New Way to Help Your Lake

The Lake Advisory Committee is an option open for lake residents. It may not work for every situation, but LEA is hoping this approach will focus resources on the most important challenge the region faces. *Page 2*

LEA
230 Main Street
Bridgton, Maine 04009
(Change Service Requested)

Summer 2016 ***Free***

LEA Lake News

LEA's Milfoil Control Team Expands Its Fight!

By Christian Oren

This year offers greater challenges for LEA's Milfoil Control Team. The service area has expanded to include much of Sebago Lake and Sebago Cove, a mild winter is causing increased milfoil growth, and federal regulations are placing burdens on the crew. Despite this, new equipment, boats, and a bigger staff provide much needed resources.

The milfoil program has expanded from the Songo River and Brandy Pond to include much of Sebago Lake. LEA will now be working in Windham, Naples, Frye Island, and the especially milfoil-infested Sebago Cove. Adopting these new areas has more than doubled our service area in an already large waterway. This year, most of our time will be spent in Sebago Cove. We plan to work from the North end of the cove to South, where it meets Sebago Lake. There is a natural current moving southward that will prevent most fragments from flowing north and re-infesting areas we have cleaned. The crew is hard at work laying benthic barriers and harvesting, but management will take time. *Continued on page 9*

LEA Milfoil Control Team and Their Fleet

The Maine Lake Science Center
Hope for Maine's Lakes

By Alyson Smith and Peter Lowell

Maine has over 5,000 lakes, which define much of the State's landscape and provide the economic backbone for hundreds of towns. Though Maine's lakes are iconic, known for their scenic beauty and clean water, scientists are increasingly concerned that they may be reaching tipping points whereby watershed development and severe weather patterns trigger dramatic loss of water clarity, accelerated algae growth and oxygen depletion. Some are warning that within twenty years, more Maine lakes could suffer dramatic and sudden deterioration, a process that has already affected some of these fragile resources.

LEA has been studying and protecting Maine lakes since 1970. Six years ago, our review of the status of lake science in the State convinced us of the need for an initiative to harness new testing techniques, equipment and research to avert significant ecological and economic degradation. The Maine Lake Science Center (MLSC) campaign was begun in 2015 to construct, staff, and operate the first facility in Maine dedicated to supporting lake research and resilience. The campaign seeks to raise $1,300K to fund the Center through 2020, at which point we expect it will be self-supporting through grants, individual donations, contracts and fees.

Dr. Bridie McGreavy, MLSC's Consulting Executive Director, has a proven track record in collaborative capacity building, and her engaged research focuses on understanding and improving science communication within sustainability science teams and coastal and freshwater management contexts. Her Center priorities include building and expanding current academic collaborations, recruiting and supporting visiting researchers, and developing grant proposals with partner organizations. Bridie chairs our Lake Science Advisory Board. In June, we began reviewing applications *Continued on page 7*

Remembering Adam

By Colin Holme

LEA and the Lake Region community were dealt a terrible blow in April when long-time LEA employee and friend Adam Perron lost his life in a car accident. Adam began working for LEA as a teenager and because of his versatility and long-term commitment, he took part in virtually all of LEA's programs. Adam's comradery and team-oriented personality allowed him to lead his crew to great success in cleaning up the Songo River and Brandy Pond. But his true calling was education, and his attentive listening skills and youthful personality were greatly appreciated by his many students.

Adam's introduction to LEA came as a high school volunteer with his long-time friend and cohort Daniel Bishop. He soon took paid shifts as a courtesy boat inspector and later became a water testing intern, which he did for many years. *Continued on page 3*

Adam in Pondicherry Park

Trouble on the Shoreline

Moose Pond, Songo River and Grist Mill Brook Properties Under Scrutiny

Dramatic disturbances continue to plague area shorelines and LEA is working with state and local enforcement personnel to investigate several possible violations. If confirmed, LEA will press for restoration of vegetation and natural ground cover. Fines may be appropriate too, but the emphasis for more than a decade has been on restoration because it is the only way to achieve water quality protection. In "the old days", when fines were the primary punishment, they became seen as the cost of doing business. Fines have a limited deterrent effect and do nothing to reverse the damage. Fortunately, LEA has historic shoreline photos of all lakes in the region. These have proven invaluable in documenting changes and providing guidance for defining restoration needs. *Continue on page 2*

Inside


Stream Decimated by Construction

Trouble on the Shoreline

If you suspect a violation is occurring, here are some steps to take. Be sure not to proceed with any actions that might trigger a confrontation.

• Immediately call the local code enforcement officer. The longer you wait, the more damage can be done and the harder enforcement becomes.

• Provide a detailed description of the activity and exact location.

• Take photos by boat or land without trespassing.

• Take information on who is involved. If you see construction equipment, note the company name or license plate number(s) and vehicle description. In the event of a violation, both the landowner and the contractor are equally responsible.

• In weekend or if the code enforcement officer is not available, contact LEA at lakes@leamaine.org. We check messages frequently every day.

• Be sure to leave contact information. We will be sure your name is not used if you wish.

New Way to Help Your Lake

The LEA board is establishing a new way for lake residents to develop and support water quality protection programs for their home lake. New LEA by-law changes will define a Lake Advisory Committee which can be established by landowners in any lake watershed as an alternative to a full-blown lake association or to enhance existing associations.

The process is straightforward:

• By request of landowners or an existing association, LEA will co-operatively convene a lake meeting to which all landowners and interested parties on the lake are invited.

• Meeting participants develop a consensus on programs and projects they would like to implement: a Courtesy Boat Inspection program, invasive plant surveys, a boat washing station, a watershed survey, advanced water testing, Clean Lake Check-Ups, educational events, etc.

• A budget is developed and fundraising assistance is provided by LEA.

• Funds raised for specific initiatives are maintained in restricted accounts. LEA receives the donations so they are tax-deductible.

• Lake Committees may elect their own spokesperson(s) and may meet as they see fit to advance their plan, fundraising efforts and to work with LEA staff.

The advantages of a committee are significant:

• Since committees are a part of LEA, requirements for formal association are not necessary: Maine and IRS tax-exempt status, officers and directors, by-laws, organizational meetings, insurance, tax filings, etc.

• Maximum resources from volunteers and fundraising can be directed to lake protection programs and projects.

• LEA and the committee have direct contact with the maximum number of residents.

The Lake Advisory Committee is an option open for lake residents and organizations. It may not work for every situation, but LEA is hoping this approach will focus resources on the most important challenge the region faces – lake research and protection. Anyone or any organization interested in the concept can contact LEA Executive Director, Peter Lowell.

LEA has scheduled meetings for Highland Lake residents on August 26th at 7:00 and for Crystal Lake and Bear Pond residents on September 1st at 7:00 PM. Both meetings are to be held at the Maine Lake Science Center with the goal of establishing Lake Advisory Committees for those three lakes.

Long Lake Gets a Remote Sensing Buoy

Another big project LEA is undertaking is a new automated sampling buoy on Long Lake. From the surface, this system will look similar to the buoy on Highland Lake, however the monitoring setup will be slightly different. Here we hope to study algae at different depths in the water column and procure accurate digital clarity data. We also plan to look at organic matter dissolved within the water column. We are still actively seeking donations from lakeshore landowners to outfit oxygen and temperature sensors on this new buoy. So far, most of the cost of the buoy has been covered by a donation from an anonymous family foundation, the Ham Charitable Foundation and a memorial gift from the family of Joe Wikler, a former LEA director. Another $25,000 remains to be raised to achieve the full potential. Donations can be sent to the LEA Long Lake Buoy Fund.

Long Lake to Get Buoy!

We are on schedule for a mid-summer deployment using the new pontoon boat custom built for installing and removing the buoys. Great Northern Docks of Naples (photo) donated it last fall, making the task of moving this expensive, delicate and heavy piece of technology much safer and easier.

The Global Lake Ecological Observatory Network buoy is part of an international network. These marvelous devices allow us to continually monitor conditions in our lakes from top to bottom throughout the open water season. The data retrieved gives researchers great insight into the biological and chemical processes that can signal a tipping point in water quality. LEA experience with the Highland Lake buoy has given us the confidence and expertise to begin introducing the devices to other lakes. Colby College Professor, Whitney King has been a marvelous resource, guiding LEA staff through the intricacies of deploying, operating and presenting data. We are all excited to establish GLEON in Long Lake and to begin delving more deeply into the lake's conditions.

Volunteer! - Help LEA and Your Community

The Courtesy Boat Inspection Program

This program has been in existence for over a decade, primarily with paid staff. However, there are days and times at various boat launches when LEA just can't afford to pay an inspector. This year we are hoping to get volunteers to help cover these times. During your shifts (no more than 4 hours) you would be asked to greet boaters, ask permission to inspect their boat, and do a thorough inspection. Engaging the boater in conversation about the importance of inspections and the consequences of not inspecting are important. Paid and volunteer inspectors must be comfortable approaching boaters and able to crouch down under the trailer as part of a thorough inspection Training is provided by LEA CBI Coordinator, Mary Jewett. If you would like to help, please contact Mary at 647-8580 or email mary@leamaine.org.

DASH Boat Attendants – DASH stands for Diver Assisted Suction Harvester and the crews of both LEA milfoil control boats need your help. We are required by OSHA to have an attendant on the boat for each diver in the water. The attendant's job is to make sure the diver they are assigned to stays safe while underwater. Time requirements for this position are flexible. The crews work Monday through Thursday for 10 hours a day. It would be helpful if volunteers could stay with the crew for as long as possible, but any help is valuable to them. For more information about this opportunity please contact Christian Oren via email at christian@leamaine.org.

