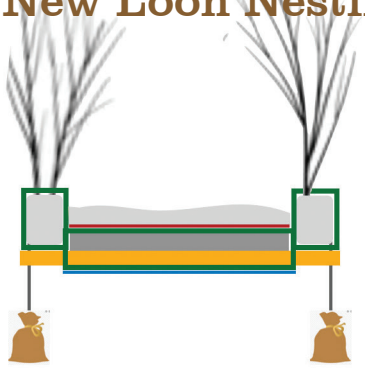
WATERSHED VIEWS

NEWSLETTER OF THE KEZAR LAKE WATERSHED ASSOCIATION

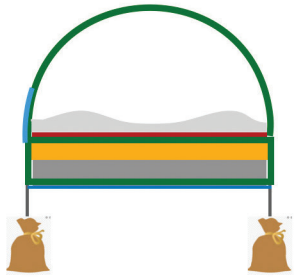
SUMMER 2021

New Loon Nesting Platform Designs Debut on Kezar Lake

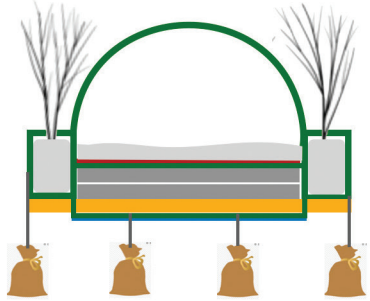
by REED ROBINSON



Veggie avian guard only



Without planting boxes



240 # net positive floatation

What is heavy in the water but light on land? When faced with the challenge of building a new loon nesting platform for Kezar Lake, this riddle governed our design.

Loon nesting platforms need to be heavy to dampen natural wave action but light enough for volunteers to launch and remove them each season. As our current platforms aged, with wood that was starting to get spongy, and weight that became unmanageable, we were in need of a new raft design.

What is not a conundrum are our platform's statistics: loons are simply more productive when using a nesting platform. Why is that? Most importantly, loon platforms float, so they rise and fall with the water level. This means that rather than being flooded out by heavy rains, the floating nests stay high and dry. Furthermore, rafts provide protection from hungry eagles shielding both the eggs and the nest-bound adults. In addition, we have closed the backs on a number of the watershed's platforms, which has made them less vulnerable to mammalian predators. Because, yes, raccoons do swim.

The problem of being both heavy and light was solved by creating a platform that is modular, making it easy to disassemble for transport. Each raft's generous positive flotation is counterbalanced by removable ballast that helps to stabilize it in natural wave action. Durability was solved by using industrial-grade marine materials, all of which are recyclable. The base is made from a box of lobster trap wire stiffened with eco-composite beams and filled with flexible closed cell 2 x 4-inch foam. Planting boxes clipped to the sides will be stocked with deep-rooted plants that provide shade for the loons while helping camouflage the rafts.

The upcoming season will be an interesting test for the new nesting platforms, which will be tried by several other organizations including the Vermont Center for Ecostudies, New Hampshire's Loon Preservation Committee, and several lakes in Maine.

Given that most of our successfully hatched chicks are born on nesting platforms, these rafts are playing an important role. But their success is up to all of us. Please give nesting loons the space they require by staying back at least 250 feet in any type of boat, even if you are not generating a wake. If you see a loon on nest with its head down low, back off immediately as that means the bird feels threatened, and with recurring instances it may abandon the nest.

With chick productivity slipping below sustainable levels, we hope that our platforms–old and new–give the birds the protection they need to thrive as an icon of our watershed ecosystem.

LAURA ROBINSON

Reed Robinson prepares one of the new rafts for launch, prior to attaching the side planting boxes.

LAURA ROBINSON

Wakes Threaten Nesting Loons

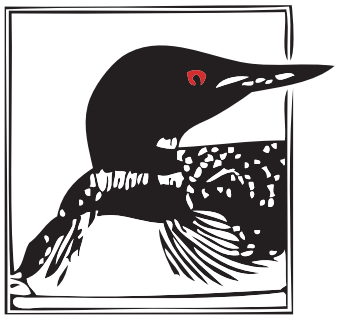
by LAURA ROBINSON

While our nesting platforms–both old and new–are designed to absorb natural wave action, no raft can overcome the rocking motion caused by a passing wake boat.

Above left: A loon platform at the north end of Kezar Lake pitches and rolls in a motorboat wake. Such wave action can crack loon eggs or cause them to roll out of the nest.

