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# LEA Lake News

Free

A Publication of the Lakes Environmental Association

Protecting Maine Lakes Since 1970

Fall / Winter 2019

## **Blue-Green Blues: Do You Need to Worry about Cyanobacteria in Maine?**

**by Ben Peierls**

“Toxic algae kills three dogs in Austin, Texas:  
Warning issued for residents”

“3 dogs die hours after playing in pond filled  
with toxic algae”

Headlines like these seemed to pop up everywhere this past summer. Unless you lived and drank city water in Toledo five years ago, you may not have thought much about toxic algae until now. This year’s arresting news about dogs dying after swimming and drinking pond water definitely struck a chord, and many folks were asking LEA if toxic algae was a concern in our local lakes. For now, the short answer to this question is no.

The toxic algae behind the scary headlines was cyanobacteria. Formerly known as blue-green algae, this diverse group of microorganisms is not technically algae, but rather bacteria that can use light for energy (photosynthesis). Members of this group can be found all over the world on land, in the ocean, and in freshwater.

Cyanobacteria are a natural component of most lakes and coexist with the algae. Under warm, calm, nutrient-rich conditions, however, cell growth can be so rapid that blooms form, often as a visible blue-green scum. Since many cyanobacteria can produce toxins (or cyanotoxins), blooms of such species sometimes

contain levels high enough to cause illness or death in humans and animals. This is what happened in Toledo in 2014 when a cyanobacterial bloom formed in Lake Erie near the city’s water supply intake and residents were banned from drinking the water. Why and when cyanobacteria produce cyanotoxins is not well understood, but it usually happens during extreme bloom conditions.

Maine lakes harbor many cyanobacteria species, but fortunately few reach bloom levels and not all of those blooms are toxic. The Maine DEP has been measuring cyanotoxins in a range of lakes since 2008, and the agency reports that most do not have dangerous levels. Only those lakes that bloom regularly and have water transparency reduced to about six feet or less will possibly have cyanotoxin concentrations that exceed EPA guidelines. The agency maintains a list of lakes at risk for algal and cyanobacterial blooms, using low transparency as a criterion ([www.maine.gov/dep/water/lakes/bloomrisk.html](http://www.maine.gov/dep/water/lakes/bloomrisk.html)).

Only three of LEA’s service area lakes (Highland Lake, Kezar Pond, and Papoose Pond) are on DEP’s list. Highland and Papoose are at low risk, though you can help us watch for anything suspicious. If you think your lake is blooming and see a smelly, green scum, contact LEA and keep yourself, and your pets, out of the water.



## **YOU are the Key to Clean Lakes**



Sparkling, clean waters is what we have all come to expect living in the Lake Region. Regardless of whether or not your home is considered shorefront, the lakes and ponds of this area improve our overall quality of life and keep our economy moving.

But every year, more lakes in both Maine and New England succumb to algae blooms and invasive plants. So that begs the question: How can we hold onto what we have and maintain these iconic pieces of the landscape for our kids and grandkids?

The key to keeping our lakes clean is within the actions we each take individually. As a lakefront landowner, that can mean walking your property in the rain to see where the water goes and installing simple conservation practices like waterbars and infiltration trenches to keep stormwater from building up and eroding away soil. As a landowner in the watershed, that can mean leaving a natural buffer of vegetation around a small tributary stream that runs through your lot. As a boater, you can check your

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## Transparency in Nature by Ben Peierls

Life is a beautiful, magnificent thing, even to a jellyfish. --Charlie Chaplin

"I see one!", shouted staff researcher Maggie Welch as we were leaving the testing location on Granger Pond in late September. I tried not to tip over the boat as I grabbed my camera and struggled to photograph the quarter-sized, translucent blob pulsating just below the surface.

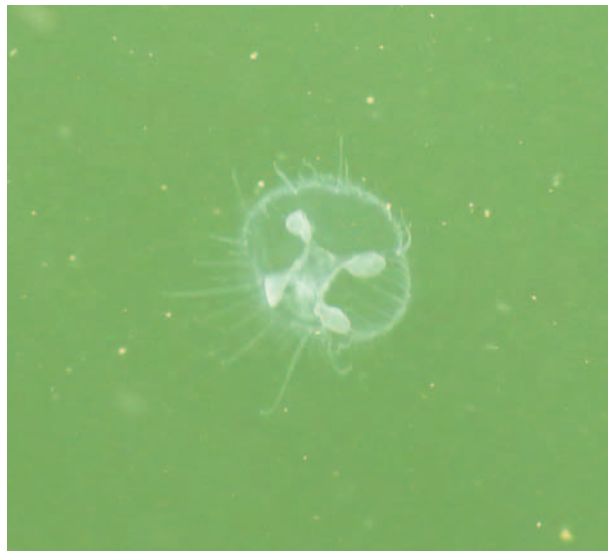
I was trying to document the presence of freshwater jellyfish (*Craspedacusta sowerbii*), an unusual and delightful sighting, in a local lake. Maggie had observed jellyfish in early September at the same location. On this day, we were out in the middle of Granger Pond for end-of-season monitoring when a few, roughly inch-long individuals were spotted near the surface.

These gelatinous critters, known as hydrozoans, are related to, but not the same as true jellyfish that you might see in the ocean. What we observed (see picture) and what makes it look like a true jellyfish is the medusoid life stage. The freshwater jellyfish actually spends most of the time as a polyp attached to structures or plants, which may be why sightings tend to be sporadic and unpredictable.

And yes, like true jellyfish, they have stinging cells, though they are unlikely to penetrate human skin. The small crustaceans that are their food source

are not so lucky. The stinging cells inject toxin into prey, which is then drawn, paralyzed, inside to be digested. In turn, these jellies get eaten by crayfish, turtles, and maybe birds and larger fish.

*Craspedacusta* is not native to Maine or even the U.S., though it is not considered invasive. It originated in the Yangtze River basin in China and was observed in London in the late 1800s. How it got established in the U.S. is unclear. What is clear is that they are fascinating, unusual, and at the same time, nothing to worry about. A great resource for information and place to record your own observations, if you are so lucky, can be found at [freshwaterjellyfish.org](http://freshwaterjellyfish.org).



## Waste Not, Want...Clean Lakes



Isla and Evyn Christie and Megan Hegarty sampling lake water for optical brighteners. Photo credit: Marissa Christie and Michelle O'Donnell

Contrary to the old saying about death and taxes, it is also a certainty that humans and animals produce waste. And this waste has to go somewhere.

Since raw human waste can be dangerous, we use sanitation systems to treat sewage, making it safe for disposal. Nowadays, few people deal with that issue directly and, in fact, many probably don't even know where their waste goes. Most homes in the lakeshore zone use onsite systems consisting of a septic tank to collect solids and leach field to filter liquids. If those systems are old and not functioning properly, then wastewater, which contains bacteria and nutrients that fertilize algae, may get into the lakes and ponds where we swim.

This past summer, LEA worked with an army of volunteers on a project funded by the Maine Community Foundation to help determine the impact of septic systems on our lakes. The volunteers collected water samples up and down the shores of nine different lakes. These samples were then

analyzed for the presence of optical brighteners. Optical brighteners are compounds found in some paper products and laundry detergents to make paper and fabrics "whiter and brighter". Their presence alone in a sample of water is not a health issue, but it does indicate that septic systems may not be properly treating wastewater. This could mean that other, more harmful contaminants are getting in our lakes.

In early July, about 40 volunteers collected over 100 water samples from Bear Pond, Brandy Pond, Crystal Lake, Foster Pond, Highland Lake, Keoka Lake, Long Lake, Moose Pond, and Woods Pond. Over 30% of all samples tested positive for optical brighteners, some from every lake sampled. The sampling period covered the holiday weekend and was assumed to represent peak lakeshore population and activity. The second round of sampling spanned August and early September and yielded almost 80 samples collected, with about 40% of those testing positive for optical brighteners. In a few cases, the

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## Getting the Most from Your Donation

Interested in making a gift of stock or property? Consider one of the following tax-advantaged methods:

### Direct Gift of Appreciated Property

If the property or stock has a current market value which exceeds its original cost -- and if sale of the property or stock would result in long term capital gain -- you should consider gifting it directly to your favorite charity (hopefully LEA!). A direct gift will have better results than a gift of the cash resulting from the sale. This is because both the cash gift and the gift of property will give you identical charitable contribution deductions, but the property or stock gift will allow you to avoid any capital gains tax. LEA can then sell the gifted property without tax.

For example, if stock is purchased at \$20 and now has a value of \$100, you can give that stock directly to a charity, without paying capital gains tax, and the value of the charitable deduction is still \$100.

