



# Aquatics **in** Brief

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## Should I Test My Water Quality?

By **David Beasley, Fisheries Biologist**



**W**ater quality plays a lead role in the behavior of your pond. A key to having a healthy, balanced pond is to maintain stable water quality. Unfortunately many water bodies face a constant battle with being out of balance.

Knowing what parameters to test for and at what interval can be tricky. For starters you have dozens of important parameters that can be tested. Those ponds that are managed for aesthetics should consider monitoring nutrient levels along with dissolved oxygen, visibility, pH and alkalinity on a quarterly basis. This information is very useful in understanding the water body. Testing the water each season of the year will provide a good baseline of data that can be used to understand trends and make decisions in the future.

Water bodies that are used for swimming and water sports should consider testing for

harmful bacteria during the warmer months. Keeping an eye on E.coli and fecal coliform levels, monthly between May and September, will help you to understand if your water is safe for swimming. Those who don't swim in their ponds but want to gain an understanding

**Testing the water each season of the year will provide a good baseline of data that can be used to understand trends and make decisions in the future.**

of these harmful bacteria could test less frequently, once or twice each summer would be sufficient.

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## Nature's Mosquito Control

By **Matthew Phillips, Aquatic Biologist**

Owni<sup>ng</sup> or living near a pond can sometimes be a mixed blessing. There is the enjoyment and adventure of having one, but then there is also the burden of nuisance critters that it might attract. One of these critters is the pesky mosquito, which can seem impossible to control. There are several sprays, "foggers", and other chemicals on the market that help control mosquitoes, but these can be expensive and come with warnings. One safe, easy and inexpensive way to control mosquitoes is to create dragonfly habitat around your pond.

Dragonflies are strictly predators and both the larval form and the adult feed on other insects, with mosquitoes being the primary choice of food. The larval form will live in the water from several months to a few years. While in the water, it feeds on other larval insects or large planktonic organisms. Mosquito larvae and even mosquito eggs encompass a vast majority of their diet. Like the larvae, the adult dragonflies feed on other insects but prefer adult mosquitoes. The adults typically live for several weeks to a few months and rarely venture far from the pond where they lived as juveniles, and usually will mate and lay eggs in the same pond.

So how does one go about creating dragonfly habitat and ensuring more enjoyable evenings spent by the pond? It is quite simple and involves planting various types of plants around the pond that will encourage dragonflies to utilize your pond.

As mentioned, the larval form of the dragonfly lives in the water, where it will stay for 3-5 months or up to a few years, depending on the species. These larvae need some vegetation and cover to be able to hide from fish and other predators.

Some beneficial plants to have in the shallow areas around the perimeter of your pond would be pickerel weed, arrowhead, spatterdock, lizard's tail, and lilies. These plants not only provide excellent cover for the larvae, but also provide nice platforms for the adults to perch or mate on. The female will also lay her eggs in the water around these plants or occasionally, make a small incision on them where she will deposit her eggs. These plants can be planted in big pots that are then submerged to help prevent them from overtaking the pond. They can also be easily "knocked back" and controlled by your professional aquatic herbicide applicator.

Sedges and rushes are good plants to have in the water-to-bank transition areas. These plants do well in the semi-wet areas



*Joe-pye weed*



*Blue flag iris*

and will not die during extreme fluctuations in water levels. They also give the larval dragonflies a plant on which to crawl out

of the water and perch while they molt into a winged adult.

Beyond the sedges and rushes, it is good to have native grasses and wildflowers along the bank such as buttonbush, Joe-pye weed, wool grass, black-eyed Susan, marsh milkweed, iris, cardinal flower, and hibiscus. Not only do these plants make great areas for the dragonfly to fly around and hide when predators are around, but they also attract other

insects, which provide a food source

for the dragonflies. Once you have this nice buffer established, it is best to let it naturally grow and die off and should never be mowed. Mowing can stress some of these plants and if cut, non natives or over aggressive invasive plants can quickly overrun your buffer. Nobody likes a pond perimeter surrounded by briars. Also, many times the

clippings end up in the pond which only increases your chance of mosquitoes

by creating tiny pockets of stagnant water. The clippings will also increase your chance of nutrient loading which will only lead to future algae blooms.

