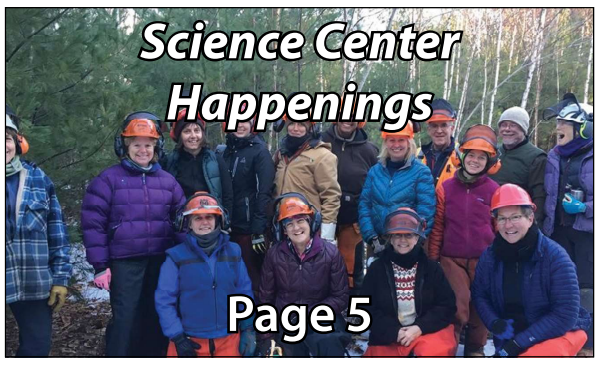
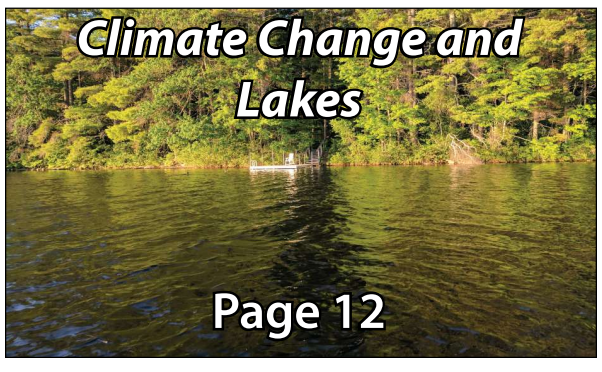








# LEA Lake News

Free

A Publication of the Lakes Environmental Association

Protecting Maine Lakes Since 1970

Summer 2019


## Holistic Monitoring Will Build a Better Understanding of Lakes

One of LEA's most important tasks is to develop an understanding of water quality conditions in the 41 lakes and ponds within our service area. For years, we have attempted to do this by following a standard monitoring protocol that involves a series of tests at the deepest point in each water body. This methodology is based on the assumption that information gathered from that central location will be the most representative of conditions in lake as a whole.

While this may be true, "deep hole" monitoring misses the variability of conditions across lake systems, including nearshore areas - the place where most people experience and enjoy lakes. For this reason, we are embarking on two new projects to assess a wider spectrum of lake and pond systems.

The first is high-resolution mapping of surface water quality using a multi-parameter instrument in a flow-through mode. For this type of assessment, lake water is pumped through the instrument, which is mounted on a moving boat, while a GPS simultaneously records the location. Based on the work of others, we prototyped our own flow-through system in 2018. This year, with the help of local lake associations

*Continued on Page 3*

*Dr. Ben Peierls, MLSC Research Director, adjusting our prototype flow-through monitoring system*

## Green Watersheds Make for Blue Lakes *by Alanna Doughty*

Although we often take it for granted, the lakes and ponds of this region are clean, cold, and clear because their watersheds are primarily forested. These woodlands help to filter and slow water down, keep soil in place, remove excess nutrients, shade small feeder streams, and provide habitat for wildlife. Well-managed, working forests also supply landowners with income, promote and maintain biodiversity, and improve climate resilience.

For these reasons, LEA is connecting with large and small landowners, as well as foresters and loggers, to offer a number of walks, talks and workshops. In particular, we are interested in assisting landowners in developing or considering forest management plans that will provide long-term, sustainable timber growth and a reliable source of income.

We share this common goal of protecting water quality through land stewardship with the newly formed Sebago Clean Waters, which is a coalition of land trusts and environmental groups (of which LEA is a partner), The Sustainable Forestry Initiative, Project Canopy, and also the Brewshed Alliance. Maine Audubon's *Forestry for Maine Birds* initiative also recognizes the many ecological benefits of sensible forest management. These partnerships remind us that, upstream or downstream, we are all connected and we all need fresh water.

This year, we are again focusing many of our education programs on the connections between our woods and our waters.These events will include paddling adventures, woodland hikes, and forester meet-and-greets. Also, stay tuned for a watershed landowner gathering in the early fall.


LEA
230 Main St.
Bridgton ME 04009
*(Change service requested)*



NON - PROFIT
U.S. POSTAGE
**PAID**
Portland, ME
PERMIT NO. 493


## Inside

# Welcome Cory!

LEA is excited to announce the arrival of our newest team member - Cory Dunning. Cory grew up in the Lakes Region and has strong ties to both LEA and the community. He took part in LEA's classroom outreach in the local schools and even volunteered with LEA's outdoor education program when he was in high school. Cory's experience with LEA inspired him to go to the University of Maine to pursue a career in the natural sciences. He graduated in 2012 with a degree in Wildlife Ecology and has had a wide-ranging career working both in labs and out in the field across the country from Maine to Alaska. Cory will be taking over the Field Services position at LEA from Christian Oren, who is leaving for a career with FEMA. This position is responsible for coordinating the milfoil control project as well as reducing nonpoint source pollution (dirty runoff) in LEA's service area. Cory is eager to bring his desire to learn, his bad sense of humor, and his lifelong passion for the natural world to LEA.

# Doing Your Part With LakeSmart

## by Cory Dunning

During heavy rain events and throughout much of the spring, a huge inflow of water spills into our lakes, ponds, rivers and streams. This water carries with it soil and sediment particles that contain nutrients that feed algae. Because there is little vegetation and groundcover in the spring, it can be a particularly good time to study how water flows over your property and an excellent season to consider a LakeSmart evaluation.

LakeSmart is a program designed for landowners who are interested in maintaining or improving their lake's water quality. It is entirely voluntary and conducted by trained volunteers. These volunteers walk the property with you and look at all the things that can impact water quality. The process starts with some simple questions to get you thinking about your land, and then a site visit is scheduled where everything from driveways to septic systems are discussed. The final product is a written report that is provided to the landowner with commendations for lake-friendly land use practices and recommendations for areas that could use improvement.

*Rubber razors along a driveway on the Preis property, pictured here with protective winter guard installed.*

Recently, I had the opportunity to talk with Jean Preis, who has been through the LakeSmart process, and ask her perspective on the program. You may know Jean from her regular column in the Bridgton News where she writes on birding (and life) but she also has a long history with LEA as an active member and past director. She and her husband Bill own Merryfield Cove on Highland Lake in Bridgton, which has had small cabins for rent since the 1950s and has been a recreation hotspot since the 1800s. With an extensive history, and much of it predating any shoreland regulations, Jean and Bill have taken special care over the years to help ensure the property does not harm the lake. Preis sees erosion control as the landowner's responsibility and one that needs to be constantly upheld. As soon as snow melts each spring, Preis begins assessing the property for signs of erosion. She prefers to use natural erosion control methods when possible, often relying on vegetation along the shore to slow down stormwater and trap nutrients before they enter the lake. Preis explained, "I get out there when it rains with my rubber boots and see where the water goes, and then I let those areas grow back up with vegetation."

To push water off their driveway and into nearby woods, Bill and Jean have installed something called "rubber razors". This is a conservation practice where a flexible strip of rubber is sandwiched between two boards that lay flush with the driveway's surface. The result is an easy to clean and maintain waterbar that you can drive over without feeling like you are hitting a speedbump.

***Continued on Page 3***

## LEA Contacts

**LEA Headquarters:**
**230 Main Street**
**Bridgton ME 04009**
**207-647-8580**

**Maine Lake Science Center:**
**51 Willett Road**
**Bridgton ME 04009**
**207-647-3318**

**www.mainelakes.org**

### LEA Staff

**Colin Holme**
*Executive Director* - colin@mainelakes.org
**Jenny O'Connor**
*Office Manager* - jenny@mainelakes.org
**Alanna Doughty**
*Education Director* - alanna@mainelakes.org
**Mary Jewett**
*Teacher-Naturalist* - mary@mainelakes.org
**Cory Dunning**
*Field Services* - cory@mainelakes.org

### MLSC Staff

**Dr. Ben Peierls**
*Research Director* - ben@mainelakes.org
**Alyson Smith**
*Center and Program Manager*
alyson@mainelakes.org

### Board of Directors

Anne Wold - *President*
Roy Lambert - *Vice President*
Lydia Landesberg - *Secretary*
Charlie Tarbell - *Treasurer*
Andrew Black • Anne Butter
Dell Foss • Karen Harding • Frank Howell
Henry Hudson III • Mark Priola
Dan Richards • Len Rudin
Orrin Shane • Eliot Stanley
Lori Thomae • Justin Ward
Pat Webber • Peter Whitchurch



*This pond is named after Waterford's first settler*

**Lake Trivia!**
See page 9

## *Holistic Monitoring*

***Continued from page 1***

and a generous grant from Patagonia, we are planning to greatly expand the scope of this project and acquire this type of data on numerous waterbodies in our service area. For the first time, we will be able to map and visualize conditions all over the lake surface and identify chemical and biological patterns and hotspots.