Trail Maintenance – LEA maintains the 2.4 mile Stevens Brook Trail in Bridgton and 4.2 miles of trails surrounding the Holt Pond Preserve. All trails need regular maintenance to provide a safe and fun place for hikers. All trails are easy to moderate terrain, so people of all experience levels can enjoy them. Trails need to be well marked and cleared of vegetation so even novice hikers can find their way. Being a trail volunteer has two components. One is to take part in the Adopt-a-Trail Program, in which you would be assigned a section of trail (your choice) and would be responsible for light maintenance and reporting any major trail issues to LEA. The other is to volunteer for just a few hours to clean up a section of trail. With this option you would have no obligation to keep maintaining a trail but would still be helping to keep our public spaces safe and clear of litter and vegetation. If you would like to get involved in either trail opportunity, please contact Mary Jewett. mary@leamaine.org.

Dock to Dock Watch for Us!

Watch for LEA's crew this summer as we go dock-to-dock in an effort to share what we have been up to this year with our members and the public. If you have questions about your property, water quality, erosion or milfoil and if you are on McWain Pond, Trickey Pond or Sebago Cove, we will come to you this summer. Look for a postcard in the mail with details, dates and times. Being an LEA member means you support lake testing, research and environmental education among many other LEA programs! If you have questions, contact Jenny O'Connor at jenny@leamaine.org.


Cardinal Flowers at Pondicherry Park

A shoreline buffer is the lake's last line of defense.

Remembering Adam

Continued from page 1

Adam and Daniel spent many days on the water collecting samples in every type of weather and always pushed each other to get the job done more efficiently. After several years of water testing he helped train others and served as a role model for new interns. Adam approached his tasks with determination, humor, and a maturity well beyond his years. He was always surrounded by a troop of friends. Some followed him to LEA and many more were made while working with us. Because of those friendships, he was able to take difficult and often grueling tasks and turn them into something much bigger and better.

After graduating from the University of Maine in Orono, he joined LEA's staff as an educator and Milfoil Control Team leader. After a stint away to complete his Masters in Education degree, he came back to LEA as the education director and milfoil field coordinator. In the summer of 2015, he decided to leave LEA to become a full-time science teacher at Lake Region Middle School, which he had attended himself years ago.

Aside from his work at LEA and his position at within the school district, Adam was also an avid musician who had played many local charity events and had recently been elected to the Harrison Planning Board. His commitment to the community and outgoing personality were distinguishing traits that set him apart from many others in his youthful age group.

Adam is survived by his wife Elizabeth, two-year old -daughter Abigail, parents Jeff and Diane, and sister Heather, as well as many other relatives and countless friends. He leaves behind an empty space and will be sorely missed by all here at LEA and many more throughout the community.

Because of his remarkable legacy at LEA, the board of directors passed the following resolution at its June board meeting:

WHEREAS - Adam served as a volunteer, water testing intern, teacher/naturalist, milfoil field coordinator and Director of Education for LEA, and, WHEREAS - Adam played a leading role in the removal of invasive milfoil from the Songo River, and, WHEREAS - Adam was a master trail builder at the Holt Pond Preserve, Pondicherry Park and Stevens Brook, and, WHEREAS - Adam was dedicated to providing locally-relevant and experience-based education to area students:

Be It Resolved that Adam be memorialized through the naming of the trail that runs from the "Emerald Field" along the Muddy River to the Holt Pond Outlook at the Holt Pond Preserve, as the "Adam Perron Memorial Trail".

Adam in his Element

The Campaign for the Maine Lake Science Center

LEA has just launched the public phase of the Maine Lake Science Center Campaign. The goal is to raise $1,300,000 to equip, staff and operate the new Center through the year 2020. After that, we hope the Center will be primarily funded by grants, contracts and program fees.

Over the past two years, almost $850,000 has been raised from foundations and major donors. Center property was purchased in 2014 and we spent the following year remodeling the structure, constructing roadways, parking areas and a new septic system. The Center was opened in June of 2015 and is a model of energy efficiency.

Open houses will be held throughout the summer and early fall. The first year of operation has been extraordinarily productive with researcher retreats and many educational and public functions. We have Center and Project Manager, Alyson Smith, and Consulting Executive Director, Bridie McGreavy, on staff and are seeking a Research Manager. You will be hearing more about this exciting venture as the summer goes on.

Foundations support has already come from an anonymous family foundation, the Betterment Fund, the Davis Conservation Foundation, the Margaret Burnham Charitable Trust, Fields Pond Foundation, the Kendall and Anna Ham Foundation, the Stephen and Tabitha King Foundation, the Morton Kelly Charitable Trust and the Nine Wickets Foundation.

The Maine Lake Science Center

Lakes with sensors:

Waterbody	Description
Back Pond	string of sensors
Hancock Pond	string of sensors
Island Pond	string of sensors
Keoka Lake	string of sensors
Keyes Pond	string of sensors
Long Lake	3 strings of sensors
McWain Pond	string of sensors
Moose Pond	3 strings of sensors
Peabody Pond	individual
Sand Pond	string of sensors
Stearns Pond	individual
Trickey Pond	string of sensors
Woods Pond	string of sensors

Show your LEA Colors

Show your friends and neighbors you are an LEA supporter! When you give at the Lake Sponsor level ($100) in 2016, you will receive a snazzy sign that can be attached to your dock or home. Help us encourage LEA membership by displaying your sign! Investing in LEA as a member is investing in the water quality of your lake. Your dues provide water testing, milfoil control and environmental education as we work to keep Maine's lakes pristine for future generations. In 2015, we added advanced testing, algae monitoring, and won the milfoil battle in the Songo River. Thank you to all members for funding all we have accomplished! If your annual membership has lapsed, please consider renewing.

Also, be sure to visit our headquarters on Main Street to check out our new LEA merchandise. We have t-shirts, hooded sweatshirts, coffee mugs, and a new line of hats for summer 2016. If you are a summer resident or are just visiting, take home a reminder of "the way life should be" as you support your favorite lake. LEA items also make a great gift for the lake lover. Visa and Master Card are accepted.

L.E.A.
LAKES ENVIRONMENTAL ASSN.

New LEA Member Dock Sign

Visit the Holt Pond Preserve for a magical experience.

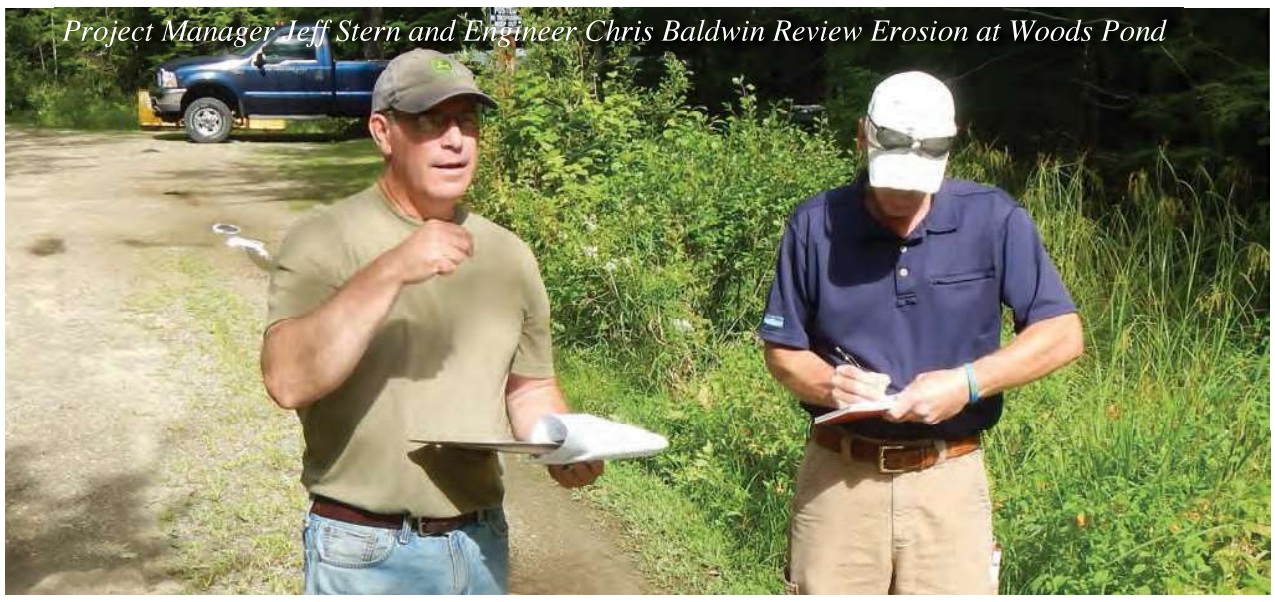
Last Chance to Apply for Funding to Fix Erosion on Woods Pond

By Colin Holme

If you are living on or around Woods Pond, this summer is your last chance to receive funding to correct erosion or runoff problems on your property. While funds for larger projects in the watershed have been used up, residential matching grants of up to $400 are still available.

Numerous landowners on the pond have already taken advantage of this funding opportunity to install best management practices like waterbars, crushed stone infiltration, driveway turnouts, and plantings. All of these help reduce the amount of dirty water getting into Woods Pond. Once stormwater builds up on impervious surfaces like roads, driveways and buildings, it begins washing away soil particles containing the nutrient phosphorus. During rain storms it is easy to see this pathway leading directly to the lake, but during smaller rain events it is much less noticeable. Phosphorus is the nutrient that controls algae growth, so once it gets into the lake, either attached to soil particles or dissolved in stormwater, more algae grow and the water becomes murky. Studies at the University of Maine have shown that as water clarity decreases, so do property values. This makes perfect sense because people like to swim, play, and live in and on clean, clear water.

