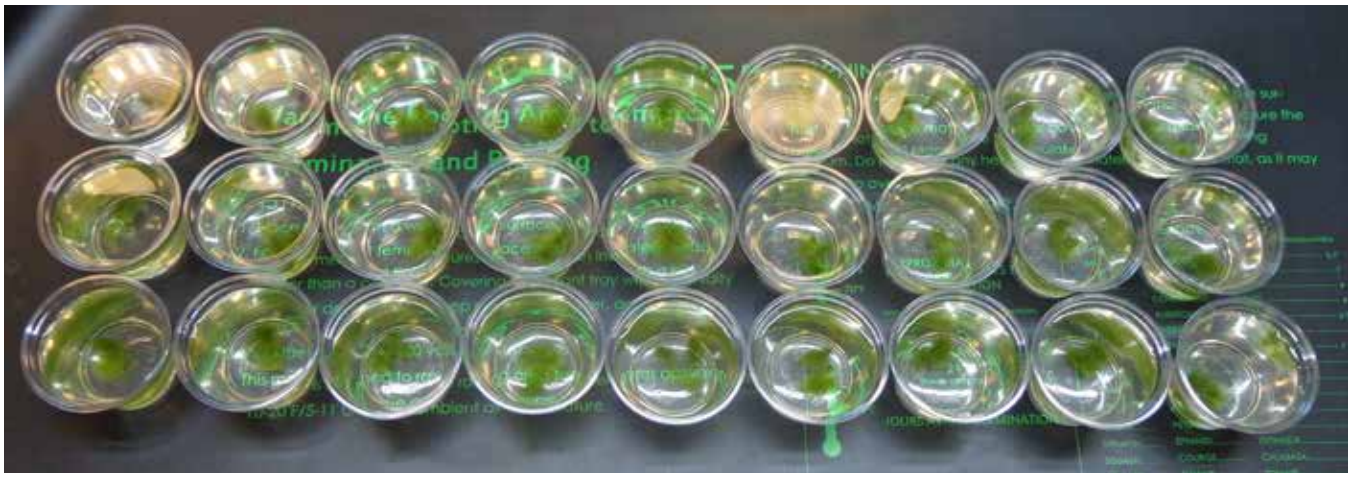
- Lakes and ponds
- Aquaculture
- Golf courses
- Retention ponds
- Filamentous algae
- Planktonic algae
- Aquatic plants
- And more

PONDZILLA PRO DOSAGE - WHEN MIXED WITH ALGAECIDE OR HERBICIDE

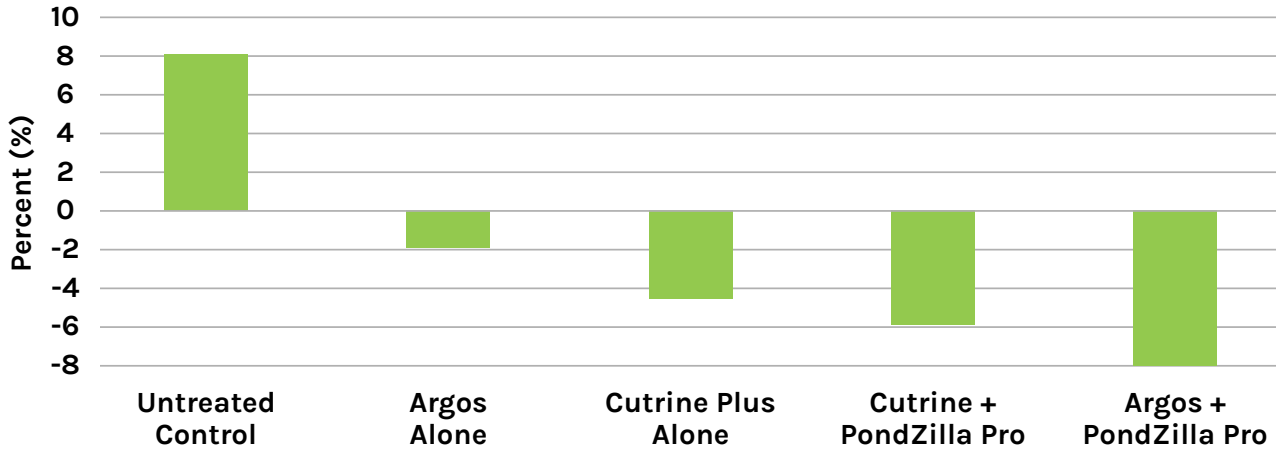
Surface Acres	Filamentous Algae	Planktonic Algae	Aquatic Plants
1/4	16 - 96 ounces	16 - 31 ounces	16 - 64 ounces
1/2	.25 - 1.5 gallons	32 - 64 ounces	.25 - 1 gallon
1	.5 - 3 gallons	.5 - 1 gallon	.5 - 2 gallons
5	2.5 - 15 gallons	2.5 - 5 gallons	2.5 - 10 gallons
10	5 - 30 gallons	5 - 10 gallons	5 - 20 gallons
100	50 - 300 gallons	20 - 100 gallons	50 - 200 gallons

- *PondZilla Pro is available in multiple container sizes: 1, 2.5, 55, and 275 gallons*
- *Best when mixed with AquaSticker for planktonic algae and aquatic plants*
- *PondZilla Pro alone will not kill aquatic plants and algae*

PondZilla Pro Pithophora Testing



PERCENT BIOMASS GROWTH



CONCLUSION

This study suggests Naturalake Biosciences' PondZilla Pro may be used to improve control of Pithophora over chelated copper products alone. Treatments receiving PondZilla Pro achieved greater damage to algal cells in a shorter period of time in this study. Further testing is underway to expand upon these conclusions and test PondZilla Pro as an adjuvant in more applications.