***Near-shore habitat varies dramatically across lakes systems depending on lake substrate, location and upshore development***

Because the shallow waters and lands that form the near-shore environment are often difficult to assess with comparable metrics, they have been left out of most lake monitoring plans. However, this zone is some of the most ecologically productive area in a lake. It is also the most used and disturbed by people. As part of a national program, the Maine Department of Environmental Protection has recently piloted near-shore evaluations of a few lakes in Maine and LEA is planning to follow their lead in our service area. Each lake survey consists of 10 site visits along the shore to record characteristics including shallow-water fish and invertebrate habitat, lake shore vegetation, and the level of human disturbance. The recorded conditions will provide a baseline for future comparisons of these sensitive areas and will not be used for regulatory purposes.

## *LakeSmart*

***Continued from page 2***

They have also installed small catch basins under the eaves to infiltrate rainwater and are careful not to remove the natural duff layer that acts as nature's sponge.

Jean is proud of her LakeSmart signs, seeing them as a badge of honor. But she feels the true reward is being part of the larger effort to preserve our lakes. "Protecting water quality is not up to some organization - it's up to us."

If you are interested in having a LakeSmart assessment or becoming part of a LakeSmart evaluation team, please send an email to cory@mainelakes.org or call our Main Street office at 207-647-8580 and we will get you in touch with a local LakeSmart representative.

# *Paddle Battle III Saturday July 6*

The third annual Maine Lakes Paddle Battle will again be held at the stunning Tarry-A-While Resort on Highland Lake and will take place on the morning of Saturday July 6th.

The race starts in a protected cove on the east side of the lake and then paddlers skirt up along the eastern shore, past picturesque islands and then either turn back for the 2k course or continue on to the tip of Knolls Point for the 5k course.

***Get ready for LEA's 3rd Annual Paddle Battle on July 6th to benefit clean lakes***

While the race times are being tallied by volunteers from the Shawnee Peak race team, we will have music, raffle items, water testing demonstrations, pastries, and a fun kids' race in the cove.

The venue opens at 8 am and races will begin by 9:30 am. Awards will be announced by noon or earlier. The 2K and 5K races are open to participants at least 15 years old. Race registration is $40 for LEA members and $55 for all others. To find out more about the event or to register, go to www.mainelakes.org or call LEA at 207-647-8580.

All proceeds from the race will benefit LEA's lake protection, monitoring, and education programs.

***The kids' race last year was a blast for everyone!***

# *There's Something in the Water*

## *by Alanna Doughty*

We've been hearing about plastic in the ocean for a while now. Often it is the kind of plastic that floats and gathers in gyres and can entangle sea birds, fish, and mammals. What we don't talk about is the simple disturbing fact that plastic does not go away. Ever. It simply doesn't decompose. It does, however, break down over time into smaller and smaller pieces. And these tiny pieces of plastic are being consumed by animals (including humans) all around the globe. Microplastics, which are defined as pieces small enough to need a microscope for identification, are becoming ubiquitous in our environment and come from a wide variety of sources. Disposable bags, fleece and nylon fabrics, manufacturing beads, cigarette butts, and plastic containers are just a few of the many sources of microplastics that eventually make their way into our waters. Research is just beginning on the prevalence of microplastics in freshwater environments, how these plastics are affecting the food chain, and how the chemicals that they are made of can leach into unsuspecting consumers, be they macroinvertebrates, mussels, or humans.

This past semester, LEA worked with Dr. Emily Lesher and her environmental chemistry class at St. Joseph's College in Windham to collect and analyze water samples from Sebago Lake and the Presumpscot River. This project was a unique collaboration with microplastic expert Abigail Barrows, Adventure Scientists, Casco Bay Estuary Partnership, Florida Microplastics Awareness Project, and the citizen science platform Anecdata. Students wrapped up their research with a public presentation on their findings and a screening of the film "Bag It!", a look into our single-use plastic culture.

Our goal with this project is to develop a replicable protocol for sampling and assessing microplastics in our surrounding freshwaters that can be easily followed by teachers, scientists, and interested community members. We hope that as this initiative grows, awareness of the local impact and consequences of our heavy use of disposable plastic products will emerge.

Just in case you are wondering, microplastics are everywhere. Our work is not to figure out whether they are here or not but instead to quantify the amount and the impact on the environment. So, there is no need to wait any longer to do something about it. Grab yourself a reusable mug and water bottle and build your arsenal of cloth bags. Bring containers when you eat out, carry a real fork and spoon (so much more enjoyable!) and ditch the straws. See what single-use plastics you can replace with something reusable every day. If you are interested in making some changes but don't know where to start, we are here for you! Reach out to alanna@mainelakes.org and break your plastic habit!

***Disk used to measure water clarity, named for an Italian scientist*** **Page 3**

# *2019 Milfoil Control Plan*

LEA's milfoil crew has another busy summer planned. There are now four waterbodies in our service area that contain invasive variable leaf milfoil: Sebago Lake, Brandy Pond, the Songo River, and most recently, Long Lake. Our two seasonal crews will be making the rounds to these areas laying benthic barriers, using the suction harvester, and swimming many miles all summer to stay on top of these infestations. With a short summer season, we have a tight schedule if we want to keep this large geographic area free of invasive plants.

The discovery of milfoil in Long Lake in 2017 was a shock for LEA and the entire Lakes Region community. We found acres of mature plants growing all over Mast Cove in Naples. We immediately made removing these plants a priority because we wanted to contain this invasive before it spread to the rest of the lake. Now, after dedicating hundreds of hours of diver time in Long Lake in 2017 and 2018, the area is starting to recover. There is no new growth in the area, and only a few spot plants remain. The crew will continue the work this summer with a 'search and destroy' approach to remove plants before they can reproduce. We are optimistic that the area will be milfoil-free by 2021.

Moving south, Brandy Pond has contained milfoil since the early 2000s. LEA has diligently removed and contained new plants and infestations that are usually found near the many marinas and boat storage areas around the pond. Last year around a dozen plants were found and removed. In 2019 we plan to continue this strategy and swim the circumference of the pond to identify any lingering milfoil.

Continuing down, the Songo River is next in line. This area was home to one of the densest infestations in the state and took LEA over ten years to bring under control. Despite our victories on the Songo, some milfoil plants remain and fragments from Sebago Lake continue to take root in the River. The Songo River will require continual maintenance to identify and remove these incipient plants before they can grow and spread. A smaller survey crew will be busy combing the river and its many oxbows this summer.

Finally, our last infested area is the largest area of concern: Sebago Lake. Most of the lake is too deep or wave-battered to host milfoil, but many of the sheltered coves have serious infestations, especially Sebago Cove. Sebago Cove, previously known as the Muddy River, is a large, shallow area in the northwest portion of Sebago Lake that is highly infested with milfoil from shore to shore. In 2019 we are planning an intense control effort using benthic barriers in combination with the suction harvester in the southern channel. Elsewhere in Sebago we will continue our ongoing maintenance programs in Frye Island and Kettle Cove.

It's a busy summer, but we are optimistic about achieving our goals. We are grateful to the continued support from municipalities as well as individual donors. If you would like to help, please consider making a donation to the crew or control work on your lake. We cannot complete this task without your support.

# *Lake School, Eco-Camps, and Wetland Explorations*

## *Hands-on Science for all ages!*

**Environmental Science Field Intensive**

We are delighted to offer an immersive, three-day field experience for high school and early college students to explore lake, forest, and wetland ecosystems. This course will get participants out on the lakes to learn, first-hand, about water testing and lake ecology. We will also examine the connection between forests, wetlands, and clean water to drive home a landscape view.

Students can expect three packed days that will include hiking in the Highland Research Forest, paddling in Highland Lake, following the path of the Stevens Brook from Highland Lake to Long Lake and taking samples all the while. We will spend time in the Science Center lab analyzing our findings and discussing implications and ecosystem connections. Finally, we will explore the Holt Pond Preserve and examine the rich interface where the water meets the land.

The course will touch on elements of limnology, biology, ecology, hydrology, and geology. This year's field intensive will run July 16-18. The course fee is $200 and we have scholarships available. This is a perfect opportunity for students considering an environmental focus in college, students who enjoys hands-on learning, or students bored with classroom instruction. Join us and remember how engaging learning can be. We are offering a 25% discount for LEA members, and those who register before June 14!