### Gifts of Depreciated Property

As you might expect, gifts to be funded with stock that has declined in value should be made after you sell it, rather than with a direct gift. The sale of the stock (or property) will allow you to take whatever tax advantage is available from the decline in value (capital losses), while giving you a charitable contribution equal to the gifted sale proceeds. A direct gift would give an identical charitable contribution but would not allow any tax advantage from the sale at a loss.

### Charitable Remainder Trust

A charitable remainder trust is a trust for a defined term (which may be your lifetime or the lifetime of you and your spouse) which pays a specified level of income annually to you. At termination of the trust, the charitable organization specified in the agreement receives the remainder of the trust.

For example, a donor may form a trust which pays the donor 5% of the trust's value annually, with the trust to continue for the life of the donor. (The annual distribution may also be specified as a percentage of the initial value of the contributed property.) At the donor's death, the beneficiary

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## Waste not

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results were positive both times at the same site.

These initial findings are alarming, but it does not mean the more harmful components of waste were actually present. We hope to answer that question next year by expanding this project with simultaneous testing for other indicators of waste contamination, like E.coli. In the meantime, we owe a huge thanks to our volunteers for the sample collection and to the Maine Community Foundation for the support. You can help as well by keeping your own septic system pumped and functioning properly.

After all, if our lakes become contaminated, it would be a waste.

## Volunteer Patrollers Report from Long Lake and Woods Pond

The LEA Invasive Plant Patrol team had a busy second year. Formed in 2018, the crew is made up of volunteers who survey high-risk boat ramps and marinas for invasive aquatic plants like variable leaf milfoil or hydrilla. By focusing on areas that are more susceptible to infestations, the hope is to catch invasive plants where they might first be introduced to a lake. Early identification of these invaders will help reduce the risk of them spreading throughout the lake or contaminating other waterbodies.

This year, the team surveyed the north basin of Long Lake and the north cove of Woods Pond. Over several weekends in July and August volunteers examined these areas via kayaking and snorkeling. No invasive plants were found at either of the survey locations.



Volunteers often encounter property owners who are curious about the equipment being used and the reason for the surveying. Interaction with property owners is a good way to explain the importance of invasive plant surveys and encourage owners to become aware of the native plants living along their shoreline. Knowing existing native plants makes it easier to identify a suspicious plant should one appear. Anyone who sees an unusual plant along their shoreline should contact LEA immediately.

The team welcomes new participants and will be offering several training opportunities in 2020. Surveying is typically done in late July through mid-September when aquatic plants are fully mature. It is a great time to be out on the water and an opportunity to help protect the lakes we all love.

If you are interested in learning more about the LEA-IPP please contact LEA's Mary Jewett at [mary@mainelakes.org](mailto:mary@mainelakes.org) or LEA volunteer Invasive Plant Patrol Coordinator, Mary Maxwell at [mary.maxwell85@gmail.com](mailto:mary.maxwell85@gmail.com).

## Erosion Surveys on Horizon for Woods, Trickey, and Moose by Cory Dunning

The landscape surrounding a lake can tell us a lot about the quality of the water. Since the majority of precipitation that replenishes our lakes, ponds, and rivers does not fall directly into them, instead flowing across the surrounding areas, the overall condition of the watershed is one of the most vital aspects in determining waterbody health. For this reason, LEA often works with partners to assess erosion and stormwater problems in a watershed by conducting a survey.

Surveying a watershed involves trained staff and volunteers walking all the land that drains to the lake and identifying areas of erosion. It is a community-wide effort that gives us the opportunity to go door-to-door visiting landowners to discuss potential improvements that could be made to their properties to improve lake health.

In the spring of 2019 and in collaboration with Jeff Stern of Fiddlehead Environmental Consulting and the Woods Pond Water Quality Association, LEA conducted a complete survey of the watershed of Woods Pond, the results of which will be available soon. We also participated in a survey of the Trickey Pond watershed in the fall of 2019, alongside FB Environmental, the Trickey Pond Environmental Protection Association, and the town of Naples. We are also in the planning stages of a partial watershed survey for Moose Pond with the Moose Pond Association that will take place in spring 2020. All of these projects were made possible thanks to involvement of community members passionate about preserving their lakes and funding from the Horizon Foundation.





## Watershed Wild by Alanna Doughty

My dad always stressed to me that you can't make water go uphill. This was usually in reference to a septic system and usually regarding the things we flushed down. But, I still recall his words when I think about the grander scheme of a watershed. The watershed I am talking and thinking about here includes all the land that catches rainfall and flows downhill into a lake (or maybe a pond or river).

Water flows downhill, check. Next, (and totally unrelated to the septic system) the surface of a watershed is important because it directly affects water quality. If the surface is primarily forest, rainwater is captured in the canopy (25% is intercepted by leaves and never reaches the ground) and slowed, its energy dissipated as it trickles through leaves, branches, and trunks. Once it gets to the ground, it can pool in forest floor depressions, allowing it to sink into the leafy duff of years past, be absorbed by plant roots, or seep down to replenish groundwater reserves. The process is all very relaxed and civilized, quiet even. Now switch your brain to imagine this same rain falling on the roofs and pavement of an urbanized area-- the entire energy of every water droplet pounding onto impermeable surfaces, running off the surface in a hurried way and gaining speed. The collective force of the water gathers things in its path: heat from the concrete, sand and debris left behind from winter plowings, drippings from leaky engines, litter, pet waste, you name it. This rainwater, instead of being slowed, speeds up and propels toward

the closest waterbody, be it a stream, wetland, or lake, and carries all sorts of troubles along with it. This is why we harp on about erosion control, infiltration, LakeSmart, and vegetative buffers -- because it truly makes a difference to slow that water down and filter out the nasties. Rain barrels, rain gardens, meandering camp roads and paths, tall trees, and lower shrubs all make a big difference for water quality.



Here in the Lakes Region, we are part of the larger Casco Bay watershed, which originates all the way up in Bethel, and includes twelve significant lake and river systems, including Sebago Lake and four major rivers: the Fore,

Presumpscot, Royal, and Stroudwater. It covers nearly 200 square miles. We currently have a beautifully forested watershed, which keeps the water that goes into Sebago Lake clean and clear and provides one out of every six Mainers amazing drinking water. However, a recent report from the US Forest Service recognized our watershed as highly at-risk due to development. Currently the Sebago Lake Watershed, which includes a little more than half of LEA's service area, is about 80% forested (awesome!), but only 10% conserved (scary!).

To help ensure that the land that surrounds us keeps filtering and cleaning the water that enters our lakes, LEA has joined a collaborative effort called Sebago Clean Waters ([www.sebagocleanwaters.org](http://www.sebagocleanwaters.org)). This group is working to increase conserved land in the upper Sebago Lake Watershed and maintain the extraordinary water quality that we have here in the Lakes Region. We are also hosting workshops for forested landowners on how to keep the forest as forest and how to do it in a financially sustainable way.

We all have a part to play in this, big and small. We keep our water clean by sharing our knowledge, joining conservation efforts through local land trusts like Loon Echo, Greater Lovell, and Western Foothills, and by making sustainable choices in our water use (Check out your water footprint at [www.watercalculator.org](http://www.watercalculator.org) - I bet it will surprise you). Cheers to a future of clean water with all of us taking part in the solution!



## My LEA Story by Mary Jewett



When I was ten years old, I was a 6th grader and attended Stevens Brook Elementary School in Bridgton. During that school year, an LEA educator named Roberta Hill visited our classroom to teach us about watersheds and the importance of protecting our local waterbodies. The lessons stuck and I continued on to study environmental science in high school, participating in trips to the Everglades, California,

and the Caribbean, which further inspired me to learn as much as I could about the natural world. I also volunteered at LEA my senior year, trained by none other than a young Colin Holme during his first year as a staff member. Continuing my love of the environment, I received a Bachelor's of Science in Ecology from Unity College. After college I volunteered with the AmeriCorps, working to promote healthy forests in North Carolina. When the job announcement for an educator position at LEA appeared in the Bridgton News during the summer of 2009, it was the chance of a lifetime for me. Without that initial contact in 6th grade, I would probably have remained unaware of LEA and may not have looked twice at that job announcement.

Ten years later, I am now teaching the 6th grade program I once participated in as a kid. Over the years I have helped thousands of local children learn about our natural resources and how to protect them. In the past few years, while managing the Courtesy Boat Inspection (CBI) program, I have had the pleasure of hiring 16 former students to help LEA keep our lakes free of

invasive plants. Of those 16, two became interns: Devyn Hatch as a diver doing plant control and Addie Casali as a trail and water testing intern.

Addie became an important member of the LEA family over the years. During her time as a student she stood out as someone who already had a passion for the environment and she thrived in the LEA program. As a CBI in 2017, she inspected a boat from Vermont that had a large piece of Eurasian Milfoil on the propeller. This was considered one of the biggest "saves" throughout the state that year and prevented a possible infestation in Long Lake in Harrison. This past summer Addie held the position of trail intern. For this job we needed someone who was comfortable working independently and who could engage with visitors on the trail. Addie also helped develop the trails and build the privy at the new Highland Research Forest, enabling LEA to host events there this fall, including a field trip for students from Addie's former school.