CattZilla™

Improve Cattail Treatments, Even at Peak Growth

KEY BENEFITS & HIGHLIGHTS

- Enhances treatment efficiency and consistency
- Speeds degradation of dead shoots and stalks
- Reduces the number of follow up treatments
- Used as an adjuvant
- Speeds chemical reactions and absorption
- Collapses dead cattails and amplifies natural decomposition
- Safe for environment and applicator

USES & APPLICATIONS

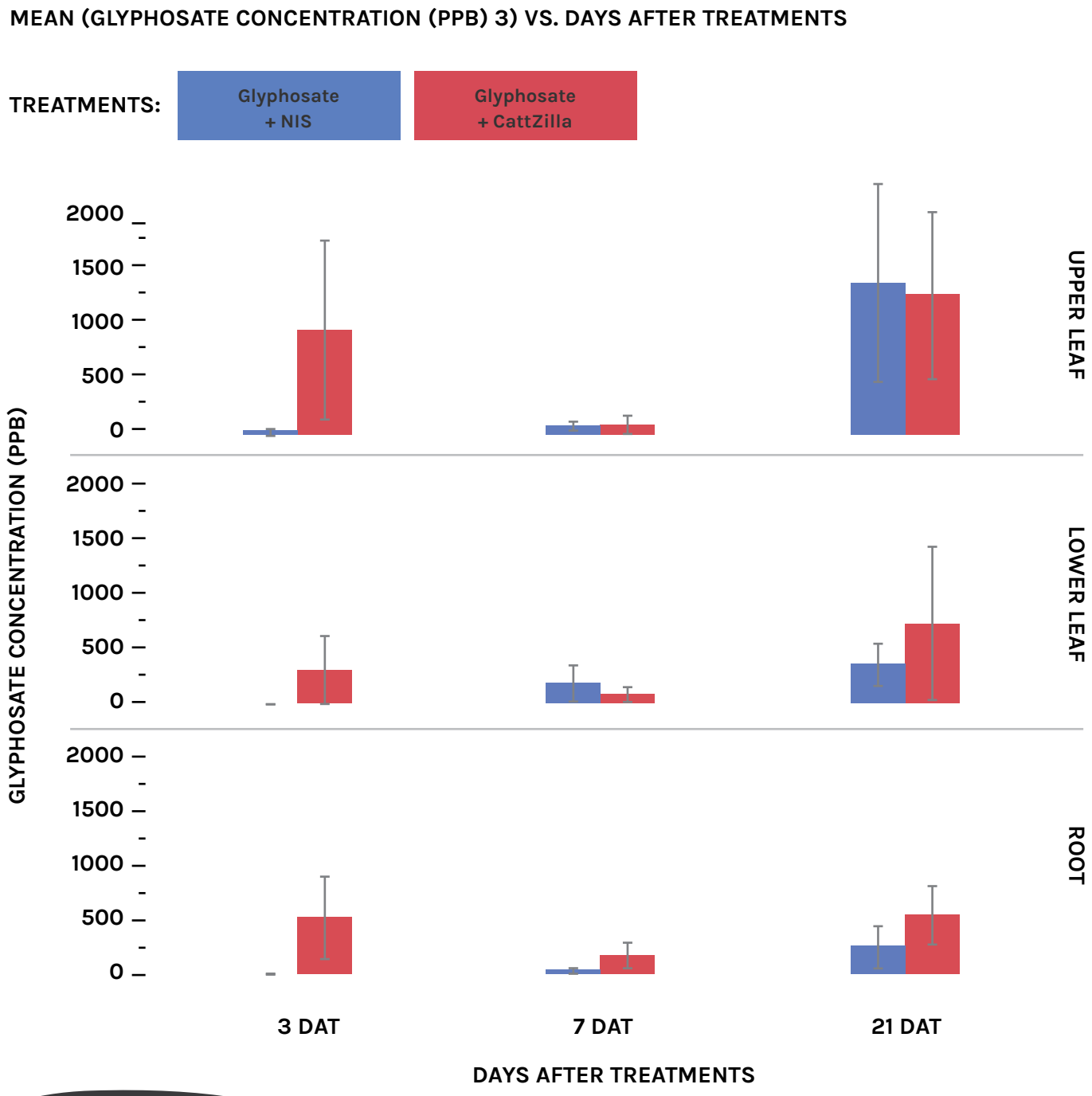
- Cattails
- Alligator weed
- Bulrush
- Frog's-bit
- Giant Reed
- Lakes and ponds
- Rivers and streams
- Wetlands
- Canals
- Golf courses
- Retention ponds
- And more!

CATTZILLA DOSAGE - WHEN MIXED WITH ALGAECIDE OR HERBICIDE

Herbicide	CattZilla	or	Treatment Area	CattZilla
1 gallon	16 ounces		1000 sq feet	12 - 16 ounces
2 gallons	24 - 32 ounces		2000 sq feet	24 - 32 ounces
5 gallons	60 - 80 ounces		.5 acre	2 - 3 gallons
50 gallons	3 - 6 gallons		1 acre	4 - 6 gallons
100 gallons	6 - 10 gallons		2 acres	8 - 12 gallons

- *CattZilla is available in multiple container sizes: 1, 2.5, 55, and 275 gallons*
- *Mix directly with herbicide and follow herbicide rate and instructions*

Effects of Biocatalysts on Cattails



AquaSticker®

Treatment Enhancing Catalyst and Sticking Agent

KEY BENEFITS & HIGHLIGHTS

- Biological sticking agent that disrupts the protective microbiota
- Stimulates competitive bacterial growth on algae or aquatic plants
- Encourages aquatic plants to naturally uptake chemicals
- Aids in hard water applications
- Safe for environment and applicator
- Enhances adhesion and contact to improve herbicide response time
- Boosts probiotic performance

USES & APPLICATIONS

- *Anabaena*
- *Microcystis*
- *Lyngbya*
- *Oscillatoria*
- *Plankothrix*
- Duckweed
- Spikerush
- Water lillies
- Chlorella
- Lakes and ponds
- Aquaculture
- Hatcheries
- Water features
- Golf courses
- Retention ponds

AQUASTICKER DOSAGE - WHEN MIXED WITH ALGAECIDE OR HERBICIDE

Surface Acres	Cyanobacteria	Planktonic Algae	Aquatic Plants
1/4	1 - 5 pounds	1.25 - .75 pounds	.25 - 1.25 pounds
1/2	2.5 - 10 pounds	.5 - 1.5 pounds	.5 - 2.5 pounds
1	5 - 20 pounds	1 - 3 pounds	1 - 5 pounds
5	25 - 100 pounds	5 - 15 pounds	5 - 25 pounds
10	50 - 200 pounds	10 - 30 pounds	10 - 50 pounds
100	500 - 2000 pounds	100 - 300 pounds	100 - 500 pounds

- *AquaSticker is available in 30 pound containers with 1 lb packets or in 15 lb containers, bulk*

Naturalake Biosciences Biocatalyst Study

Efficacy Testing in 2019

Clipper© alone

vs.

