

Aquatics**in**Brief

SUMMER 2014



Volume 8, Issue 3

Inside:

Page 2

**Invasive Species
Control and Improved
Biodiversity**

Page 3

**The Benefits of
Stocking Supplemental
Forage Fish**

Page 4

**Be Part of The SOLution
Win a FREE Lake
Makeover**

Page 5

New SOLs

**Congratulations to our
Volunteer of the 1st
Quarter, J. Wesley Allen!**

Page 6

**Understanding the
Water Quality in your
Pond or Lake**

Check Us Out

Page 7

**Before and After
Showcase: Successful
Aquatic Weed and Algae
Treatments**

Page 8

Ponder These Thoughts

Turtles: Are They Hurting My Pond?

By **Marcus Harris, Fisheries Biologist**

Turtles are one of the oldest still-living groups of animals on the planet. The order Chelonii (includes all species of turtles both extant [living] and extinct) dates back to the Triassic period and the time of dinosaurs about 220 million years ago! Over that time period they've adapted to living in many different environments and can be completely terrestrial, semi-terrestrial, and aquatic (both marine and freshwater).

The majority of lakes and ponds have suitable habitat for turtles. So, if you have water on your property, you most likely have turtles and you may be wondering what effect they have on the ecosystem. To determine that, we need to look at what type of turtle you may encounter. The two most common types are sliders (painted and red-eared) and snappers (alligator and common).

Painted sliders are the most widespread native turtle in North America while red-eared sliders are common in the pet trade. Red-eared sliders are listed as one of the world's 100 most invasive species by the International Union for the Conservation of Nature and have been introduced into the wild where they

Painted Sliders



Snapping turtle

out-compete the native painted populations.

Their diet includes small aquatic insects and plant material and this is where the question of "Are they hurting my pond?" comes into play. Larval and small fish eat the same small insects that the turtles do. There is no evidence to support that an overabundance of slider turtles can limit an insect population to the point that it starts to effect fish. Turtle populations tend to be self-regulating, meaning that as food and other resources become more available, the population numbers grow, and as resources become less available the population numbers drop. This means the population has a hard time becoming overpopulated to the point of impacting other species.

Continued on page 2

SOLITUDE
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*A Full Service
Lake, Pond, and Fisheries
Management Company*

Invasive Species Control and Improved Biodiversity

By **David Ellison, Aquatic Biologist**

Very often we are asked to look at an issue that has been plaguing someone for years and they are finally ready to resolve the problem once and for all. *Phragmites australis*, commonly known as phragmites, is one particular species that people quickly become tired of seeing. The plant can block breathtaking views and can reduce the ability to fully enjoy your property. Phragmites is a highly invasive species that secretes an acid in to the soil to help the plant outcompete other species. There are particular control strategies that have shown excellent results and with diligent treatments, you can get the upper hand on this highly invasive plant.

Over the past 3 years, SOLitude performed this type of treatment on a military installation infested with hundreds of acres of phragmites. Treatments were performed in the fall utilizing both air and ground techniques. Fall is the optimum time to treat phragmites as the plants are sending nutrients to the roots, similar to animals fattening up before winter hibernation. During this time, the plants will transport the systemic herbicide to the roots allowing for better plant control. Both aerial and ground applications were utilized as some areas are wide open and accessible and others are fringed with trees.

One of the areas was an 80 acre open wetland area fed by a small stream that is fringed by trees and other woody vegetation and bordered by a small raised road. Upon initial investigation, the site was found completely 'choked out' with phragmites and little beneficial vegetation and wildlife was observed. During the first treatment season, this area was treated by both aerial and ground treatment with systemic herbicide. After inspection in the spring, a significant reduction in the number of phragmites plants present was observed.



We also noticed a significant increase in the amount of waterfowl present and observed multiple terns and even a few egrets.

The same area was treated by both aerial and ground treatments in the fall the following year and further improvements were observed the next spring. The client observed multiple animal burrows in the area, increased turtle activity, and new frog species that had never been seen on the site. They also noted that the multi-year treatments greatly limited regrowth of the phragmites and new native grass species had begun to repopulate the area.

Another area included 10 acres bordered by a road on one side, trees on two sides and a small stream that fed the wetland on the other side. This was also treated in consecutive years by both air and ground treatments. After two years of treatments, there were significant improvements, more bird activity, and more invertebrate species were present than previously observed. Most importantly, new grasses, sedges and other plants began to propagate where the phragmites had previously overtaken.

