



# LAKEWATCH

Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program

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## Open Letter to Volunteers to Start Sampling in June



UF/IFAS  
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5/29/2020

LAKEWATCH UPDATE: Volunteers can Begin Sampling in June (Yes!)

We hope that you and yours are doing well during these difficult times.

As you know, because of the Covid-19 situation LAKEWATCH was forced to pause all citizen science sampling and other activities during the months of April and May. While everyone still needs to be careful and maintain reasonable social distancing, we are pleased to announce that volunteers can restart their sampling in June.

Over the last few weeks, the University also allowed LAKEWATCH Regional Coordinators to visit sample drop off centers to collect frozen samples that had already been collected and restock supplies needed for future sampling. However, they were not allowed to travel overnight so the farthest drop off locations in extreme South and Northwest Florida are probably still full of samples. These areas will need to contact their Regional Coordinator to discuss sampling in June. To be safe, unless you need supplies to continue sampling, we ask you not to visit drop off locations in June and keep new samples in your freezer at home while we continue to monitor the situation.

Our LAKEWATCH water laboratory is still closed and we are waiting on University procedures and policies that will enable our return to the laboratory. This shut down will put quite a delay on the processing of our samples that are currently in the freezers at our LAKEWATCH facility. So please be patient as the University and LAKEWATCH gets geared up to move farther forward into 2020. We will send another update at the end of June to keep everyone informed on our progress.

Thanks for Your Patience and Service!

LAKEWATCH Team

## Happy Retirement

Sadly, we will be losing two of our excellent long-term (greater than 10 years) LAKEWATCH staff with Steve Banes and Mary Lettelier retiring before the end of summer. Steve was hired in September 2010 and has been an ultimate anchor for everyone in the water chemistry laboratory since he started. Mary Lettelier was hired in June 2004 and was always the voice on the phone for all of our LAKEWATCH Volunteers along with everyone else calling for information about Florida lakes. Mary also single handedly kept all of our Regional Coordinators organized and moving in the right direction (not an easy task!). Steve and Mary will be greatly missed but LAKEWATCH wishes them God speed and all the best on their new life path.

The following are short biographical sketches for both Steve and Mary:



**Steve Banes** is a Laboratory Technician for Florida LAKEWATCH. Steve primarily analyzes water samples for chlorophyll and has been with LAKEWATCH since 2010.

Steve is originally from Kentucky and has lived in Florida for 12 years after retiring from a Quality Control lab in the private sector. Steve received B.S. and M.S. degrees in Food Science from the University of Kentucky.

After vacationing in Florida for many years, Steve continues to enjoy the many attractions here including the beaches and Disney (The drive's much shorter now).



**Mary Lettelier** is an Office Assistant for Florida LAKEWATCH. Mary does data entry for Florida LAKEWATCH. She is in direct contact with LAKEWATCH volunteers on a daily basis. She sends out supplies, prints data reports, and sets up meetings for Regional Coordinators and volunteers. Mary has been with LAKEWATCH since 2001 and has loved every minute of it.

Mary is a native-born Floridian and has been here all her life. With a background in bookkeeping and accounting she has accomplished many new and exciting tasks working with the Florida LAKEWATCH program.

As a native Floridian she has always been a lover of fishing, camping, and hunting. For many years she has loved wildlife and being a nature lover. Her love of animals has led her to become a "pet sitter" for her friends and family pets.



## **New Informational Circular!**

Florida LAKEWATCH produces information circulars to help share information and address commonly asked questions about Florida lakes and their companions. Our newest one is in the works, so keep your eye out for Informational Circular 113

A beginners Guide to Water Management – Common Aquatic Birds Using Florida Lakes



Snowy Egret. Credit Florida LAKEWATCH Volunteer

The purpose of this information circular is to briefly describe Florida LAKEWATCH and LAKEWATCH's volunteer aquatic bird monitoring program. It will use current research information to describe how aquatic birds are related to lake morphology, water chemistry and aquatic plants in lake systems. Finally, it will identify and describe some characteristics of the most common aquatic birds observed on lake systems by Florida LAKEWATCH volunteers as they participated in LAKEWATCH's aquatic bird surveys (<https://lakewatch.ifas.ufl.edu/media/lakewatchifasufledu/for-volunteers/Field-Sheet-Aquatic-Birds-2019.pdf>).

