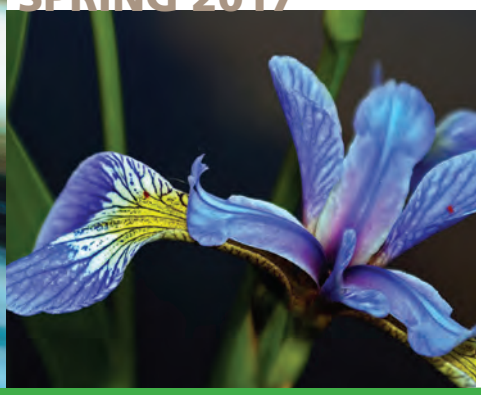
SPRING 2017

AquaticsinBrief



Volume 11, Issue 2

Inside:

SOLITUDE LAKE MANAGEMENT®

A Full Service Lake, Pond, and Fisheries Management Company

How Often Should Water Quality be Tested?

By **Brea Arvidson, Aquatic Biologist**

Healthy water quality is extremely important for all lakes and ponds, and proactive testing and monitoring is vital when it comes to helping prevent water quality problems in recreational lakes, stormwater ponds and drinking water reservoirs. Lake and pond owners often wait until an algae bloom, fish kill, foul odor or other negative water quality problem occurs before implementing a basic water quality program. This can have dire consequences.

Poor water quality can quickly lead to an unbalanced ecosystem, which not only negatively impacts the ecology and recreational use of a waterbody, but can also affect surrounding waterways. Take the enormous toxic algae bloom in Florida, for example, which originated in Lake Okeechobee in the summer of 2016 and impacted Treasure Coast waterways and beaches; the dangerous cyanobacteria limited boating, fishing and swimming throughout South Florida and posed a serious threat to the health of residents, tourists, pets and wildlife. While a number of unique factors contributed to the development and spread of this harmful algae bloom, it is clear that water quality problems in our lakes and ponds can rapidly turn into ecological nightmares.

Knowing the importance of proactive water quality testing and monitoring, how often should water quality be sampled? Does sample location matter? The use of the waterbody and surrounding land dictates how often water quality should be sampled, and individual waterbody management goals also affect the rate at which water quality is monitored.

Sampling locations and frequency depend on the waterbody use objectives, and water quality should be monitored during the season that supports plant and algae growth. The smaller the pond, the easier the water quality is influenced. Thus, monitoring should be performed more frequently for smaller waterbodies.

For larger lakes and ponds, water quality sampling frequency is determined more by waterbody benthic contours, inlets and

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How Often Should Water Quality be Tested?

Continued from front cover

potential runoff from high-use areas such as farm fields, beaches and heavily manicured lawns. Multiple sampling sites are typically located within a larger waterbody, depending on the breadth of external influences. Sampling multiple sites across several dates throughout the year can help identify localized areas within the lake or pond that are experiencing impaired water quality.

Fishery ponds, especially when managed for the growth of trophy sport fish, are a prime example of specialized recreational use, and frequent testing is crucial to a successful fisheries management program. Persistent water quality monitoring, focused on desirable plankton production and available habitat, can indicate how to further build and support the fishery. The forage-base in a fishery is also important and plankton sampling can help dictate how to manage or supplement the plankton population in order to help maintain the desired productive fishery.

But no matter the shape, size or use of a waterbody, a proactive annual sampling of baseline water quality conditions is recommended. A proactive approach to water quality testing and monitoring helps to document annual trends occurring within the waterbody and acts as a reference for emerging water quality impairments. For many, water quality sampling is a reaction to the lake or pond's condition. Proactive monitoring, though, ultimately gives us a better understanding of the processes occurring within the waterbody and helps us identify potential problems before they occur. ■

Five Benefits of Feeding Fish with Automatic Fish Feeders

By **Aaron Cushing, Fisheries and Wildlife Biologist and Environmental Scientist**

Regularly feeding the fish in your lake or pond with an automatic feeder can be beneficial for a variety of reasons. Many waterbodies are lacking a natural food source or don't produce enough natural food to support the desired predator population. And while not all species eat fish food, every fish in your lake or pond will benefit from the additional food source. Here are five reasons to consider adding fish feeders to your lake or pond this year:

5. Fish feeders are flexible, dependable and come in multiple sizes to meet the exact needs of your aquatic ecosystem. They are solar powered and operate on timers so they can easily be placed in almost any location on your property. Feeders can be installed on the shore, on a dock or on a float. Quality feeders require minimal maintenance and can last a lifetime.