**Wetland Field Workshops**

Interested in learning more about wetland ecology? Join us for our watershed exploration paddles that are geared for all ages. Throughout the season we will explore various wetlands, ponds, rivers, and lakes in the LEA service area and expand our horizons with the Greater Lovell Land Trust and Maine Audubon with trips to some of Lovell's unique ecosystems and a "field trip" to Scarborough Marsh.

**Eco-Explorers and Field Days**

Opportunities for our little ones to get outside and explore are VITAL to their development! For this reason, we are offering a couple field days at the Highland Research Forest and Maine Lake Science Center for kids ages 5-9 to examine and learn about the natural world. For a little deeper dive into the natural world, we have the 4-day *Eco-Explorers* day camp at Holt Pond for kids ages 8-12. This day camp will take place August 12-13 and 15-16.

For more information or to register for any of these courses, please contact alanna@mainelakes.org.

# *MLSC – Booming with Learning*

From trees, to birds, to chainsaws, to plants, to amphibians, to moving dirt, the Maine Lake Science Center has been host to a plethora of workshops, trainings, presentations, meetings, and fun. They say knowledge is power, and the more of us who know what affects water quality, the greater the chance we will be able to enjoy our local water resources and pass on that enjoyment to future generations. There's more upcoming this summer, including workshops, camps, presentations, and even Lake School. Check the events calendar on page 11, our website www.mainelakes.org, or follow us on Facebook for more information. No matter what lake, pond, or river you love, knowledge and action will keep them pristine for generations to come. Swim, boat, ski, paddle, fish, drink, gaze at, or listen to -- they bring us health and joy!

Contractors learn best management practices for working in the shoreland zone, taught by Maine DEP and DOT this spring

Foresters teach safe and sustainable forestry techniques and the importance of trees for water quality at the Women's Chainsaw Safety course

Ben and Amanda demonstrate winter water sampling on Keoka Lake with Fryeburg Academy students in March

Maine invasive plant biologist Nancy Olmstead teaches about native and invasive plants


Amphibian protectors learn how to become crossing guards for this year's Big Night

# *LEA and Sebago Lake*

The vast majority of LEA's service area lies within the Sebago Lake Watershed and research has long shown that the key to maintaining pristine water quality lies in the upper headwaters. This is why cities like Boston and New York have protected thousands of acres around their water supplies, and it is also why they have invested in advanced monitoring and innovative regulations for the remaining, privately owned land.

Of course, clean water benefits more than just the people who drink it. In the Lake Region, the allure of our beautiful waters attracts residents and visitors alike, and waterfront land values, recreation, and tourism are the primary drivers in our economy.

The work LEA does in preventing nutrients, sediment, and pollutants from entering Sebago's upstream waters is helping to keep the lake clean and clear for present and future generations, but it is not the only work we are doing on Sebago.

Our milfoil control endeavors at the State Park, Frye Island, Kettle Cove, Sebago Cove, and in the Songo River has greatly knocked back the amount and extent of milfoil infestations in the lake in the last few years. Because of this success, our Courtesy Boat Inspectors at the State Park launch and at the Songo Lock no longer regularly see or remove milfoil from boat propellers and gear.

***LEA is not only working in the upper watershed to keep Sebago clean, we are knocking back invasive milfoil and working with Portland Water District to better monitor and understand the lake***

In addition to taking on invasive milfoil, we are also interested in obtaining a better understanding of the water quality of Sebago Lake. Working with Portland Water District, we are planning on implementing littoral zone (shallow water and near shore) assessments and a rapid lake-wide analysis using a multi-parameter monitoring device and an innovative pump system (see our cover story). We also worked with PWD and Saint Joseph's College to help configure the design of the new automated monitoring buoy that went into Lower Bay last summer.

Sebago Lake is one of the cleanest lakes in LEA's service area and we have a keen interest in understanding this unique system and keeping it pristine for the benefit of the landowners living around it, our economy as a whole, and everyone who relies on it for their drinking water.

***Name one of the three layers of a stratified lake***

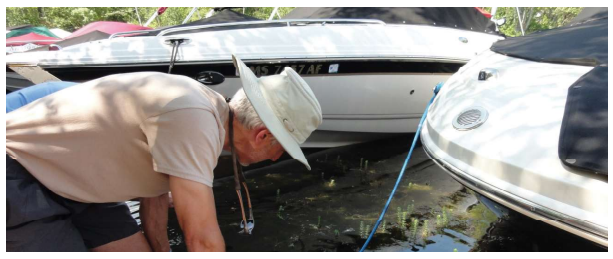
# Clean, Drain, Dry!


For years we have talked about the threat of invasive aquatic plants in Maine. While ridding our lakes of milfoil is still part of our mission, the threats have evolved. We are no longer just facing infestations of unwanted plants. In the spring of 2018, a zebra mussel was found by a Courtesy Boat Inspector on a strand of milfoil. The previous waterbody was the St. Lawrence River in New York. This was a wakeup call. We have known for years that there are tiny invasive mussels, clams, and water fleas in nearby states but this time, the threat made it all the way to the boat launch.

Maine law clearly states that boats, trailers and equipment must be cleaned of any plant material. Because tiny animals and plants can survive in standing water for long periods of time, the Maine Department of Environmental Protection has refined its message for boaters to ***"Clean, Drain, Dry"***. Simply put, this mantra asks that you clean your boat, drain the standing water, and let it dry completely before launching someplace new.

This summer, be on the lookout for new winch stickers available from your friendly, neighborhood Courtesy Boat Inspector!

# Marina Inspections Required



***DEP Biologist John McPhedran assessing the milfoil infestation on Long Lake***

Following the disturbing discovery of an extensive patch of invasive variable leaf milfoil at a marina in Long Lake, the Naples Select Board asked LEA to draft an ordinance that requires the owners of private boat ramps and large docking facilities to inspect their facilities annually. This ordinance passed unanimously at the Naples town meeting in June of 2018.

This spring, the Naples Select Board again approached LEA after learning that marinas and campgrounds were not inspecting boats that launch at these facilities. Working with the board, we came up with a proposal to require boat inspections at commercially owned launches. Existing staff could do the inspections as long as they attended a short training program and watercraft maintained by the business would not need an inspection. In the spring of 2019, Naples residents strongly approved these new amendments at the annual town meeting.

Marinas and campgrounds are an important part of the local economy and intertwined with the lakes community. While these new requirements are an additional responsibility for this business group, all those who weighed in recognized the value and importance of keeping our lakes free of invasive aquatic plants.

# An Update on Maine's Lakes *by Colin Holme*

If we want to keep the lakes and ponds of our area clean, then we need to be aware of the issues other waterbodies in Maine are facing and what types of remediation techniques are available. Sharing research and resources are the key to staying ahead of lake degradation and absolutely necessary to come up with workable solutions when problems do occur. For these reasons, LEA convenes an annual Research Retreat at the Maine Lake Science Center. Below is a summary of some of the hot topics that were discussed at this year's retreat.

Maine Department of Environmental Protection staff started the discussion with a sobering overview of lakes that have recently succumbed to algae blooms in 2018. Then they went over work on a vulnerability index that assesses lake health and the importance of acquiring high-resolution depth data.

Dr. Karen Wilson from the University of Southern Maine discussed collaborative research on Highland Lake in Windham, which has been experiencing recent algae blooms. These blooms are caused by something called pico-cyanobacteria, which is an extremely small type of algae that can flourish in waters deeper than other problem species.

The new monitoring buoy in Sebago Lake was covered by Dr. Ryan Dorland from Saint Joseph's College. This buoy has shown the dynamic stratification in Maine's deepest lake and how wind and weather act upon the water column. LEA worked with Portland Water District and Saint Joseph's College to help design and outfit this new piece of equipment based on our experience with automated buoys.

Peter Countway from Bigelow Labs in East Boothbay shared advances in molecular detection of algae using DNA. Countway has been working on ways to quickly and accurately measure the blue-green algae Gloeotrichia, which LEA has been studying for the last five years.

As a side effect of reducing acid rain and changing soil chemistry, some lakes in Maine are turning slightly brown. Dr. Sarah Nelson from the University of Maine reported that this is a result of more dissolved organic carbon entering the lakes. Nelson also discussed the impacts of climate change and noted that Maine has experienced a three-degree Fahrenheit increase in temperature over the last 100 years and about a six-inch increase in precipitation.

