

# THE CONSERVATIONIST

ENSURING OUR FUTURE



VOLUME 12 | SPRING 2023

## YEAR-ROUND PROGRAM VITAL TO WATER-QUALITY EFFORTS

By Dr. Danielle Wain  
7 Lakes Science Director

7 Lakes Alliance monitors water quality year-round on each lake in the Belgrade Lakes watershed. When you see us on the water aboard the Colby Compass or our Boston Whaler, or on the ice in the winter, you may ask, “What exactly are they doing out there?”

Our water-monitoring activities involve three key components: measuring water clarity, logging temperature and oxygen profiles, and collecting water samples to quantify phosphorus, chlorophyll and algae.

Clarity is the most obvious indicator of a lake’s water quality. We measure this with a Secchi disk – a black-and-white disk that is lowered into the water until it is no longer visible from the surface. People have been taking these measurements on the Belgrades for over 50 years. So, these measurements help us understand long-term water-quality trends in each lake.

Temperature and oxygen data is gathered by slowly lowering a water-quality probe to



7 Lakes Science Director Dr. Danielle Wain collects water samples on McGrath Pond last fall. 7 Lakes gathers water-quality samples and data year-round to better understand trends and needed responses.

a lake’s bottom. Temperature and oxygen profiles tell us if the lake is stratified and whether oxygen is near the bottom. If there is no oxygen at the bottom, sediments can release phosphorus, which can lead to algae growth. So it is important for us to understand

how often a lake lacks oxygen at the bottom. The balance between phosphorus coming from lake sediments versus from the watershed (mostly from runoff and erosion) dictates the

**SEE WATER QUALITY ON PAGE 8**

## 2 LAKES GRANTED \$224K FOR EROSION CONTROL

7 Lakes Alliance has been awarded \$224,434 in Clean Water Act grants to address erosion issues contributing to declining water quality in Long Pond and Messalonskee Lake.

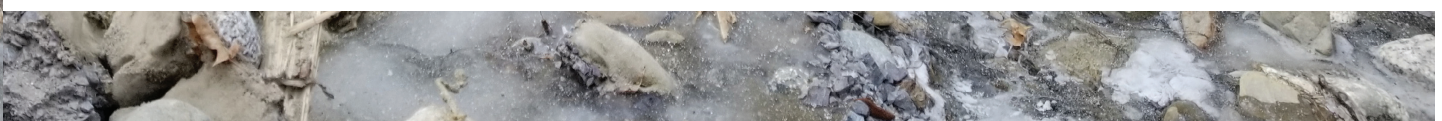
The grant money, awarded by the Maine Department of Environmental Protection, will be used to mitigate erosion and stormwater runoff by improving town roads, private gravel roads and driveways, culverts, ditches and bridges. Using the grants to leverage additional funds from property owners and municipalities, a total of about \$500,000 is anticipated to be spent on erosion control around Long Pond and Messalonskee Lake. The funds will be available after the first of the year.

Dirt washed into streams and lakes by stormwater runoff contains phosphorus on which algae feeds. Excessive phosphorus in a lake can spark the sort of algal blooms North Pond has suffered each of the past four summers.

7 Lakes Alliance was one of seven recipients to receive Clean Water Act grants through Maine DEP. It is the only organization to have earned two grants – \$112,550 for the Long Pond watershed and \$111,884 for the Messalonskee watershed. (A watershed is the geographic area that drains into a specific waterbody.) Of the \$854,672 in grants awarded in Maine in 2022, 7 Lakes received 26% of the funds.

Last year, 7 Lakes received three grants totaling \$308,650 to address erosion around North Pond, Great Pond and McGrath Pond-Salmon Lake. The funds were used to improve seven miles of gravel roads and driveways, plus culverts, ditches and a bridge. Funding for these projects, in part, was provided by the U.S. Environmental Protection Agency under Section 319 of the Clean Water Act. The funding is administered by Maine DEP in partnership with EPA.

Clean Water Act grants help 7 Lakes address harmful erosion that washes dirt into waterbodies. This gully eroded 5 feet after a December rainstorm.



### 3 COMMON BEST PRACTICES FOR SLOWING EROSION

A major thrust of 7 Lakes Alliance is encouraging and facilitating “best management practices,” or BMPs, that mitigate erosion into lakes and streams. Such measures are important to protecting and restoring water quality. Developed property, particularly construction that is not sustainable, is prone to creating runoff. Dirt carries phosphorus into a waterbody, and phosphorus feeds algae, which degrades water quality.