In addition to the residential matching grants discussed above, seventeen large-scale erosion control projects will be completed by summer's end, reducing the amount of sediment going into the pond by 40 tons per year. These projects include drainage work on surrounding roads, large buffer plantings and beach stabilization work. Last summer there was a grant-sponsored meeting about understanding Shoreland Zoning and a workshop on buffer plantings at Camp Wildwood. One more workshop featuring a tour of residential conservation techniques is planned for this summer.



Project Manager Jeff Stern and Engineer Chris Baldwin Review Erosion at Woods Pond

We anticipate the money remaining for this project will be used up before the summer ends, so if you are interested in doing something to improve your property and the water quality of Woods Pond, the time to act is now. Prior to receiving funds, landowners need to contact LEA to set up a free property consultation on controlling runoff and preventing erosion. There is no regulatory aspect and no obligation whatsoever to implement the recommendations.

If you are interested in a grant or would like to receive a free property consultation, call LEA at 647-8580 or Jeff Stern of Fiddlehead Environmental Consulting at 595-0317, who has been coordinating the grant for LEA. The Woods Pond Project is partially funded by the U.S. Environmental Protection Agency, under Section 319 of the Clean Water Act and this funding is administered by the Maine Department of Environmental Protection.

Family Gives to Better Understand Highland Lake

By Colin Holme

Weather Station added to the Buoy. This spring, LEA deployed its fully automatic water testing buoy on Highland Lake for the third year. Attached to the buoy are sensors measuring temperature and oxygen from the top to the bottom, chlorophyll (a measure of algae concentration), and water clarity. Boaters with a keen eye may also notice something different about the buoy this year. Perched on one corner is a large white apparatus with a lantern-like top and a series of shades below.

This peculiar looking piece of equipment is a weather station, which was purchased through a generous donation from a Highland Lake family who hopes others will join with them to support greater lake protection. The station measures everything a land-based weather station measures: precipitation, wind speed and direction, relative humidity, and air pressure. Weather data is compared to the water quality data collected by the buoy so the influence of weather on water conditions can be analyzed.

During the first two years of deployment, LEA used a land-based weather station on Highland Ridge. This unit is still fully functional and you can see it online at Weather Underground and as a local weather station on Intellicast. However, there are several advantages to equipment being right on top of the buoy.

When setting up a land-based weather station, an essential requirement is open space. Any nearby trees or buildings can alter wind and precipitation readings which affects the overall accuracy. Open space in the shoreland zone is hard to find, which is good for Highland Lake but bad for weather measurements. Another consideration is power and connectivity. To maintain constant communication, our land-based station requires an internet connection and a power source. Getting a large cleared field with power and internet near Highland Lake was a tall order, but eventually we found a good location at Tarry-A-While Resort, thanks to owner and LEA board member Dan Richards. Still, with a line of trees to the east of the station, wind conditions are not always accurate. This is a concern because wind is the primary driver for in-lake currents, upwelling and downwelling (water moving up or down in the lake).

Andy Reeve and Amanda Pratt Removing Crooked River Water Level Logger

Another factor affecting station accuracy is the distance between the buoy and the weather station. While the land-based station is less than a mile from the buoy, weather measurements still differ over that short distance. In particular, wind speeds over the water are generally higher than those measured on land. Precipitation can also be localized and air temperature on the lake is often cooler in the spring and warmer in the fall. Also, daily temperature fluctuations are buffered by the heat-holding capacity of a large body of water like a lake. The new weather station should eliminate these differences and thus reduce error.

Finally, a built-in weather station on the buoy insures that weather conditions are automatically coupled to the incoming water quality data which is sent through a cellular signal to our office and projected in graphic form on line. This means all readings are taken at the exact same time and in the same format.

Over the next year, we will continue to run both weather stations, compare data collected at each site and relate this information to in-lake conditions. To see current water quality and weather conditions live on Highland Lake, please check out our Highland Lake live data page at www.mainelakes.org.

Flow Monitoring Begins At Highland. After meeting with researchers and academics working on lakes throughout New England, we realized that one large gap in our monitoring program was the absence of data on flow inputs from surrounding streams, brooks and rivers. This information is needed to understand how much water is coming into the lake from various tributaries and can be used to help better define important areas to focus mitigation efforts. Accurate flow data on surrounding streams will also give a more precise idea of lake flushing rates (the overall time that water spends in a lake).

Unfortunately, gathering flow data can be expensive because equipment needs to be set up on the numerous streams and brooks that have a significant contribution to the lake year. Until now, we have not been able to conduct this type of monitoring. However, last fall, the family on Highland Lake that made our weather station possible also made a donation toward buying flow monitoring equipment for the lake. So this summer we will be setting up sensors on inlets to Highland Lake to monitor this particular lake system.

Prior to receiving the donation, we had been in contact with Dr. Sean Smith and Dr. Andy Reeve and PhD candidate Brett Gerard, at the University of Maine, about setting up this type of monitoring regime. Smith and Reeve are currently working on studies in the Sebago Lake watershed and have provided guidance on equipment and site selection. In preparation for this project, LEA began "learning the ropes" by periodically downloading data and helping maintain sensors placed in the major tributaries around Sebago by teams led by Reeve and Smith.

This is a new and exciting project for LEA and although the equipment the family purchased will stay on Highland Lake, we hope to do similar work on other lakes as we refine the process and incorporate the data into our existing sampling program.

NOTE: Highland Lake has provided LEA with a testing ground for exciting new monitoring and research projects and technologies. It is our aim to use the knowledge learned to expand this work to as many lakes as we can. Most of the initiatives on Highland have come about because of generous donations. If you are interested in supporting this cutting-edge effort on your lake, please email Peter Lowell at lakes@leamaine.org.

LEA membership is an insurance policy for your property value.

What's New in the Education World?

By Alanna Doughty

Here at LEA we have a longstanding tradition of solid programs: the wildflower and orchid walks at Holt Pond; a very well-attended mushroom talk and walk; winter constellations; and more. This year we are expanding the focus of our public programs in three directions: Art and Nature, Outdoor Family Time, and Community Discussion Potlucks. In a world that seems to be speeding by faster and faster, it is vitally important for us to carve out time to connect with our natural world, our families, and our community. Through sketching, photography and painting we can open our eyes and deepen our connection to the things around us.

The Art in Nature series draws on the experience of three local and talented artists: our own Mary Jewett, watercolorist Lynn Driscoll, and Wendy Newcomb. Educator and naturalist Mary Jewett has been taking photographs of the natural world for years and will share her knowledge during a class held at Holt Pond in August. No matter what camera you use, Mary will get you on the right track toward capturing what you see. Take only great pictures, leave really small footprints!

Bridgton-based Lynn Driscoll of Stone River Gallery is a talented artist who works in a variety of mediums, but has a passion for watercolor. She has a beautiful print on display at the Science Center, and will offer some incredible classes on watercolor and botanical illustration this summer, with all materials provided. Focusing on natural flora and fauna, Lynn will help you develop your own sketches into watercolor works of art. Did we mention materials are provided? It doesn't get much better!

Local artist Wendy Newcomb is joining us for a not-to-be-missed nature journal series. Wendy says: "My paintings represent a visual journal of my life in Maine, reflecting my love of nature and my participation in it. Spending time outdoors walking, hiking, kayaking and biking, I have the opportunity to stop and look closely at my surroundings. It is this connection to nature that I want to share with others. Often, my intent is to give the viewer a sense of "place" – of being there, whether climbing a rock, floating down a river, or looking closely at various plant and animal life." Wendy has an incredible amount of experience and we are lucky to have her partner with us this summer. Join her walking in Pondicherry Park, Holt Pond and Baldpate Preserve and build your visual skills as you fill the pages of your nature journal. We have developed a materials list for the class, so you may assemble your tools of the trade, and continue on where the classes leave off.

The Outdoor Family series is just that - a guided opportunity to enjoy nature with your family. We will explore Pondicherry Park, Holt Pond, Baldpate and Stevens Brook - trails outside our backdoors and places you can return to again and again. Developing a love of nature in our children is important, and here is a chance to be outside together, exploring and discovering and enjoying time together. The guided walks are held throughout the summer and into the fall, so find the times that work for your family, and we'll see you on the trail!

The third new program being offered brings us to the Maine Lake Science Center. Through the summer and into the fall we have several opportunities to meet here to learn about and discuss pertinent and local environmental issues, and to connect with other members of our community. These potluck discussions are free and open to the public. We will start off the evening with a short presentation on the topic of the evening, sit down for dinner and informal discussions, and end with an after-dinner stroll through Pondicherry Park. Please bring a dish to share and join us!

We are always working to bring you informative, relevant and engaging workshops, classes and guided walks that help to foster the connection between you and the natural world around you. Our public education series is typically free for members and a wonderful membership benefit- our way of thanking you for your support! We welcome your feedback- what are you curious about? Whatever your interests, we hope within our offerings you find something that leads you to discover something new and amazing about our wonderful world.

Native Plants Add Beauty and Diversity

By Alanna Doughty

The Maine Lake Science Center is experiencing another transformation this year as the landscape begins to be developed with native plants, and a perennial point of view. The Center is designed as a research facility, and opportunities for learning abound inside and out. Whether you attend an event focused on Big Night, or join us for a walk in Pondicherry Park, it offers us all a wonderful place to gather and discover. With the help of local landscaper Lucia Terry and her crew at Perennial Point of View, the areas outside the Center are becoming living examples of native plant biodiversity that we can all emulate in our own yards.