Clipper© + AquaSticker

vs.

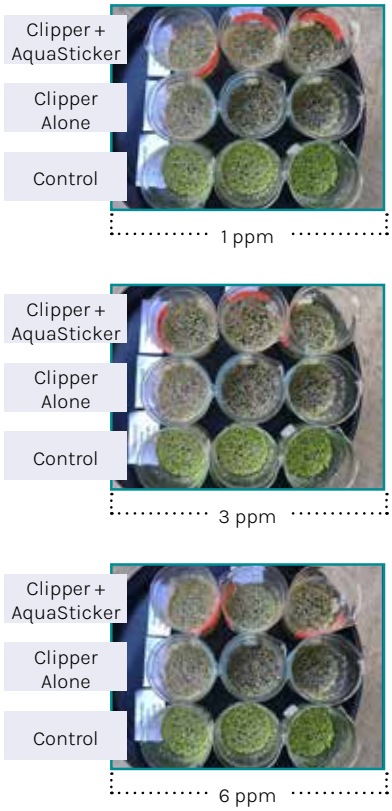
Clipper© + PondZilla

vs.

Clipper© + CattZilla

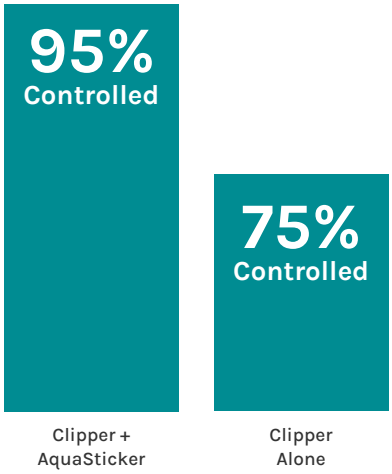
START

END



Duckweed Control

7 DAT



Conclusion

This study suggests that Naturalake Biosciences' biocatalysts may be used to improve control of duckweed over Clipper herbicide alone. Treatments receiving Naturalake Biosciences' biocatalysts achieved greater control in a shorter period in this study. In addition, treatments receiving Naturalake Biosciences' biocatalysts were able to maintain control for longer periods before new growth was observed.

FULL STUDY ONLINE:
WWW.NATURALAKE.COM/NATURALAKE-BIOSCIENCES-BIOCATALYST-STUDY

OXYGEN SATURATION TECHNOLOGY™

Next Generation Aquatic Aeration System

KEY BENEFITS & HIGHLIGHTS

- Drastically increases oxygen levels (>80% saturation)
- Does not disturb sediments or cause unnatural mixing
- Reduces muck and eliminates HABs
- Preserves thermal stratification

USES & APPLICATIONS, INCLUDING BUT NOT LIMITED TO:

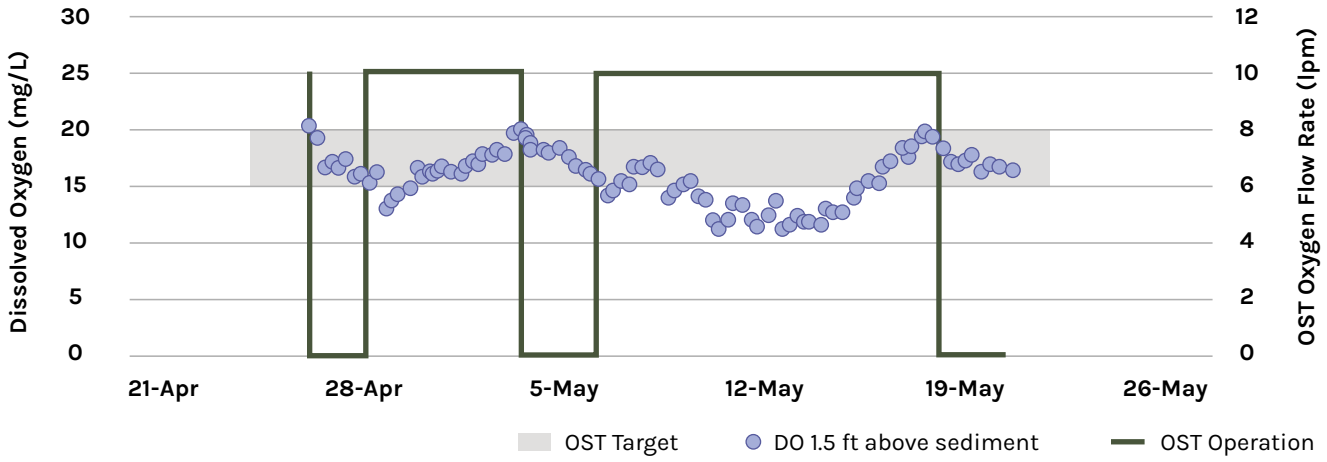
- Lakes and ponds
- Aquaculture
- Drinking reservoirs
- Stormwater ponds
- HAB Management
- Fish Kills
- Fecal coliform
- Odors
- Iron staining
- Sediment reduction
- Manganese control
- Cold water fisheries

OXYGEN SATURATION TECHNOLOGY DEVICE SCALING	*BASED ON 1 FT DEPTH
Water Body Size (Surface Area)	**Device Scale**
4 Acres or less (up to 10 kg/d O2 add capacity)	OST
4-10 acres (up to 20 kg/d add capacity)	OST Pro
More than 10 acres	Call for info on custom built systems

- *Oxygen Saturation Technology is a modular system that can be custom scaled to fit any size water body*
- *220 volts with 30 amp service per system required*

OPERATION CYCLES USING DISSOLVED OXYGEN DATA

OST is designed to maintain exactly the ideal DO, between 15-20 mg/L, by cycling on and off as necessary.