Don't forget to check out our other circulars for more information . Find them at <https://lakewatch.ifas.ufl.edu/extension/information-circulars/>

## Lake Browning

This article is comprised of excerpts from the Spring 2020 issue of LAKELINE Magazine. The full publication is accessible to members of NALMS at [www.nalms.org/nalms-publications/](http://www.nalms.org/nalms-publications/)

Water clarity is a primary determinant of water quality in lakes across the continent. The economic, recreational, and aesthetic value of lakes, and, in particular, their value as drinking water resources, is directly related to their clarity. Even in the clearest of lakes, water resource managers and the public shout slogans like “Keep Tahoe Blue!” The good news is that scientists have found the holy grail of lake management – excess nutrients, most often from human activity, are a primary contributor to algae blooms and green lakes. But why then, has there been so little change in the relationship between nutrients and algae in lakes across much of the continent in spite of the many success stories of controlling nutrients and decreasing algae blooms in individual lakes? The largest study to date of changes in water quality in over 2,900 lakes in the northeastern and Midwestern USA has shown that in spite of this awareness of the importance of nutrients and extensive management efforts, there has been little change in nutrients or algae in lakes since 1990; rather, we have seen an “unexpected stasis in a changing world” (Oliver et al. 2017).

At the same time that an unexpected stasis has been observed in nutrients and algae, many lakes across northeastern USA, northern Europe, and beyond, have seen up to a doubling or more in their dissolved organic matter (DOM) (Monteith et al. 2007), a phenomenon often referred to as “browning.” Thus we need to think beyond the holy grail of nutrients, and consider how DOM and browning influence lake ecosystems (Figure 1). DOM is a major regulator of the clarity of inland waters around the world, often more important than chlorophyll. Our most pristine, oligotrophic, blue lakes are threatened not only by nutrients turning them green with algae, but also by DOM that can turn them into dystrophic brown lakes. When both chlorophyll and DOM are high, lakes can become mixotrophic, with a brownish-green color.

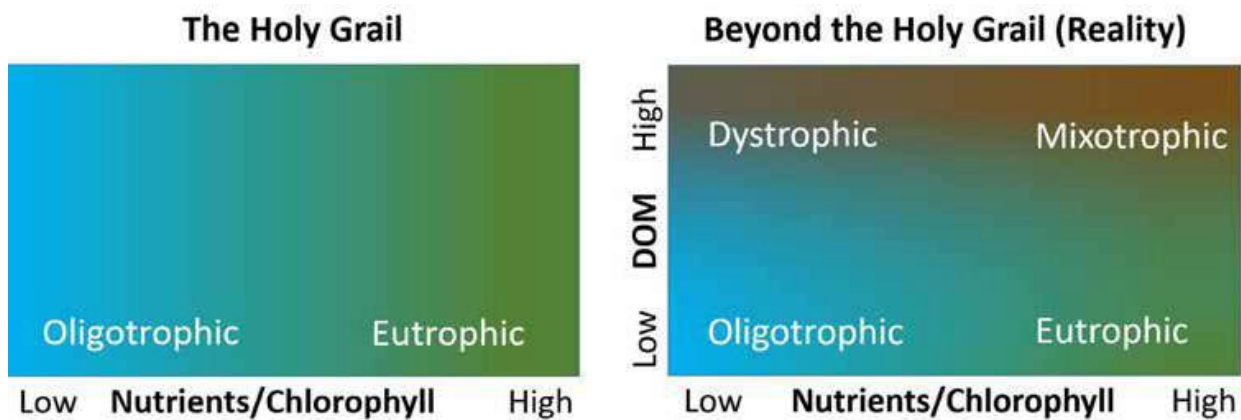


Figure 1. Conceptual diagrams showing the holy grail of nutrients and chlorophyll from the conventional, single-dimensional perspective (left), and a more complete paradigm that includes dissolved organic matter (DOM) and browning (right). Lakes do not vary only along a single gradient of nutrients and chlorophyll from oligotrophic blue lakes to eutrophic green lakes. DOM is a major regulator of water transparency, and in many regions around the world it is leading to more dystrophic (brown) lakes, or mixotrophic lakes in which both chlorophyll and DOM reduce water clarity.