Although one does not have to have these plants around their entire pond, it is good to have them in the extreme shallow areas or in the areas that receive the most sunlight. Having all these plants around your pond will also help with nutrient management. They will soak up a lot of the nutrients, which will help prevent algae blooms. They also will keep the shallow perimeter areas well shaded, which will also help to reduce recurring algae problems.

It is good to avoid plants like cattails and Phragmites as these plants are highly aggressive and will out-compete your beneficial plants. Cattails also produce isolated pockets of stagnant water that are prime habitat for mosquito larvae. Broad leaf trees should be avoided as they will create too many shaded areas and can deposit large amounts of leaf litter into the pond which can contribute to nutrient loading.

While a lot of this might seem very daunting, chances are you already have several of these plant species already growing in and around your pond. ■

# Integrated Pest Management By Shannon Junior, Aquatic Ecologist

If you have been reading this newsletter for the past year, then you are already aware that the new National Pollutant Discharge Elimination System permit for aquatic pesticides went into effect last fall on October 31. The 2012 growing season is well under way, so we have already been applying herbicides and are in compliance with the permit requirements. The overall intended goal of the permit is to minimize the total amount of pesticides discharged into the aquatic environment. While much of the “red tape” associated with the permit does not contribute directly to this objective, the requirement for the consideration of Integrated Pest Management (IPM) strategies is a valuable feature that actually does offer some environmental protection. IPM is a comprehensive approach to pest management that includes the use of many alternative strategies prior to or in conjunction with the use of pesticides.

SOLitude Lake Management has always recommended IPM alternatives to our clients, but the new legislation makes this consideration more of an obligation than an option. Although herbicides are often the quickest and least expensive short-term solution for nuisance algae and aquatic vegetation infestations, the continual discharge of pesticides into the environment is not sustainable as a long-term strategy. There are better solutions available that not only address the immediate problem of algae and aquatic vegetation infestations, but also serve to improve water quality and target the underlying conditions that cause the infestations in the first



place. We will continue to educate the public about the value of IPM strategies, and if you are a current client, you will periodically receive correspondence from us with specific recommendations for your particular site. As a decision-maker and co-permittee under the NPDES program, we would recommend your consideration of the information, not just for permit compliance, but for the long-term health of your water body and the other water resources in your area.

There are six main alternative strategies that should be considered as part of any IPM Plan. They are No Action, Prevention, Mechanical/Physical, Cultural, Biological, and Chemical. No Action may be acceptable in water bodies with no nuisance algae or aquatic vegetation issues, or during times when there is no active algae or aquatic vegetative growth. However, it is recommended to continually monitor for growth since it is much easier to treat problems when they are small as opposed to after an infestation has developed. Preventive strategies are

frequently employed in large water bodies that are open to public boat traffic. Boat and gear inspections are critical in preventing the spread of invasive weeds since even small plant fragments can contribute to new colonies. Mechanical/Physical strategies would involve the mechanical removal of vegetation, manipulation of the physical environment to control plant growth, or exposure of the plants to unfavorable environmental conditions. Examples of specific practices would be harvesting, drawdown, aeration, or Sonic Solutions ultrasonic devices. Cultural solutions would include the establishment and maintenance of a vegetated buffer, or the reinstallation of denuded native vegetation. Biological strategies, such as water quality augmentation with beneficial bacteria or the stocking of triploid grass carp for submersed vegetation control, are often some of the safest and most cost-effective options available. And there are many Chemical solutions that do not involve pesticide applications, such as Phoslock, oxygenating products, and flocculants. Please let us know if you would like more information about any of these options, or are interested in developing a site-specific IPM Plan.