4. Feeders create a great fishing location to take children and families anxious to catch fish. Preset timers allow for a reliable and predictable feeding schedule, and this predictable food source causes fish to congregate. Feeders allow you to observe your fish feeding every time while creating a reliable fishing hole, making them great additions to either your private waterbody or community shoreline.

3. A wide variety of species eat fish food. Forage species, such as Fathead Minnows, Golden Shiners, Gizzard Shad and Bluegill, as well as ornamental fish such as Goldfish and Koi, all readily take to fish feed. Predators such as Channel Catfish and Trout naturally consume pelleted feed, while others such as Largemouth Bass and Hybrid Striped Bass can be trained to eat feed.

2. Fish feed is a great way to support the base of the food chain and to help maintain a healthy fish community. In most lakes and ponds, beneficial plankton is lacking, limiting the food available

for the waterbody's small forage fish. When there are not enough small fish to feed on, the big fish go hungry. When the forage base is healthy, the fish population is better balanced and this helps improve the entire aquatic ecosystem.

1. Pellet fish feed is the most cost-effective fisheries management approach to growing fish. Given the efficient conversion rate, fish feed is a less expensive option when looking to support your lake or pond's forage base or feed-trained predators. Approximately two pounds of quality fish feed will convert into one pound of fish growth, whereas ten pounds of stocked fish will convert to one pound of fish growth. This provides an opportunity for rapid fish growth, allowing predators to put on several pounds of weight in one growing season.

Fish feeders ultimately help balance the lake or pond's predator-to-prey ratio. When the lake or pond's fish population is balanced, the entire ecosystem will benefit from the productivity. ■

Which Mechanical Option is Right for your Waterbody? Harvesting or Hydro-raking?

By **Emily Walsh, Environmental Scientist, and Jeff Castellani, Director of Mechanical Operations**

There is rarely one specific remedy for helping restore a waterbody. Often times, restoration includes a multiyear management program encompassing a combination of aquatic management tools and techniques, such as herbicide and algaecide treatments, nutrient remediation, aeration and biological augmentation. Mechanical removal is an additional management method that may be incorporated into a restoration program, and has a number of ecological benefits including nutrient mitigation, water circulation and open water habitat restoration.

Mechanical removal encompasses two distinct management tools and approaches: aquatic weed harvesting and hydro-raking. While both provide ecological benefits, it is important to distinguish which option is better-suited for the specific management objectives of your lake or pond.

The aquatic weed harvester is a floating barge that cuts and effectively removes vegetation and algae from the surface of the waterbody. The plant material is collected and then offloaded, either into a container to be transported offsite or to a designated onshore compost area.

Mechanical harvesting offers an eco-friendly solution that does not create temporary water use restrictions during or after the work. For sensitive aquatic ecosytems, it can act as an alternative to herbicides. Mechanical harvesting can be an ideal management option for annual plants that are invasive or at nuisance levels. The aquatic weed harvester has been proven effective on water chestnut (*Trapa natans*), giant salvinia (*Salvinia molesta*), water soldier (*Stratiotes aloides*), and water hyacinth (*Eichhornia crassipes*).

The hydro-rake is also a floating barge run by two hydraulic paddle wheels, but is equipped with a 12-foot hydraulic arm with a rake attachment that is used to rake the pond bottom and remove detritus, organic sediment and aquatic vegetation with attached root systems. The hydro-rake, having no on-board storage, must offload the collected material directly onshore or onto a transport barge for removal.