The DOM that is turning lakes brown is largely derived from terrestrial sources, has a dark yellow-brown to black color, and is thus often referred to as colored, or chromophoric DOM, CDOM. The extent of the color of this DOM is a function of the plants from which it is derived, with some plants producing more highly colored DOM than others (Figure 2). There are multiple causes of the observed increases in DOM and browning in lakes and other inland waters. Less acidic soils have increased the mobilization of DOM to downstream waters. Heavy precipitation also increases the flow of water from terrestrial ecosystems, washing increasing quantities of DOM into inland waters (Strock et al. 2016).



Figure 2. Dissolved organic matter in lakes, reservoirs, and other inland and coastal waters is derived primarily from terrestrial plants, as can be seen from freshly fallen leaves leaching DOM on a sidewalk (left). Different types of trees and other plants leach different types of DOM, which vary in their color, and thus potential contribution to changes in inland water quality. Soil microbes and photodegradation by sunlight can further alter the composition and thus color and quality of the DOM, with important consequences for aquatic ecosystems.

The primary mechanism through which DOM alters lake ecosystems is through absorption of sunlight, which reduces light for photosynthesis, the primary source of energy that supports aquatic food webs. In addition to making lakes darker and aesthetically less desirable for some, browning has many effects on a wide variety of critical ecosystem services provided by lakes from drinking water to public health to fisheries. When drinking water is chlorinated, DOM combines with chlorine to produce carcinogenic disinfection byproducts such as trihalomethanes. The UV radiation in sunlight is also

the most potent natural mechanism to disinfect the surface waters of lakes. By strongly and selectively absorbing UV radiation, DOM can reduce the effectiveness of solar disinfection of parasites and pathogens of humans and wildlife, leading to increases in parasitism and infectious diseases. Aquatic vectors of disease such as mosquitoes are also killed in their early larval stages by exposure to high levels of solar UV radiation. Increases in DOM associated with browning may thus provide a refuge from damaging UV that increases the breeding success of mosquitoes.

Terrestrially derived dissolved organic matter (DOM) can profoundly influence life in lakes, from the primary producers at the base of the food web all the way up to the fishes. DOM derived from terrestrial plants can have negative effects on *Daphnia*, which are important consumers of phytoplankton that can help control algae blooms. The effects of DOM on light, heat, and the productivity at the base of the food web also influence organisms at higher trophic levels, like benthic invertebrates, zooplankton, and fishes. Several studies have documented relationships between DOM concentrations and the productivity, biomass, or individual growth of these groups.

These patterns presumably arise in large part from bottom-up limitation: control of primary productivity by DOM in turn limits the potential productivity of the organisms further up the food web that depend on that primary productivity.

Lake-front property values also decline with decreases in water clarity. A study of property values for lake-front cottages in Ontario showed a 10 percent reduction in Secchi depth (a crude measure of transparency) decreases property values by 2.2 percent (Clapper and Caudill 2014). Similar results have been obtained in New Hampshire and Maine. While these and other studies have assumed that changes in water transparency are due primarily to eutrophication, browning is now also having a strong effect on water clarity across much of North America and needs to be folded into the current nutrient-algae paradigm.

## References

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## Can you outrun an alligator, and other myths explained

From Action News Jax by Debbie Lord, Cox Media Group National Content Desk

In some parts of the United States, Florida in particular, it is not uncommon to see an alligator walking down the road. The Sunshine State affords the perfect climate for alligators – fresh water and lots of warm weather. And while seeing an alligator in Florida's greater outdoors isn't that unusual, it seems that encounters with the reptiles are on the rise in other places, as well.

Interactions with alligators seems to be more common, leaving some to wonder why the usually private animals are making the rounds. There are two main reasons, experts in wildlife say, that we are encountering the animals more often – first, we're encroaching on their habitat; second, at certain times of the year, alligators are out looking for love, so to speak.

Here's what you need to know about the alligator and his home, along with some tips to keep some distance between you and the animals.



Photo Credit: Jason “MO” Bennett

### **What's love got to do with it?**

Mating season for alligators happens from mid-April through May. Male alligators, like males of other species, have been known to cruise areas looking for females. A gator looking for love has been known to end up visiting human homes near his natural habitat.



### **Not all males are on the prowl.**

Since larger gators are apt to eat smaller ones – remember, an alligator is pretty much an eating machine – the gators one sees strolling in neighborhoods or trying out Jacuzzis on someone's deck are likely juvenile or young adult gators. They are more likely just trying to get away from larger gators.