All BMPs are good, says Stuart Cole, 7 Lakes’ erosion control project coordinator. Which are best, Cole says, depends on the characteristics of a property. He identified the following three BMPs as most common.

- **Vegetative buffers** are the most effective BMPs, Cole says. Trees, shrubs, bushes, plants and duff anchor the soil better than grass and keep it from washing away. Trees canopies offer the added benefit of dispersing rainfall before it hits the ground, minimizing runoff. Blueberry sod and bushes are particularly effective BMPs.
- **Defined pathways** offer meandering paths to the water using crushed stone or mulch. Left to their own devices, people trod the most direct path between their camps and their docks, typically wearing a dirt path straight to the water. Coarser than the covering used on playgrounds and flowerbeds, erosion-control mulch is the gold standard for mulch.
- **Defined parking areas** provide surfaces that, while not completely impervious, are



Most shoreline properties could benefit from more vegetative buffers in limiting erosion. Blueberry sod such as this is the gold standard of vegetative buffers, though it is expensive.

better than dirt. The porous pavers at the 7 Lakes building at 137 Main St. in Belgrade are a great example of a pervious parking area. Many people opt for bluestone, which creates less runoff than asphalt and is leagues better than dirt.

7 Lakes’ LakeSmart program is a free and easy way to determine which BMPs can help

minimize runoff from a shoreland property. Recommendations from a LakeSmart survey can be installed in the summertime by 7 Lakes’ Youth Conservation Corps for a minimal cost. The property owner pays for the materials, though Cole arranges for their acquisition. To schedule a LakeSmart survey or YCC project, email [stuart.cole@7lakesalliance.org](mailto:stuart.cole@7lakesalliance.org) or call 207-495-6039.

### GRASS CAN BE BAD FOR THE LAKE – HERE’S WHY

The grass is not always greener. Expansive lawns that slope down to the water risk fouling water quality.

Grass has shallower root systems than trees, shrubs, native ground covers and other types of vegetation. Deeper roots more effectively hold dirt in place. Dirt contains the naturally occurring element phosphorus – a key nutrient on which algae feeds. So, the more dirt – and phosphorus – washed into a lake by stormwater runoff, the higher the likelihood of an algal bloom.

Turf also fails to slow and absorb stormwater runoff as well as other types of vegetation and duff – organic matter such as leaves and pine needles decaying on a forest’s floor. Stormwater gains velocity as it passes over grassy declines, increasing erosion into waterbodies.

That’s why the State of Maine passed a law that prohibits raking duff within 75 feet of shorelines – to preserve absorbent material that impedes stormwater runoff. The statewide conservation organization Maine Lakes

recommends limiting lawn size, mowing less often, stashing rakes and leaving clippings on the ground.

Leaving clippings on the ground also negates the need to fertilize lawns – another way grass can threaten a lake’s health. Phosphorus is a key ingredient in fertilizers. Applying fertilizer to a lawn risks phosphorus being washed into a waterbody, again feeding algae. Further, fertilizers, herbicides and pesticides can harm children, pets and aquatic life.

Stuart Cole, 7 Lakes Alliance’s erosion control project coordinator, offered these suggestions for mitigating the impact of lakefront lawns:

- **Request a LakeSmart or Youth Conservation Corps evaluation** to identify ways to control erosion from a lakefront property. Request an evaluation by emailing [stuart.cole@7lakesalliance.org](mailto:stuart.cole@7lakesalliance.org). Recommendations from LakeSmart evaluations can be implemented by 7 Lakes Alliance’s YCC, which provides the labor at a discounted rate.

- **Plant a vegetative buffer** between the lawn and the lake. Blueberry bushes are especially effective. (Plus, fresh blueberries!)

[SEE GRASS ON PAGE 8](#)



This erosion along Salmon Lake is from water flowing unimpeded across a sloping lawn onto a beach. Grass is ineffective at absorbing runoff and holding dirt in place.

## WATER SAMPLING ISN'T JUST A SUMMER ENDEAVOR

By Lizzy Gallagher | Assistant Lake Scientist

The Compass and Great-Great, 7 Lakes Alliance's trusty water-quality sampling boats, shuttle team members to and from sampling sites on all seven ponds throughout the summer. But did you know we keep at it long after the swimming season ends?