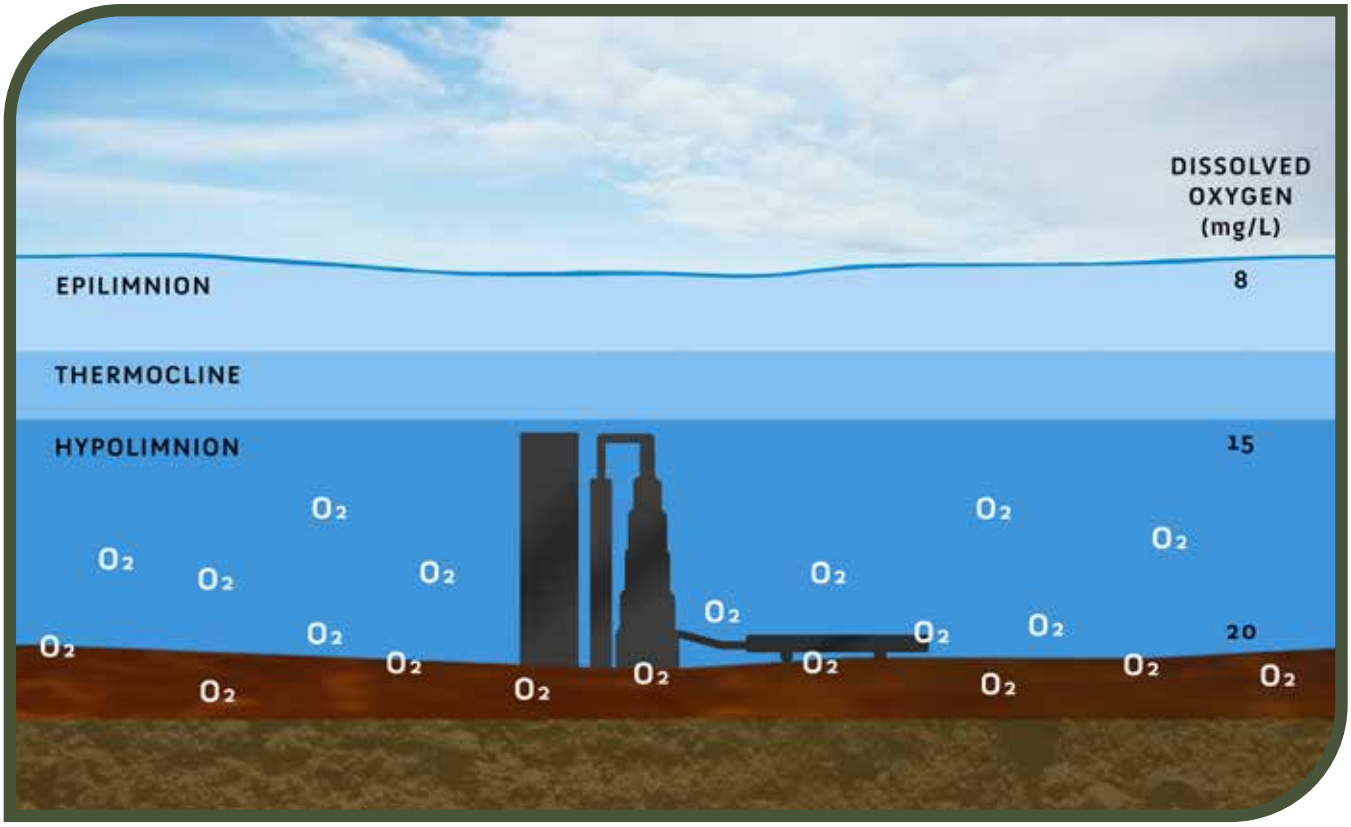


Diagram shows Naturalake OST distributing oxygen rich water throughout the hypolimnion layer, blanketing and penetrating the sediment.

Meet Naturalake Biosciences Expert Oxygenation Team

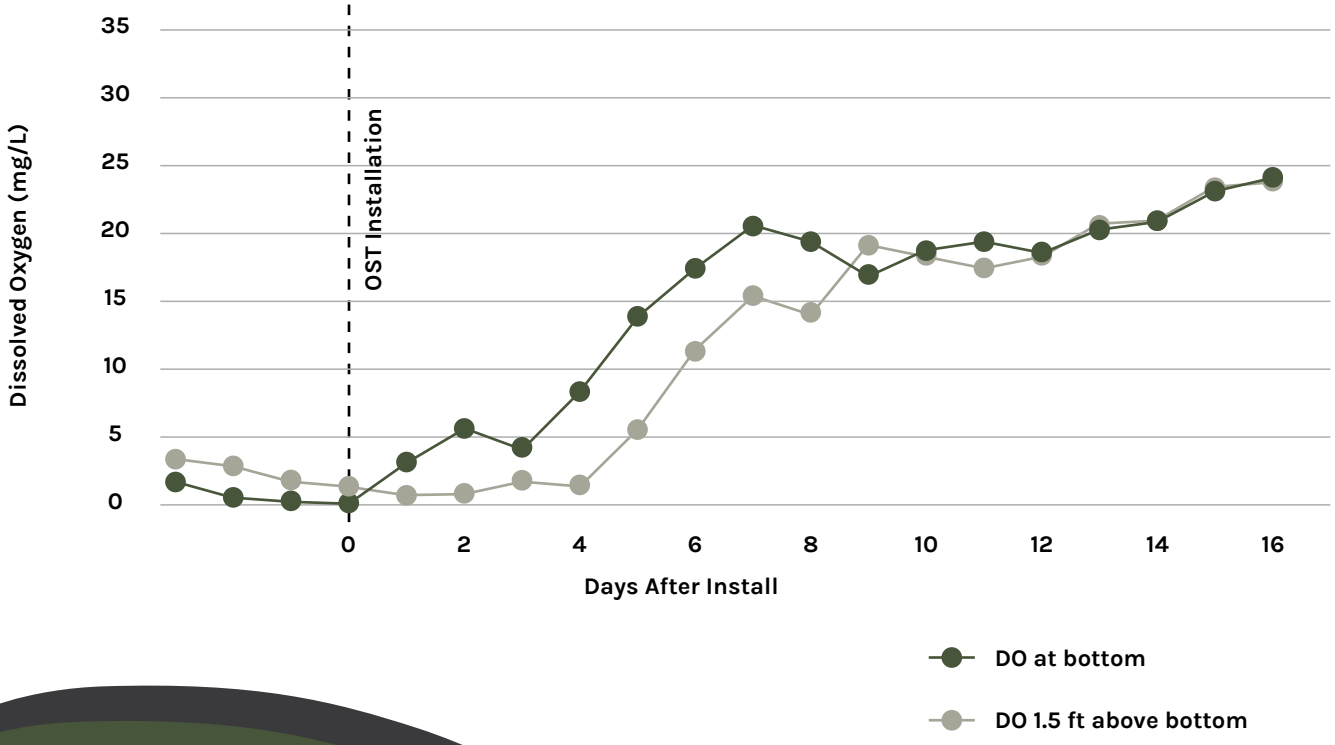
Paul Gantzer holds a Ph.D. in Civil/Environmental Engineering from Virginia Tech and has over 20 years of experience in water resources management. Dr. Gantzer has extensive knowledge in water quality management related to oxygenation and aeration of lakes and reservoirs to control harmful algal blooms (HABs), taste and odor, and manganese. Dr. Gantzer has authored, and co-authored numerous peer reviewed publications related to oxygenation and aeration. He has successfully restored numerous water bodies with several being delisted from the 303(d) list for impaired water bodies. Dr. Gantzer is a leading expert regarding his knowledge and understanding of oxygen dynamics in all types of water bodies.