Multiple-season treatments on phragmites at this and many other sites have provided significant improvements. These sites show how quickly native plants and animals will begin utilizing a habitat once conditions become more favorable. Observation also shows that biodiversity increases with the removal of invasive species. Establishing and maintaining a well-devised management plan for any invasive species is integral for the control of these nuisance plants. It will substantially aid in preserving the habitat for animals and enhance the natural beauty of the landscape that our clients are seeking. ■

Turtles: Are They Hurting My Pond?

Continued from front cover

turtles also eat plants and decaying matter in the pond. Again, there is no evidence supporting any negative effects on plant populations as a result of turtles.

The answer to the question is a fairly straightforward "No" when talking about slider turtles but becomes a little grey when questioning snapping turtles. Like slider turtles, snappers are omnivores. They lie-in-wait and ambush live prey with a fast lunge of their neck and snap of their jaws. Snappers are known to eat fish but it's not uncommon for them to feed on ducklings, birds, mice, and just about any other source of meat that may enter their habitat. Again, the thought is that snappers eat live fish so they might have an impact on fish populations. Like the

case with sliders, there is no scientific evidence to support this and in a natural setting, snappers have no negative effect on fish or waterfowl numbers.

The grey area comes into play when looking at recreational activities around a lake or pond. Snappers can grow quite large (20-40 pounds) and have a large and powerful jaw and sharp claws on their feet. They are aggressive during egg laying (peaks in June-July) and are known to bite if provoked on land. Trapping can be done to remove snappers, but should always be conducted by a trained professional with the proper authority and knowledge to do so. Handling of snapping turtles should be avoided. They may not be hurting your pond but they may end up hurting you! ■

The Benefits of Stocking Supplemental Forage Fish

By David Beasley, Lead Fisheries Biologist

Owning or living on a pond with good fishing is something that many pond owners find desirable. The unfortunate reality is that having good fishing is not something that always occurs naturally. What happens more often than not is that many ponds become predator heavy, throwing off the ideal predator-to-prey ratio. When this occurs it is very difficult for the forage fish to reestablish naturally, due to the ongoing pressure from predator fish. One management strategy to consider when trying to maintain or establish good fishing is to stock supplemental forage fish.

Stocking supplemental forage fish is a term that typically refers to stocking bait fish to improve predator growth. This stocking strategy of adding extra fish to a system is often the last improvement set in motion in a fisheries management strategy, yet is one of the most impactful management strategies when done properly.

Depending on your goals and budget, the amount of forage fish stocked will vary greatly. The more forage fish stocked, the better the growth rates that can be expected. When considering stocking forage fish it is important to understand that every 10 pounds of forage fish will result in 1 pound of predator growth.

For those pond owners serious about improving growth rates on their bass, stocking golden shiners every fall is a great way to achieve results. Stocking in the fall rather than in the spring is a best management practice for two primary reasons. One reason is golden shiners will compete with the ponds natural forage fish. As a result, stocking large numbers of shiners in the spring can take away from the pond's natural productivity. Secondly, stocking in the fall alleviates pressure from the 'native' forage fish that were born in the spring and summer and allows those smaller fish a chance to grow and avoid predation. The ideal time for stocking golden shiners is from September through November as it provides the most value for the investment.

In addition to stocking shiners, stocking trout is another great supplemental stocking option. Trout serve as an ideal food source for bass while also providing fisherman the opportunity to catch a different species of fish over the course of the fall, winter and spring. This change in diversity is great for both private and community-owned ponds. One of the most desirable advantages to stocking trout is that kids can catch them fairly easily. Having a species of fish in the pond that are relatively simple to catch is a great value to most pond owners with kids and adults alike who love to fish.



Trout serve as an ideal food source for bass while also providing fisherman the opportunity to catch a different species of fish over the course of the fall, winter and spring.



Aside from the great fishing opportunities they present, trout serve as an outstanding food source for bass. The ability to stock intermediate-size trout that your bass can eat, yet large enough for people to catch when fishing, make them a preferred choice for a supplemental forage stocking program. One downside to trout is that they cannot tolerate water temperatures above the low 70's. Fortunately for the bass, as trout slowdown in the spring, they become an easy meal and put a bunch of weight on the bass quickly. Trout's inability to survive year round in most ponds requires pond owners to restock them annually, but the positive sides to having trout greatly exceed the need to for continual restocking. The ideal time of year to stock trout ranges from September through November, depending on water temperature.