So, what's the big deal about native plants? Native means they are naturally found in our area, and thus are evolutionarily suited to the local soil, seasons, and pests. They also provide food and habitat for local fauna. Because these plants are naturally suited to the area, they need much less care than a typical landscaped garden (no fertilizer or pesticides). Once established, they help increase biodiversity as local fauna frequent the site, attracted by flowers, food and shelter. This is big time stuff - right up there with making sure we are recycling, being conscientious consumers, and bringing our own bags to the grocery store. Imagine that with the simple planting of a few native seeds or seedlings, we can positively change our local ecosystem's health and biodiversity! It's like we are natural super-heroes. I feel better already.

Unfortunately, sometimes it can be tricky finding a good mix of native plants for sale. "Many nurseries do not have the time or knowledge to collect native seeds" (wildseedproject.net). However, this is changing, and we can help the transformation along by asking our local shops to stock them, and then supporting these local shops.

The first step is to determine what your space is like. Is it shady or sunny, wet or dry? Next, research where to get seeds or seedlings matching your conditions. LEA can help with both of these steps and has materials available to guide you. You can also Google 'Maine native plants' and start to sift through the wealth of information at your fingertips. If you miss your planting window this year, there is plenty of time to plan for next year. Get yourself a Fedco catalog to keep you company through the long winter months… trees, shrubs, flowers, seeds, oh my.

In the meantime, come visit LEA and ask about the native plant landscapes we have developed on Main Street and at the Center. Meet the plants in the leaf, see them flower, sit and visit with them a while. We encourage you to support the Wild Seed Project, seek out your local shops and landscapers, and develop a relationship with them.

LEA Contacts

Peter Lowell
Executive Director lakes@leamaine.org

Colin Holme
Assistant Director colin@leamaine.org

Jenny O'Connor
Membership Coordinator jenny@leamaine.org

Alanna Doughty
Education Director alanna@leamaine.org

Mary Jewett
Teacher-Naturalist mary@leamaine.org

Amanda Pratt
Researcher amanda@leamaine.org

Christian Oren
Invasive Plant Program Coordinator
christian@leamaine.org

MLSC Staff

Dr. Bridie McGreavy
Consulting Executive Director

Alyson Smith
Center and Program Manager

Board of Directors

Orrin Shane – *President*
Roy Lambert – *Vice President*
Leigh Macmillen Hayes – *Secretary*
Julie McQueen – *Treasurer*

Steve Collins • Brian Cushing
Sean Dundon • David Ehrman
Matt Frank • Henry Hudson III
Dan Richards • Drew Sanborn
Tom Stockwell • Karla Swanson-Murphy
John Willson • Anne Wold

Honorary Directors

Sonny Berman, Ray Caplan, Tom Rosen
Hubert Caplan, Stan Cohen

Planting workshop at MLSC

Native Plants Add Beauty and DIversity

Learn to identify Milfoil at LEA's Lake Center Aquarium Garden.

Tar Sands – The Sleeping Ogre


Oil Pipeline and Water Main at Sebago Lake

Several years ago, tar sands was a hot topic and Lake Region towns were passing moratoria to oppose the pipeline repurposing that might convey these noxious materials through our watersheds. LEA staff traveled to Mayflower, Arkansas to file an investigative report on the tragic oil spill from an Exxon pipeline with old and flawed welding techniques that some have compared to the Portland pipe. The oil glut, lower energy prices and even forest fires in the Canadian northwest have stalled the threat. But a quiet legal battle between the Portland Pipeline Company and the City of South Portland may provide the next chapter in this story.

Soon after the City passed an ordinance that would prevent a reversal in flow to deliver tar sands oil to the Maine coast, the pipeline company filed a suit to overturn the local law. The outcome of that law suit threatens to re-open the specter of tar sands if the company prevails. The Arkansas pipeline remains closed, but we may face similar concerns in the future. Keep an eye on this situation.

Lake Region Educators Expand Classroom Walls

By Alyson Smith

"I was so happy to see all smiling faces as teachers participated in the various activities," said an assistant principal who had concerns about teachers learning outside on a cold March day. Over fifty SAD 61 and two LEA educators participated in a Project Learning Tree (PLT) workshop at the Maine Lake Science Center. The PLT facilitator team of foresters and an area teacher led indoor and outdoor lessons with teachers and administrators from kindergarten through grade 5. Curriculum and grade-level connections were explored. "This was a wonderful workshop," said fifth grade teacher Deanna Woodward. "I learned so much. Thank you! The PLT guide that we received is full of excellent lessons."


Maine Rotarians Work the Forestry Trail

The Maine Lake Science Center (MLSC) is the first facility in Maine dedicated to supporting lake research and resilience. MLSC is establishing a formal network of researchers, economists, key state agency staff, lake advocates and decision makers to share resources and innovations to promote expanded lake research, policy upgrades, community resiliency, and stewardship. This includes a strong educational component for students of all ages.

Since healthy forests are vital for clean lakes, a partnership between LEA and PLT is a natural fit. LEA and school district 61 have been working collaboratively for many years, and this joint training has ramped up that effort several notches. Plans are underway to develop interdisciplinary units at all elementary grade levels intended to engage students in active learning about their local watersheds. Lessons will include exploration of lakes, rivers, wetlands, and forested ecosystems; testing and monitoring of these systems; exploring engineering and design to solve local problems; and communicating findings.

The district is working to align its curriculum with Next Generation Science Standards by expanding classroom walls and providing more inquiry-based instruction. "Thanks for such a great workshop. We all enjoyed ourselves, and look forward to implementing the many ideas from PLT," said Vicky Edwards, another grade 5 teacher. "The opportunity for biodiversity study on-site at MLSC's 18-acre forested lot provides an ideal outdoor classroom for data investigations."


Science Teachers at the Maine Lake Science Center

New community service programs for students that involve interpretive trail development and stream monitoring are planned for the next school year. In his book Last *Child in the Woods: Saving our Children from Nature-Deficit Disorder,* Richard Louv documents the healing and learning value of connecting kids with the natural world and its importance to their mental and physical development. The course of study built around a trail program will combine academic and practical engagement, where students learn to appreciate volunteerism, get real-life experience maintaining trails and monitoring streams, contribute art and interpretive aspects, and nurture the plant and animal life, all while becoming junior land stewards. Trails provide environmental learning opportunities where kids can experience the flora and fauna, and gain an understanding of the need to plan for erosion protection, recreation, and community development. Through the use of student-generated interpretive signage, trails present themes that inform visitors about local history, culture and the environment, and hopefully, a sense of place. Maine Rotarians gathered at the MLSC in June to create a forest interpretive trail that will be utilized by students throughout the Lake Region.

Many thanks to Maine PLT Coordinator Pat Maloney for fabulous resources and pooling efforts that encourage environmental stewardship for all involved. One teacher stated at the end of the workshop, "I am looking forward to making connections with standards and finding ways to incorporate more outdoor learning in collaboration with LEA. I already have a couple of lessons in mind!"


Teachers Participate in Every Tree for Itself Activity

An algae bloom can be caused by 15 parts per billion of phosphorus.

The Maine Lake Science Center - Hope for Maine's Lakes

Continued from page 1

Contractor Certification Training at the Center

for a Research Director to recruit researchers to work in the Lakes Region and to conduct specific research projects. That position should be filled this year.

The Maine Lake Science Center is a statewide and local resource facilitating a broad range of gatherings, all of which have a direct or indirect theme of lakes and their importance to Maine. Here are some of the activities held at the Center in its first year:

• Fifty lake advocates attended a dinner lecture in August, featuring Paul Mayewski, director of the Climate Change Institute at the University of Maine, Orono.

• In October, the Maine Lake Leaders held their semi-annual meeting. This introduced a dozen of Maine's largest lake associations and researchers from Colby College and the University of Maine at Farmington to the facility.

• In January, we organized a retreat for lake researchers that attracted fourteen scientists from four Maine colleges and universities and the Maine DEP. The event resulted in expanded collaborations and prioritization of research topics. LEA President Orrin Shane described January's event as "a fantastically successful step forward for the Center."

• Children attended events during February and April vacations, exploring natural signs of each season.

• Fifty science teachers from Lake Region schools attended a Project Learning Tree workshop and field work in March. The session was tied to the Center's forest learning trail, blazed in June by Maine Rotarians.

• In March, a certification workshop for 40 earth-moving contractors was held in conjunction with the DEP.

• Senator King visited as part of a regional sports fishing and climate change forum, attracting 70 people.

• Also in March, we hosted the Bridgton Lions Club, the Harrison Lions Club, and a Chamber of Commerce after-hours reception.

• In April, Down East magazine presented their 2016 Environmental Award at a luncheon which featured those working to eradicate invasive aquatic plants. A diver-assisted suction harvesting workshop was also held.

• A second researcher retreat was held in June with 15 people representing four Maine colleges and universities and the Maine DEP, and coastal, river and lake organizations from throughout Maine attended a retreat to bridge the gap between those working to protect Maine's waters and to identify overlaps and opportunities for sharing information. As a result of these retreats, scientists and policy makers are honing in on priority research and guidelines for evaluating tipping points.

• More than a dozen open houses have been held for business owners, community leaders, lakeshore landowners and the general public.

Upcoming events can be found on LEA's web site and on the Natural Resources of the Lake Region Schedule included in this newsletter. There will be a number of family outings and informational workshops offered to the public.