Patrick Goodwin holds a B.S. in Biology from the University of North Florida and an M.S. in Lake Management from SUNY Oneonta. He is a certified lake manager with over ten years of experience in water resource management. Patrick specializes in data collection to evaluate nutrient loading and the consequences of that loading in terms of algal blooms and water clarity. He has written numerous comprehensive lake management plans and has unique industry insight into applied restoration techniques, where he has conducted numerous experiments evaluating restoration techniques. Patrick has successfully restored multiple water bodies and is considered an expert in oxygenation and circulation techniques.

BENEFITS COMPARISON OF POPULAR OXYGEN SOURCES VS OST

	OST	Nanobubbles	Diffused Aeration	Fountains
Increases and maintains dissolved oxygen levels (8 - 25 mg/L) optimal for fish habitat	X			
Prevents harmful algae blooms (HABs)	X			
Drives dissolved oxygen into the sediments reducing nutrient re-release	X			
Reduces fecal coliform	X	X	X	
Low energy use per oxygen input	X		X	
Shallow water application (<8ft)	X	X		X
Single treatment injection point	X	X		X
Maintain thermal structure (summer stratification & winter ice preservation)	X			

AVERAGE DAILY DISSOLVED OXYGEN AFTER OST INSTALLATION



Cattails/Emergent Plants

- Tank Mix CattZilla and aquatic herbicide

Filame

- Tank Mix
- OST

Floating Plants

- Tank Mix Aquasticker and aquatic herbicide

Planktonic Algae

- Tank Mix Aquasticker and algaecide
- OST

Submerged Pl

- Tank Mix PondZilla
  and aquatic herbici

BIOCATALYSTS

ntous Algae

PondZilla Pro and chelated copper

Aquatic Midges

- AQUABACxt
- OST

Water Quality

- Water Column Clarifier
- MicrobeBooster
- Temperature Driven Solutions
- OST

ants

Pro
de

Muck/Decaying Plant Matter

- Apply MuckBiotics
- OST

PROBIOTICS

OST

MuckBiotics®

Powerful Muck Degradation and Nutrient Removal

KEY BENEFITS & HIGHLIGHTS

- Great for both targeted treatments and full water bodies
- Non-toxic, non-hazardous, and pet safe
- Tablet technology sinks into the muck layer to target issues directly
- Removes build up of organic matter
- Improves water quality and clarity
- Reduces internal nutrient load and restores balance to water bodies
- Proven results, backed by years of scientific research

USES & APPLICATIONS

- Muck and sludge
- Water clarity
- Nutrient Reduction
- Aquatic Plants
- Submerged plants
- Filamentous algae
- Planktonic algae
- Cyanobacteria
- Lakes and ponds
- Aquaculture
- Shoreline
- Golf courses
- Retention ponds
- Decorative ponds
- And more!

MUCKBIOTICS DOSAGE

Surface Acres	Targeted Muck Reduction	Muck Maintenance & Prevention	Degradation of Floating Debris
1/4	5 - 12.5 pounds	2.5 - 6.25 pounds	1.25 - 3.75 pounds
1/2	10 - 25 pounds	5 - 12.5 pounds	2.5 - 7.5 pounds
1	20 - 50 pounds	10 - 25 pounds	5 - 15 pounds
5	100 - 250 pounds	50 - 125 pounds	25 - 75 pounds
10	200 - 500 pounds	100 - 250 pounds	50 - 150 pounds
100	2000 - 5000 pounds	1000 - 2500 pounds	500 - 1500 pounds

- *MuckBiotics are available in 30 pound biodegradable and resealable bags*
- *If used in conjunction with algaecide or herbicide, do not mix directly, apply MuckBiotics after chemical treatment for best results*
- *Works best in water temperature between 51°F-130°F (11°C-54°C)*