After holding workshops around the state, LEA's Colin Holme reported on what the public perceives as the biggest issues facing Maine's lakes. These topics included an elevated interest in understanding the role of seasonal streams, invasive fish, the impacts of wake boats, and how blue-green algae is connected to Lou Gehrig's Disease.


***Dr. Whitney King discussing the logistics of a massive alum treatment on East Pond to mitigate recurring algae blooms***

The million dollar alum treatment on East Pond in Smithfield was the subject of Dr. Whitney King's presentation. King, a chemistry professor at Colby College, helped design and oversee the monitoring of this massive chemical experiment to control regularly occurring noxious algae blooms on East Pond. He described the difficult logistics involved with an application of alum on this scale and the delicate process of ensuring that these additions do not negatively impact the overall ecosystem of the lake.

LEA's Dr. Ben Peierls talked about winter lake monitoring and how there is still much to be learned about these systems in the colder months. He discussed sampling challenges and the state of current research. He then gave an overview of winter data collected from Highland Lake in Bridgton and Bear Pond in Waterford.

This annual gathering at the Maine Lake Science Center has become a welcome forum to discuss lake-related projects around the state, share information, and greatly helps focus LEA's limited resources.



*Term for the longest distance across a lake*

# *No Stopping Ursula!* *by Mary Jewett*


*Rose Pogonia*

In 1998, Ursula Duve moved to Maine and, shortly after that, led her first Orchid Walk at the Holt Pond Preserve for LEA. Ursula is a botany enthusiast who has introduced many people to the wonders of the tiny, colorful treasures found in the Maine woods. Each year she leads two walks at Holt Pond: Wildflowers in May and Orchids in July. She and her late husband, Wolfgang, would visit the preserve the day before the walks so she would know exactly where to find the best plants. She has shared so much knowledge with so many people, including LEA staff.

In 2016 Ursula came to the Wildflower walk wearing a "boot". In March she had broken her foot while feeding her beloved wild birds, but it didn't stop her from leading the walk. She always entertains with stories about her explorations of the Maine woods. And she loves to share the secret location of rare yellow lady's slippers in western Maine.

Last spring was the first time that Ursula did not do recon with Wolfgang before the walk. He had passed away over the winter after 60 years of marriage. On that walk Ursula remembered her husband to attendees with love and laughter.

This year Ursula is planning on bringing her daughter to assist her. On May 15th she is ending three weeks of radiation treatment, but she assures us that she will be at the Holt Pond Preserve at 9am on May 17th for the Wildflower walk. The Orchid Walk will take place on July 5th.

Ursula's philosophy is that "sharing what you enjoy is what life is all about. All the other 'stuff' doesn't matter." LEA is grateful for Ursula's many years of volunteering and her incredible vitality. At 81 years old, she is truly an inspiration.


*LEA's favorite botanist, Ursula Duve, sharing her enthusiasm for flowers and life at Holt Pond*

# *Trails and Preserves Update*

**Highland Research Forest Happenings**

We are very excited about several new updates at our new Highland Research Forest. Last fall, we were able to install a small parking lot at the main trail entrance so visitors can easily and safely access the trails off of Commons Drive. We also installed the base of a privy (rustic park bathroom) and we have plans to construct the rest of the building this summer. We roughed in a trail network and the main path down to the lake is in great shape. Numerous interpretive signs will be installed shortly, we have plans for a kiosk, and we are in the process of developing a map and brochure. Funding from the **Sustainable Forestry Initiative** and **Project Canopy** has been instrumental in fueling much of this recent work. If you have not been up to the Highland Research Forest, please join us this summer for a hike or bring your loppers and become part of the LEA trail team!

**Holt Pond Update**

The back forty of Holt Pond, which disappears in sawgrass about mid-August, has been long overdue for some TLC and the front forty could also use some love. Well, if we are being frank about it, the road accessing the preserve is in rough shape too. Thanks to foundation funding, Holt Pond is going to receive a much needed revamping in 2019. The **Fields Pond Foundation** is generously supporting our work to improve and renovate the trail and extensive boardwalk system and the **Morton-Kelly Foundation** has provided funding to improve Grist Mill Road, which is the main access to Holt Pond. Morton-Kelly also provided school transportation funding to ensure local students can continue to regularly visit this amazing set of ecosystems.

**Meet our Trail Intern!**

Thanks to **Norway Savings Bank**, we have also hired a trail intern. In addition to helping with some of the projects discussed above, she will be available for guided walks, hiker assistance and serve as a representative for LEA in the woods. She will also be helping out on the Stevens Brook Trail between Highland and Long Lakes. She comes to the trail intern position after two years as an excellent and slightly famous Courtesy Boat Inspector and volunteer water tester. She was also a student in LEA education programs in Harrison and at Lake Region. Have you guessed yet? That's right, it's Addie Casali! We are so excited for her to join us in this capacity and share her love of the outdoors with those she meets on the trail. And don't worry, for those rainy day projects we will be upgrading the Holt Pond Guide, which we hope to have available for your phone soon!


*Where do loons go in the winter?* *Page 7*

# 10 Fun Things to do Outside with Kids

Research shows that time outside for children (of any age!) unlocks a huge amount of benefits from focus and cognition, to balance and observation, and cause and effect. Being in nature connects us to place and influences our stewardship and conservation action down the road.

If you are just beginning, start with short amounts of time and lots of opportunities for free play and exploration (instead of a planned hike for example). If you provide a small amount of guidance and direction, the rest will come on its own. Building a connection to nature can be both calming and exciting, and allowing for some managed risk (like jumping over streams), will help make sure everyone has fun. Other things to think about include: layers, snacks, water to drink, extra clothes, sunscreen and bug repellant.

1. **I spy**. Take turns finding something cool as you're walking through the woods and others have to guess what it is. You can do a series of yes/no questions to help narrow things down. This works well if stopped for a few minutes or while having a snack together.

2. **Use Frisbees** upside down in a stream or body of water as a collection tray for algae, macroinvertebrates or pretty stones. Frisbees are light, flat and buoyant and perfect for little hands. Children love observing their finds up close so a magnifying glass is a nice addition. Encourage stewardship by carefully placing everything back into the water when you're done observing.

3. **Provide them with a camera**. When kids have control over what they can capture digitally, their focus changes and it often heightens attention to detail. Make sure the camera or phone has a sturdy, waterproof case, show them how to use it, and let them be the lead on capturing your moments outside together. Later you can print photos and have them write a story of their outing.

4. You've probably built some fairy houses. Take it a step further and **help some fairies fly!** At home have your little one design and build a parachute made from a produce bag, bandana, or lightweight piece of cloth. With some string or a kitchen twist-tie, attach the homemade parachute to a small figurine, stick or acorn. Then find a boulder or climbable tree to clamber up, and let your fairies fly. The Douglas Mountain trail in Sebago has a stone tower at the summit- a wonderful flight school for fairies. Look out below!

5. **Find a geocache together!** Begin by finding something at home to leave in the box. Work together to find the geocache with GPS apps on your phone. Be sure to include a comment and leave your treasure in the box for others to see! To find out more info, search Maine geocache, or check out traillink.com from Rails to Trails. P.S. There is a geocache at Holt Pond!

6. **Seek out something specific.** Take to the trails with the plan of finding a specific bird, tree, wildflower or fish. At home bust out the field guides and do some research on your subject. Where might you find it? What are some things that will indicate you've found it? Bring nature journals to capture your experience and take some time observing and drawing.

7. **Play house.** How does this never get old? Find a space, imagine the kitchen, living room, and bedrooms and begin to design and decorate. Then make a woodland snack of sticks and lichen. It may look delicious, but please do not consume.

8. **Learn something new together.** Take a class designed for families on shelter building, knot tying, camping, canoeing, fishing, or…whatever! Then go find a place to use your new-found skills together. By the way, kids love to camp right in the yard- so you don't have to go far!

9. **Design and float your own boat.** Think small scale here, like that fairy from #4 could also experience a boating trip down a stream. Designing, testing, and rebuilding miniature boats is a great way to spend an afternoon. Break out your box of recyclables and scout the kindling pile for supplies!

10. **Give back.** Involve your kiddos in a trail day, cleanup, or community service related to the outdoors. They will see that others enjoy being outside and taking care of it too, just like them!

# Increase Funding for Milfoil Prevention?

For years, we have struggled to combat invasive aquatic plants on a limited budget. Even with towns and lake associations contributing funds, we still can't afford to station Courtesy Boat Inspectors at some of the region's busiest launches during key periods. Actual milfoil control and remediation is even more difficult to fund. This work is grueling, requires extensive training, expensive equipment, and numerous provisions to ensure safety.