The Center is establishing a formal network of researchers, economists, key state agency staff, lake advocates and decision makers to share resources and innovations in order to promote expanded lake research, land use policy upgrades, community resiliency, stewardship, recreation, education and volunteerism. The initiatives developed and fostered by the Center are robustly collaborative. LEA has spent decades building relationships with lake associations, state agencies, conservation groups, the business community and local governments. These diverse groups all realize what the Brookings Action Plan for Maine's Sustainable Prosperity concluded ten years ago – Maine must invest in its "outstanding quality of place." Our relationships and networks position the Maine Lake Science Center to maintain and expand a leadership role in protecting Maine's natural resources and the state and local economies they support.

Stevens Brook Trail Progress and One Crazy Day!

For almost four decades, LEA has maintained the Stevens Brook Trail which runs from Highland Lake to Long Lake following the river's meandering course through downtown Bridgton and into the woodlands that shelter its cool, trout waters. It was created through the generosity of landowners and now features several public lands beginning at the Highland Lake public beach, passing by Pondicherry Park's entrance and the Bridgton Community Center and ending at the Long Lake boat launch site.

The trail has been in disrepair until this year when, with funding from the local Gilroy Foundation, LEA is embarking on a major re-build. We are lucky enough to have the help of Ryan Curtis, a recent graduate of the University of New Hampshire, and the person who volunteered all of last summer to revamp every trail in the Holt Pond Preserve. Ryan has a contagious passion for public trails, drawing in family and friends to help him assure that the walkways are a fun and safe adventure.

Two members of the Milfoil Control Team, Lucien Sulloway and Cody Moen, joined Ryan one day in June to tackle a particularly damaged section of boardwalk. When high water levels made the repair job nearly impossible, the guys dismantled a couple of abandoned beaver dams, bringing the river back to normal levels. Then when a snapping turtle took offense at their activities, Lucien grabbed him by the tail and relocated him. This is the kind of can-do attitude that has characterized the Milfoil Team and Ryan's trail work. We are lucky to have such amazing staff members!

You can pick the trail up at numerous locations along its two-mile course. Maps are available at Pondicherry Park's Bob Dunning Bridge kiosk, at the Greater Bridgton Lake Region Chamber of Commerce and at the LEA headquarters on Main Street in Bridgton. You'll thank Ryan and the generous landowners every step of the way!

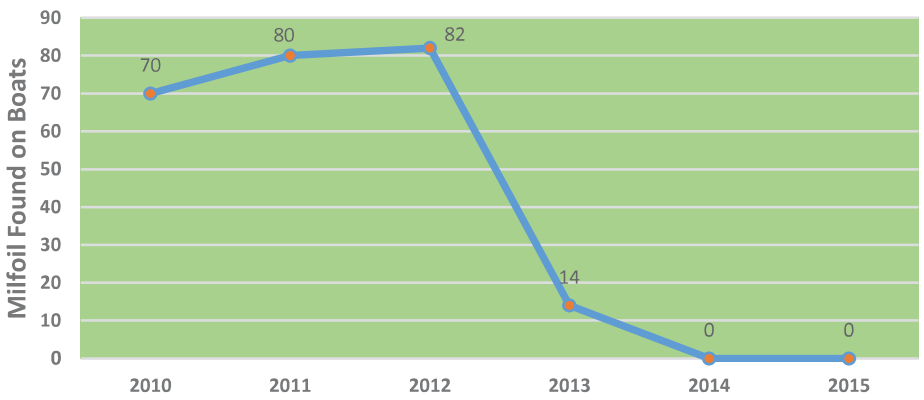
Ryan Curtis, Lucien Sulloway and Cody Moen on the Trailt

Hike Pondicherry Park and the Stevens Brook Trail.

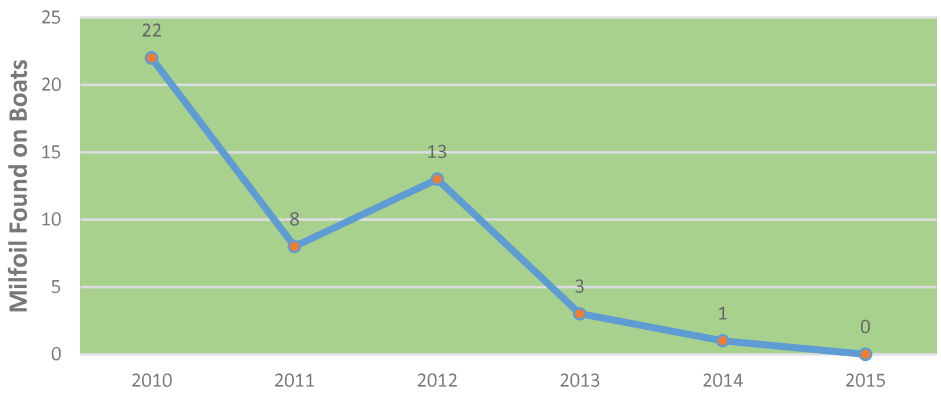
Courtesy Boat Inspections – Stay Vigilant

By Mary Jewett

Milfoil Intercepts from Sebago Lake State Park



Milfoil Intercepts from the Songo Lock



LEA's 2015 Courtesy Boat Inspection (CBI) program saw a slight decrease in inspections from 2014. In 2015 we conducted 7,483 inspections at 14 launches on 12 different lakes, a decrease of 1,500 inspections from the previous year.

The reasons for the decline in inspections vary widely from poor weather to gas prices. The major reason for the drop was a decrease in inspector coverage and activity at the Songo Lock, and this happened for the best reason: lack of invasive plants. Over the past few years, we have seen a drastic decrease in the number of invasive plant fragments found in the Songo Lock and the State Park. From 2012 to 2013 we saw a sharp decline in the number of plant fragments found at both locations (see chart). The variability in the numbers is affected by different things, but the good news is this: despite the fact that we have increased the amount of coverage at both sites since the beginning of the program, we are seeing fewer plants. This is very encouraging as we continue to diligently monitor boat activity and do thorough inspections of each boat.

But plants are still a concern in the Songo River, Sebago Cove and Sebago Lake. On Memorial Day weekend one of our inspectors pulled a handful of milfoil off a boat coming from Sebago Cove. This is a new inspection launch site for us and an important place to cover. Sebago Cove connects to Sebago Lake and is heavily infested with milfoil. Their close proximity to other, infested waterbodies such as Hancock, Peabody and Trickey Ponds make this a critical place that needs to be covered. And, in early June, another inspector removed plants from a boat in the Songo lock. We can't afford to let up our guard, and the boating public must continue to be vigilant.

In addition to its coverage of the Songo River and Brandy Pond, the LEA Milfoil Control Team will be working in Sebago Cove and Sebago Lake this summer. Our team, using suction harvesters and benthic barriers, will take several years to clean the extensive infestation we have added to the "attack list." And all locations will need to be constantly monitored for new growth. With the great combination of Courtesy Boat Inspectors and the Milfoil Control Team, we are confident we can eliminate this threat to the health of our lakes and ponds.

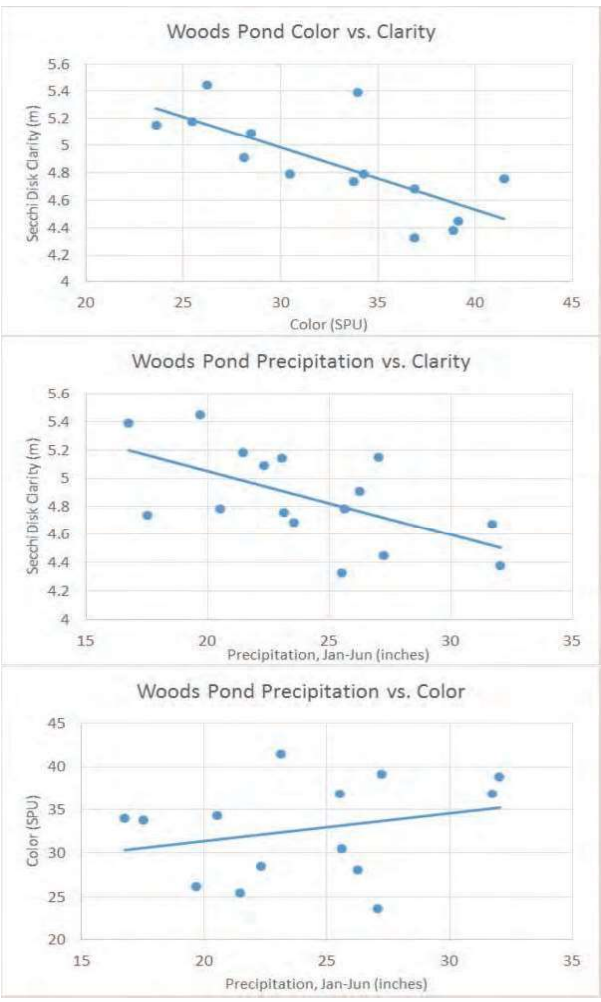
Our CBI crew started inspections before Memorial Day and will continue past Labor Day. The next time you are out on the lake, we encourage you to let us know how our inspectors are doing. We hope their presence will help encourage boaters to inspect their own boats and continue to prevent the spread of invasive plants.

Please see our article on volunteer opportunities to learn how you can become part of our CBI team.

Boat Inspections are Crucial

Higher Precipitation Affects Color and Clarity in Lakes and the Gulf of Maine

By Amanda Pratt



Color, Clarity and Precipitation - Woods Pond

A recent study by researchers at Bigelow Laboratory for Ocean Sciences and the U.S. Geological Survey has found that ocean color in the Gulf of Maine is changing. This change is being brought about by an increase in brownish-yellow water from rivers entering the Gulf. The highly-colored water blocks light that phytoplankton (microscopic, plant-like algae) need to grow, causing their numbers to diminish. Large numbers of these phytoplankton are the key to the Gulf of Maine's high productivity – in fact, they are essential to the survival of Maine's seafood industry because they are a food source for a variety of fish and other sea life.