Case Study: Sediment Reduction With MuckBiotics

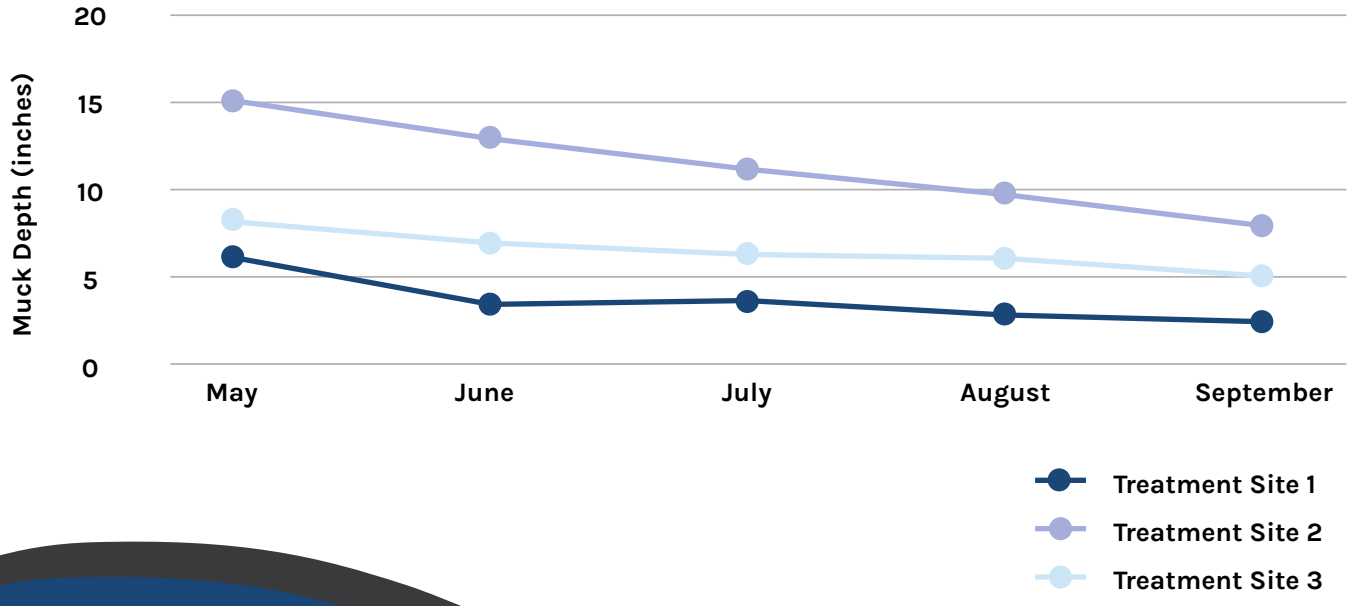
SIZE: 0.80 acre private pond

SUMMARY: Water runoff from surrounding fertilized lawns and lack of riparian buffers causes heavy nutrient accumulation of nitrogen and phosphorus. This nutrient overloading causes prolific pithophora algal blooms during the growing season.

SOLUTION: MuckBiotics was applied evenly within the southern lobe, the key area of this study.

RESULTS: Our three test sites within the target area resulted in an average muck depth reduction of 4.5 inches in five months. Muck depth at these three sites gradually decreased beginning with the initial application of Muckbiotics in May.

ORGANIC MUCK DEPTH TESTING WHEN TREATED WITH MUCKBIOTICS



Temperature Driven Solutions™

Natural Aquatic Stabilizer Trio for Year-Round Treatment

KEY BENEFITS & HIGHLIGHTS

- Three unique blends, each optimized for specific water temperature
- Dry probiotic that cycles out nitrogen and phosphorus compounds
- Promotes balanced ecosystem after chemical treatment
- Consumes soluble nutrients and lowers ammonia
- Balances ponds and clarifies water

USES & APPLICATIONS

- Muck and sludge
- Water clarity
- Nutrient Reduction
- Filamentous algae
- Planktonic algae
- Cyanobacteria
- Lakes and ponds
- Aquaculture
- Golf courses
- Retention ponds
- Decorative ponds
- And more!

Summer Slam	Nature's Blend	Polar Blend
75 - 120°F 23.9 - 48.9°C	58 - 78°F 14.4 - 25.6°C	41 - 60°F 5 - 15.5°C

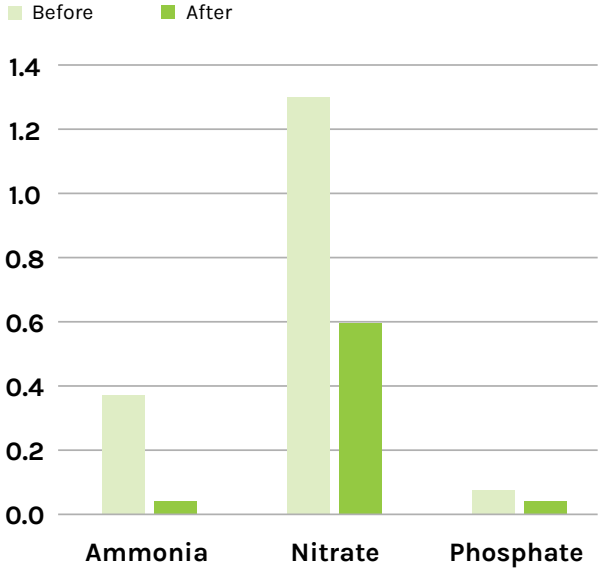
TEMPERATURE DRIVEN SOLUTIONS DOSAGE - APPLY BI-WEEKLY

Surface Acres	Initial Application	Standard Application	Hypereutrophic Water
1/4	1 pound	.5 - 1 pound	1.5 pounds
1	3 pounds	1 - 3 pounds	6 pounds
5	15 pounds	5 - 15 pounds	30 pounds
10	30 pounds	10 - 30 pounds	60 pounds
100	300 pounds	100 - 300 pounds	600 pounds

- *Temperature Driven Solutions are available in 10 and 30 pound containers*
- *If used in conjunction with algaecide or herbicide, do not mix directly, apply after chemical treatment for best results*

Case Study: Nutrient Reduction With Nature's Blend

WATER SAMPLE COMPARISONS



SIZE: 3-acre lake with over 400 acres of farm field runoff
GOAL: Reduce nutrient levels in the lake to better control Planktonic/Cyanobacteria Algae outbreaks.

SUMMARY: This residential community was dealing with several challenging lakes in its system. They have a long history of major mat forming cyanobacteria, extremely hard water, and excessive submerged vegetation.

SOLUTION: To control nutrients, utilize Nature's Blend at 3 lbs. per acre; MuckBiotics at 12 lbs. per acre.

RESULTS: Using Nature's Blend, we were able to reduce nutrient levels in the lake by more than half. We saw better response to chemical treatment on the Planktonic/Cyanobacteria and water clarity improvement. Treatments of Nature's Blend will continue during the warmer months and rotating to Polar Blend during the cooler months for continued year-long nutrient control. Without these products the Planktonic/Cyanobacteria would continue to be an uncontrollable nuisance.