The vast majority of funds for prevention and control work in Maine comes from what is referred to as the "milfoil sticker". This sticker is now incorporated into the in-state boat registration process. Out-of-state boat registrations need to purchase a separate, stand-alone sticker. The fee for this sticker has been the same since the original bill passed in 2002. In this same time period, minimum wage has increased 74% and gas over 100%. Since 2002, more lakes have also become infested with invasive plants. So, while demand and cost have increased, revenue has stayed the same.

For this reason, LEA approached local representatives Walter Riseman (Independent, Harrison) and Jessica Fay (Democrat, Casco) to make the case for more milfoil funding. After discussing the issue at length, Riseman introduced a bill to increase the sticker fee and Fay co-sponsored the bill along with several other representatives from across the state.

After vigorous debate in work session, the bill was amended to increase the milfoil sticker fee in 2020 by $5 for in-state registrations and by $15 for out-of-state registrations. The Inland Fisheries and Wildlife Committee unanimously voted that this amended bill "ought-to-pass". While this is an extremely promising start, as of press time, the bill has not yet gone to the House and Senate floors or seen the Governor's desk.

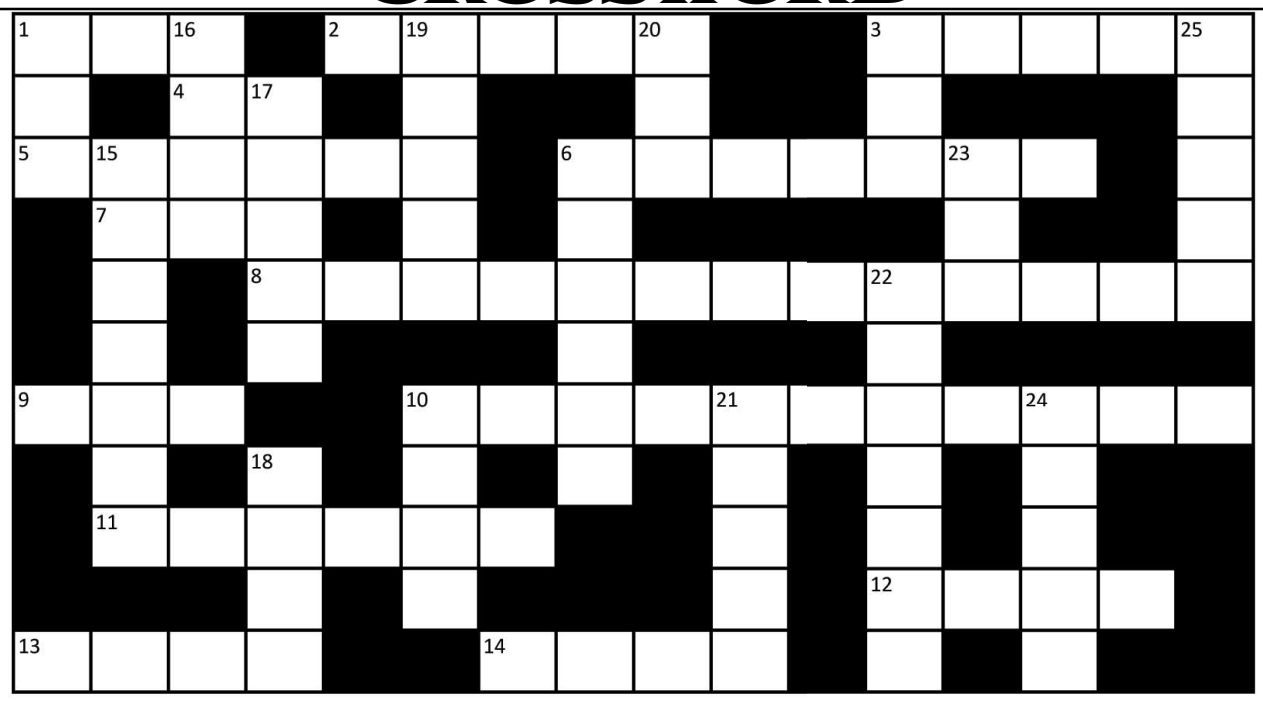
***Milfoil control and prevention work sorely needs a funding boost***



*Term for a group of swimming ducks*

# Puzzles & Games

## CROSSWORD



**Across**

1 Exclamation after sip of Moxie
2 Wading bird
3 Songo River ____
4 State with many dammed lakes
5 105 miles of shoreline
6 Bad aquatic plant
7 LEA VP
8 Now called Crystal Lake
9 ____ Sensors (Course at MLSC)
10 Big Night find pictured on left (pl)
11 Fun water accessory
12 Fine particle in muddy water
13 Bufflehead eg
14 Sheltered from wind

**Down**

1 Aquatic Invasive Species
3 Status ____ won't do
6 Hatches in the 5th month
10 Bad for freshwaters
15 #1 lake pollutant
16 In lake temp sensors / itinerant person
17 Boat palindrome
18 Lake hangout spot
19 _____trichia (type of algae)
20 Skinny dipping details
21 Maine's famous ungulate
22 West shore benefit
23 Milfoil looker (acronymn) (see page 13)
24 Cause of beach closure
25 Aquatic nymph

**Lake Trivia!**

The blue bars at the bottom of each page of this newsletter contain trivia questions about LEA, our service area, and our lakes. The first five people to submit all of the correct answers via email to cory@mainelakes.org will win an LEA mug!

Crossword and Lake Turnover answers can be found at mainelakes.org/answers/

## LAKE TURNOVER

S B I N A

T J Y T E

K D C U Y

R E P P E E

Now, rearrange the circled letters to find to the answer to the puzzle.

A "_____"


*Semi-aquatic mammal that secretes an oil used in food flavorings* Page 9

# *The Three Legs of Lake Protection* by Colin Holme

Relaxing and decompressing on the shore or rejuvenating through a swim, paddle, sail, fishing trip or ski, the therapeutic power of lakes is considerable. Whether we realize it or not, our beautiful and pristine waters help keep us physically and mentally healthy.

However, our lakes will not have the same power to rejuvenate if they are choked with algae and invasive plants. Instead, I surmise this will only add to our stress level. For this reason (and many more), we must also look out for the health of our lakes.

Preserving and protecting this region's lakes is LEA's mission and our work can be generalized into three broad categories: **Action**, **Education**, and **Research**. Each of the "legs" is important on its own but when assembled together they form a stool of lake protection that is stable and well-rounded.

The **Action** category includes identifying and correcting erosion sites, reducing nutrient loading through the installation of innovative stormwater controls, milfoil prevention and eradication, and oversight and review of development projects.

Our **Education** efforts include working with over 1000 students in the surrounding schools every year, offering routine public events, outings, courses, classes and field trips, providing landowners with personalized advice and recommendations for their property, and offering regular trainings for municipal volunteers, contractors, real estate agents, and other business professionals.

**Research** is an investment in the future and includes our traditional water testing program, advanced monitoring, automated data collection buoys, citizen science projects, data analysis, and reporting.

Many groups focus on one or two of these categories, but to achieve holistic lake protection, all three must be used as one cohesive tool. The integration of on-the-ground work with community engagement and research is necessary to keep our waters clean today and in the future. This is where LEA stands out above the rest.

But to succeed in protecting our lakes, we need the majority of the community active and involved. It is simply not enough to support the idea of lake protection alone. By joining LEA, you can become part of this three-legged solution. You will be providing our organization with the fuel to keep our programs running and you will be informed of current and pressing lake issues. If you are not an LEA member, please join or consider volunteering to help with water testing, courtesy boat inspections, milfoil removal, or trail projects. Still not sold? Come to one of our events and see for yourself how you can fit in. By the way, LEA events are usually free for members!



# *We are Not Off the Hook Yet!*

## *Old fishing lures are still pollution*

LEA staff and interns find a wide variety of objects in the water throughout the year. Everything from old boats and wallets to more unusual finds like a spiral ham or an ornate sword. But most disturbing is the amount of trash we see in the water. One of the most common things we find is fishing gear and tackle. The hooks, lures and fishing line take hundreds of years to break down and this litter accumulates rapidly in our waters.

To address this issue, Senator Paul Davis, a Republican from Piscataquis County, proposed a bill this spring to ban all non-biodegradable fishing lures in Maine. With strong opposition from the fishing community, this bold proposal was eventually scuttled. The bill would have made illegal many of the common tools of the trade. However, it did spark an important conversation. What can be done about this problem?

While the bill did not pass, something needs to be done to address the ever-growing amount of plastic fishing tackle that is accumulating in our waterways. Although biodegradable alternatives are available, they are often more costly and can be difficult to track down.