Hydro-raking can be an effective alternative to herbicide and algaecide applications, but it has also proven effective in unison with these treatments. When managing emergent or floating leaf species, such as common reed (*Phragmites australis*) or water lily (*Nymphaea sp.*), herbicide application is often the first management approach, followed by hydro-raking. Hydro-raking is commonly utilized after control, to collect the plant biomass and associated root structure, negating it from contributing to the organic matter substrate below. This approach has proven effective on a number of aquatic plants such as cattails (*Typha sp.*), purple loosestrife (*Lythrum salicaria*), pickerelweed (*Pontederia cordata*), watershield (*Brasenia schreberi*) and Alligator weed (*Alternanthera philoxeroides*).


Hydro-raking; Before


Hydro-raking; After

Hydro-raking can also serve as a more environmentally friendly and cost effective alternative to dredging. Additionally, if a lake or pond is periodically maintained through hydro-raking, the need to perform a large scale dredge project may be negated, saving financial resources and prolonging ecological disruption in the process.

Both aquatic weed harvesting and hydro-raking collect plant biomass before it decomposes and contributes to the organic muck layer, maintaining or increasing overall water depth. In addition to the plant biomass, these mechanical options remove the associated nutrients (phosphorus and nitrogen) that contribute to increased plant and algae growth and, potentially, eutrophication.

These management techniques are used in a wide variety of projects on private, public and state waterbodies to help maintain or restore the open water space of shorelines, coves, inlets and outlets. Depending on the management objective and the target aquatic species for control, mechanical projects are usually part of a multiyear program. The next time you look out at your lake or pond, remembering its former attributes and beauty, consider investigating how mechanical services can be applied to help restore balance to your aquatic ecosystem. ■

Volunteer Spotlight:

SOLitude Recognizes Three Outstanding Volunteers of 2016

SOLitude Lake Management named Becky Snyder and Ann Marie Dori as the 2016 Volunteers of the Year, and Shannon Junior as Volunteer of the Quarter for the fourth quarter of 2016. In recognition of their volunteering efforts last year, SOLitude made charitable donations totaling $5,860 to the International Order of the Rainbow for Girls, the Virginia Beach SPCA and the Rappahannock Animal Welfare League (RAWL).

Becky Snyder, Regional Administrator for SOLitude's New England territory, was named as a Volunteer of the Year after spending an impressive 125 hours volunteering in 2016. For nearly two decades, Becky has regularly volunteered as an adult advisor with the International Order of the Rainbow for Girls, a non-profit organization that encourages girls to let their individual spirits shine bright. Becky also serves as SOLitude's volunteering team captain for the New England region and has done a tremendous job of organizing new and interesting team events. In 2016, Becky coordinated team volunteer events with Worcester County Food Bank, Worcester Animal Rescue League and the American Cancer Society.


Becky Snyder

Ann Marie Dori


Shannon Junior

Ann Marie Dori, Marketing Project Coordinator at SOLitude, spent 209 hours volunteering in 2016 and was also named as a Volunteer of the Year. Ann Marie volunteered for a number of organizations including the Virginia Beach SPCA, Lynnhaven River NOW, Virginia Peninsula Foodbank, Chesapeake Bay Foundation and the East Ocean View Civic League. Every Monday night, you can find Ann Marie at the Virginia Beach SPCA satellite cat adoption center caring for adorable kittens and cats who are awaiting their forever homes. One of Ann Marie's other passion-projects in 2016 involved working as project leader with the East Ocean View Civic League (EOVCL) to design and build a rain garden at the recreation center in her neighborhood.

Shannon Junior, Aquatic Ecologist and Senior Business Development Consultant at SOLitude, was named as Volunteer of the Quarter and volunteered 51 hours in the fourth quarter of 2016. Shannon spent almost every Saturday of the fourth quarter, and throughout the year, at day-long PetSmart adoption events, bringing dogs from her local Madison County Animal Shelter to meet with potential forever families. Through all of her efforts last year, Shannon helped 103 dogs find their permanent homes.