Increased precipitation in the last decade or so is causing higher volumes of water to enter the gulf, spurring these changes in color. Precipitation also affects color in lakes, although the biggest factor that determines lake color is the surrounding watershed. Lakes with small watersheds that are fed with groundwater such as Trickey Pond have very low color, while lakes with large areas of wetlands surrounding them like Holt Pond and Woods Pond are naturally darker in color. However, year to year variation in color is largely a function of precipitation. Big rainfall events (or snowmelt in the spring) send a pulse of soil, debris, and colored material into lakes which reduces clarity and often increases color and nutrient levels.

A study published this year in the journal Inland Waters found a strong correlation between January-June precipitation, average lake clarity, and color measurements in Maine lakes. The study found that in individual lakes, lake color and chlorophyll concentrations were the main drivers of variation in lake clarity from year to year. It also found precipitation was important when looking at changes in clarity across the entire state.

Reviewing 15 years' worth of LEA water testing data from Highland Lake and Woods Pond shows a clear relationship between increased color and reduced clarity. The relationship between precipitation and color or clarity is less marked in Highland Lake, which may have to do with the lake's size. Woods Pond, which is smaller, does show an increase in color and a decrease in clarity in response to increasing precipitation.

Understanding these relationships is essential if we want to understand the threats to our lakes and how to mitigate them. More intense and more frequent storm events are predicted to affect Maine with the onset of climate change – indeed we are already experiencing them. This likely means more colored material flowing into the Gulf of Maine and our lakes.

Always test your soil before applying fertilizer.

LEA's Milfoil Control Team Expands Its Fight!

Continued from page 1

We predict that it will take at least five years to remove the majority of milfoil and bring the cove to the same level of management as the Songo River.

Work will also continue in the Songo River, Brandy Pond and around Sebago Lake. Milfoil is an incredibly resilient plant, and if we do not continue to manage cleared areas, they will revert to their previously-infested state. Crews will survey all of these areas to remove any regrowth and keep these waters in their natural state.

A mild winter and warm spring have spurred milfoil growth this year. Plants were seen growing to the surface in May, weeks ahead of expected growth, and these plants are now in prime range to be spread by boat props. More plant volume and increased fragmentation will make for a challenging summer.

To properly control the expanded territory, we hired a few new people to join the crew. Cody Moen, Abraham Wiblin and Gunnar Harriman all join returning members Tyler Oren, Tom Chagrasulis, Derek Douglass, Sullivan Tidd, and Lucien Sulloway. This will be Christian Oren's second year leading the crew. The bigger crew of nine people will be split into two or three teams to tackle infestations around the lakes. Each team is capable of pulling over 2000 pounds of milfoil or laying 15-20 tarps a day.

The milfoil crew has received new equipment that will greatly aid our efforts. The milfoil removal group Save Sebago Cove offered their two boats, a suction harvester and barge boat to LEA when we offered our support to Sebago Cove. Our milfoil crew now has a fleet of four boats, including three suction harvesters and a surface support barge boat. These additional boats make us more mobile, and provide back-ups in case a boat malfunctions. The crew also invested in full face masks with underwater communication systems this year. These masks are required for federal safety standards, and will also help in day to day operations, such as adjusting tarp placement, finding milfoil, or keeping the divers safe from passing boats.

LEA's milfoil crew has its work cut out for it in 2016. The sheer size of the new territory coupled with early season milfoil growth will prove to be tough. However, new resources along with confidence from last year's victory on the Songo River give hope that despite greater challenges, the crew will eventually be successful with the new challenge.

Thanks go to an anonymous family foundation, the Town of Naples, The Maine DEP and landowners for financial support, and to Naples Marina for providing boat docking, storage and repair help.

Interesting Ways to Give

The TD Bank Affinity Program: It is a great opportunity to support LEA at no cost to you. Anyone can participate from any branch by simply giving this code for the Affinity Program: AF30.

If you have an existing checking account, TD Bank will donate $10. If you open a new checking account TD Bank will donate $50 to LEA. For new or existing savings accounts the bank will donate a percentage of the annual average balance. The more LEA supporters that bank with them, the more money we earn to support water quality on the lakes we love. It is important to note that the bank shares no personal information with LEA and we are not notified who the participants are. Remember, this is at no cost to the participant!

The TD Charitable Foundation recently funded work on our new lake and natural resources program at Lake Region High School.

AmazonSmile: LEA is enrolled in AmazonSmile. This generous program in which Amazon donates .5% of eligible purchases to the charitable organizations selected by their customers. Go to www.smile.amazon.com for details on how to sign up and select LEA as your charity. Millions of products on AmazonSmile are eligible for donations. You will see eligible products marked "Eligible for AmazonSmile donation" on their product detail pages. This is a simple and automatic way for you to support LEA every time you shop, at no cost to you.

New Testing Initiatives - Long Lake Buoy, Flow Monitoring, Algae ID, Live Data, Depth Maps

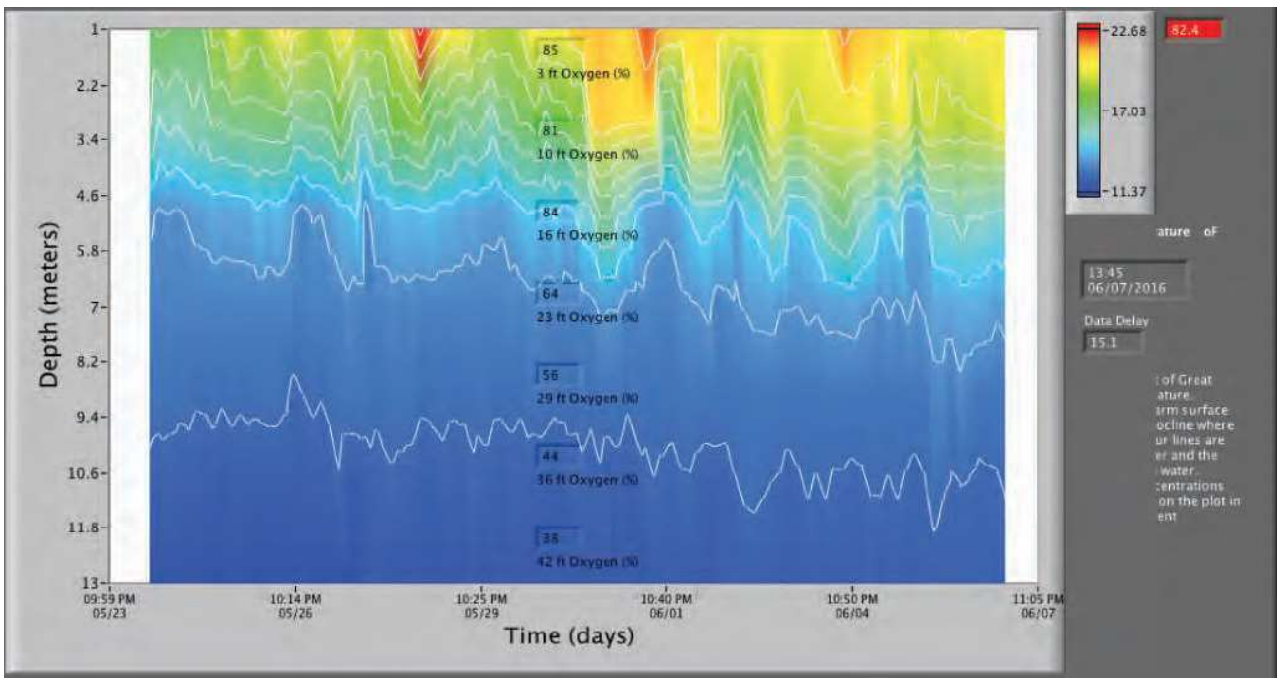
By Amanda Pratt

As a result of ever-advancing technologies and growing relationships with professors and researchers working in freshwater science, LEA is again expanding monitoring programs to better understand the ecological systems controlling our lakes and ponds.

Thanks to the generous support of a local family, we will now be studying flow monitoring on Highland Lake. This has been on our radar for several years and the stars finally aligned this spring with help from two professors at the University of Maine, as well as dedicated funding. As we learn how long it takes to implement and run this type of program, we look to expand it to other lakes in the region.

Another big project we are undertaking is a new automated sampling buoy on Long Lake. From the surface, this system will look similar to the buoy on Highland Lake however the monitoring setup will be slightly different. Here we hope to study algae at different depths in the water column and procure accurate digital clarity data. We also plan to look at organic matter dissolved within the water column. We are still actively seeking donations to outfit oxygen and temperature sensors on this new buoy. So far, most of the cost of the buoy has been covered by a donation from an anonymous family foundation, the Ham Charitable Foundation and a memorial gift from the family of Joe Wikler, a former LEA director.

On several lakes last year we began baseline algae monitoring to look at which species are present. This is much different from our Gloeotrichia monitoring which focused on one particular species of algae identified as a possible toxicity concern. This new broad-spectrum algae sampling more complex because it requires in-depth knowledge of algae identification and much greater magnification. This year we have greatly improved algae identification through the



Temperature Data from Highland Lake Updated Every 15 Minutes on LEA's Web Site

purchase and use of an inverted Nikon microscope with attached digital camera. The new microscope setup will let us identify and document algae types that may be difficult to categorize. Funding for the microscope came from the Ham Charitable Foundation and other donors. Staff time to sample, identify and count algae for this initiative has been covered by specific donations from individual lake associations and expanded staff time was funded by an anonymous family foundation.