There doesn't seem to be a single, obvious way to fix this problem, but there are definitely ways to improve the integrity of our lake ecosystems while preserving the fishing experience. One option is to halt the use of soft plastic lures. These inexpensive lures absorb water when submerged, and large and small pieces can easily break off into the water. Fish ingest these lures which swell and then impede digestion, and these plastics leach harmful chemicals such as phthalates into the environment. Until a practical solution can be found, we encourage anglers to look for alternative lures or biodegradable options instead of the soft plastic lures.



*Fairy Shrimp are an indicator of which type of wetland?*


# Science Center Celebration

**Last summer, the Campaign to build and operate the Maine Lake Science Center surpassed its goal of $1,450,000!**

The Center development process has yielded a host of scientific spinoff projects that have enriched LEA's original mission, including high-resolution bathymetric mapping, sonde flow-through spatial analysis sampling, and fluorometry studies to better understand algal populations.

Other evolving activities have greatly enhanced lake protection in Maine: a series of robust researcher retreats, expanded education and outreach opportunities, capacity-building resources for lake associations, and a lake policy initiative launched to upgrade lake protection at state and local levels.

As a result of the Center's work, lake science, lake education and lake policy have made significant strides and we have co-developed an action plan that serves as a common thread uniting scientists, state agencies and lake associations for lake protection in Maine and beyond.

**Now it's time to celebrate with a gala event for all the donors who helped make the Maine Lake Science Center a reality!**

**June 20th, 5:00 – 6:30 pm**
**MLSC, 51 Willett Road, Bridgton**
**Hors d'oeuvres, drinks, and entertainment**

**Please RSVP by 6/18 to Alyson at 207-647-3318 or alyson@mainelakes.org.**


| | | |
|---|---|---|
| **June 2019** | | |
| **21st Fri.** | **9 am - 3 pm** | **Amazing Wetlands** Holt Pond and HRF $20/$15 |
| **26th Wed.** | **9 am - 11 am** | **Milling about along the Stevens Brook: A History Walk** with Bridgton Historical Soc. |
| **July 2019** | | |
| **TBD** | **TBD** | **Orchid Walk** Holt Pond |
| **6th Sat.** | **8 am** | **Third Annual Paddle Battle!** Sign up at www.mainelakes.org |
| **10th Wed.** | **4-5:30 pm** | **Wetland Plants** at Holt Pond Preserve |
| **16th-18th** | **All Day** | **Environmental Science Field Course** for high school and college students |
| **20th Sat.** | **10 am - 1 pm** | **Pinehaven Family Picnic** at the Maine Lake Science Center |
| **22nd Mon.** | **9 am - 3 pm** | **Field Day** at the Maine Lake Science Center (rain date on the 23rd) |
| **24th Wed.** | **5 - 6 pm** | **Boat Wake Presentation** Maine Lake Science Center |
| **25th Thur.** | **9 am - 3 pm** | **Field Day** at the Highland Research Forest (rain date on the 26th) |
| **30th Tues.** | **4:30-6:30 pm** | **Sea Level Rise Presentation and Discussion** with the Gulf of Maine Research Institute |
| **August 2019** | | |
| **6th Tues.** | **TBD** | **Invasive Plant Patrol 101** with Lake Stewards of Maine at the MLSC |
| **7th Wed.** | **5 pm** | **Alum Treatment Presentation** with Colby College professor Dr. Whitney King |
| **9th Fri.** | **12 pm - 4 pm** | **Scarborough Marsh Field Trip Paddle** $15 Sign up through Maine Audubon - we will car-pool from Bridgon! |
| **12-13th, 15-16th** | **9 am - 4 pm** | **Eco-Explorers Camp** at Holt Pond. Join us for four days of fun, ecology-based and hands-on activities for children ages 7-11 |
| **19th Mon.** | **8:45 am- 3 pm** | **Project Wild** K-12 Teachers' Workshop $25. Sign up through Maine Audubon. Join us to explore an excellent outdoor curriculum guide! |
| **20th Tues.** | **4:30-5:30 pm** | **Boat Wake Presentation** at the Maine Lake Science Center |
| **23rd Fri.** | **TBD** | **Trail Day** |

**Weekly guided walks** will be offered with our trail steward at Highland Research Forest, the Holt Pond Preserve, MLSC's Pinehaven Trail, and the Stevens Brook Trail throughout the summer. Contact Alanna or visit our Facebook page for more info!

Registration is required for all events
FMI or to register: alanna@mainelakes.org

Most events are free for LEA members: Join today!

Events are added and changed regularly. Please follow us on Facebook for up-to-date event infomation

Sign up for events e-mails at www.mainelakes.org

*Name a type of carnivorous plant found at the Holt Pond Preserve* *Page 11*

# Why Hire an Erosion Control Certified Contractor?

Choosing an excavation or landscaping contractor can be difficult. You will likely ask friends and neighbors for recommendations and get multiple quotes. But if you want to keep our lakes clean, you should begin the process by making sure the contractor is certified in erosion and sediment control. Certified contractors have gone through training from the Maine Department of Environmental Protection (DEP) on effective erosion control techniques and know how to prevent soil from running off construction sites and muddying our pristine waters. Further, contractors moving more than a cubic yard of soil in the shoreland zone are required by law to be certified. Even working outside of these sensitive areas, we encourage you to use certified contractors to minimize any impact on our waters.

There are many benefits to hiring a certified contractor, not the least of which is having some assurance that the excavation work will be done in an environmentally sound manner. In addition, certified contractors may be able to complete your project more quickly, as they can bypass the 14-day waiting period for Stream Crossing Projects under the Permit-by-Rule program and file erosion and sedimentation control plans through Stormwater Permit-By-Rule. In short, by hiring a certified contractor you are making water quality protection a priority.

In an effort to encourage more contractors to become and stay certified, LEA hosts training sessions each spring for contractors. This past March, 65 contractors and municipal officials attended sessions at our Maine Lake Science Center. To find a certified contractor near you, call the DEP's Nonpoint Source Training Center at 207-615-3279 or visit https://www.maine.gov/dep/land/training/ccec.html

# Annual Meeting August 20th at Mataponi

The LEA Annual Meeting will be at 5pm, August 20th at Camp Mataponi on Sebago Lake in Naples. Come share a meal and learn about LEA's innovative lake protection work. Sign up at www.mainelakes.org

# Climate Change and Lakes *by Ben Peierls*

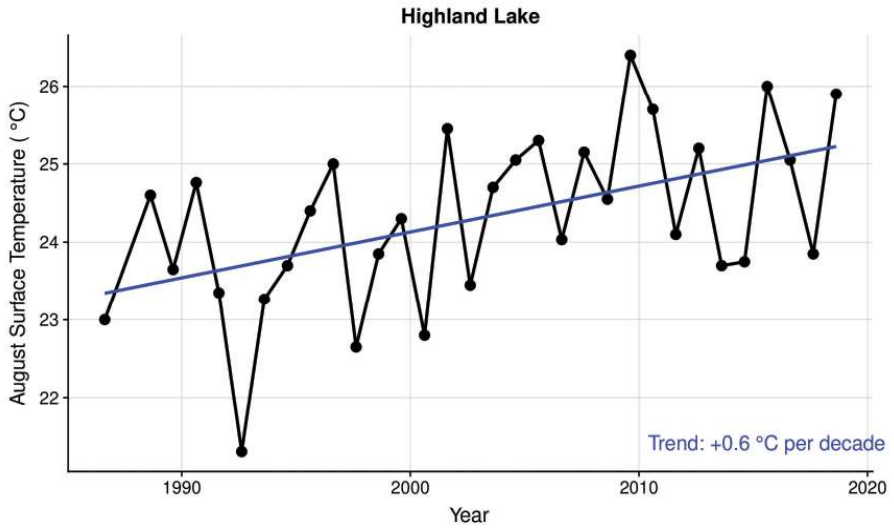
## *"If you don't like the weather in New England, just wait a few minutes." - Mark Twain*

Whenever there is a heat wave, early snowstorm, drought, or an unusually cold snap, it is easy to imagine something is changing with our climate. Then again, these not-so-unusual weather events are just that - weather, and not climate. Weather changes day to day, while climate is defined by long-term patterns that are not always easily recognized. Sure, we may remember unusual events, like the time it snowed in May or a heatwave in October, but we need long-term records to be aware of gradual changes that happen over decades or longer.