Achieving growth rates on predator fish in ponds can be very difficult depending on the condition of the fishery. Even though supplemental forage fish stocking as a stand-alone management strategy is not likely to result in a well-balanced fishery, it does however play a critical role as a management step in the process of improving a fishery. When putting together your management strategy for maintaining or improving growth rates on your predator fish, make sure to consider stocking supplemental forage fish. ■

Be Part of The SOLution

Join the SOLitude team as we volunteer in our local communities to clean up our rivers and streams, help find forever homes for dogs and cats, prepare food for children in underprivileged families and teach kids about nature

The SOLution
creating a better world

and how to fish. Check out some of the fun and inspirational environmentally-focused volunteer events and campaigns that we supported this spring as part of our commitment to environmental stewardship and community involvement:



Ecologist, Gavin Ferris, volunteered for **Survive and Thrive Philadelphia**, a Meetup group for people interested in sustainable living and emergency preparedness. He used his expert wilderness skills to show guests how to identify signs of wildlife and obtain emergency food, along with a lesson on ecology.



In honor of Earth Day and Arbor Day, SOLitude partnered with the **National Forest Foundation** to plant 101 new trees — one new pine tree for every new social media follower from 4/1/14-5/15/14. Thank you to our new social media fans and followers for being part of The SOLution!



Wesley Allen, Greg Blackham and Greg's family were part of The SOLution, joining 1100 volunteers to plant American Beach Grass along the shore for **Delaware Seashore State Park**. Thank you for your effort to help prevent beach erosion!



Aquatic Ecologist, Shannon Junior, volunteered to judge presentations for this year's regional **Envirothon competition** in Syria, VA. This team-based natural resources competition for high school students is focused on teaching environmental stewardship and management strategies for solving real world problems.



The Northern Virginia SOLitude team had a fantastic time volunteering once again at the **Graves' Mountain Lodge Heritage Day**. Staff displayed our electrofishing boat and a large tank full of native fish species, introducing hundreds of kids and their parents to our local fish and their environment.



SOLitude's Delaware staff helped the **Brandywine Valley Association** gather almost 2 tons of trash around the Brandywine Creek near West Chester, PA. The team was excited to find that progress is being made and the amount of trash collected was down from previous years.

Join in on the fun and help support our local communities! We encourage our clients, partners, family and friends to all be part of The SOLution. If you would like to share a non-profit's goals or upcoming event, or join the SOLitude team at an upcoming volunteer day in your area, email Tracy King, Director of Marketing at tking@solitudelake.com.

Win a FREE Lake Makeover!

Is your non-profit's lake or pond 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 Makeover!

LOVE YOUR LAKE



New SOLs

In each issue, staff from SOLitude are highlighted. It is our pleasure to introduce the incredibly talented members of our team who are instrumental in our growth and continuing commitment to providing our clients with high quality, value added services.

Ann Marie Dori supports several core departments including marketing, business development, customer service and operations as SOLitude continues to grow. Ann Marie assists with the management of our online marketing presence and community outreach program, The SOLution, along with various special projects to support our staff and clients. Ann Marie comes to us with over fourteen years of experience, the last four of which she oversaw the daily operations, social media, finances, record keeping and event planning for an online marketing company and two growing non-profit organizations.



Ann Marie Dori
*Marketing & Special Projects
Coordinator*

Growing up in a small community in Maryland on the Chesapeake Bay, the water and the environment have always been important to Ann Marie. Her decision to earn her bachelor's degree in Psychology at Salisbury University on the Eastern Shore of Maryland was due, in part, to its proximity to the water.

Ann Marie is passionate about traveling and is slowly making her way around the world; so far she has visited thirty-three states in the U.S. and twenty-five countries on six continents. She also enjoys scuba diving, cooking, going to concerts, volunteering, working out, hiking, and just about any activity that gets her outside in the sunshine. Ann Marie shares her home in Virginia Beach with her husband, Dave Moore, and their four "fur kids," all rescued kitties who are now living in the lap of luxury. ■

Karen Avery joined SOLitude's Client Relations department bringing over 25 years of experience in sales, administration and management including human resource development, international travel, and bookkeeping, most recently in the automotive and security industries. Having worked in retail sales and management most of her career, Karen moved into administrative roles over the last few years to give her a unique and diverse experience in business practices. She currently provides support to SOLitude's Business Development team as well as our valued prospective and current clients.



Karen Avery
Client Relations

Karen supported her husband through his twenty-seven years in the US Navy. She volunteered as the command ombudsman when he was stationed on the USS Ross and worked with Navy families through the fleet and family support groups to help spouses with the challenges of Navy life.

Karen is a native of the Hampton Roads, Virginia area. Even after living in other states, she always considered Virginia Beach her home. Karen enjoys playing volleyball with friends and family and going to art festivals to show support to local artists. ■

Congratulations to our Volunteer of the 1st Quarter, J. Wesley Allen!