FULL CASE STUDIES:
WWW.NATURALAKE.COM/PAST-CASE-HISTORY-WINNERS

WATER COLUMN CLARIFIER®

Natural Water Clarity Enhancer

KEY BENEFITS & HIGHLIGHTS

- Clarifies water through enhanced biological flocculation
- Removes nitrogen and temporarily binds phosphorus
- Broad spectrum and fast-acting liquid probiotic blend
- Establishes healthy bacteria cultures
- Balances pond and enhances clarity
- Keeps pond and fish healthy

USES & APPLICATIONS

- Muck and sludge
- Water clarity
- Nutrient Reduction
- Filamentous algae
- Planktonic algae
- Cyanobacteria
- Lakes and ponds
- Aquaculture
- Water features
- Hatcheries
- Golf courses
- Retention ponds

WATER COLUMN CLARIFIER DOSAGE - EVERY 2-4 WEEKS AS NEEDED

Acre Foot	Initial Application	Standard Application	Hypereutrophic Water
1/4	5 - 16 ounces	5 - 8 ounces	13 - 32 ounces
1/2	10 - 32 ounces	10 - 16 ounces	32 - 64 ounces
1	20 - 64 ounces	20 - 32 ounces	64 - 128 ounces
5	.75 - 2.5 gallons	.75 - 1.25 gallons	2.5 - 5 gallons
10	1.5 - 5 gallons	1.5 - 2.5 gallons	5 - 10 gallons
100	10.5 - 50 gallons	10.5 - 25 gallons	50 - 100 gallons

- *Water Column Clarifier is available in multiple container sizes: 1, 2.5, 55, and 275 gallons.*
- *If used in conjunction with algaecide or herbicide, do not mix directly, apply after chemical treatment for best results*

Case Study: Water Column Clarifier For Clarity and Nutrient Removal

SIZE: 0.14 acre pond with a max depth of 12 feet and an average depth of 9 feet

GOAL: Use a heavy bacterial management strategy to address excessive nutrients and enhance water clarity

SOLUTION: Monthly applications of MuckBiotics at 50# per acre and Water Column Clarifier at 0.6 gallons per acre foot.

RESULTS: Using MuckBiotics and Water Column Clarifier, there was increased clarity and nutrient concentrations reduced below historic levels:

- Reactive Phosphorus (58% reduction)
- Total Phosphorus (27% reduction)
- Ammonia Nitrogen (42% reduction)
- Nitrite+Nitrate (96% reduction)
- TKN (50% reduction)

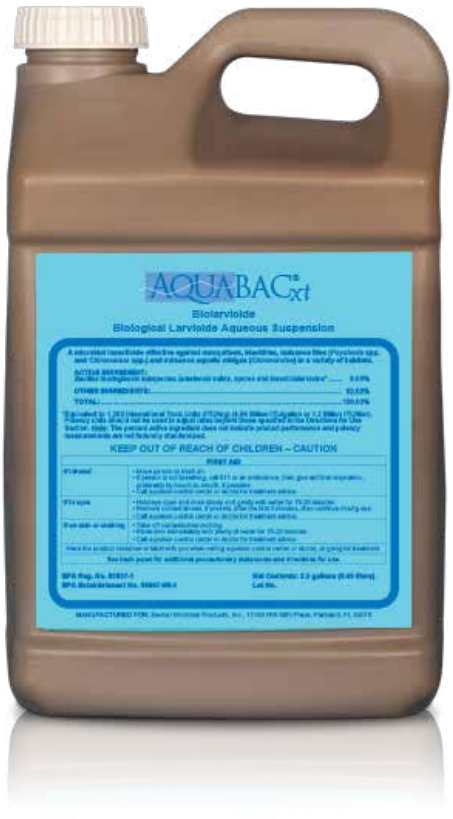
Nutrient Sampling Before/After MuckBiotics and Water Column Clarifier

	Reactive Phosphorus	Total Phosphorus	Ammonia Nitrogen (NH3)	Nitrite plus Nitrate Nitrogen (NO2+NO3)	Total Kjeldahl Nitrogen (TKN)
BEFORE	0.069 ppm	0.040 ppm	0.069 ppm	1.600 ppm	1.700 ppm
AFTER	0.029 ppm	0.029 ppm	0.040 ppm	0.057 ppm	0.850 ppm

Date	Seechi Disk Reading
June 4	9 inches
July 2	11 inches
July 30	12 inches
August 27	17 inches

AQUABACxt

Kill Mosquitos and Aquatic Midges Quickly



KEY BENEFITS & HIGHLIGHTS

- Highly potent with immediate results
- Environmentally friendly
- Only targets nuisance insects
- Reduces nutrient recycling caused by midges
- Balances food by restoring zooplankton populations
- Improves lake water quality

USES & APPLICATIONS

- Mosquitoes
- Black flies
- Fungus gnats
- Midge flies

AQUABACxt DOSAGE - APPLY DILUTED WITH WATER AND REPEAT AS NEEDED

Nuisance Pest	Location	Dose Rate per Acre
Mosquitoes	Standing Freshwater	0.25 - 1 pint
Mosquitoes	Standing or Tidal Saltwater	0.5 - 1 pint
Mosquitoes	Highly Polluted Water	1 - 2 pints
Midge Flies	Shallow lakes/ponds per sewage oxidation ponds (<1 acre, 6ft deep)	1 gallon

- *AQUABAC®xt is available in multiple container sizes: 5, 135, and 250 gallons*
- *Apply in conventional aerial and ground application equipment with sufficient water to provide thorough coverage of the target area*
- *The amount of water needed depends on weather, type of spray equipment and mosquito habitat*
- *For black flies and other nuisance flies, reference label instructions*