And many of these records clearly show that climate is changing. Over the last century, air temperature has increased, sea level has risen, and more extreme precipitation events are the norm (see 2018 National Climate Assessment Report and UMaine's Maine Climate Future 2015 Report). Lakes turn out to be ideal sentinels of climate change because they are responsive and react relatively rapidly to climate.

Since water temperature is linked to air temperature, it should be a good indicator for climate change. Indeed, a recent study reported an increase in global mean lake surface temperatures of 0.3 °C per decade since 1985, though individual lake trends varied with location and characteristics like size and elevation. This was confirmed in another paper, which showed that lake surface water in northeastern North America warmed even faster at about 0.5 °C per decade, twice as fast as the air was warming. We see about the same rate of increase in our area.

*Ice-out on Sand Pond, April 2018*




*Water temperature trend at Highland Lake*

Lake ice coverage and duration will decrease as air and water temperatures increase. Records of ice-out and ice-in dates go back sometimes centuries; these records were kept typically for cultural or practical (e.g., transportation) reasons. The trend seen in many of these records is for lakes to be freezing later and breaking up earlier. A study by USGS scientists reported ice-out for 29 New England lakes happening 9 to 16 days earlier since 1850.

Lake data trends are consistent with climate change, but recent studies have shifted to evaluating the impacts of climate change on lakes. This is a complicated research topic because of the multiple interacting factors. Warming water will increase the time period a lake is stratified, which can impact how long the bottom waters are deprived of oxygen. This in turn affects where fish can go and increases the likelihood and amount of phosphorus release from sediments. And no two lakes will respond exactly the same. With your support, LEA is building an evolving story on how climate change is affecting our lakes.



*Name a type of coldwater fish found in Maine lakes*

# *Traveling the Lakes Through Time*

*Nowhere such a devious stream,*
*Save in fancy or in dream,*
*Winding slow through bush and brake,*
*Links together lake and lake.*
*-Henry Wadsworth Longfellow,*
*"Songo River"*

Transportation is usually not high on most people's list of benefits lakes provide to society. But since the days of the settlers and until the early twentieth century, lakes and waterways were an essential way to move people and things, and the Lakes Region was no exception.

In 1768, Captain Benjamin Kimball became the first settler in the Bridgton area and was under contract by the original land grant owners to build and run a sailboat to carry passengers and goods between West Cove on Long Lake and Sebago Lake at what is now Standish. Captain Kimball's boat carried people and their belongings up and down the waterway, thus helping to settle the new town. Around the same time, Jacob Stevens used Long Lake to move logs and lumber to and from his mill on the stream that runs from Highland to Long Lake and now bears his name. For the next few decades and when they were free of ice, Long and Sebago Lakes were a vital way to move people, mail, and commodities around.

In 1832, water transportation in the region got a boost when the Cumberland and Oxford Canal opened up along the Presumpscot River connecting Portland Harbor with Sebago Lake. As it is today, Sebago was connected to Long Lake via the Songo River and Chute River. A planned extension of the route from Long Lake to Waterford via Bear Pond and Keoka Lake was never built, likely because of the steep terrain. At that time it was possible to travel the 38 miles from Portland to Harrison completely by boat, passing through 27 locks on the way to Sebago Lake and one more lock on the Songo River. Specially designed, flat-bottomed boats were towed by horses and pushed by poles in the canal and were converted to sail power for open water travel. These vessels primarily hauled freight, sometimes as much as 60 tons, including lumber, masts, firewood, and apples going to Portland and supplies and mail making the return trip inland.

By the 1840s, the first steam-powered vessels began carrying freight and passengers. Steamers of the time ranged from small boats roaming a single lake, like the *Lady of the Lake* on Highland in Bridgton, to the large passenger vessels, like the side-wheelers *Oriental* and *Sebago* and the 90-foot *Goodridge*, which could carry 300 people. Companies such as the Sebago Lake, Songo River and Bay of Naples Steamboat Company ran regular routes from the Sebago Lake railroad station in Standish to the top of Long Lake in Harrison with stops along the way.

The growth of the railroad led to the end of the canal, which saw its last use in 1873. Steamers were active on the lakes for 40 years until the railroad reached Bridgton and made water transportation less profitable, though trips continued into the twentieth century. Travelers and sightseers could still ride aboard a steamboat until 1932, when the last working boat, the *Goodridge*, burned at the Naples dock. It is not surprising that, given a propulsion system requiring fire, burning was a common fate for many of the steamers of the era.

Now, transportation on our waterways is less about going somewhere in particular and more about recreation - and usually at much greater speed. What would Captain Kimball think?

*Photo: Harrison Historical Society Facebook Page*

# *Early Detection with LEA's Invasive Plant Patrol* by Mary Maxwell

The newly formed Invasive Plant Patrol (IPP) team sponsored by LEA had an active first year. The IPP was formed after the discovery of milfoil in Long Lake sparked concern in the Lake Region area. Volunteers came together with the desire to promote early identification of invasive aquatic plants, thereby minimizing the risk that these noxious plants would spread throughout the lake or contaminate other lakes.

The team's primary focus is surveying high risk boat ramps and marinas in the Lake Region. By concentrating on these hotspots, we hope to catch invasive plants before they become well established. Also, the team wants to increase awareness of the importance of surveying for invasive plants, which will eventually lead individual lake associations to form their own plant survey teams.

Last summer, ten IPP volunteers kayaked and snorkeled on four lakes. No invasive plants were found during these surveys. Surveyors often encountered property owners curious about the equipment used and the purpose of the activity. All expressed great appreciation for this effort and an awareness of the risk of invasive plants.

The IPP team is always looking for new members and this summer we are offering several training opportunities. Surveying is an enjoyable way to see and experience new lakes with a group of people - all the while learning to identify the flora of this area. Surveying is typically done in late July through mid-September when aquatic plants are fully mature. It's 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 team, please contact:**

**Mary Jewett, LEA**

**207-647-8580**

**mary@mainelakes.org**

**Mary Maxwell, LEA-IPP volunteer coordinator**

**503-515-7946**

**mary.maxwell85@gmail.com**

*The essential pigment used for photosynthesis by plants and algae* Page 13

# *LEA by the Numbers*


**Trout released by 5th and 6th grade classes at local schools**


**Lakes and ponds in LEA's service area**


**Courtesy Boat Inspectors employed last summer**


**Clean Lake Check-Ups performed in 2018**


**Native seed bombs given out to students at LEA's "Hey You!" cruise**


**Porcupine sightings at LEA events at the Highland Research Forest this past winter**


**Miles of easy to moderate terrain at LEA's Holt Pond Preserve**


**Volunteer hours logged in 2018**


**Salamanders saved by LEA's crew on Big Night**


**Trees taken by beavers on the Muddy River, Winter/Spring 2019**


**Total number of LEA members -Thank you!**


**Participants in events, workshops, and programs at MLSC in 2018**

**Water Testing 2018 Stats**

**275 lake visits**

**554 chlorophyll and phosphorus samples collected and tested**

**60 algae samples analyzed**

**Courtesy Boat Inspection 2018 Stats**

**11,959 inspections**

**485 total plants found**

**10 invasive plants found**

**Milfoil Crew 2018 Stats**

**34 benthic barriers deployed**

**13,550 square feet covered by barriers**

**432 bags of milfoil removed**

**185 acres of milfoil cleared**

# *LEA Priorities by Colin Holme*

One of the biggest problems we face in the Lake Region is our own good fortune. This area has been blessed with beautiful and pristine lakes and ponds. Unlike other parts of the state and New England, our lakes have held their own as the watershed and climate around them changes. Without severely blooming lakes in plain sight, many people remain unconcerned that something like algae or invasive aquatic plants could affect their lives or the value of their property. Unfortunately, this common, but short-sighted view does not take into account the increasing trend of blooming lakes and waterbodies infested with invasive aquatics or the gigantic repercussions that come from this type of change.

Many entrepreneurs have made a fortune from predicting the future and building an idea or company around it. They did not do this by gazing into a crystal ball. Instead, they took a step back and looked at the bigger picture and made an assessment of what was needed. If that assessment was correct, they were rewarded with success. If it was incorrect, most tried again. While there are countless cases to illustrate this point, I think Leon Leonwood Bean's "duck boot" is a worthy example.

Tired of hunting with cold, wet feet, L.L. Bean designed and manufactured a boot with a rubber bottom to keep his feet dry. While the first round of boots sold well, the stitched seam between the rubber and the leather came apart. Leon refunded those who purchased bad boots, thus beginning L.L. Bean's famous return policy and then improved the product to fix the defect. Muddy, wet ground is common in Maine even if you don't hunt and Leon astutely picked up on this need in 1912 and put his time and effort into designing a product that was unlike others.