You need look no further than LEA's current year-round staff to see the impact of our education programs. In addition to me and numerous summer staff over the years, Cory Dunning, our field services director, and past staff members Adam Perron and Christian Oren also experienced LEA programming while in school. It is wonderful to see and experience this connection first-hand, particularly in an area where many of our young people have to move away to pursue a desired career. Like much of LEA's work, our education program is a long-term investment in the community with the ultimate goal of yielding the next generation of lake stewards.



## Getting the Most from Your Donation

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would receive all assets then held by the trust.

A charitable remainder trust allows the donor to benefit from the assets contributed to the trust and obtain a current charitable contribution deduction for the current value of LEA's interest in the trust. The annual trust distribution the donor receives will generally be taxed as ordinary income to the extent that the trust itself realizes ordinary income. If the donor's trust distributions exceed the trust's ordinary income, the excess will be taxed as capital gain to the extent of the trust's capital gain.

Here's a more specific example: Joan owns stock that she bought at \$20 and has a current value of \$100. Joan is 70 years old. She wishes to have the stock's value provide support for her in her continued retirement. Joan contributes the stock to a charitable remainder trust which will pay her 5% of its asset value annually for her life, with the remainder to be distributed at her death to LEA. The trust sells the stock for cash immediately after its contribution and invests the sale proceeds in a balanced portfolio of stock and bonds.

Because of her age, Joan's contribution to the trust will allow her to claim a \$52 charitable contribution, which is the current actuarial value of LEA's interest in the trust (this is an IRS calculation based on Joan's age). Because of this donation, Joan avoids any tax on the \$80 of appreciation. Joan will also receive an annual trust distribution, estimated at \$5 annually but fluctuating with the performance of the trust's investments. The annual distributions will be taxed as a combination of ordinary income or as capital gain, depending on the performance of the trust's investments.

These are a few examples of the possibilities available to a well-informed donor. There are other options which could be appropriate under less typical circumstances. If you are contemplating a stock or property-sourced gift to LEA, you should begin by discussing this possibility with a tax professional and then LEA. LEA will make every effort to maximize your benefit in making a gift.

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## Challenge Course Expansion – Connecting Kids to Nature

*by Alyson Smith*

"Thank you so much for this awesome adventure! We will be back," writes the Capano family. And they're not the only ones. There is now a steady stream of families who come to experience the nature-based obstacle course behind the Maine Lake Science Center.

Thanks to a generous grant from the Davis Conservation Foundation, we are adding even more elements to the course on the Pinehaven Trail, and now joyful exclamations of children playing in the woods routinely echo around the Science Center.

The Pinehaven Trail connects to Pondicherry Park and weaves through old pastureland and a lowland forested swamp along a boardwalk. Pondicherry Park is accessible from seven locations in downtown Bridgton, including the elementary school, the hospital, and from the parking lot on Willett Road right next to LEA's new Science Center sign.

Along this trail, four low element challenge course stations were constructed last summer and meander amongst the trees, rocks, ferns, and pine needles. You can scuffle like "Birds on a Wire", zig and zag through the "Wildwood Walk", hop, scoot, and climb through "The Enchanted Forest", and find the right balance in "Paul Bunyan's Playground." This summer and fall, the expansion with three more stations has a historical twist. You can now arrive in

"Bridgetown", take a ride on the "Narrow Gauge Railroad", and imagine the milling of wood along the brook at "Mills and Dams". Just seeing the first element pulls you onto the trail. All stations are designed to physically challenge your balance and agility in a fun way. With a starting point in the Center's parking lot, each station evolves to be more complex than the one before, creating motivation to continue on. The elements are all integrated into the woods and encourage children and adults to connect with nature. Eight-year-old Colton really likes the challenge course "because it's in the woods and I get to explore things".

Another goal is to promote use of the trail on a regular basis, encouraging more time spent outdoors. With almost 3,000 visitors this year, it's clear that word has gotten out. In addition to providing a venue for outdoor physical activity for children and adults, the challenge course provides opportunities for learning about the natural environment through exploration and interpretive signage. It is our hope that this course, the trail, and woods around it stirs something in the hearts of our children so that they will appreciate and steward our environment in the future.

These new features are open and free to anyone and LEA has incorporated them into our summer camps and programming. Pondicherry

Park and the MLSC trails are open dawn to dusk so hike the trails, challenge yourself on the low elements, and let us know what you think. You can leave comments in the donation collection post on the trail or email [alyson@mainelakes.org](mailto:alyson@mainelakes.org).





## Five Ways to Protect Your Lake over the Winter

**1. Take out your dock!** We all know that installing and removing a dock can be a laborious task, but it is worth the effort. Taking out your dock in the fall will protect it from winter ice damage and prolong the life of the dock. It will also protect your shoreline. When ice does grab a hold of a dock, it often rips up part of the shoreline where the dock attaches to the shore. If this happens, it can be difficult to get your shorefront bank stable again. Finally, almost all modern docks are considered temporary structures under shoreland zoning regulations and can only remain in the water for less than seven months a year.

**2. Store your dock on your path.** Placing your dock on the low bush blueberry, ferns, and low vegetation near the shore kills those plants that are filtering and cleaning stormwater before it gets to the lake. Instead, put your dock on your footpath. The vegetation in this area has probably already been removed, and this will help keep the path clear for next year. If this isn't practical, put the dock in an area with the least amount of vegetation or put it on its side to minimize its impact.

**3. Pump your septic tank and clean your filter.** Septic tanks need to be pumped every two to three years if the home is used year-round. You should pump your tank every five years if you only use your home seasonally. When you get your tank pumped, ask your provider to clean your filter too. This is really important. Most modern systems have a filter to keep floating debris from entering your leach field. If you have a filter, eventually it will get clogged. If this happens, it is a real mess and nasty water and sludge can leak out of the top of the tank toward the lake. Truthfully, you can pump your tank almost any time of year, but it is a lot easier if there is no snow on top, and the fall is a good time since the ground is usually drier.

**4. Don't rake everything!** Pine needles and leaves are a great natural erosion control and filter. The more you can leave on your lakefront property, the better. Instead of spending your time raking, just pick up the sticks and pine cones and leave the rest. If having a bunch of leaves around your house is just too much for you to take, rake most of them away and leave a thin layer. Some is better than none. Pine needles are fantastic--you would never rake those... right?

**5. Talk to your snow plow person.** Do you need your driveway plowed for those late winter or early spring storms? Snow in late March or April around here goes away quickly. If this is a second home, are you really going to be here in March and April? That is the height of mud season, skiing is mostly over, and the lake is still frozen. Plowing when it is warm rips up your driveway, which can lead to erosion and costly fixes down the road. (Sorry for the pun.) If you have a snow blower, this is a great time to use it.

## A Lake Blooms in the Winter

It may look quiet on an ice-covered lake, but there can be a world of life underneath the frozen surface. Last winter, LEA staff found an extraordinary display of lake biology in these frigid waters. Hovering just below the two feet of ice and one foot of snow on Keoka Lake, an algae bloom made the lake water look like diluted pea soup.

This find was part of an expanded effort by LEA to assess lake conditions during wintertime. Over the course of two and half months, we visited six different local lakes, three times each. In addition, to Keoka, we made trips Highland Lake, Island Pond, Sand Pond, Stearns Pond, and Trickey Pond. Our goal was to build an understanding of lake physical and biological conditions under the ice, how those conditions change throughout the season, and eventually whether there is a connection with summertime water quality.

We had previously noticed more dense algae near the ice-water interface on several lakes, but the March Keoka trip was exceptional. The sensor on the sonde that measures chlorophyll, a pigment found in all plants and algae and a proxy for algal biomass, revealed under-ice readings of about ten times the late January readings and almost twenty times typical summer values. Deeper than about three feet, however, the water was basically clear.

LEA staff tentatively identified the bloom as a kind of chrysophyte or golden-brown algae, not uncommon in local lakes, though not usually seen at these densities. This algae forms colonies made of dozens of individual cells and is known to collect under the ice where light is optimal in late winter or early spring. These organisms can sometimes cause odor and taste problems in drinking water, but otherwise there was no reason for concern and by ice-out the bloom had dissipated.

We will continue wintertime testing in 2020 and will be able to see if such a bloom is a recurring feature of this and other lakes. Special thanks to several LEA members who gave us access to the study sites through their properties. And remember, if you are a year-round lakeshore resident, we would love to have your report on when ice-in and ice-out occur.



## You are the key

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watercraft and trailer thoroughly for plants and let it dry completely when moving your boat from lake to lake. You can also be mindful of your wake and its impact on the shore and bottom sediments by staying in the wider and deeper portions of the lake. As a community member, you can participate in town planning, development review, and neighborhood clean-ups.