At SOLitude Lake Management, we pride ourselves on being innovative and implementing new and environmentally friendly products and technologies as they become available. Our newsletter, blog, Facebook page, and other informational resources will continually feature different IPM strategies, and we hope that you will consider our recommendations and join us in our mission to preserve and protect our aquatic resources. ■

## Should I be Testing My Water Quality? Continued from cover

Ponds and lakes that are managed for fishing, benefit from monitoring quarterly. Each fishery's needs often vary slightly, but testing the nutrient levels and alkalinity, along with a profile of Dissolved Oxygen, pH, and temperature can prove to be very beneficial. When fish are stressed they go into a survival mode, and don't grow much, if any. If fish growth is expected, it is always good to understand if the fish are “stressed out” from poor water or if they are happy with their environment. Reducing assumptions

by obtaining water quality information can improve the success of a pond management program.

Overall, knowing what is in your water can influence how to correct an issue that is adversely affecting the aesthetics and health of your water body. If you don't test your water already, you may consider having a water sampling protocol tailored to your individual needs. ■

# New SŌLs

## Brent Weber, Environmental Scientist

Brent Weber, a native of Williamsburg, Virginia, joins the SŌLitude Lake Management staff as an Environmental Scientist. A graduate of James Madison University with a B.S. degree in Integrated Science and Technology with a concentration in Environment, coupled with a minor in Environmental Science, Brent is an instant fit for the team. Brent will be based in the Newport News, Virginia office and will primarily serve SŌLitude's clients from the Virginia Peninsula to Western Virginia and will also reach into Northern Virginia.

Prior to his employment, Brent worked in landscaping and horticulture, and also as a groundsman for an arborist company. As a lover of the outdoors, Brent enjoys hiking, camping, fishing and playing basketball.



## Jessica Mueller, Aquatic Specialist

One common theme that binds most of the SŌLitude staff is their passion for the outdoors. This isn't lost on Jessica Mueller who recently joined the Newport News, Virginia Office as an Aquatic Specialist. Jessica joins the team after spending twelve years in the horticulture industry. Her positive attitude is infectious and is a big hit among clients and staff. Jessica's experience with design, sales, and project management combined with her sharp, analytical customer service skills, will make her an instant asset. Jessica will be responsible for serving clients from Southeastern Virginia to Central Virginia.

In her spare moments, Jessica enjoys spending time with her family and friends whether at football games with her husband, visiting her local pond with her daughter to watch the turtles, or in her own backyard.



## David Riedl, Environmental Scientist

David Riedl happily returns to his home town of Fredericksburg, Virginia as he joins SŌLitude's Fredericksburg office. Serving clients in Northern Virginia, Maryland, D.C. and Western Pennsylvania, David joins SŌLitude as an Environmental Scientist and brings a "can do" attitude. With a B.S. in Environmental Science from Christopher Newport University, David's prior work experience includes Portsmouth Mosquito Control where he learned basic pesticide application and a position as a Research Technician for the King George Landfill where he treated landfill leachate.

David enjoys spending time with family and has many hobbies. He enjoys playing soccer, lacrosse and the drums. He also travels the country finding the best snowboarding spots.



## John Phelps, Regional Manager/ Environmental Scientist

John Phelps joins SŌLitude Lake Management as a Regional Manager/Environmental Scientist. Primarily responsible for Delaware, Pennsylvania and New Jersey, John brings more than a decade of experience with Water and Land Management with him. A graduate of Indiana University of Pennsylvania with a Bachelor's Degree in Environmental Planning, John's past experience includes serving as an Environmental Wetland Specialist for Mercer County New Jersey's Mosquito Control Division, employment as an Environmental Scientist with the Pennsylvania Sewage Enforcement Office and managing Stormwater Facility Compliance Programs for two leading environmental engineering companies in Delaware.

John is a devoted father and husband who enjoys spending time hiking the Appalachian Trail, canoeing the Potomac or fishing his favorite honey hole.



# “Ole” SŌLs

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

**D**ustin Kennedy is deep in the “roots” of SŌLitude Lake Management. He was the Company’s very first employee. When the company began as Virginia Lake Management, Dustin was the first hire for President and Owner, Kevin Tucker and has been a loyal and trusted employee ever since. Dustin Kennedy is an Aquatic Biologist, but don’t let the “reserved” title fool you. Dustin is far from laid back when it comes to tackling his daily tasks. He is quick, thorough and most of all knowledgeable. And, if fountain maintenance ever needed a “pit crew”, Dustin would be their chief. He tackles aeration issues with expeditious precision making him a great value to the team and a leader amongst his colleagues.