Algae studies were identified as a key piece of the puzzle to understand lakes and their tipping points during our lake researcher retreats at the Maine Lake Science Center this past winter and spring. Climate change threatens to introduce exotic species of algae to our lakes, so we need to track them carefully.

Another new project is developing detailed depth and sediment maps for area lakes. This information is essential for giving us accurate lake volumes and to identify bottom conditions to help find areas where invasive species are able to colonize. The technology for this project is not expensive, but it will take a significant amount of time to do the mapping with GPS/depth finder equipment. However, most of the time would simply be spent driving a boat around the lake, which doesn't sound like a bad job! If you have a boat and are interested in getting involved, please email Colin Holme at colin@leamaine.org.

Note: Live data from the Highland Lake buoy is now available on our website. This information is refreshed every 15 minutes based on current conditions in the lake and is displayed as graphs with detailed explanations. These live charts were developed by Colby chemistry professor, Dr. Whitney King and greatly help to explain the inner workings of the lake in a visual format. Check it out at www.mainelakes.org

Encourage your neighbors and friends to join LEA.

Algae Monitoring Program Overhauled

By Amanda Pratt

Amanda Pratt Using LEA's New Inverted Microscope

With support from an anonymous family foundation, the Kendal C. and Anna Ham Charitable Foundation, and our 2016 Annual Appeal, LEA has purchased a new inverted microscope, camera, and settling chambers that will be used for algae analysis. Last summer with the help of area lake associations, we started looking at what types of algae are present in a number of lakes in our service area, including Hancock and Sand Ponds, Woods Pond, and Moose Pond.

In April, I visited Bigelow Laboratory for Ocean Sciences in East Boothbay to talk to Mike Lomas, the Director of the National Center for Marine Algae. He and colleague Peter Countway gave some great recommendations on how to go forward with our algae monitoring program. I explained a little about our current method for analyzing algae samples and he suggested using the Utermöhl technique, which is now the standard algae concentrating and counting method.

This technique involves settling algae samples for 24 hours in a special chamber. Preservative is added and the algae slowly sink to the bottom of the chamber. An inverted microscope must be used – so-called because the objectives (the parts that magnify samples) are upside down and samples are viewed from the bottom rather than the top. The algae that have settled are clearly visible by looking up through the thin bottom of the settling chamber with the microscope.

Back at LEA, I contacted Bob Costello at MVI, Inc. who sold us our compound microscope last year. He came to our offices to show us the inverted microscope and made sure we got exactly what we were looking for. Our new microscope has a higher magnification range than our old one, which will allow us to see small algae in more detail. We have also added a specialized microscope camera which can be used with both microscopes. This is perhaps the most exciting aspect of our algae work, because now we can share the images with you!

I am excited about my upcoming trip to Michigan in July to attend a week-long Algae Taxonomy (identification) and Ecology Workshop. The workshop, held at PhycoTech, a consultancy and laboratory specializing in algae identification, will be taught by world-class algae expert Dr. Ann St. Amand. I am looking forward to bringing everything I learn back to LEA to apply to this new program!

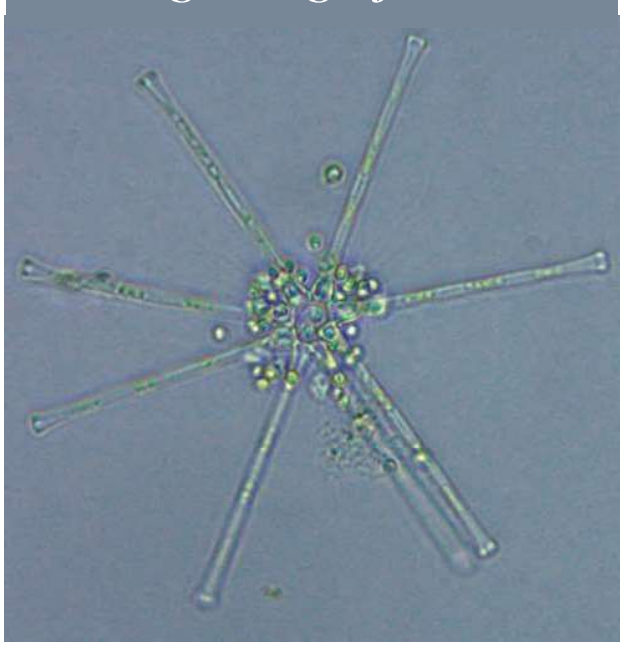
While many lake monitoring programs include chlorophyll analysis (which measures algae concentration), very few look at the algae themselves. The process is time consuming and involves a high level of knowledge about algae taxonomy. However, algae identification can be very informative and sheds light on numerous aspects of lake function. The dominant algae in each lake changes over time, so we sample monthly. The number of different types of algae and the relative abundance of each can indicate lake nutrient levels, water conditions, and details about the lake food web. Sampling started in June, and we are taking samples from several lakes through September.

Mainelakes.org Gets a Facelift

This spring LEA embarked on a total website redesign. It had been several years since the site's last facelift and it was time for an overhaul to incorporate recent changes in our organization and to increase the overall compatibility of the site. With a whole new look, the updated site has a simplified interface so users can more easily focus on important messages or events. The front page is now less "crowded" but all content from the old site is still available, as well as updated information. Regular viewers will notice there is a new section dedicated to the Maine Lake Science Center, and we are now streaming live data from the Highland Lake buoy. Another goal of the update was to make the site mobile phone friendly so content can be easily viewed on the go. Online contributors will also notice that the donation process is has been simplified and streamlined. LEA used Webfix Studios of Portland for the upgrade.

Check us out at the new www.mainelakes.org and let us know what you think!

The Algae Aasterionella at high magnification



New High School Course on Lakes

By Alanna Doughty

It has been awhile since I sat in the classrooms of Lake Region, but one particular class stands out as changing the direction of my whole life. You don't really forget something like that I guess: Environmental Studies with K Bolduc. Not only did I learn about ecosystems and the natural world, I learned to learn. I learned what it was like to be curious again, to be excited, to make connections, and to relate to something outside of myself. In addition to K's gentle way of sharing knowledge, we had amazing opportunities to travel to the Florida Everglades, Arizona, California, and Trinidad and Tobago. These experiences fired synapses in my brain that had long been stagnant, but it wasn't until college in Orono that I had a chance to start exploring wetlands in our beautiful state of Maine.

Currently, Lake Region has no environmental class. Principal, Erik Good, said to Peter and me in the fall, "I want students to know what it means to live in the Lake Region." Because, as we all know, we protect what we know and love. We started working on a class to co-teach with science lead teacher Joe Dorner. We hope this class will get students outside, learning about the natural environment, making real-world connections, asking pertinent, "un-google-able" questions, solving real-world problems, and relating to something bigger than themselves. The natural world is an incredible teacher, if we stop to listen.

Part of our effort is to have this curriculum spiral down through all the grades in the district, so that by the time students are in high school they have the skills to delve deeper. We have a strong program in grades 6-8, and grade 4, but we need to have a presence in every grade. This work is supported by your donations, and is helping to educate the next generation on the topics that affect all of us: clean water, understanding climate, ecosystems, human footprint, natural habitats, and more. If you have any questions about where we are headed, or would like to get involved, please email me at alanna@leamaine.org. We have a long climb ahead of us!

Landowners and lake research are our best hope for lake protection.

Natural Resources of the Lake Region Series - Sponsored by the Caplan Family

***Registration Policy**: Space is limited for events, so registration is required unless otherwise noted. All are welcome, but LEA members are given advanced sign up opportunity and free or discounted admission. Please consider becoming a member today!*