There are as many ways to protect our lakes as there are ways to impact them. It is the decisions that each and every one of us make that will ultimately determine how our waterbodies will fare in the future.

If you would like to learn more about how to help keep our lakes clean, please join LEA so you can receive regular copies of our print and email newsletters. Or, stop in and see us at 230 Main Street in Bridgton or at the Maine Lake Science Center behind Hannaford in Bridgton.



## Letter from the President



Dear Members and Friends,

An article ran in the *New York Times* on August 6th entitled “A Quarter of Humanity Faces Looming Water Crises”. The reasons for this are manifold and I won’t go into them here, but my takeaway from the article was how extraordinarily lucky we are to be in an area rich with fresh water. LEA covers 41 lakes in just 6 towns. Not only do we have abundant clean water to drink, but we have large bodies of clean, clear water in which to swim and recreate.

Just like the old spiritual in which the foot bone is connected to the heel bone which is connected to the ankle bone which is connected to the shin bone, Maine’s inland water bodies are all connected and cannot function separately. I live on Bear Pond, which is fed by Keoka Lake and feeds into Long Lake, which is connected to Brandy Pond, then to the Songo River, and finally to Sebago Lake. Sebago provides drinking water to one in six Mainers. What happens here doesn’t stay here. It moves on to affect other communities.

The far-reaching implications of LEA’s work is one of the reasons that we are able to partner with diverse organizations such as Maine Audubon, the Portland Water District, and Maine Inland Fisheries and Wildlife, to name a few. Another reason is LEA’s track record. We’ve been around since 1970 and have always been at the forefront of water quality protection. While we continue to do water testing and promote responsible lake stewardship through education and advocacy, we are now also now turning our attention to the forested land that feeds our lakes. Clean water isn’t just a matter of keeping your local lake clean.

Clean lakes need a supporting infrastructure that includes both healthy water bodies and well-managed land upstream. With 50 years of data collection, experience, and relationships behind us, LEA is well positioned to take on this challenge.

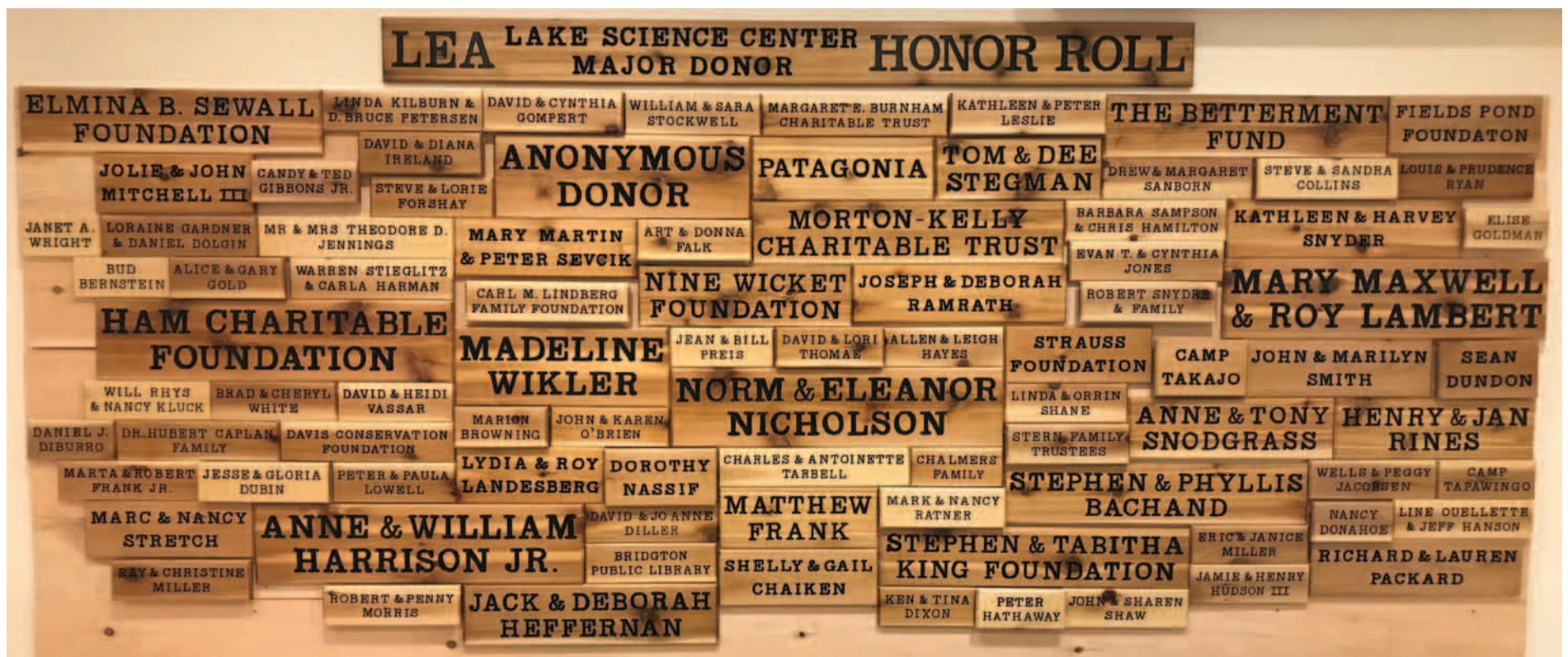
LEA’s greatest strength is you, our members. We are a membership-driven organization, funded primarily by dues. Many of our members have a primary residence outside the Lakes Region, but they clearly have strong ties within it. Local and seasonal residents alike volunteer for citizen science, support our fundraising events, participate in our educational programs, and most importantly, care for the lakes and the land around them.

Among the services we provide is detailed information on each lake in our service area. If you haven’t yet seen our recently updated website at [www.Mainelakes.org](http://www.Mainelakes.org), please take a moment to visit. One of the most active areas on our site continues to be MY LAKE. By clicking on this link at the top of the home page, you can enter the name of your lake and get up-to-date, detailed information such as the water testing summary and fishing information. The site is chock full of useful information regarding our programming, our trails and preserves, tips on best practices for lake health, and just about everything else relating to LEA’s many areas of activity.

Thanks so much for your support!

Best,

Lydia Landesberg,  
LEA Board President



## UMO partners with LEA to assess Long and Highland Lakes

In late October, two University of Maine graduate students visited LEA to collect sediment cores from Long Lake and Highland Lake. Both Simona Lukasik and Ben Burpee are advised by Professor Jasmine Saros, who specializes in historical lake conditions and has sampled these lakes before for LEA. Ben Burpee provided his field expertise during the coring operation. LEA staff members Maggie and Ben (Peierls) took the two students out on our pontoon boat, assisted with dividing the cores, and collected data from the water column. Simona will be measuring algal pigments in the cores to determine how land use changes have impacted water quality over time. These pigments are like fingerprints left over from algae and they identify species that do not preserve well in sediments. Stay tuned for the results.



Core sampling with University of Maine graduate students required boating to the deep spot and pulling up sediment from the bottom of Highland and Long Lakes.



## *AM Enterprises - A Business that Gives Back*



**Young Volunteers on Community  
Earth Day Clean Up**

### **An interview with Emily Baker of AM Enterprises in Harrison**

#### ***What does AM Enterprises do?***

We provide full excavation service, driveway building and repair, septic installation and repair, retaining wall construction, snow plowing, and weekly trash pick-up in Bridgton and Harrison.

#### ***Who is in the company?***

Jason and I own the company and currently employ two people. It is not unusual to find our son on a job site raking loam and throwing rocks or either of our kids helping out in the trash truck.

#### ***How did you get started?***

We took over the company from my father in 2014 after he was diagnosed with stage 4 cancer. We took a leap of faith and I left my job to run the new business and devote more time to my kids.

#### ***What type of work do you enjoy most?***

We like working on the lake. Who wouldn't enjoy a beautiful setting by the water while playing in the dirt and improving the quality of properties?

#### ***How could your work affect lakes or water quality?***

Through our excavation work, we can help reduce the amount of sediment that enters the lake by rerouting drainage and controlling surface water, along with stabilizing the soil.

#### ***What are some things you do in the community?***

Our favorite event is our annual Harrison Community Earth Day Clean Up. We have been coordinating and hosting this event for the past five years now. Last year, 143 people came out and volunteered their time and cleaned up over 1,700 pounds of trash off the roads in Harrison. All volunteers get a free t-shirt and local businesses provide a BBQ chicken lunch with all the fixings following the clean-up where people can warm up, socialize, and listen to a band.

#### ***Why did you join LEA?***

We decided to join because LEA cares about the health of our environment and giving back to the community. We feel they provide a great service to our children by working with the surrounding schools to help educate the students, and we love the new obstacle course they have put in next to Pondicherry Park.