Just as the beautiful fall colors signal a change in seasons in forests, lakes undergo seasonal changes, as well. One important change we look for during our fall monitoring is the shift from stratified to mixed waters. Lakes can become stratified during the summer, meaning they have distinct layers of water with different temperatures. If you plunged into a lake last summer, you'll remember the top layers were warm. As you dove deeper, the water got cooler.

As these layers warm throughout the summer, they stay near the top because warmer water is less dense than cooler water. Once this pattern is established, it carries throughout the entire water column to the bottom of the lake, which can limit the transportation of dissolved oxygen. During periods of stratification, the bottom of the lake can become anoxic (without oxygen). That creates conditions that allow phosphorus to escape from the lakebed. Excess phosphorus in the water column is a problem we want to avoid, as it can lead to algal blooms.

As top waters cool in the autumn, they eventually mix with the rest of the water column. The term for complete mixing is lake turnover. Once lakes turn over, dissolved oxygen is evenly distributed. Sampling late into the fall lets us capture the timing of this change. This is vital for two reasons. First, because turnover means the layers of water are completely mixed, algal levels can increase during and after turnover because there is a release of phosphorus during the process. On some lakes, this can result in a fall algal bloom.

Additionally, it is important to know when an absence of oxygen on the bottom of the lake

has ended, as it will have implications for the next summer in terms of phosphorus levels.

In deeper lakes, such as Great and Long ponds, and Messalonskee and Salmon lakes, the timing of fall turnover varies. At some points in time, one part of the lake may have mixed while another has not.

We continue to monitor these sites as long as the weather holds. At some point, ice on the lakes forces a temporary hiatus until it is safe to sample again. Although we measure many of the same parameters, winter sampling is an entirely different ballgame. By drilling through the ice to sample, we can monitor the many lake processes that occur beneath the ice. Winter sampling provides the unique opportunity to study these processes while the lake is buffered from the atmosphere.



Assistant Lake Scientist Lizzy Gallagher lowers a probe to measure water temperature and oxygen levels while collecting water samples in October. 7 Lakes collects and analyzes samples throughout the fall to determine when a lake's water "turns over" after being stratified by temperature throughout the summer.



## STAFF Q&A

**Name:** Jonathan Milne

**Title:** Land Steward

**Staff member since:** November 2021

**Education:** Master's degree in Environmental Studies/Conservation Planning, bachelor's degree in Recreation and Park Management/Forestry focus

**Previous work experience:** Landscape Planner, Park Ranger at Baxter State Park, Outdoor Program Director for the U.S. Navy and Colby College, Field Technician working on ecological characterizations of Superfund sites

**What are the responsibilities of your role?**

Taking care of all of the lands in the 7 Lakes Alliance portfolio. That includes maintaining trails, monitoring all lands on an annual basis, and GIS mapping to help tell the story of conservation.

**What's the most rewarding aspect of your job?**

It is a combination of working in the field, working with all the people who support and enjoy these conserved lands, and sharing my knowledge and passion for the natural world.

**What's the most challenging facet of what you do?**

Every land stewardship person faces challenges. One is the need to be in many locations that require work over the course of a normal work year. Another is trying to anticipate what the climate will bring to our area and how to make each acre as resilient as possible.

**What about your job might surprise others?**

Land stewardship requires a varied skill set that includes: GIS mapping, relationship building with supporters, an understanding of how landscapes impact water quality, and a forward-looking approach that integrates cutting-edge landscape knowledge to address changing climate.

**What can folks do to practice good stewardship of conserved lands?**

Two primary actions are critical to stewarding lands over a long duration of time: Practicing "Leave No Trace" outdoor ethics when you are visiting any lands, and sharing your knowledge and passion with a younger person.

## PRESIDENT'S MESSAGE

The Belgrade Lakes watershed is brimming with springtime. Songbirds and loons are returning, trillium are popping up on forest floors, and nights are filled with a symphony of frog-sound. We all share a sense of anticipation and longing for a return to the lakes and lands.

As water moves through the spring landscape, it reveals how our collective actions can jeopardize fragile lands and waters. Runoff from too much lawn, unsustainable development and poor land management erode dirt into our waters. Eventually, ALL of our lakes are under threat of turning green with an overabundance of algae, fueled by phosphorus in the dirt.