Above right: A wake passes through the raft, with the potential to wash eggs out of the nest. In fact, just a few days after being laid, an egg was found at the bottom of the lake below this platform. The wake of a passing motorboat may well have been the culprit. Sometimes loons will make a second attempt at nesting, but with our chick numbers recently dipping below a sustainable level, every egg counts.

Please observe Maine's state law of "No Wake Speed" within 200 feet of the shoreline. Better yet, because this law does not protect natural loon nests and platforms from being washed out, KLWA recommends that large wakes be generated only when at least 500 feet from shore.



Kezar Lake Watershed Association

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President's Message

by RICK PILSBURY

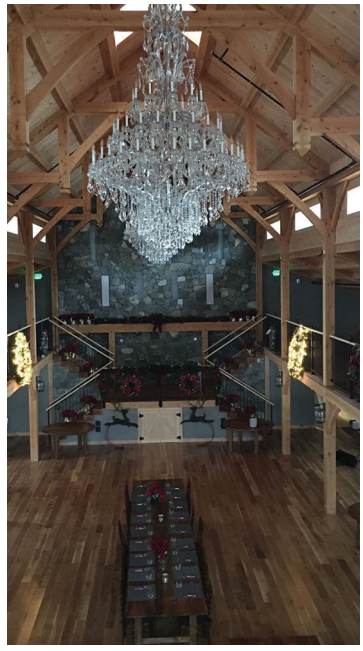
My wife Shelley and I spent our first winter in Lovell and loved it. We've been told not to judge Maine winters by this one as it was fairly mild: not too cold, average snow and only one longish power outage. Be that as it may, we now plan to make Lovell our permanent home. The beauty of Maine far exceeds the inconvenience of a little snow and ice.

Last year brought unique challenges but we adapted and executed KLWA's mission-driven programs as planned. This year there will be Board changes as four long-serving Directors will "term out" and a new director, Dave Durrenberger, will step in. Join us in appreciation and sincere thanks to Wes Huntress, Ed Poliquin, Don Griggs, and Lynda Rasco, for their service. Their contributions were significant. Fortunately, they're not going anywhere and we know where to find them.

Dave Durrenberger and his fiancée Elaine relocated from Connecticut to Lovell about two years ago. Dave brings youth and passion to the Board. He approached us about serving and we snapped him up. Dave owns a software company, various properties in Connecticut and what he describes as a "Paint Bar," where guests can paint with a professional artist while enjoying some fine wine and beer. Dave will play a key role in our Shoreland Initative project, which is in development; we plan to introduce it this year. Stay tuned.

As you read on page 1, KLWA Board Director Laura Robinson and her son Reed have developed a new, vastly improved prototype of a loon nesting platform you'll see in the water this season. It has more protection for the loons, is much easier to move, and is totally eco-friendly. Some outside organizations have already lined up to buy the "Robinson Raft," but be assured we'll have an inside track.

Thanks to the KLWA Board and especially to you, our members and supporters, who understand the importance of KLWA's mission to preserve, protect, and maintain the Kezar Lake Watershed.



KLWA 2021 Annual Meeting

Wednesday, July 28 at Old Saco Inn

Mark your calendar for **July 28, 5:30 to 7 PM**, for KLWA's Annual Meeting at the Old Saco Inn's beautiful new barn, 125 Saco Lane, Fryeburg, Maine.

The barn at the Old Saco Inn is ideal. It's big and beautiful allowing for plenty of distancing and comfort for KLWA members and friends. Parking is plentiful on the beautiful grounds surrounding the barn.

Details are in the works but we're planning to have hors d'oeuvres, beverages, and a cash bar. If you have any questions, email us at kezarwatershed.org. Don't miss this important meeting.

Water Quality Report Shows Good Findings and Minor Alerts

by STEVE LEWIS

The 2020 Water Quality Report is now on the KLWA web site, kezarwatershed.org. It shows that the general water quality of the watershed is doing well but with some parameters in some of the ponds being a bit high (red highlights in the chart).

The readings, however, are not particularly worrisome. In Heald Pond, the high phosphorus and color probably answers part of the low clarity issue, though Trout and Horseshoe Ponds, usually quite clear, also had unusually low clarity. Often grabbing one sample a couple of times in a summer can catch an out-of-ordinary reading. Clarity, for example, can vary quite a bit depending on runoff, rain, wind, etc.