Case Study: Aquatic Midge Control With AQUABACxt

SIZE: 1 acre

LOCATION: Florida

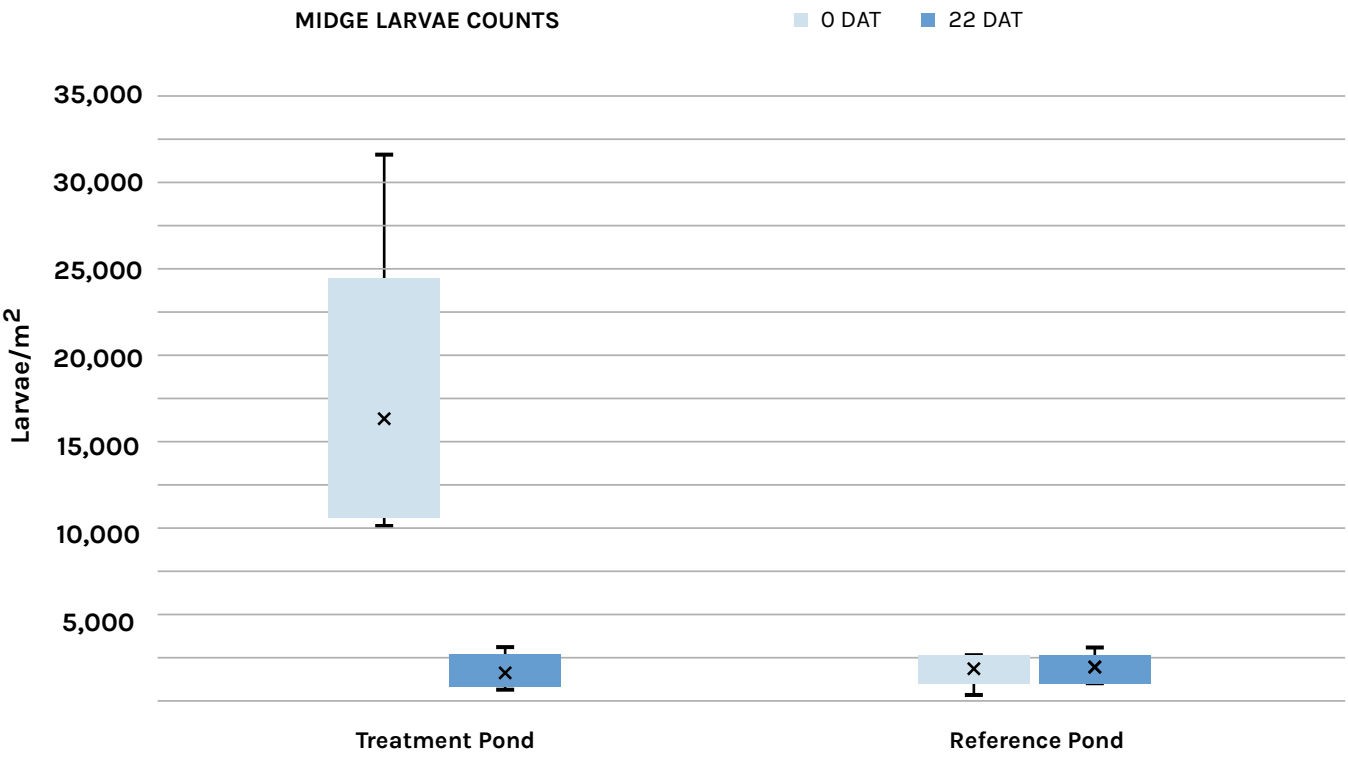
ISSUE: Midge Fly Swarming

SOLUTION: AQUABAC®xt

RESULTS: 88.6 % control 22 DAT

OVERVIEW:
The AQUABACxt application was made on May 17th, 2022, on Pond #1 with larvae counts being performed using a 6-inch square bottom sampler before and after treatment (n=5) in both Pond #1 and in a nearby reference Pond #2.

The label rate for midge fly control using liquid AQUABACxt was followed at 1.0 gallons/acre (3.80 liters/acre) and applied to Pond #1. An 88.6 % decrease in larval counts 22 days after treatment was observed in Pond #1 with no living Chaoborus midges being found. The non-treated reference Pond #2 had an increase in larval counts by 18.5% with all larvae found to be alive. Stakeholders reported recreational activities were no longer hindered just days after the treatment. AQUABACxt can be used to effectively control Chaoborus midges.



MicrobeBooster™

Set it and Forget it Water Quality Improvement

KEY BENEFITS & HIGHLIGHTS

- Slow release and long-lasting probiotic
- Net-free design for easy application and clean up
- Supports microbial communtiy between treatments
- Aids in nutrient removal
- Aids in sludge and muck reduction
- Aids in water quality and clarity

USES & APPLICATIONS

- Lakes and ponds
- Aquaculture
- Shorelines
- Channels
- Golf courses
- Retention ponds
- Decorative ponds
- And more!

WHERE TO PLACE

- Apply in or near flowing water
- Hangs on docks, fountains, or aerators

WHEN TO PLACE

- Check frequently
- Replace after 60 days or when fully dissolved

3 Pound MicrobeBooster Dosage

Acre Feet	Number of Units
Up to 5	1
Up to 10	2

9 Pound MicrobeBooster Dosage

Acre Feet	Number of Units
Up to 10	1
Up to 20	2

- *MicrobeBooster is available in 3 pound and 9 pound units.*
- *Works best in water temperature between 40°F-120°F (1.4°C-48.9°C)*
- *Effective lifespan of MicrobeBooster is 30-60 days, store in a cool, dark place*

Find many helpful tips and product instructions like the placement and usage guide for MicrobeBooster shown above, by visiting our website or Naturalake Biosciences on YouTube.

GET CERTIFIED

For those companies that truly exemplify all that is Naturalake Biosciences, we're proud to announce the Naturalake Certified program!

Participants in this program will be able to show their customers that they are both educated in and dedicated to the science behind healthy, balanced ponds and lakes.

To help you display this, Naturalake Biosciences will provide a certificate of your membership in the Naturalake Certified program as well as stickers of the seal and a digital media kit for use on your website and in marketing.

How do I become Naturalake Certified?

To become Naturalake Certified, you or your company must display a dedication to the science and study behind natural solutions by participating in Naturalake Biosciences training. Contact us to set up a virtual training session or request an invite to our annual Naturalake University conference.

Visit www.naturalake.com/certified or
contact info@naturalake.com with any questions.

Naturalake Biosciences

PO Box 8682
Madison, WI 53708-8682

Training For Aquatic Professionals

2023 Naturalake University

Naturalake University is an exclusive educational opportunity for aquatic management professionals to learn about the biological aspects of lake and pond management. Leading industry experts, scientists and academics all share their most up to date knowledge and research at this annual 2-day event. Limited space available, be sure to request an early invitation online, details below.

Presentations by our team of researchers, and guest industry experts:

- Using biocatalysts to reduce algal and plant biomass
- New research on how probiotics reduce nutrients in the sediment layer
- Field studies and case histories from aquatic professionals
- Overview of biological treatment methods and best practices
- Oxygen Saturation Technology: The next generation aquatic aeration system
- **NEW** probiotic technologies....and more!

Deborah Lee, MS
Lead Microbiologist
Naturalake Biosciences

Patrick Goodwin M.S., CLM
Water Resource Scientist
Naturalake Biosciences

Paul Gantzer Ph.D., P.E.
Environmental Engineer
Gantzer Water, LLC

TBA:
Special Guests
Industry Experts

Request an invite to NLU!
February 8-9, 2023

email: info@naturalake.com
call: 888.757.9575
scan: the QR code to the right to register online!

Take a photo, register online!