Every year, SOLitude Lake Management staff earns points for their volunteer time and, based on the amount of points earned, the company then rewards and supports a non-profit of their choice. SOLitude matches the reward amount when it is directed to a non-profit. Becky Snyder directed her $1,060 donation to the International Order of the Rainbow for Girls, and Ann Marie Dori directed her $2,800 donation to the Virginia Beach SPCA. Shannon Junior directed her donation of $2,000 to the Rappahannock Animal Welfare League (RAWL).

"Becky, Ann Marie and Shannon lead by example and inspire us all to help make the world a better place," said Marc Bellaud, President of SOLitude Lake Management. "We admire their support of the causes they care deeply about and their commitment to making a difference in their local communities."

The SOLution is a company-wide program that encourages the company and all employees to strive to "create a better world" through volunteerism, community outreach, sustainability and environmental consciousness. SOLitude's company leadership feels it is important to not only be good stewards of the environment, but also to fulfill company core values to "take action and be accountable" and to "protect and respect nature." ■

The SOLution
creating a better world

To participate or share a non-profit's goals for consideration in The SOLution, contact info@solitudelake.com or visit www.solitudelakemanagement.com/solution.

New SOLs

In each issue, staff members from SOLitude are highlighted. It is our pleasure to introduce you to the incredibly talented members of our team and give you insight into the vast array of knowledge and experience they offer.

Tyler Meighan
Fisheries Scientist
Charlottesville, VA

Tyler promotes the growth of game fish by providing a variety of superior fisheries management services, including fish stocking, electrofishing, fish cover enhancement, aeration installation and water quality management. Tyler earned his bachelor's degree in Fisheries Conservation from Virginia Tech in Blacksburg, VA.

Kelly Orne
Director of Human Resources
Shrewsbury, MA

Kelly works to link talent strategy to the business strategy at SOLitude, and ensures that the organization has the right talent, in the right place, at the right time. Kelly resides in Massachusetts where she earned her Bachelor of Science degree in Liberal Arts from Assumption College in Worcester.

Madison Miller
Marketing Assistant
Virginia Beach, VA

Madison is responsible for all marketing administrative work required to support our expanding team of business development consultants. She focuses much of her attention on helping to nurture prospects and obtain new, longtime clients. Madison graduated from Longwood University, where she earned her bachelor's degree in Communication Studies.

Amy Draudt
Business Support Analyst
Virginia Beach, VA

Amy brings many years of experience in all areas of accounting and payroll. At SOLitude, she is responsible for providing office support in the day-to-day operations of the business, including processing service contracts and orders, purchasing, licensing and much more. Amy attended Kingsborough Community College in New York City.

Travis McCarver
Shop Foreman
Bryan, TX

Travis is responsible for maintaining company equipment and vehicles, and also works in the field delivering quality services to our clients. His work helps to ensure that the aquatic and fisheries professionals at SOLitude have the tools necessary to complete their job in a timely and safe manner.

Brianna Scicluna
Regional Administrator
Virginia Beach, VA

Brianna provides excellent customer service to each and every client she works with. She works closely with our CEO and spends much of her time ensuring all of the needs of our team are met. Brianna is currently earning her bachelor's degree in Business Administration at Regent University in Virginia Beach, VA.

LOVE YOUR LAKE

Win a FREE Lake Makeover!

Does your non-profit charity organization or foundation have a lake or pond that is unhealthy and in dire need of ecological restoration? Are recreational activities limited due to nuisance algae and aquatic weeds?

Submit your photos and story to info@solitudelake.com for the chance to win a FREE Lake or Pond Makeover! Join us in being part of The SOLution.