Waterbody	Water Clarity (m)		Total Phosphorus (ppb)		Chlorophyll-a (ppb)	
	Historical[b]	Recent 2020[c]	Historical[b]	Recent 2020[c]	Historical[b]	Recent 2020[c]
Kezar Lake - Upper Bay	7.7	9.0	5.0	6.0	2.1	1.0
Kezar Lake - Middle Bay	7.3	8.7	4.5	5.0	2.0	2.0
Kezar Lake - Lower Bay*	3.2	3.3	9.0	9.0	2.3	2.0
Bradley	5.2	5.2	8.0	10.0	4.0	4.5
Cushman	5.5	5.4	7.0	7.0	2.3	3.0
Farrington*	4.4	4.0	13.0	13.0	5.8	5.5
Heald	4.6	3.7	10.0	13.5	4.0	4.0
Horseshoe	6.9	5.9	7.0	7.5	3.4	2.5
Trout	7.4	5.9	4.5	5.5	2.0	2.0
Maine Lakes[a]	4.8		12.0		5.4	
Waterbody	pH		Alkalinity (ppm)		Color (PCU)	
	Historical[b]	Recent 2020[c]	Historical[b]	Recent 2020[c]	Historical[b]	Recent 2020[c]
Kezar Lake - Upper Bay	6.7	6.8	4.0	4.0	10.3	9.0
Kezar Lake - Middle Bay	6.6	6.8	4.0	4.0	10.5	10.0
Kezar Lake - Lower Bay*	6.7	6.8	4.0	4.0	13.0	14.0
Bradley	6.5	6.4	4.0	3.5	21.5	26.5
Cushman	6.7	6.7	5.0	4.5	11.0	11.0
Farrington*	6.7	6.7	4.0	4.5	16.0	19.0
Heald	6.7	6.6	5.0	5.0	24.0	43.3
Horseshoe	6.7	6.7	3.0	3.5	10.0	11.0
Trout	6.7	6.8	4.0	4.0	9.0	9.5
Maine Lakes[a]	6.8		11.8		28.0	

** Water clarity limited by lake depth - Secchi disk hits bottom*

[a] Median values calculated from the Lake Stewards of Maine, 2019, Distribution of Lake Water Quality Data. Includes datapoints through 2018. https://www.lakestewardsofmaine.org/distribution-of-water-quality-data.

[b] Median historical values calculated by FBE from all data obtained by the MEDEP through 2018; duplicate values/days were averaged; only epicore samples were used in the analyses; includes FBE-collected-only data for 2019-20

[c] Median values calculated by FBE from 2020 data

Red cells indicate median values from 2020 showing worse water quality compared to the historic median

Dark blue cells indicate median values from 2020 showing better water quality when compared to the historic median

Light blue cells indicate median values from 2020 showing no change from or within one standard deviation of the historic median

LAURA ROBINSON

Heald Pond intruding loon being chased off by resident pair

LAURA ROBINSON

Peering through aquascope toward Secchi disk to determine water quality

For further details, please visit the web site and check out the full report.

It has been ten years since KLWA has worked with Forest Bell Environmental in detailing the water quality of the Kezar Watershed. With their expert help we have one of the best characterized watersheds in the state, if not the country.

A couple of comments on the coming year's monitoring; With the low amount of snow this past winter, the pH may possibly lower, toward being more acidic, as it did a few years back when we also had low snow amounts. Apparently, the ground exposure to air early in the spring releases more acidic chemicals during runoff from the forest floor, thus lowering the pH of the general watershed.

This year, we will increase monitoring of tributaries to gather more details on what is being fed into the lakes. There have been some indications in the past of excess Phosphorus and/or E. Coli, possibly showing septic system issues or just natural effects. We want to keep our eye on these and other parameters to be sure there are no problems in the making.

Core Sample Studies Cite Erosion and Boating as Contributing to More Sediment in Upper Bay

by DON GRIGGS

The Climate Change Observatory has received preliminary study results from a sediment coring in Horseshoe Pond and their comparison to earlier core samples from Kezar Lake. This comparison was made to possibly shed light on the sudden rapid increase in the rate of sediment accumulation found in the Kezar samples.

The Horseshoe Pond cores were taken in June 2019 and February 2020 by a team of KLWA volunteers and Plymouth State University students, led by Dr. Lisa Doner, Environmental Science professor. The coring study and analysis was completed by Dr. Doner and graduate student Melissa Macheras. A brief summary of the study is presented here, and the entire 25-page report will be posted on the KLWA/CCO webpage, kezarwatershed.com.