## *Night Sampling on Holt Pond*

*by Colin Holme*

It was a perfect late August night with cool, crisp air and clear skies. I was meeting my co-worker in the LEA parking lot at 11:45 pm. I don't stay up into the wee hours anymore, so I slept for a couple hours beforehand. That just only left me groggy and wishing I just had a few cups of coffee instead.

I was meeting Addie Casali, one of LEA's summer interns, to do some zooplankton sampling on Holt Pond. The sampling trip was part of a research project she was working on for her undergraduate degree with Dr. Karen Wilson at USM. I will get to why she needed to sample in the dead of night in a minute.

Last fall, LEA's research director, Ben Peierls, and I met with Karen Wilson about establishing a zooplankton monitoring program at LEA. Zooplankton are the tiny creatures that eat algae, and in turn, are consumed by small insects, invertebrates, and fish. Because of their central role in the food web, zooplankton community dynamics can influence and be influenced by the type and abundance of the dominant algae and fish present in a lake. We already do regular chemical and physical assessments and have several years of algae data in-hand, but zooplankton are an important piece of the lake puzzle missing from LEA data.

So, why haven't we acquired zooplankton data in the past? Simply put, they are difficult to sample. That is why I was meeting Addie in the middle of the night. Zooplankton tows (dragging a mesh net through the water) done in the day will catch some individuals, but you are only getting a small part of the whole picture. Most zooplankton migrate vertically in the water column to escape predators. In early morning, they swim down to the bottom of the lake and hang out in the fluff just above the muck and away from the light to avoid getting gobbled up by hungry fish. For this reason, most zooplankton protocols involve starting sampling at least two hours after sunset when the animals migrate back up from the deep.

As someone who has done daytime zooplankton tows in the past, I have to say I was astounded by both the amount and the diversity of species we found that night. It was amazing to see the numerous, mostly translucent creatures, some quite large, swimming around in the collection container. It is no wonder fish finders can pick up large colonies of zooplankton near the bottom.

The goal of Addie's research project is to better understand the role that water color plays in controlling dominant zooplankton species. A lake's color is determined primarily by the amount of dissolved organic matter in the water. Some of our lakes are highly colored and look like lightly tinted iced tea, while others have almost no color. Recent research suggests that some New England lakes are "browning" and by comparing zooplankton from lakes that vary in color, Addie is trying to figure out how that might change zooplankton populations over time.

Aside from seeing some truly phenomenal zooplankton and paddling through a thick blanket of mist, we also ran into some other wildlife while night sampling on Holt Pond. Every five minutes or so, a beaver would slap its tail down loudly and the sound would echo across the pond. Beavers are also much more active at night and there is nothing like a thunderous "whack" right next to you, and just out of sight, to keep you awake and alert - no coffee needed!



**LEA intern Addie Casali  
loading gear up for  
night zooplankton mon-  
itoring at Holt Pond.**



**Addie about to lower a  
sampling net down into  
the pond. Many zoo-  
plankton spend most of  
their day near the bot-  
tom of the lake. Because  
of this, the best time to  
sample for them is at  
night.**



# Them's Metaphyton Words (and Other Natural Phenomena)

by Ben Peierls

The fact that we get asked about “stuff” in the lakes all the time pleases me. It means our members are observant of the natural world around them. Here are some of the more common questions we receive:

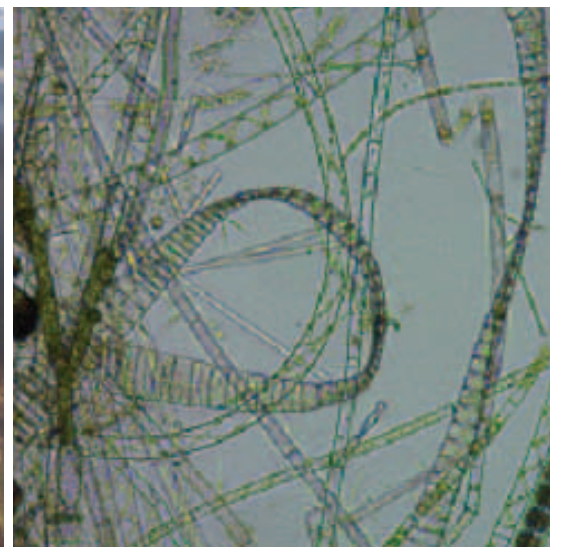
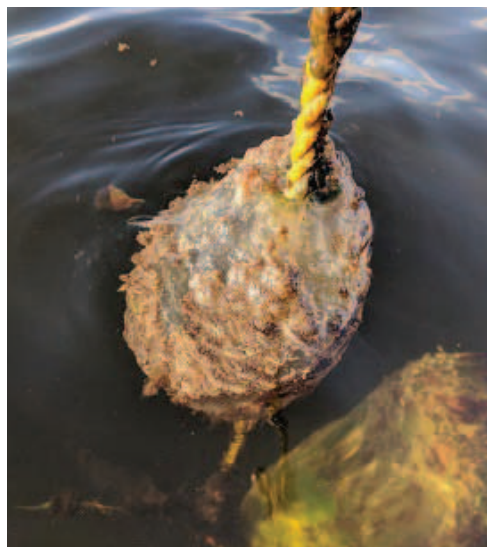
We often get inquiries about the light-green, fluffy masses commonly seen in shallow lake water tangled in plants. Some people describe it looking like cotton candy, others call it elephant snot, and if you have ever tried to pick it up you will know why. Known as metaphyton, the cloud-like aggregates consist of filamentous green algae, diatoms, plant parts, debris, and mucilage, and since they are not really attached to anything they get moved around by wind and waves. I like to think of them as the tumbleweeds of lakes. Metaphyton provides food and habitat for animals and may compete with other algae for nutrients. The masses break up and decompose in the fall and do not reappear until after ice-out in the spring. We have heard, anecdotally, from our members that metaphyton is more prevalent in our lakes today than it has been in the past, and this may be a research topic in our future.

Members also regularly ask us about foam on the water. Many see it and worry that soap or chemicals are contaminating the lake. That is possible, but more often than not the foam has a less alarming source. Natural organic matter from dying algae and wetland plants acts as a surfactant to reduce water surface tension. Wind and waves do the rest and foam can form near the shore or where tributaries empty into a lake. Usually, natural foam has an

off-white or brownish color and smells a bit fishy or earthy. Foam from detergents or other chemicals looks bright white and may be artificially scented. Please let us know if you observe foam fitting the latter description.

There is nothing like a large gelatinous ball attached to a mooring rope or dock post to generate a question or two, and some folks have even brought in samples for identification. What they have is a colony of Bryozoans, aquatic invertebrates that use tentacles to filter algae, bacteria, and other small animals and particles from the water for food. The individual animals are small (only about one millimeter long), but the colonies can grow to the size of a basketball. Out of more than 5,000 species worldwide, only about 50 live in freshwater. Bryozoans do not pose a hazard to humans and actually help keep the lake clean through their feeding, so leave them in place if you can.

Even though we did not get asked about this last wonder of nature, I would be nuts if I did not comment on the number of acorns that fell this year. Hard hats were definitely the head gear of choice when working outside. At the Science Center, we were kept alert by the percussive pattern of acorn missiles hitting the metal roof. Acorns also made a splash in lakes. I observed hundreds to thousands of acorns in the shallow waters of Sand Pond. Research has shown that terrestrial organic matter subsidizes lake food webs, though it might take a while for acorns to turn into fish. Be on the lookout for diving squirrels next year.



Natural foam on the Crooked River, a fresh water bryozoan, and metaphyton under the microscope.

## LEA Projects are Your Projects by Colin Holme, Executive Director



Every day, I come to work eager to get going on the stack of tasks to do. The pile is ever growing with planned projects, unexpected requests, emergencies, and collaborations, but I get great satisfaction from plugging away and knocking the pile back down. The days go by quickly with this stimulating and exciting work.

Yet, it is only after I have left the office that I have more time to think and explore solutions to some of our more pressing lake issues. Sometimes it is during an evening walk in the woods, sometimes it is over a morning cup of coffee, but most often it is when I am lying in bed, sleepless.

Many of the best ideas and solutions, however, come from outside LEA. Our board has always supported professional development and Peter Lowell, our past director, encouraged staff to engage fully with colleagues and members of the community. Because of this support system, I have been thanked many times for coming up with good ideas, when in fact they were not mine -- all I really did was implement someone else's concept. I rely heavily on LEA members, board members, staff, and community leaders to provide feedback and input to help guide our work and future projects. It is time intensive and it requires putting all the puzzle pieces together, but the end result is a better product.

The hardest part of my job is deciding on which projects to decline. It is easy to say “yes” to a good idea, but every project comes with staff

and financial costs. For years, LEA has been relying on our members who cover these expenses because they value the services LEA provides. However, I believe that most lakefront landowners and the wider community all value our work, even if they are not members.