Dustin brought a great deal of experience to SŌLitude Lake Management. Before joining the company, Dustin worked in the Landscape, Electrical and Construction industries. He is a graduate of Old Dominion University and his thirst for knowledge has not yet been fully quenched. He continually takes advantage of SŌLitude’s many training opportunities.

He takes part in the company’s annual SePRO Corporation Preferred Applicator training. He is a factory certified technician for both Aqua Master and Otterbine fountains and is experienced with all types of fountain and aerator motors. Dustin also participates in company-provided sales, customer service and managerial training.

You will rarely find Dustin Kennedy far from water. He spends most of his day surrounded by various lakes and ponds. He spends a great deal of his leisure time surfing in the ocean. Dustin has surfed some of the best spots in the world. Despite his modesty, it isn’t surprising to see him “Catching a Wave” in photographers’ shots on various websites. For Dustin, the water is a way of life. If he isn’t surfing on it, you will find him fishing in it.

Dustin shares all of his passions with his lovely wife, Lindsey and his two beautiful children. Despite the way he feels about waves or fish, he wouldn’t trade a great afternoon with them for anything. ■



**Dustin Kennedy,**  
*Aquatic Biologist*



# Rain Gardens: Improving Water Quality in Your Watershed Can Start on Your Property

By **John M. Phelps III, Environmental Scientist**

If you have read one of SŌLitude Lake Management's recent newsletters, attended an educational seminar on stormwater management in the past two years, glanced at the newspapers' headlines or ever been on the internet, you've probably been introduced to a lot of confusing initials and acronyms revolving around state and federal attempts to improve the quality of America's natural water ways. Terms like TMDL, NPDES, BMP, MS4 and WIP to name a few. While the development of new rules and regulations affecting stormwater and sources polluting our waterways are still being fully realized by the mass public and regulators alike, the underlying take home message of improving the quality of water in our local and national watersheds is loud and clear from terms like Total Maximum Daily Load (TMDL), National Pollutant Discharge Elimination System (NPDES), Best Management Practices (BMP), Municipal Separate Storm Sewer System (MS4) and Watershed Implementation Plan (WIP).



of allowing rain water run off to rush into storm drainages, a rain garden channels water to plants that appreciate the moisture. Rain gardens have changed the way we view stormwater. They are no longer a problem but an asset that can beautify landscaping. Rain gardens take the pressure off storm sewer systems, helping to protect streams, and provide important habitat for insects and birds.

Rain gardens have long been misunderstood. You are not creating a wetland. A properly designed rain garden absorbs water rather than holding it. Absorbing water in about a day, rain gardens are NOT mosquito breeding habitats. Typical rain gardens can absorb 30% more rain water than conventional lawns.

Rain gardens consist of native plants that will filter out pollutants, loose soil, mulch and sometimes gravel. Together these elements collect, absorb and clean run off. The surface layer of mulch and/or gravel spreads water throughout the garden so that plant roots and the soil mixture can absorb the water. As runoff passes through the mixture, chemical and biological processes breakdown any pollutants.



Just like conventional flower beds, a rain garden should be well designed. Its size should be proportionate to your home or other features of the landscape. They do not have to be large to be effective. Where water pools up over the edge of your driveway, around downspouts, where sump pumps drain and at the bottom of a slope where rain water collects are ideal spots for a rain garden. Rain gardens are often a great way to fix small erosion gullies.

There are simple calculations to establish the size and number of plants for a rain garden. Resources are available for design. Rain Gardens are low cost to install, easy to maintain, and fun to enjoy, we encourage their use. ■

**A great way to improve water quality in your watershed is by installing a rain garden on your property.**

In the undeveloped world there is relatively little storm water run-off and impervious surfaces. In Urban and Suburban areas houses, driveways, sidewalks & streets, have replaced forests and grasslands. The management of stormwater is one of the most important functions of federal, state and local regulatory agencies and it is highly important to your local geography as it directly relates to the quality of our water and the water "down stream". Water quality is essential for fish and wildlife, but it is also critical to our own health and welfare. A great way to improve water quality in your watershed is by installing a rain garden on your property.