Today, our economy and way of life is built around our clean lakes. Stepping back, we see other waterbodies succumbing to algae and invasives, but we still lack adequate checks and balances to ensure that our lakes and ponds will remain pristine. This is the breach that LEA must fill and also the reason we created the Maine Lake Science Center.

We need to draw attention to our lakes, ponds and waterways in a way that we have never done before. The clock is ticking and it is essential that the whole community is aware of risks so that we can all collectively weigh the cost of action versus inaction.

In the last few years, we have grown our programs and offerings tremendously in an effort to reach new audiences and influence how individuals and businesses make decisions that could impact lakes. It is working, but we still have a long way to go. Some of our big priorities moving forward include:

**Growing outdoor, experience-based education** by offering programming available to all ages and income levels. This will include a wide variety of courses, camps, classes and in-school and after-school activities.

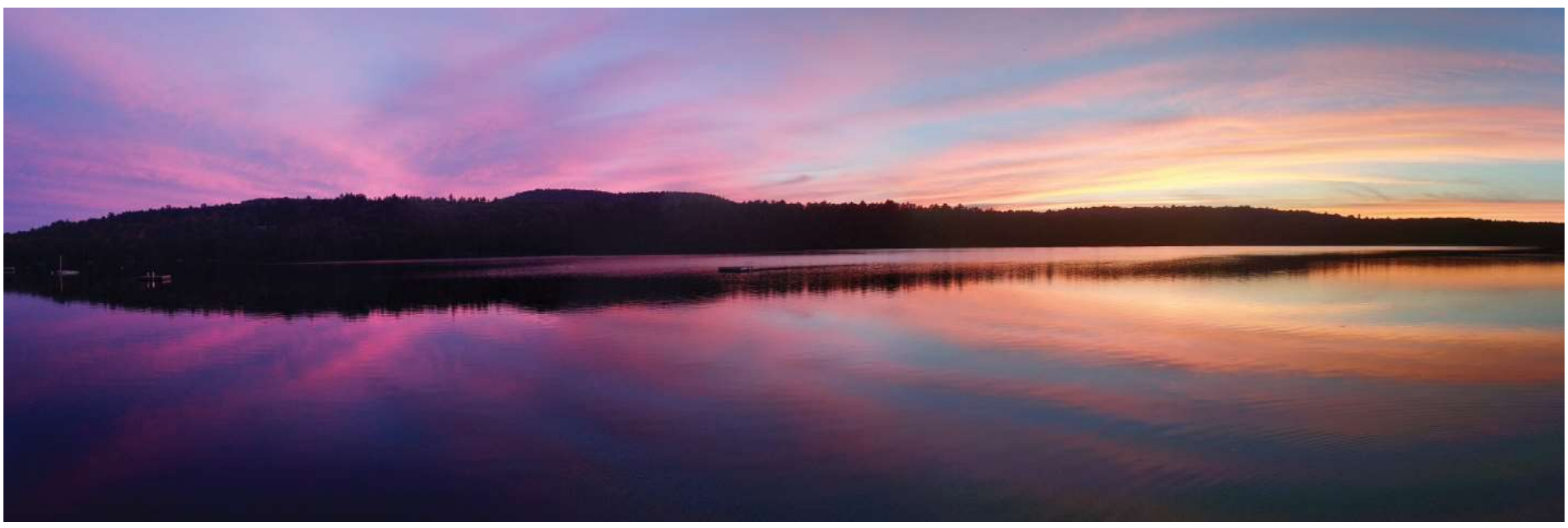
**Maintaining a strong milfoil control team** that can handle the existing infestations in the area and deal with new infestations as they are identified. We must also put **more resources into invasives prevention** to keep new invasives from gaining a foothold. To do this, we must find and cultivate funding sources for this program and ensure that our projects are prioritized.

**Transition into a strong partner and resource for contractors and businesses** that work in this area. In the past, LEA has often been viewed as an environmental activist organization and many have been wary of inviting us to job sites. We need to change this relationship from adversary to partner if we are to make real progress.

**Incorporating the lakes community into our research and monitoring projects**. There is still much we don't understand about lakes and we need people who care deeply about them to help us get some of these crucial data. We have been expanding our programs and research to address questions brought up by folks living on the water, but we need volunteers and lake stewards involved in the action! Many of these projects are short term and do not involve extensive training or protocol.

We need to expand our work with other organizations, partners, and landowners to **ensure critical headwaters and riparian areas are protected**. Maintaining the integrity of our streams, rivers, wetlands, and shoreland areas is essential to keeping our lakes and ponds clean. While LEA is not a land trust, we can still work with landowners to conserve, sensibly manage, and protect sensitive upper watershed land.

As we have done in the past, we will continually evaluate and re-evaluate programming to ensure our goal of clean water is always in mind and we are spending our time wisely. We know that there is a pressing need for boots on the ground to address lake issues and you can be sure that if some of these boots have bad seams, we will change our design and make more.



# *Water Color – Not Just a Style of Painting*

Water color changes depending on what is in it and we can use this characteristic to gauge lake water quality. Very clear and low productivity lakes tend to look blue, since blue light is scattered more than other colors in pure water. Lake water can lose that blue color as material is added to it. This is because floating particles and dissolved organic material reflect different color hues. This is why waterbodies that are surrounded by large wetland systems often take on a brownish color. Sometimes the floating particles can be algae, which contains chlorophyll that absorbs blue and red light, but reflects green – giving blooming lakes their emerald hue.

Most lakes have a color range that they stay within throughout the year. This is largely dependent on the amount of organics, sediments, and algae in the water column. At LEA, we have been measuring this parameter for years using a HACH color wheel. This method is useful as it provides a quick and comparable metric that can help evaluate the accuracy of clarity data that we also collect. We have also begun regular analysis of color using our new lab spectrophotometer. This device gives a more detailed assessment of light absorbance and reflection and the results paint a vivid picture of the lake or pond's physical and chemical characteristics. Please keep an eye out for the results of this new type of appraisal in our fall issue and year-end lake reports.

*What is the largest lake in LEA's direct service area?* Page 15

# *The Importance of LEA Membership*

We often say that membership is the lifeblood of LEA because it's true. Most of our programs rely on membership dollars, not state or federal funding. You help us accomplish all of our ambitious goals with your donation. Whether it's teaching in our local schools, testing water quality in all four seasons, working to eradicate milfoil infestations in the area or identifying and preventing erosion and stormwater problems within the watershed, LEA is there.

Here are some of the special perks we offer to LEA members:

- Free admission and early sign-up for most LEA events, workshops, and environmental education classes
- LEA newsletter mailed to you twice a year
- Technical assistance for landowners: Have you ever wondered how to keep your driveway from eroding into the lake? Which plants would grow best on your property? All members are entitled to a free consultation!
- Knowing that your membership dollars are having a direct, positive impact on your community, your lake, and your property values.

Please fill out the membership form at the bottom of this page to become an LEA member. You can also set up recurring monthly donations that fit any budget by getting in touch with us or emailing jenny@mainelakes.org. This is a convenient way to make sure your membership never lapses. Or feel free to renew your membership in person at our Main Street office where you can check out our invasive plant tanks and extensive field guide library.

**Are you wondering what your membership dollars can help LEA accomplish? Help us continue to protect Maine's lakes for a 49th year!**

| Membership Level | Donation Level | |
|---|---|---|
| Benefactor | $1,000 | Pays for 10 hours of milfoil removal by our 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 |

# *Connect with Us!*

There are many ways for you to interact with LEA and keep up on what we are doing as an organization year-round. Watch our summer water testing interns as they work or our educators as they teach the wonders of our watershed by liking us on Facebook and following us on Instagram (@lakesenvironmental). Don't forget to check our website, mainelakes.org, for the latest water testing results on your favorite lake. You will also find our current events calendar, information on invasive plants, news of the Maine Lake Science Center and more! Please don't hesitate to call us at our Main Street office if you have any questions at 207-647-8580.

Another way to support LEA at no cost to you is by shopping with Amazonsmile and selecting LEA as the beneficiary. They will donate a percentage of each sale to LEA. This is an easy way to support us while buying the things you need anyway.

Looking for a unique way to give to LEA? Stop into your local TD Bank and ask about the Infinity Program. Here's how it works: If you have an existing checking account TD Bank will donate $10 to LEA. For opening a new checking account TD Bank will donate $50 to LEA. For a new or existing savings account TD Bank will donate a percentage of the average balance to LEA. This all happens at no cost to you! Simply give them the LEA code: AF307.

# 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.mainelakes.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 _____