Because lake pressures and demand for our services continue to grow, we are diversifying our funding sources by increasing the number of fee services (particularly to non-members) and focusing on growing our membership. It is uplifting to know that we have supporters from outside of our direct service area who appreciate our statewide efforts to maintain Maine's beautiful lakes. We also have members who live in the upland hills who value and donate to LEA, and of course, we have many members who own lakefront property. Still, more than half of the lakeshore landowners in our service area do not support our work.

You can help us change this dynamic and allow our lake protection work to grow sustainably by simply talking to your neighbors about LEA and our initiatives. In fact, right now is an ideal time to do it. We have a generous funder who has pledged to match the donation of any individual, family, or business who has never been a member. This is a fantastic opportunity for people to be introduced to our work and have their impact doubled. Members make LEA: people like you fund 70 percent of our efforts and help to keep our lakes exceptional. Thank you for making LEA a better organization.



## Notes from the Research Director, Ben Peierls



Sir Isaac Newton once wrote, “If I have seen further it is by standing on the shoulders of giants.” Our efforts at LEA and the Maine Lake Science Center to “see further” in lake research certainly would not be where it is without the work of the many “giants” in the field of lake science. And no less important to our research work is the giant contribution from LEA members, lake associations, and volunteers.

Our regular water testing work requires biweekly access to 22 different lakes and access to another 19 lakes once a year. The more recent winter fieldwork also depends on access, though under more extreme conditions. Without the many different landowners who let us go through their property to the shore, we would never be able to monitor as many lakes as many times as we do. Also, quite a few members let us use their boats, which saves enormous time and energy lugging our canoe.

We designed our 2019 optical brightener project around volunteer participation. During two sampling periods, 44 community volunteers collected over 180 water samples to be measured for optical brighteners. The results highlight areas that may be impacted by lakeshore septic systems. Many of the volunteers were eager to do more, so we hope to expand this work in 2020.

Our project to map surface water conditions using a boat-mounted, flow-through sonde also succeeded because of community support. We did do the field data collection ourselves, but received substantial help in other ways. Special thanks goes to Jim Button for the use of his boat on Middle and Back Ponds and to Bruce Whichard for access and help launching our boat on McWain Pond. Eight lake associations also provided generous financial support for the project, which we greatly appreciated.

Science is often a collaborative venture. We are so fortunate to have such involved collaborators with our LEA and community members. Be it through donations, hands-on activities, or other means of support, the research at LEA and the Science Center is sure to grow with your help and provide the scientific insights that we need to understand and protect our precious lakes.

## 2020 LEA Summer Internships

LEA’s internships are paid positions geared towards motivated and responsible students with environmental or educational interests. Interns are required to complete a variety of tasks while working with many different individuals in challenging conditions. The work environment is casual but fast-paced and much of the time is spent working outdoors in some of the most beautiful natural settings that the Sebago Lake Region has to offer.

### Water Testing Interns

Water testing interns are responsible for monitoring and collecting water samples from more than 40 lakes and ponds in the area. Working in teams of two, interns test the quality of the water using a variety of analytical methods. This position offers valuable entry-level field and laboratory experience in which interns will learn how to operate commonly used water sampling and analytical laboratory equipment. Interns must be comfortable in a canoe and be able to swim.

While water testing is the primary duty of this position, providing assistance for other LEA programs is expected. If you are interested, please contact [maggie@mainelakes.org](mailto:maggie@mainelakes.org).

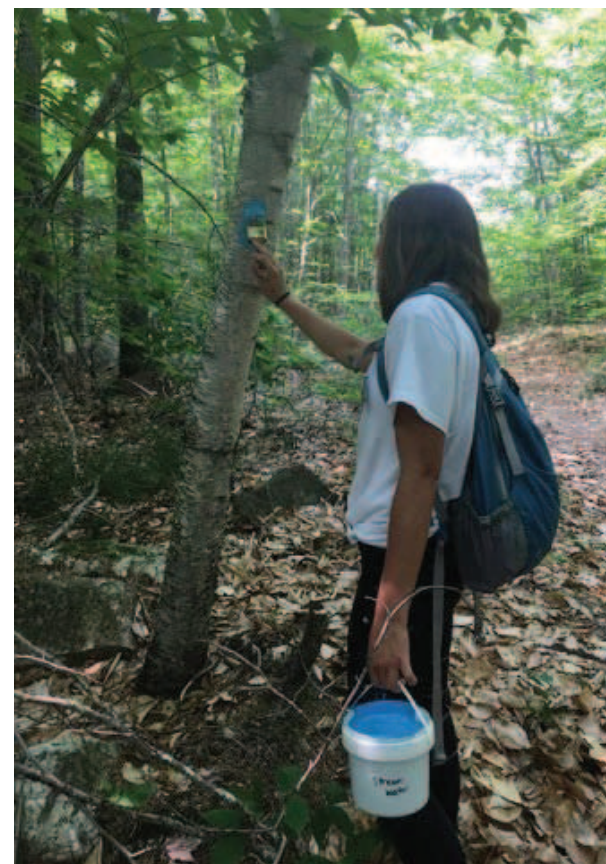
### Milfoil Crew

Milfoil crew members remove the invasive plant variable leaf milfoil from infested waterbodies in the Naples area via a variety of harvesting techniques. Tasks include removing, collecting, and disposing milfoil, conducting plant surveys, monitoring diver safety, educating boaters, and light boat and engine maintenance. All crew members receive dive and CPR training. Applicants must be comfortable spending three to four hours in the water at a time and capable of lifting 50 pounds. If you are interested, please contact [cory@mainelakes.org](mailto:cory@mainelakes.org).

### Trail Intern

The LEA trail intern is responsible for trail maintenance and upkeep at the Holt Pond Preserve and the Highland Research Forest. Tasks include weed-whacking and manual removal of overgrown vegetation, repairing and replacing trail structures with staff help, and assisting in marking and mapping trails. In addition to trail maintenance, the intern will be expected to participate in education initiatives such as classes, presentations, and nature walks.

Successful applicants should be comfortable speaking to groups and individuals and be physically capable of trail maintenance activities. If you are interested, please contact [alanna@mainelakes.org](mailto:alanna@mainelakes.org).





## Milfoil Update 2019



**Mast Cove In Good Shape...Long Lake Still Under Microscope.** The LEA milfoil team continued its work in Mast Cove in 2019 with regular surveying and removal of individual milfoil plants and small patches. In areas that we worked last year, we found vigorous native plant growth, and this is a shining example of how successful early detection and response can be. The sheer size and length of Long Lake make it difficult to survey, but our crew covered much ground this past summer using “sea-sleds”. These are flat plastic wings with handholds that allow a diver to adjust his depth while being pulled slowly behind a boat like a rudder or fin. By devising a system that pulls two divers simultaneously, our crew was able to survey large swathes far quicker than can be done swimming with flippers. Reports of suspected plants continue to be an important aspect of our milfoil operations, and this year alone five separate small patches were located and eradicated, thanks to observations reported by community members on Long Lake.

**New Patch Found In Brandy Pond.** A vigorous patch of milfoil in the Chute River of Brandy Pond was likely the source of numerous reports of fragments in the pond in 2019. After finding the infestation in the late summer, the team quickly responded by laying benthic barriers and suction harvesting around the mats. This area is in good shape now, but we will continue to monitor it next year. LEA also surveyed all the commercial marinas and Brandy Pond Park in the summer for invasive milfoil, removing spot plants and patches as they were found.

**More time needed on Songo River.** Early season surveying indicated that milfoil had regained ground in the river and had spread substantially in areas off the main channel that had been clear for years. This was a grim reminder of the tenacity of this aggressive invasive plant and the need for a long-term and persistent strategy to deal with it. After two survey

sweeps of the river and a dedicated effort on several large patches in the late summer, the main channel is now back under control going into the off-season. Plants do remain in some of the back-water coves, but they are less likely to spread because of reduced traffic in these areas.

**Progress around Frye Island and Kettle Cove.** Initial surveying of Frye Island revealed a daunting amount of milfoil growth in the marinas, but the crew was able to make tremendous progress by diving and hand-pulling the plants in these areas. A full crew spent a week at Frye Island surveying, hand-pulling, and laying benthic barriers when necessary. A late season survey of the two marinas indicated that they are both in good shape going into the winter. The team also snorkel-surveyed the marina and surrounding area of Kettle Cove, hand-pulling variable leaf milfoil as it was found.