LOVE YOUR MOTHER

In support of Earth Day (April 22) and Arbor Day (April 28), join us in being part of The SOLution. Become a new follower of any of our informative social media pages or blog during the month of April and we will plant two trees for you!

www.solitudelakemanagement.com/blog

NATIONAL FOREST FOUNDATION

10 Ways to Help Reduce Mosquitoes and the Threat of Disease in Your Community

Mosquitoes are a royal pain that nobody wants to deal with. And in addition to being an annoyance, mosquitoes pose a serious threat to public health, as they transmit dangerous diseases like Zika and West Nile virus. Here are 10 ways to help reduce mosquitoes in and around your lake or pond, and throughout your community:

1. Remove cattails and other non-beneficial shoreline vegetation, which can provide breeding habitat for mosquitoes.
2. Maintain a buffer of beneficial vegetation, such as Pickerelweed and Cardinal Flower, to help provide habitat for mosquito predators like dragonflies.
3. Stock your waterbody with an appropriate species of small fish like Fathead minnows or Bluegill to help control mosquitoes that may be breeding in shallow areas.
4. Circulate the water with a fountain or submersed aeration system, as mosquitoes tend to only breed in stagnant water.
5. Treat nuisance aquatic weeds and algae; weeds and algae can create isolated pockets where mosquitoes may be able to reproduce.
6. Eliminate standing water in your community by cleaning up litter, removing tire piles and repairing potholes. This will help limit breeding habitat.
7. Regularly empty containers around your home, such as flower pots or buckets.
8. Clean the gutters on your home to further limit mosquito breeding habitat.
9. Educate your community members about ways to avoid exposure to mosquitoes and reduce breeding habitat on their property.
10. Implement a proactive Integrated Mosquito Management program, which includes surveillance and testing efforts, to address all aspects of the problem and to help prevent mosquito bites and the transmission of serious disease. ■

Invasive Species Highlight: *Hydrilla*

By **Emily Mayer, Aquatic Biologist**

Hydrilla (*Hydrilla verticillata*) is a highly invasive aquatic plant that is plaguing freshwater ecosystems in the US, particularly in the South, Southeast, Mid-Atlantic and (most recently) the Northeast. Hydrilla has several distinguishing characteristics. Its small leaves are arranged in whorls of three to eight, and these leaves are heavily serrated and can be seen without the aid of magnification. Reproduction typically occurs through fragmentation, although hydrilla also produces tubers, which are subterranean potato-like structures. These tubers can stay dormant in the sediment for up to 12 years, causing significant challenges in eradication.

Hydrilla forms dense mats at the surface of lakes and ponds, which limits recreational use and diminishes the aesthetic appeal of the waterbody. This invasive plant also out-competes native aquatic plant species, reducing biodiversity and negatively impacting water quality. Hydrilla also serves as a host for toxic cyanobacteria (*Aetokthonos hydrillicola*) that is responsible for avian vacuolar myelinopathy (AVS), a fatal neurological disease that affects eagles and other birds of prey at several sites in the southern US.

There are many management options to help control hydrilla; however, studies show that long-term management targeting tuber bank depletion is needed for successful eradication. ■

Before and After Showcase

Excellence in Water Quality Treatments

Location: Clemmons, NC
Surface Area: 1.2 acre private farm pond
Primary Target: Duckweed and watermeal
Restored By: Trent Nelson, Aquatic Specialist

Location: Tomball, TX
Surface Area: 0.75 acre community pond
Primary Target: Water primrose
Restored By: Cole Kabella, Wildlife and Fisheries Biologist

Location: Hendersonville, TN
Surface Area: 1.1 acre private pond
Primary Target: Filamentous Algae
Restored By: Parker Hurst, Wildlife and Fisheries Biologist

Featured Mechanical Harvesting Project

Location: Hyannis Port, MA
Surface Area: Managed .875 acres of 1.75 acre pond
Primary Target: Yellow water lily
Restored By: SOLitude Mechanical Team

Check Us Out

SOLitude Lake Management will be participating in the following events over the coming months. We encourage you to come see us!