Rain gardens are really flower beds that absorb rain water and help control erosion. Rain gardens can help reduce the amount of sediment and pollutants from entering our streams, and reduce watering costs by letting Mother Nature water the plants. Instead

# Helping Ducks Stay Healthy

By **Gavin Ferris, Ecologist**



I spent a lot of my childhood near a lake, and there was always a bag or two of stale bread on hand ready to be fed to the mallard ducks that swam expectantly past our dock. Who hasn't experienced the pure joy of feeding ducks? Unfortunately, it turns out we aren't doing the ducks much of a favor by tossing bread and crackers to them.

For one thing, bread and crackers are to birds what donuts and chips are to people: junk food. The carbohydrates are a good source of energy, but with little nutritional value, and while an occasional piece of bread here and a saltine cracker there does little harm, if too much of a duck's diet comes to consist of these handouts from people, they can gain too much weight and have trouble flying. This makes it difficult for them to migrate naturally, and can make it harder for them to avoid predators.

Better choices if you wish to feed wild ducks can include grapes, frozen peas (once they're defrosted), cracked corn, oats, and birdseed. But even with healthier foods, feeding wild animals from hand does pose other problems. Like any animal, ducks can come to associate people with food, and lose their fear of humans, leading them to dangerous behaviors like crossing busy streets to get to people. The presence of an unnaturally abundant food source can also prevent ducks from spreading out to find food, which can lead to overcrowding, aggression, and disease.

The best thing you can do to show ducks that visit your area that you care is to improve their habitat. Improving the aquatic ecosystem with diverse native plants provides natural food sources and cover from predators. If your pond is in a wooded area, wood duck nest boxes may be appropriate. Nesting boxes for mallard ducks are also an option, and both provide hens with a place to lay their eggs safely away from raccoons and other nest predators.

However you choose to enjoy the wildlife that visits your local pond or lake, be kind to your fine feathered friends, for a duck could be somebody's mother. ■



## Check Us Out...

**S**OLitude Lake Management® will be participating in the following events over the next couple of months. We encourage you to come see us! If you need information on attending any of these events, please call our office.

### April 19

The Pennsylvania and Delaware Valley Chapter of Community Associations Institute Annual Conference and Expo, Citizens Bank Park, Philadelphia, PA

### April 22

Earth Day 2012 – "Like" the SOLitude Lake Management page on Facebook and SOLitude will plant a tree in your honor.

### April 26

Central Virginia Chapter of CAI's Spring Networking Social, *Off to the Races with CAI*, Saudé Creek Vineyards, Lanexa, VA

### July 26 – July 29

Virginia Leadership Retreat, The Homestead, Hot Springs, VA



## Find Us On Facebook:



Want helpful pond tips all the time? "Like" us on Facebook (SOLitude Lake Management®) or read our Blog ([solitudelake-management.blogspot.com](http://solitudelake-management.blogspot.com)).



## Ponder These Thoughts

**S**olitude Lake Management® wants to be certain that your pond is prepared for the upcoming season. With this in mind, we recommend you consider the following tips as you start the spring:

- Spring is a great time to “green up” your lawn. Just make sure this doesn’t mean “greening up” your lake. Ensure correct fertilizer rates are observed and limit usage in areas directly adjacent to a lake or pond. Avoid applying fertilizers onto pavement and concrete and use products that are low in Nitrogen and Phosphorus.
- During this growing season, limit mowing around your lake or pond to help establish a protective vegetative buffer. This will stabilize the bank and help act as a filter to reduce the amount of nutrient build-up in the water.
- The change to Day Light Savings Time should trigger thoughts of your pond’s Annual Infrastructure Inspection. This inspection, performed by a licensed engineer, will help cite any issues that can easily be addressed in the warmer season. Having the inspection done in the Spring will also help put you ahead of the upcoming budget season.
- As the weather warms, mosquitoes will invade. Ask us about stocking your lake with minnows to naturally and effectively control mosquitoes.
- Has your pond had a check-up lately? Having a water quality test can determine the health of the pond. If issues exist, remedies can be put in place quickly to restore the pond to good health. ■



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