The PSU research found that the increase in Kezar Lake sediment is due to an increase in shoreline erosion and recreational boating. The researchers observed that the mean particle size in Kezar Lake remained relatively stable until 1980 when it began to increase dramatically.

In contrast, the mean particle size of Horseshoe Pond has stayed relatively stable, including the period from 1980 to the present. This difference can be attributed to far less boating and less erosion of the shoreline.

The researchers concluded that an increase in shoreline erosion has been occurring in Kezar Lake since around 1980, which coincides with an increase in boating activity in New England.

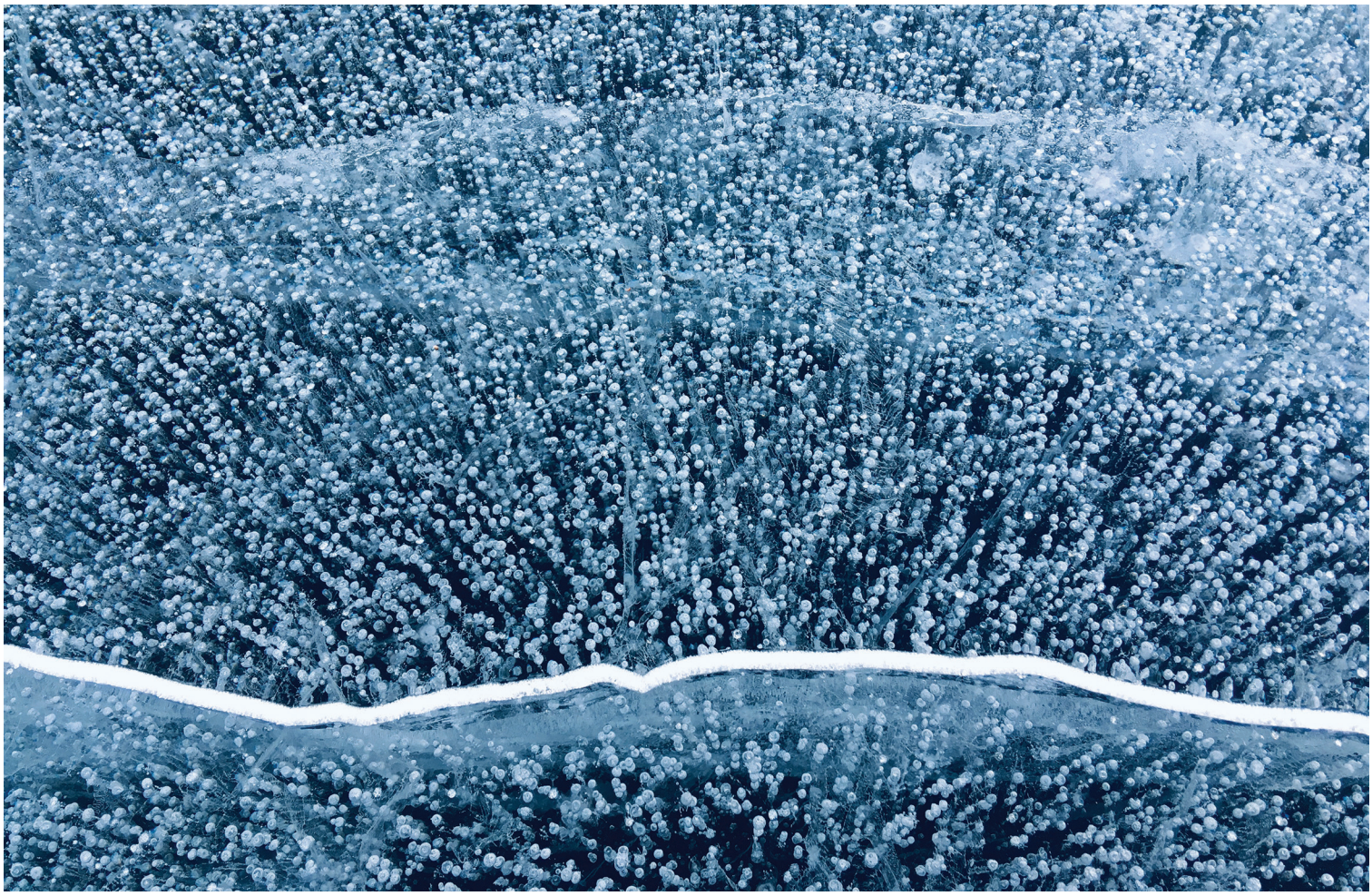
There are other possible causes of erosion—timbering, development, farming, and weather—however, there does not seem to be major changes in those possible causes since 1980 in and around the Upper Bay. What has changed is an increase in boat traffic and use of boats that produces large wakes.