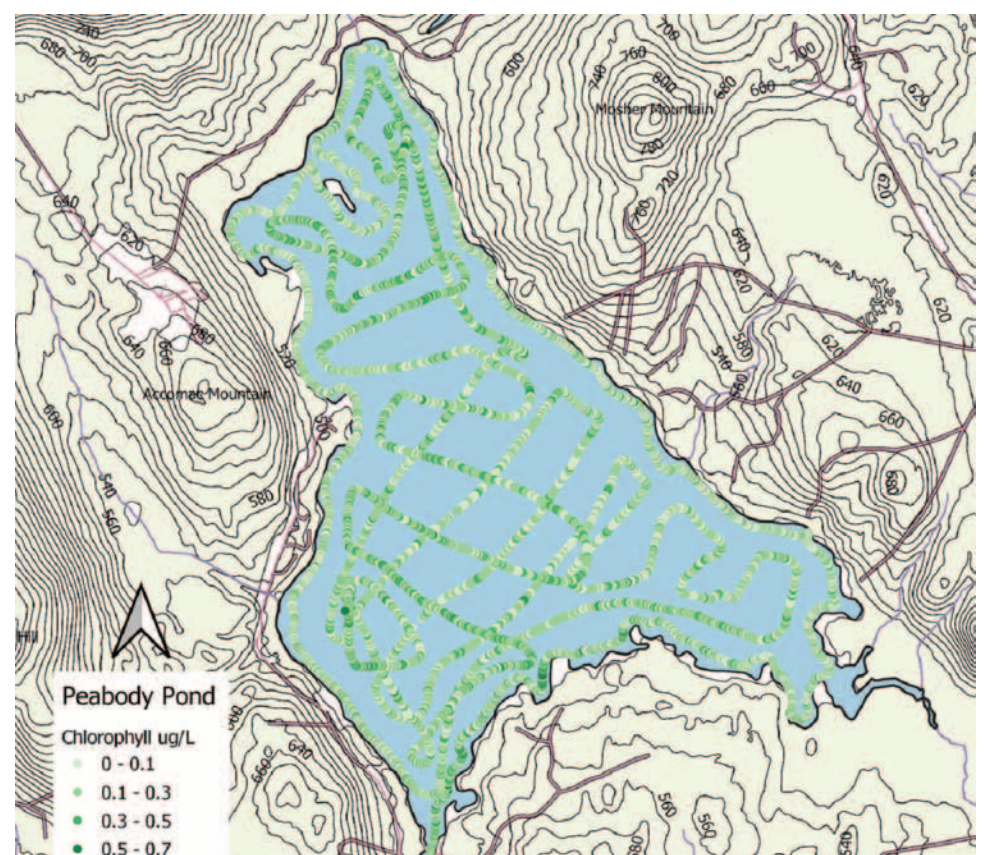
**High traffic areas addressed in Sebago Cove.** LEA’s milfoil crew focused this year on three zones within Sebago Cove, with the objective of clearing and maintaining the portions of the Cove that see the highest volume of traffic. These areas are the southern portion of the channel toward the bridge and the surrounding area, the northern portion of the channel, and the shallow area toward the island in the southern end. By focusing on these shallow, routinely traversed areas we can limit the amount of milfoil fragments spread by boat propellers and subsequent regrowth. This season, the crew laid over 40 barriers across dense patches of milfoil to starve them of sunlight. The barriers alone cover approximately 35,500 square feet of milfoil. Our plan for next season is to continue to expand our work in the high boat traffic areas using a combination of benthic barriers and suction harvesting.

## Going With the Flow-through by Ben Peierls

Many of you are probably familiar with our traditional lake monitoring protocol: Travel out to the deepest spot in the lake, anchor, and collect measurements and samples. As some of our regular readers know, we have been also been working with a flow-through instrument that will assess how conditions compare at other locations around the lake. The basic idea is to pump water through the working end of our boat-mounted, multi-parameter instrument while we travel all over the lake. With generous financial support from Patagonia and eight local lake associations, we set out to survey ten different lakes using this technique.

Each lake often took several hours, and sometimes two days, to get good coverage of the lake surface. That meant traveling from 5 to 32 miles on each lake, depending on size. You may have noticed us out there, particularly when we did a slow-speed shoreline circuit. All told, we drove the boat 172 miles and collected over 780,000 data points.

Not all of that data can be used since we still occasionally get air bubbles introduced into the flow, particularly at high speed. Once we weed out invalid data, then we can map how parameters like oxygen, turbidity, and chlorophyll fluctuate across the lake surface. So far, the raw data shows most of the parameters do change along the boat track lines, though the amount and pattern of variation differs by sensor. We will evaluate and report on the significance of this variation and what it means for overall lake conditions as our workflow continues.



Map of flow-through chlorophyll data collected on Peabody Pond



# Controlling Aquatic Invasives: The Good News and the Bad News

by Mary Jewett

At the end of August, an LEA Courtesy Boat Inspector, Ella Sulloway, was conducting inspections at Sebago Lake State Park when about halfway through her shift a jet ski with a Maine registration pulled up. The first thing asked when inspecting is what the last waterbody the watercraft was in. The jet ski had just come from the Mystic River in Massachusetts. Any boat or jet ski coming from an out-of-state waterbody is treated as suspect by our inspectors due to the high rate of infestations throughout the Northeast. Ella stooped down to check out the bottom of the craft and noticed a large amount of plants hanging out of the intake area on the jet ski. While she did not know exactly what the plants were, they looked suspicious so she brought them to the LEA office. About half the plants were identified as hornwort, which is a native species. The other half of the clump was unmistakably Eurasian Milfoil. This was a big save and tells us that the program is working, especially since that one clump of Eurasian Milfoil could have created a new infestation in Sebago Lake. Eurasian Milfoil is difficult to manage and usually requires the use of herbicides to be eradicated.

In September, LEA helped inspect boats at the Eastern Regional Bass Tournament at Point Sebago. The good news was that, with boats coming from all along the eastern seaboard, the Bass club organizing the event recognized the need to inspect all watercraft before the tournament. LEA commends the Maine B.A.S.S. Nation for their efforts to protect Sebago Lake from possible invasive species coming from other states. Two boats inspected before the tournament had invasive aquatic plants on them. The first was Eurasian Milfoil found



by me on a boat from Vermont, and the other was Hydrilla, found by a game warden on a boat from Georgia. While the vast majority of boats entering our lakes come from within Maine, these instances reaffirm the need for out-of-state boats to be inspected when arriving in Maine.

That was the good news. The bad news is that two new infestations were discovered in Maine this fall. The first was on Big Lake in Washington County where the DEP confirmed a large patch of Variable Leaf Milfoil. This milfoil is the most common invasive aquatic plant in Maine and is the species that LEA divers battle every summer. The second discovery was Curly Leaf Pondweed in the Kennebec River. This invasive pondweed is only found in two other waterbodies in Maine and has been difficult to control in those places. The good news on that front is that a private company, New England Milfoil, will be in the Kennebec pulling the pondweed this fall and reducing the spread in the river.

Want some more good news? YOU can help protect our lakes by checking your own boats for aquatic plants and encouraging your friends and neighbors to do the same. If you find a plant you don't recognize, please bring it into our office or send me a photo at [mary@mainelakes.org](mailto:mary@mainelakes.org). I love getting photos and plant samples from vigilant community members; it lets me know that LEA has a strong base helping to protect our lakes.



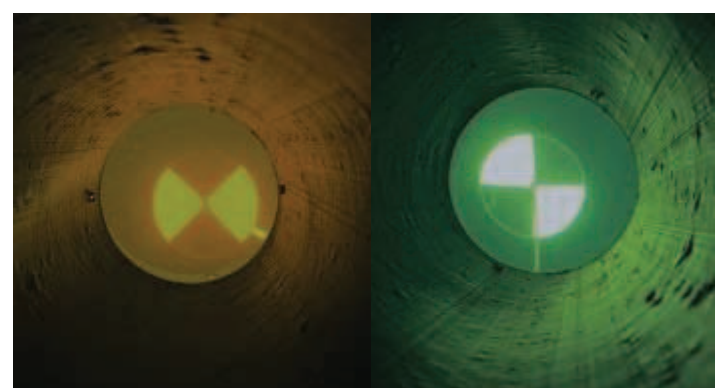
## Water Clarity: Easily Measured, and Important

Water clarity, chlorophyll-a concentration, and phosphorus concentration are often used in conjunction with one another to estimate a lake's overall water quality. These metrics are used because, individually, they can indicate the presence of algae, and when combined, they can indicate if conditions are present to support an algae bloom.

Measuring phosphorus and chlorophyll-a concentrations require lab equipment and technical savvy that aren't readily available to most people. However, water clarity can be measured by anyone with a Secchi disk and scope. In freshwater systems, a black and white Secchi disk is lowered into the water until it disappears from sight. The more transparent the water, the deeper the disk can be seen. Water clarity can be influenced by algae, zooplankton, water color, and silt. Of these, algae is most likely to decrease water clarity. For this reason, Secchi readings will decrease and increase as the algae population fluctuates. If a lake is naturally colored or productive (has significant algae and plant growth) then Secchi readings below four meters aren't a cause for alarm. However, if a historically unproductive (low nutrient and low algae) lake that consistently produces Secchi readings above seven meters suddenly produces a clarity reading below four meters, then this could be a cause for concern and an indication that water quality has deteriorated.