April 13
Rocky Mountain Chapter of Community Associations Institute's Spring Showcase & Trade Show
Greenly, CO

April 18
Central Virginia Chapter of Community Associations Institute's Trade Show and Education Expo
Richmond, VA

May 3 - 6
2017 Community Associations Institute's Annual Conference and Exposition
Las Vegas, NV

May 5 - 6
New York State Federation of Lake Associations Conference (NYSFOLA)
Hamilton, NY

May 11
Pennsylvania and Delaware Valley Chapter of Community Associations Institute's Annual Expo
King of Prussia, PA

May 11
New Hampshire Lakes Congress
Meredith, NH

June 3
Chesapeake Bay Foundation's 29th Annual Clean the Bay Day
Various Locations

SOLitude Locations

SOLitude Lake Management is consistently adding new staff and office locations to better serve and exceed the expectations of our growing clientele throughout the United States.

Below is a list of all of our current locations with professional staff servicing all of your lake, stormwater pond and fisheries needs. If you don't see your state listed, call 888.480.5253 and we'll get you in touch with one of our preferred providers in your area.

Arkansas
Little Rock: 888.480.5253

Colorado
Denver: 888.480.5253
Pueblo: 888.480.5253

Delaware
Georgetown: 302.329.7664

Georgia
Atlanta: 678.207.7631

Illinois
Schiller Park: 888.480.5352

Maryland
Gaithersburg: 240.780.2053

Massachusetts
Shrewsbury: 508.885.0101

Mississippi
Jackson: 888.480.5253

Missouri:
Steele: 888.480.5253

New Jersey
Hackettstown: 908.850.0303
Mt. Laurel: 856.254.2039

New York
Oneonta: 607.433.2484

North Carolina
Raleigh: 984.444.2548
Shallotte: 910.367.6869

Pennsylvania
Oxford: 484.727.8918

South Carolina
Charleston: 843.640.0064

Tennessee
Nashville: 888.480.5253

Texas
Bryan: 979.279.2946
Dallas: 888.480.5253
Tyler: 903.581.3830

Virginia
Charlottesville: 434.218.7829
Fairfax: 540.371.4382
Newport News: 757.591.8780
Richmond: 804.525.9088
Virginia Beach: 757.689.8890

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Services and Consultation Offered Nationwide

- **Annual Lake & Pond Management**
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- **Fisheries Management**
- **Water Quality Testing**
- **Bathymetric Studies**
- **Biological Augmentation**
- **Mechanical Harvesting**
- **Ultrasonic Algae Control**

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Ponder These Thoughts

SOLitude Lake Management wants your lake or pond to be prepared for warm weather. With this in mind, we recommend that you consider the following during the spring months:

- Have your lake or pond's water quality professionally tested. Find out early in the season if there is an imbalance or increased nutrient load in the water.
- Be patient if you notice spring algae or green water. Once your waterbody has established a balance, either naturally or with assistance from the SOLitude Lake Management Annual Management Program, algae will clear up.
- Put a natural and effective integrated mosquito management plan into place for your community with surveillance, monitoring, minnow or Bluegill stocking and other control methods.
- Examine basin inlet(s) and outlet(s) to ensure devices are obstruction-free and operational. Schedule an annual inspection.
- If your lake or pond's vegetative buffer was not trimmed last fall, spring is also a good time to remove dead vegetation from the buffer, setting the stage for healthy growth.
- Spring is the perfect time to enhance your waterbody's buffer with supplemental plantings. Beneficial flowering plants will add color and character plus help absorb nutrients from entering the waterbody.
- Be sure your lake or pond is stocked with easy-to-catch fish such as Bluegill, Largemouth Bass and Channel Catfish and plan a successful summer fishing event in your community.
- Spring is an ideal time for a fisheries biologist to assess the health of your fishery, using an electrofishing vessel to provide a strategy to keep your fishery healthy.
- Consider Hydro-raking as an effective alternative to costly dredging for area-selective removal of nuisance, rooted vegetation and to clear accumulations of bottom muck and debris.