Although the consequences of large particles settling in deep water are minimal, the impact of erosion can be very serious. While there is certainly not anything KLWA can do to reduce the number or type of boats on the lake, we have established Guidelines for Responsible Boating to keep those activities that make large wakes 500 feet from shorelines and in water over 20 feet deep. Check kezarwatershed.org for complete guidelines.

TOM HUGHES

Sediment coring on Horseshoe Pond

RICK PILSBURY



LAURA ROBINSON

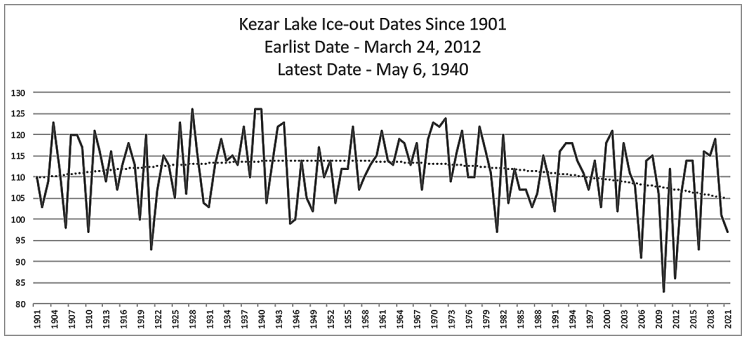
Ice-in and Ice-out. Why It's Important.

by DON GRIGGS

Did you know that recording ice-in dates is as important as tracking ice-out dates? It has been determined that tracking both dates is essential so we can establish the time ice is covering the water. The time period of ice cover is an indicator of climate change and one that has a noteworthy impact on biological and physical lake properties, and thus implications for maintaining the excellent water quality of Kezar Lake. The 2020 Climate Change Observatory Annual Report will have a theme of Ice-in and Ice-out.

Recent Kezar Lake Ice-in/Ice-out Data

Winter	Main Body					Lower Bay				
Year	Ice-In	Julian Date	Ice-out	Julian Date	Days Covered	Ice-In	Julian Date	Ice-out	Julian Date	Days Covered
2017-2018	12/29/17	363	4/25/18	115	117					
2018-2019	12/9/18	343	4/29/19	119	141					
2019-2020	12/21/19	355	4/10/20	101	111					
2020-2021	1/20/21	020	4/7/21	097	77	12/12/20	347	4/5/21	095	114



Maine lakes have experienced significant decreases in the duration of ice cover in the last century. Shorter ice cover means more thermal stratification in summer, which can reduce oxygen levels in bottom waters and trigger internal phosphorus loading, fueling algal growth.

Lake ice dynamics are critical to lake processes. Ice thickness, opacity and depth of snow control the amount of light exposure to surface waters. Lake activity slows down but does not stop in the winter. Conditions such as increased light can stimulate under-ice algal growth and lead to spring fish kills.

Some Maine lakes reported algal blooms underneath snow-free ice in January 2021.

Although local lake communities can't protect an individual lake from the impacts of warming air temperatures, it is possible to reduce non-point source pollutants within the watershed and decrease nutrient loading to the lake, an effort that can mitigate the impacts of reduced ice cover on water quality in Kezar Lake.

We have ice-out data from 1901 but ice-in data only since 2017. To illustrate this, we've included a graph with a trend line showing the ice-out Julian dates. The last ten years reveal an earlier ice-out trend. We are recording the ice-in and ice-out data for the Lower Bay separately because the nature of the ice cover on that bay is different from the rest of the lake. Complete ice-in and ice-out data is posted on the KLWA website under "Reports."

Heeding the Call to Water Safety

by TOM GILMORE

As we look forward to a new season with anticipation it is worth taking a brief look back at summer 2020. This time a year ago, none of us had any idea what the summer was going to look like. All we knew was that it would be different.

In hindsight for the Lake Patrol, things were pretty normal. The lake was very active. Anecdotally, Lee Conary reports the marina had a record year and boating use was heavy. We had no serious incidents on the lake thanks to all of you who have heard the call to water "SAFETY, SAFETY, SAFETY" so often it has become a bit of a mantra. In short, our lake remains a very welcoming place for boating activity.