We monitor clarity and a host of other parameters on the largest 20 lakes and ponds within LEA's service area bi-weekly. On the smaller ponds, we take these measurements annually. After collecting water

quality data, we store and analyze clarity data as part of an ongoing effort to document changes to lake water quality over time. Our water quality data is shared with Maine's Department of Environmental Protection and the Lake Stewards of Maine so that it can be included in statewide water quality analyses. You can support our data collection efforts by becoming an LEA member or providing access to water.



Looking through a viewscope, at a secchi disk, into two different lakes. The water on the left is more colored and has lower clarity. The water on the right is less colored and less productive and has better clarity.



## Fun Photos from 2019



Top to bottom and left to the right: The “grom” race for kids at the 2019 Paddle Battle, learning lab procedures at the MLSC, the joy of flight at LEA’s Eco-Explorer Camp; Alanna Doughty discussing the characteristics of native and carnivorous bladderwort at the Highland Research Forest; Audubon’s Sally Stockwell shedding light on the relationship between woodlands and wildlife; intern Hannah Sirois talking lakes at LEA’s summer field course; Courtesy Boat Inspector Gilon Backlund talking to a boater entering Long Lake; David Kelly and Lucas Hartford working on the Holt Pond boardwalk.



## On the Trail

We have been busy making the trail systems at the Holt Pond Preserve, Highland Research Forest, and the Pinehaven Trail at the Science Center welcoming, user-friendly, and exciting so you can enjoy them with your family. Grants for materials, construction, and a summer trail intern, along with our incredible volunteers, made all of it happen! Read on for this season's upgrades.

### Pinehaven at the MLSC



3 new low course element stations installed Read more in the article on page 5



3-D animal track signs installed on the lower half of the trail with the new course elements



A new "iron ranger" in place to collect comments and donations for trail maintenance



Trail counter installed to find out how many people use the trail during which times of day/week



Numerous visitors young and old take a break on the low elements course.

### Holt Pond Preserve



Hosted a week of Eco-Explorers camp where kids ages 6-12 explored the magic of Holt Pond



P&K Sand and Gravel added material and regraded Grist Mill Road entrance (Naples side) after a wet spring left the road rutted.



Q-Team's Tree Service cleared trees along the roadside to make way for school busses.



Plastic culverts installed under inundated boardwalk sections to make it level and keep us out of the water.



Trails re-blazed (white) and weed-whacked mid-season

### Highland Research Forest



Trails to wetland, Highland Lake, and a loop cleared and blazed. Volunteers built a bog bridge with leadership from Ed and Kelly Pontbriand.



Ecological Assessment by Rick Van de Poll and Forestry Management plan by Paul Larrivee completed



Thanks to funding from Will Rhys and Nancy Kluck and carpentry from Jim Kelley, we have a privy! Thanks to Laura Cleveland for keeping it tidy.



Interpretive signage funded by the Sustainable Forestry Initiative and Project Canopy was installed.



Parking lot constructed and privy tank installed by Dyer Excavation



## Lake Crossword



### Across

1. One of the Paddle Battle Sponsors
2. Diver Assisted Suction Harvester used by milfoil crew (abbrv.)
3. Layer of old leaves on forest floor
4. Predators affecting loons and herons
5. Covers lakes and ponds in winter
6. Paddle Battle steed
7. Begs maintenance every 3 years, do you know where yours is?
8. Downtown Bridgton brook surveyed for 12 mill sites in 1768
9. The edge of lakes and ponds where sunlight reaches the bottom
10. Coming soon, LEA canvas \_\_\_\_!
11. Filamentous algae (see Ben's article)
12. Zone on lake bottom, or barrier for milfoil
13. Ephemeral woodland pool filled by rain water and snowmelt
14. Nutrient-rich water body
15. Shoreland owners concerned about this from boats
16. An iPhone videocall to your snowbird loved ones
17. To portage a boat
18. Spring and fall lake mixing and delicious pastry
19. Rare dragonfly species found in Maine bogs, spooky!
20. Nature's natural watershed filter
21. Diagnostic feature in identifying winter twigs
22. MLSC's ropes course trail

### Down

1. A "beaked" reptile
3. Hunted waterfowl
15. Famous Maine treat, also found in PA.
19. Don't throw your extras in the lake when you're done fishing!
23. Airpump that assists milfoil crew
24. "Go make a \_\_\_\_\_ in the lake!"
25. Compressed sphagnum used as fuel
26. LEA turns \_\_\_\_\_ this year! That's a lot of cake!
27. Male version of # 3 down
28. \_\_\_\_\_ of a lake (fetch)
29. Aquatic invasive \_\_\_\_\_ pondweed
30. Water vapor exits leaf stomata
31. Invasive insect , abbrv. See Photo
32. \_\_\_\_\_ brighteners measured in water samples that could indicate a leaky septic systems
33. LEA's wetland preserve
34. Mountain abbrv.
35. This invasive was noticed and removed from a jet ski before entering Sebago Lake this summer
36. A newly coined term for the water source used in craft breweries
37. Fairy \_\_\_\_\_, obligate species of vernal pools



Answers Online @ [mainelakes.org/answers](http://mainelakes.org/answers)



# Invest in Your Lake AND Your Community

Did you know that LEA is primarily funded by you, our members? Your support keeps us doing important work such as:

- Regular water monitoring on more than 40 lakes in our area
- Standing up for lake health in the legislature
- Running, scheduling, and hosting environmental public education series
- Providing training and technical assistance to landowners, developers, and municipalities
- Milfoil control in Long Lake, Brandy Pond, Sebago Lake, the Songo River, and Sebago Cove
- Hiring, training, and scheduling all Courtesy Boat Inspections in the area
- Maintaining miles of hiking trails at the Holt Pond Preserve and the Highland Research Forest
- Providing environmental education programming to over 1000 local school children each year
- Implementing collaborative, locally-based lake research projects

It has never been more important to become an LEA member and to support our work. If your membership has lapsed, please consider renewing today. We welcome gifts by check or credit card, by mail, phone, or online. Want to make your gifts routine? As of this year, LEA can now accept recurring gifts. Are you looking for more ways to give? Contributions of appreciated securities or stocks, corporate matching gifts, or planned gifts are also welcome. Just contact [jenny@mainelakes.org](mailto:jenny@mainelakes.org) for more information. A donation to LEA is an investment in your favorite lake and this tight-knit, local community. Your support is appreciated!

Are you wondering what your membership dollars can help LEA accomplish? Help us continue to protect Maine's lakes for another year!		
Membership Level	Donation Level	Results
Benefactor	\$1,000	Pays for 10 hours of milfoil removal by a 5-person crew
Patron	\$500	Pays for 1 Nikon field microscope for LEA's Environmental Education programs in our local schools
Sponsor	\$250	Pays for lab testing of chlorophyll samples from one lake for one summer sampling season
Lake Sponsor	\$150	Pays the bus transportation costs for one class from a local school to go to the fish hatchery
Family	\$100	Pays for a day of courtesy boat inspecting on a local lake
Individual	\$50	Pays for 4 Courtesy Boat Inspector signs

## Are you an LEA member? Please help us protect our lakes!

You can join LEA with a contribution of any amount. Just mail this form and a donation to LEA, 230 Main Street, Bridgton, ME 04009.

You can also join or renew at [www.maine-lakes.org](http://www.maine-lakes.org) or in person at our Main Street office.

Name\_\_\_\_\_

Winter Address\_\_\_\_\_

Summer MAILING Address \_\_\_\_\_

Favorite Lake\_\_\_\_\_

Year-round Phone\_\_\_\_\_

Email\_\_\_\_\_

I am interested in information on estate planning and planned giving: ☐

### Donation Information

☐ \$1000 Benefactor

☐ \$500 Patron

☐ \$250 Sponsor

☐ \$150 Lake Sponsor

☐ \$100 Family

☐ \$50 Individual

☐ \$\_\_\_\_\_ Other Amount

I would like to make an additional donation to the:

☐ Maine Lake Science Center \$\_\_\_\_\_

☐ Mifoil Fund \$\_\_\_\_\_

☐ Environmental Education Fund \$\_\_\_\_\_

☐ Anonymous Gift (We occasionally acknowledge our donors publicly. Check this box if you would like your donation to remain anonymous.)

☐ Check enclosed

☐ Charge my credit card \$\_\_\_\_\_

Credit Card # \_\_\_\_\_

Expiration Date \_\_\_\_ / \_\_\_\_

CVC \_\_\_\_\_

Signature \_\_\_\_\_