In 2014, Wesley identified several new environmentally-focused volunteering opportunities in his region, recruited staff and their family members to join him on several occasions, and participated in team volunteer events as well.

Wesley volunteered multiple times for the Delaware Department of Natural Resources and Environmental Control (DNREC) to remove invasive species from Cedar Swamp in Smyrna, DE. He helped with the annual Delaware Seashore State Park beach grass planting event, along with teammates, family members and 1100 other caring individuals. Wesley also adopted a Delaware State Park trail for SOLitude, and is committed to maintaining and monitoring activities on a specific section of the trail throughout the year.

Wesley is an invaluable member of the SOLitude team and we appreciate his commitment to improving the condition of the parks and shores in his community. Congratulations on your recent accomplishments, Wes! ■



Understanding the Water Quality in your Pond or Lake

By **Shannon Junior, Aquatic Ecologist**

As an Aquatic Ecologist with SOLitude Lake Management, I visit hundreds of ponds and lakes each year to evaluate them and to provide recommendations for remediation and long-term management. Our initial assessment typically includes a visual inspection of the pond from the shore, and we are able to gain quite a bit of ecological information about the waterbody during this visit. However, in order to have a more comprehensive understanding of the lake ecosystem, it is important to perform quantitative measurements of the appropriate water quality parameters.

The determination of the most important water quality parameters to sample and the frequency of data collection would be based primarily on the water use and management goals for the pond or lake. There are several general baseline water quality parameters that are helpful to know for every pond. The pH of a waterbody reflects whether it is acidic or basic, and most aquatic organisms thrive at a fairly neutral pH between 6 and 9. Abnormally high or low pH readings can be stressful for fish and other inhabitants of the pond, and extremely acidic conditions can also cause other water quality issues. Alkalinity and hardness are closely related and affect the buffering capacity of the waterbody to fluctuations in pH, which can also be stressful to aquatic organisms. The alkalinity level is particularly important to know for waterbodies with nuisance vegetation issues because there are certain herbicides that can be toxic to fish at low levels. Low alkalinity can be remediated by applying the appropriate amount of lime to the waterbody.

Dissolved oxygen (DO) is another parameter that is especially valuable to know for larger waterbodies and for ponds where recreational fishing is a high priority. Dissolved oxygen is the amount of oxygen gas dissolved in the water column. Small amounts of oxygen enter the water column by direct diffusion at the air/water interface. However, the primary source of oxygen in a pond is production during photosynthesis by aquatic plants and algae. The breakdown of organic matter (i.e. aquatic plants, leaf litter, manure, fish waste) consumes large amounts of oxygen from the water column, so ponds with heavy organic loads may experience low dissolved oxygen conditions, especially during the hottest part of the summer. Fish require oxygen for respiration and become stressed at

levels less than 5 mg/L. Dissolved oxygen is typically measured not just at the surface, but in set increments all the way through the water column to the bottom of the pond, along with temperature readings at the same depths. The dissolved oxygen/temperature profile indicates where the thermocline exists in a waterbody (the density gradient between warm surface water and colder bottom waters), and whether anoxic conditions exist near the bottom of the lake. This can have important implications for the health of fish and other aquatic organisms. Submersed diffused air aeration systems or floating aerating fountains can be specified for lakes where low dissolved oxygen is an issue.

Most of the ponds and lakes in the geographic areas that we service have elevated nutrient levels, which are primarily caused by the runoff of fertilizer and sediment from urban and agricultural watersheds. While nutrients are essential to the productivity of the phytoplankton that form the base of the food web, over-enrichment can lead to excessive growth of algae and aquatic plants. Nitrogen and phosphorus are the elements most associated with plant growth, although phosphorus is generally the limiting nutrient in fresh waterbodies. With the recent development of a new product called Phoslock that can be used to remediate phosphorus, it has become even more important to understand these parameters. Measuring the numerical values for nutrient parameters can help us to provide a site specific nutrient and algae management program for your pond or lake. We are also able to identify the species of algae that are present in the waterbody in order to determine when potentially harmful blooms of cyanobacteria are present, which also helps us choose the best herbicide to control the target species.

For ponds used for swimming, it is recommended that the *E. coli* and fecal coliform levels are measured to confirm that the water is safe for humans and pets. These bacteria are indicators of contamination with the fecal matter of humans or other animals, and can be a sign of the presence of pathogens in the water that may cause gastroenteritis or other illnesses.

No matter what your goals are for your pond or lake, baseline water quality testing and periodic monitoring can be a valuable tool for providing long-term management recommendations. ■



Check Us Out...

SOLitude Lake Management will be participating in the following events over the coming months. We encourage you to come see us! If you need information on attending any of these events, please call our office at 888-480-LAKE (5253).