### **What part of the country do gators favor?**

Gators call a wide swath of the Southeast and portions of the Southwest home. The gator caught on tape appearing to ring the doorbell was in South Carolina. The ones visiting friends at the apartment complex was in Cocoa, Florida.

One of the biggest factors in the increase of human-to-gator contact is encroachment on their habitat. More houses are being built near places gators have called home for hundreds of years. If your home is built next to theirs, don't be surprised if you get a visit. They were there first.

### **What habitat do they favor?**

Mostly non-moving fresh water – small rivers, creeks, swamps. However, that doesn't mean the occasional alligator won't take up digs in brackish or even salt water.

### **What do you do if one drops in?**

This probably shouldn't have to be said, but, don't get near it. Even a relatively small alligator has relatively large jaws that can clamp down on something with the force of more than 2,000 pounds per square inch. In comparison, a human can clamp down on an extra-large pizza with the works at a force of 150 psi.

And keep your pets away from it, too.

Second, if you see a gator, call the man. That is, call your local fish and wildlife management agency. In Florida, there's a special number for "nuisance" alligators, 1-866-FWC-GATOR. Don't be shy, the Florida Fish and Wildlife Conservation Commission hotline gets around 100-150 phone calls a day about gators.

### **What should you do if you hear an alligator hissing?**

Run. Alligators hiss to warn you that you are too close, or that they are about to strike.

## **Gator myths**

The University of Florida Institute of Food and Agricultural Sciences put out the fact sheet below with some common myths about alligators. Try not to laugh at numbers one and four.

### **Myth #1. You should run zigzag if you come across an alligator.**

This is a common misconception. First, it is rare for an alligator to pursue a human because humans are too large to be suitable prey. However, if an alligator does make an aggressive charge, run fast and straight (away from the alligator, of course). They usually do not run very far. But remember they are most likely to charge at you if you are near their nest.

### **Myth #2. Alligators have poor eyesight.**

Alligators actually have very good eyesight, which is an important adaptation for hunting. They are especially adapted to see and sense movement of potential prey animals. The position of their eyes on their head (almost on the side) gives them a wide sight range. The only place they cannot see is the area right behind them.

### **Myth #3. Alligators are not good climbers.**

Alligators have sharp claws and powerful tails to help them push their bodies up. Young alligators are agile climbers and adults have been known to climb fences to get to water or escape captivity. Low fences, therefore, may not be sufficient protection for pets in areas where alligators are present. Fences should be more than 4.5 feet tall if you are attempting to keep alligators out of your yard.

### **Myth #4. Alligators make good pets.**

Seriously? Alligators make terrible pets. Although baby alligators may seem like a cool addition to the family, it is illegal to possess an alligator without the proper licenses and permits from the Florida Fish and Wildlife Conservation Commission. Alligators are purely instinctual hunters. They do not show affection. Unlike cats and dogs, alligators will never love the hand that feeds them. Eventually, if given the chance, they will eat the hand that feeds them.

Photo Credit: Jason “MO” Bennett



## North American Lake Management Society's Lakes Appreciation Month



*You work and play on them. You drink from them. But do you really appreciate them? Growing population, development, and invasive species stress your local lakes, ponds, and reservoirs. All life needs water; let's not take it for granted!*

NALMS Lake appreciation month encourages people to get out and enjoy the lakes they love, participate in clean up events, and lake education activities for all ages.

Help make Lakes Appreciation Month great this year!

Get your governor to proclaim July as Lakes Appreciation Month.  
Pursue media coverage for your local Lakes Appreciation events.



Join the **Secchi Dip-In** and help track water quality trends in your local lake or reservoir. <https://www.nalms.org/secchidipin/>

Utilize our fun, kid-friendly **BINGO sheet** (partnership with Earth Science Laboratories)! A perfect teaching tool that can be used year-round.

Share your stories, events, photos, videos, etc. on social media! Be sure to use the hashtag **#LakesAppreciation** and tag NALMS! (We love to see your stories and lake photos.) Have you followed us on Facebook and Twitter yet?

**Please consider donating to NALMS!** Your support allows us to strengthen our programs, and therefore, continue our important work to save lakes, reservoirs, and watersheds.

<https://www.nalms.org/donate-to-nalms/>



Have a great photo from a day out on the water?

An inspiring story to share?

A fun fact or recipe?

We would love to see what you've got. Send your submissions to:

FL-LAKEWATCH@UFL.EDU You might even get published!

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