Event	Date	Time	Place	Lead	Cost
Pondicherry Park Family Outing - Bring the family and join LEA staff at the Maine Lake Science Center for a morning of outdoor exploration and fun activities!	Friday, July 8	9 to 11:30	MLSC / PP	Mary	$5 non-member
Potluck Discussion: Healthy Water, Healthy Fish Potluck and discussion. Join us at the Maine Lake Science Center for a short presentation on fish populations of the area and how healthy fish are related to healthy water! Bring a dish to share, and let us know if you are coming!	Friday, July 15	5 to 7	MLSC / PP	Alanna	Free
Wendy Newcomb Nature Journal #2 - Join Local Artist Wendy Newcomb at Holt Pond to develop a nature journal. Tools of the trade, tips for sketching outdoors and guided sketch practice will help you develop your art of seeing and your artistry. The 2nd of a 3 part series. We will send you a materials list and more information when you register. (Age 13 and up)	Saturday, July 23	9 to 12	Holt Pond Preserve	Wendy and Alanna	$20 members / $35 non-members
Dragonflies - Join naturalist Mary Jewett at the Maine Lake Science Center for an afternoon of safely catching, handling, identifying and releasing dragonflies.	Friday, August 12	1 to 3	MLSC	Mary	$5 non-member
Lynn Driscoll Watercolor Series - Join local artist Lynn Driscoll in a 3-part class that will take your nature drawings and sketches to a new dimension in watercolor! Lynn will teach watercolor techniques in an approachable way with plenty of time for practice and instruction. Materials are supplied, and bring your sketches! Register at: stonerivergallery@gmail.com.	Fridays, August 12, 19, 26	9 to 12	MLSC	Lynn Driscoll	$65 for total of 3 classes, $75 for non-members
Nature Photography - Join naturalist Mary Jewett to work on the art of capturing flora and fauna in a photograph. Explore with other amateur photographers some new techniques for improving your photography! Bring whatever camera you have, and Mary will lead you towards capturing the moment. Trails are easy to moderate at Holt Pond. Please wear comfortable shoes and bring a snack and water, and your camera!	Saturday, August 13	9 to 12	Holt Pond Preserve	Mary	None, members only
Stevens Brook Trail Day - Time to give back! Join LEA in cleaning up trails that wind through downtown Bridgton, the trails that we know and love- or come explore with us if you've never walked them. We will talk about history and ecology along the way!	Tuesday, August 16	9 to 12	LEA	Alanna	Free
Holt Pond Headwaters Walk - Learn forest ecology, watersheds and local history! Terrain is modertate, so wear comfortable shoes and bring a snack and water.	Wednesday, August 17	9 to 12	Holt Pond Preserve	Alanna	$5 non-member
Paddling with Sportshaus - Moose Pond. Join LEA educators and staff from Sportshaus for a morning of serene paddling on Moose Pond. We will learn about wetland ecology, water quality testing, and hopefully see some wildlife! Life jackets, boats and paddles are provided. Bring a snack and water.	Wednesday, August 24	9 to 12	Moose Pond	Alanna	None, members only
Mushroom Talk - Plant pathologist and mycologist, Jesse Dubin, is back to teach us about the life history of mushrooms and the many varieties that call Maine home.	Thursday, August 25	TBD	MLSC	Mary	$5 non-member
Mushroom Walk - Those who attended the Mushroom Talk will go out with Jesse and explore the different species of mushrooms at the Holt Pond Preserve. Space is very limited for this walk so participants must sign up early. People who attended the indoor presentation get priority.	Friday, August 26	TBD	Holt Pond Preserve	Mary	None, members only
Wendy Newcomb Nature Journal #3 - Join LEA and Wendy Newcomb as we explore Baldpate Preserve and work on our nature journals! Tools of the trade, tips for sketching outdoors and guided sketch practice will help you develop your art of seeing, and your artistry. We will send you a materials list and more information when you register. (Age 13 and up)	Saturday, August 27	9 to 12	Baldpate	Wendy and Alanna	$20 members / $35 non-members
Potluck Discussion - Come celebrate the kickoff of the Great Maine Outdoor Weekend with us at the Maine Lake Science Center as we welcome in the fall. Bring a dish to share and an appetite!	Friday, September 16	5 to 7	MLSC / PP	Alanna	Free
Holt Pond Family Day - Bring the family and join us for the Great Maine Outdoor Weekend in exploring Holt Pond! Enjoy family-friendly activities and learning at the beautiful preserve. Get outdoors!	Saturday, September 17	9 to 12	Holt Pond Preserve	Mary	Free
Paddling Series with Sportshaus - Join LEA educators and staff from Sportshaus for a morning of paddling on the Songo River. We will learn about river ecology, the battle with milfoil, and hopefully see some wildlife! Life jackets, boats and paddles are provided. Bring a snack and water.	Wednesday, September 21	9 to 12	Songo River	Alanna, Christian	None, members only
Paddling Series with Sportshaus - Join LEA educators and staff from Sportshaus for a morning of paddling on the Five Kezars. We will learn about lake ecology, and hopefully see some wildlife! Life jackets, boats and paddles are provided. Bring a snack and water.	Wednesday, October 5	9 to 12	Five Kezars	Alanna	None, members only
Volunteer Day Holt Pond - It's time to give back! Join us for a beautiful fall day at Holt Pond and enjoy the sights and sounds of fall as we work to maintain trails.	Saturday, October 8	9 to 12	Holt Pond Preserve	Alanna and Mary	Free
Signs of Fall Family Outing - Bring the family and join us at the Maine Lake Science Center and in Pondicherry Park as we explore signs of fall. What is happening to our plants and animals as they prepare for another long Maine winter?	Saturday, October 15	1 to 3	MLSC / PP	Alanna	$5 non-member
NEON Night - Join family and friends at the Pondicherry Park Bob Dunning Bridge for a magical hike through the park. Be sure to bring neon items to light up the night with color and the glow of day!	Friday, November 4	7:00 PM	PP	Peter	Free

The Natural Resource Series at LEA is made possible in part through the generous support of Dr. Hu and Ray Caplan, members and directors of LEA since the 1970s. The Caplans recognize the vital importance of education in all aspects of LEA's work in protecting the Lake Region's waters and watersheds.

The Crooked River begins at Songo Pond and ends at the Songo River.

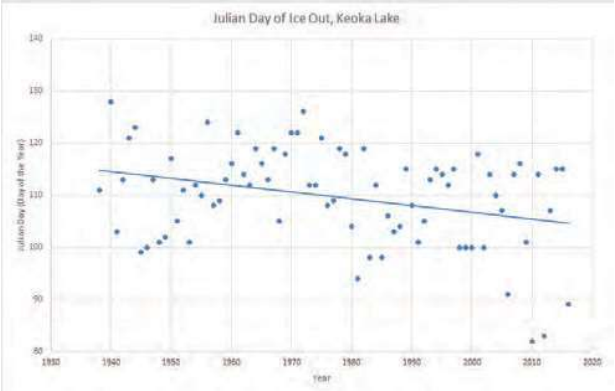
Early Ice-Out May Mean Poor Water Quality in 2016

By Amanda Pratt

Lake experts around the state are predicting poorer than average water quality on many lakes this summer. The reason? Earlier than normal ice-out this spring. Ice-out, the date when a lake or pond becomes completely ice-free, occurred in late March this year on most lakes in the Lake Region. Early ice-out means a longer algae "growing season" for lakes, which leads to more severe oxygen depletion and potentially much more algae growth by the end of the summer.

If that wasn't bad enough, this year's early ice-out doesn't appear to be an anomaly. Ice-out dates are getting earlier and earlier over time. LEA tracks ice-out dates for a number of lakes in our area. Keoka Lake records go back to 1938 (courtesy of Ed and Irene Bean and Joann Fillebrown). This year, ice-out on Keoka Lake was on March 29th, which is the third earliest ice-out since 1938 and three weeks earlier than the average ice-out date of April 19th! The only two earlier ice-out dates were in 2010 and 2012.

Record early ice-out dates in recent years echo national and global trends of warmer temperatures



Graph of ice-out dates on Keoka Lake over time. The "Julian Day" refers to the day of the year when ice-out occurred (e.g., day 1 = January 1, day 110 = April 19 or 20 depending on if it's a leap year).

caused by climate change. 2015 was the warmest year globally since records began in 1880, and the top five warmest years have all occurred within the past 11 years.

Early ice-out contributed to dramatic water quality problems in Lake Auburn in 2012, when severe anoxia (lack of oxygen) in the deeper parts of the lake caused a massive fish kill. LEA also saw the water quality of lakes in our service area suffer that year.

That same year, over 70% of our lakes had higher than average phosphorus and chlorophyll levels and lower water clarity than the long term average. While ice-out can be a useful indicator of water quality conditions, there are multiple factors that affect lakes from year to year, such as rainfall, temperature and frequency and severity of storms. This was the case in 2012, when dry conditions were followed by a wet and stormy June contributing to the year's poor water quality. Unfortunately, climate change predictions for this region indicate that these types of weather patterns (longer dry periods and more intense storm events) will become increasingly common.

With the pressures from climate change more apparent than ever, it becomes even more important to do all we can to preserve our lakes. Preventing phosphorus from entering lakes by reducing erosion in the watershed is the most direct and effective way to protect and improve water quality This is a start, but we need to do more. LEA's Maine Lake Science Center was created because we felt the need for more research, education, and advocacy to address the many critical threats facing our lakes.

Membership – LEA's Life Blood

It has never been more important to become an LEA member and to support our Annual Appeal. If your membership has lapsed, please consider renewing today. Our staff is working hard to usher in the Maine Lake Science Center, and to foster new programs and the connections that will come with them. But we need to maintain all the programs that you have come to know and love.

It has been our loyal membership that has provided the funding that makes what we do possible. We have set a very ambitious membership goal for 2016 and hope you will join us in making it a reality. Encourage your friends and neighbors to become an LEA member, give a gift membership to a lake lover, or consider increasing your own membership donation to LEA. We welcome gifts by check or credit card, by mail, phone or online.

Are you looking for more ways to give? Contributions of appreciated securities or stock, corporate matching gifts or planned gifts are also welcome. Contact Peter Lowell for more information. Your support is appreciated!

Dock to Dock

This summer, LEA staff and volunteers will be going dock to dock again. Look for us on these lakes: McWain Pond, Trickey Pond and Sebago Cove. Dates are TBA. If you are a land owner on one of these lakes, you will receive a postcard and/or email from LEA indicating dates and times. Wait on your dock and we will come answer your questions and hear your concerns.

Shop Lea For Gifts, Birthdays And Holidays

Now you can support LEA and look sporty at the same time! We have just replenished our supply of the popular white logo t-shirts and have navy blue hooded sweatshirts for cold evenings and mornings in Maine.

The vintage hats have been brought back by popular demand along with LEA mugs and bags. All of these items are available at the LEA headquarters at 230 Main Street in Bridgton. Members receive a discount!

LEA Members Keep Us Going

Are you an LEA member? Please join in the effort to protect our lakes

Name: _____ Email: _____

Winter Address: _____

Summer Address: _____

☐ Check enclosed ☐ Charge my credit card $_____

☐ Visa ☐ Master Card Exp. Date _____

Account #: _____

Gift Levels:

- ☐ $1000 Benefactor
- ☐ $500 Patron
- ☐ $250 Sponsor
- ☐ $100 Lake Steward
- ☐ $75 Family
- ☐ $50 Individual
- ☐ Any other amount $_____

I'd like to make an additional donation to the:

- ☐ Intern Fund $_____
- ☐ Milfoil Fund $_____
- ☐ Environmental Education Fund $_____

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**