Lake Patrol activities have been well documented in the past but deserve mention again. Over the course of the 14 summer weekends from mid-June through mid-September, Turf Ramsden, our Lake Officer, spent 209 hours on the water. This included passing out 124 whistles, performing 17 boat assists, conducting 8 Maine Warden meetings and completing 482 safety boat checks. There should be no question that this activity adds greatly to safety around and on the water.

Last summer also began our affiliation with the Lake Buoy Maintenance Program sponsored by the State of Maine Bureau of Parks and Lands and Tim Thurston, Navigational Aids Supervisor. Working closely with Tim, Turf was on the water in early April to inspect each and every one of Kezar's 47 navigational buoys. Once it was determined that all buoys were properly positioned, Turf checked their locations bi-weekly throughout the course of the season. The project was deemed a terrific success and the State plans to roll it out across other large Maine lakes in the coming years.

Once again I am happy to report that Turf Ramsden will serve as Officer for the Lake Patrol. Turf's calming presence and friendly approach go a long way toward helping us achieve our goal of a safe summer on Kezar.

LAKE TROUT ARE KEEPERS

The Maine Department of Inland Fisheries and Wildlife is asking Kezar Lake anglers to help manage and maintain our fish population by "harvesting" Lake Trout, also known as Togue, instead of releasing them. Lake Trout are the largest native freshwater fish in Maine. They are voracious and adaptive feeders, so much so that other species are going hungry.

Maine IF&W is responsible for maintaining balanced, healthy fisheries across the state. From time-to-time laws are changed if a particular species becomes overpopulated, tipping the desired balance in a waterbody.

Kezar Lake watershed's lakes and ponds are open for fishing year-round, whether on ice or open water. Streams and brooks are open April 1 to September 30. If you're a catch-and-release angler, have at it. If you want to keep your catch, go to the website of Maine Department of Inland Fisheries & Wildlife for regulations on size and quantity: https://www.maine.gov/ifw/fish-wildlife/fisheries/species-information/lake-trout-togue.html.

REED ROBINSON

Cormorant

LEIGH MACMILLEN HAYES

Charles Pond

Greater Lovell Land Trust (GLLT) Continues Essential Work

by ERIKA ROWLAND, *EXECUTIVE DIRECTOR*

Greater Lovell Land Trust had an action-packed end to 2020 and jump start into 2021. GLLT's mission is to protect and preserve the ecosystems of the Kezar Lake, Kezar River, and Cold River watersheds for the benefit and enjoyment of the natural and human community in the towns of Lovell, Stoneham, Stow, and Sweden today and as a legacy for the future, and we contribute to its fulfillment daily.

With the snow gone and leaves beginning to emerge, the GLLT stewardship staff and our volunteer Groundhogs kicked off the trail maintenance season with new trail junction signage, trail reroutes around long-standing wet spots, and more planned. Soon work will shift to the new Charles Pond Reserve in Stow and North Fryeburg, preparing the pond access trail and waterfront for the numerous paddles and hikes planned for the summer months. The property is rich with diverse wetlands, and protecting it will contribute greatly to long-term water quality and habitat health of the pond and Cold River, just as a new conservation easement donated by the Rohr family on 180-acres on West Lovell Road will benefit Kezar Lake.

Visiting Charles Pond Reserve is just one of the many opportunities to get out with GLLT. Our Environmental Education program is ready with a CDC-compliant summer calendar that is brimming with something for everyone! Some of the many highlights include:

- A multi-week series of walks to learn about the amazing songbirds that raise their young in the Maine woods.
- Programs illuminating the importance of our local pollinators and the joys of beekeeping.
- Frequent opportunities to restore your soul through arts and movement in the natural world.

Keep up to date with the goings on on our website: gllt.org/events, and while you're there, sign up for our weekly email announcements.

The land trust's strategic vision has been refreshed for the next three years, identifying priorities for land protection including the stewardship of our current conservation properties, connections with our towns and partners, and continuing to build the resources that support the organization's work and the people behind it.

The lands and waters of this place at the edge of the White Mountains are priceless. Thank you for your ongoing support of this important work.

Corporate Sponsors

The KLWA has enjoyed a long tradition of partnership with local business. Each of these Corporate Sponsors has made a much-valued contribution to the financial stability of our organization and to the programs that we support. We are most grateful for their continued commitment and for their recognition of the many benefits that a vibrant and sustainable watershed brings to our community.

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