July 24-27

Community Associations Institute (CAI) - Virginia Leadership Retreat

The Homestead, Hot Springs, VA
www.facebook.com/VirginiaLeadershipRetreat

August 8-10

Virginia Outdoor Sportsman Show

Richmond Raceway Complex, Richmond, VA
www.sportsmanshow.com

September 11-12

South Carolina Chapter of CAI - Annual Conference

Sheraton Myrtle Beach Convention Center
Myrtle Beach, SC, www.cai-sc.net

October 3

Southwest Virginia Chapter of CAI - Community Associations Day

Sheraton Roanoke Hotel & Conference Center
Roanoke, VA, www.caisvva.com

BEFORE AND AFTER SHOWCASE

Successful Aquatic Weed and Algae Treatments

Before



Location: Purcellville, VA
Surface Area: 1.5 acres
Primary Target: Watermeal, filamentous algae and brittle naiad



After

Before



Location: Charlotte, NC
Surface Area: 1.5 acres
Primary Target: Pithophora algae



After

Before

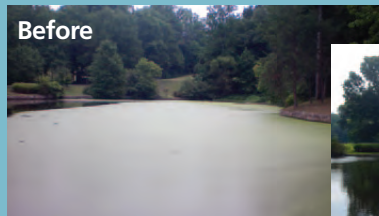


Location: Montville, NJ
Surface Area: .25 acres
Primary Target: Duckweed



After

Before



Location: High Point, NC
Surface Area: 2 acres
Primary Target: Watermeal

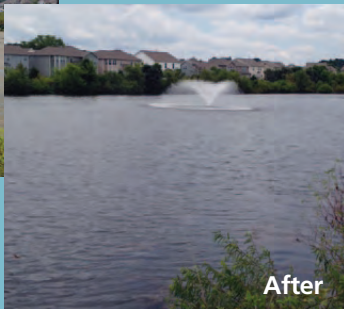


After

Before



Location: Concord, NC
Surface Area: 2 acres
Primary Target: Pithophora algae



After

Before



Location: Crozier, VA
Surface Area: 8 acres
Primary Target: Watershield

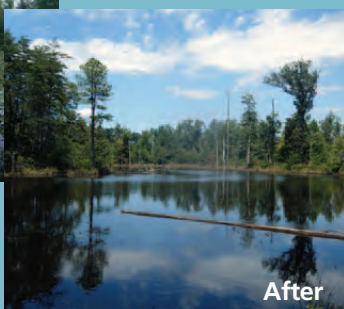


After

Before

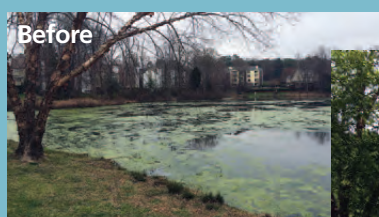


Location: Bowling Green, VA
Surface Area: 4.25 acres
Primary Target: Spatterdock and Bladderwort



After

Before



Location: Henrico, VA
Surface Area: 14 acres
Primary Target: Filamentous algae



After

Be sure to visit www.solitudelakemanagement.com to download *Your Guide to Sustainable Pond Algae and Aquatic Weed Control* and *How to Restore Lake and Pond Water Quality Through Nutrient Management*. Learn from the experts at SOLitude and help ensure your lakes and ponds are healthy and looking good year round with a sustainable annual management plan.





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- **Annual Lake & Pond Management**
- **Bathymetric Studies**

Aquatics**in**Brief

SUMMER 2014 | Volume 8, Issue 3

Ponder These Thoughts

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

- Warm summer weather seems to bring out the best and the worst in ponds. Although algae and aquatic weeds seem to be more abundant at this time of year, a year-round maintenance plan is the best way to ensure a healthy pond all year long.
- Summer is the perfect time to think about aeration. The warmer water temperatures can be detrimental to the overall health of your pond. Increase oxygen, reduce stagnation and stratification, and prevent algae, mosquito breeding, fish kills and many other water quality problems with a properly sized aeration system.
- Mosquitoes can ruin summer fun. Think about stocking your pond with juvenile bluegill, fathead minnows and other small fish that help to control the mosquito population. This, along with beneficial buffer plants and proper aeration, can help eliminate a potentially big problem.
- Living on a lake brings responsibility. Remember to respect the natural buffer around the lake and never mow all the way to the water. Also, be sure to keep clippings and other debris out of the water as this adds nutrients and spurs algae growth.
- Summer months = Good fishing! Make sure you maintain your fish habitat with good water quality and cover. Consult our experts if you have questions about proper maintenance of your fishery.