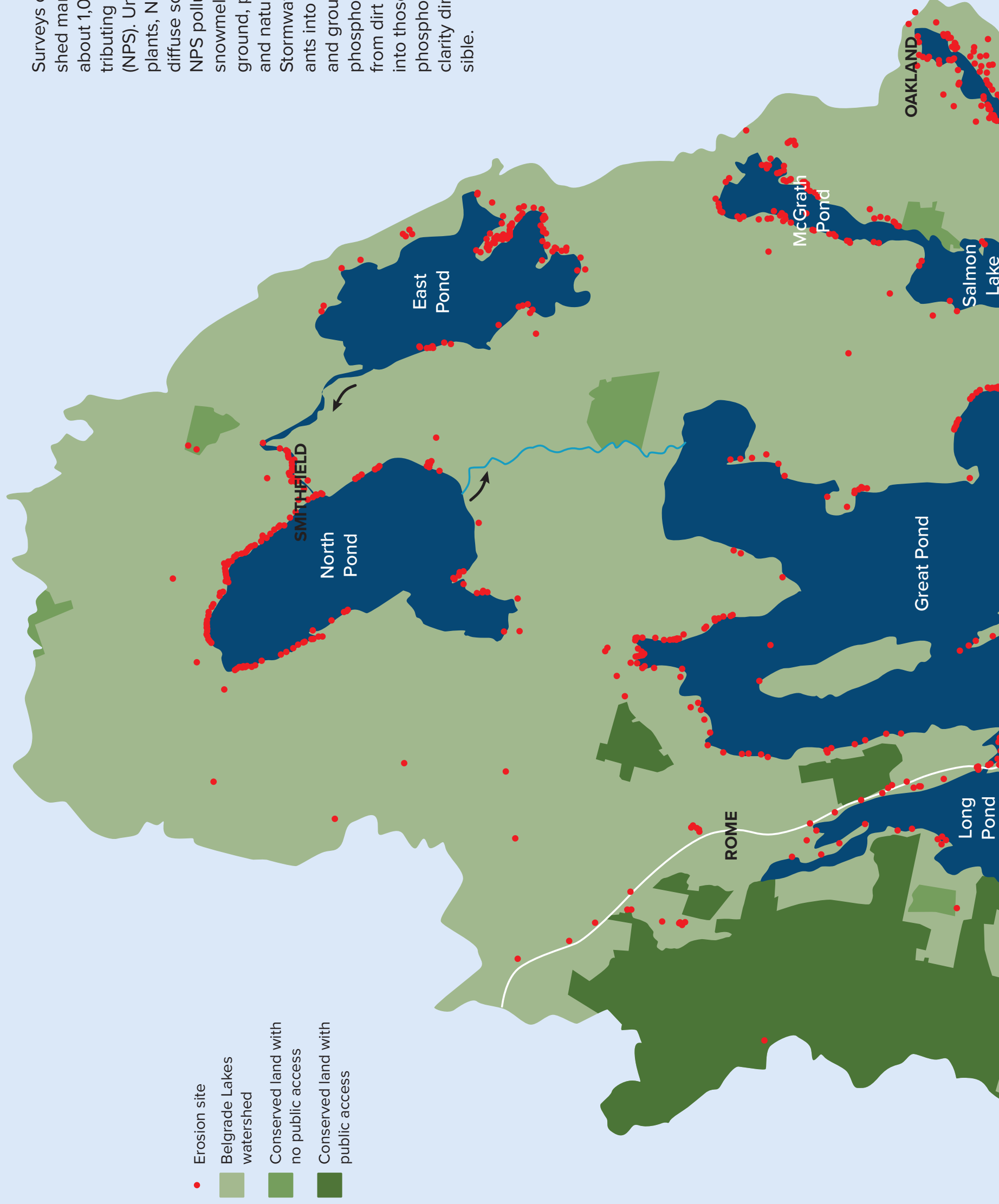
So, spring is a perfect season to renew your commitment to protect our lakes and lands. Support 7 Lakes, lake associations and other causes that protect nature and our communities. Schedule a free visit from our friendly, knowledgeable erosion-control experts. Enlist the Youth Conservation Corps to make your property lake-friendly – even LakeSmart! Take simple steps to prevent the spread of harmful invasive organisms. Learn something new at a 7 Lakes hike or event.

We would love to hear from you how 7 Lakes can partner with you to make a difference for our lakes and lands.

Laura Rose Day, President and CEO

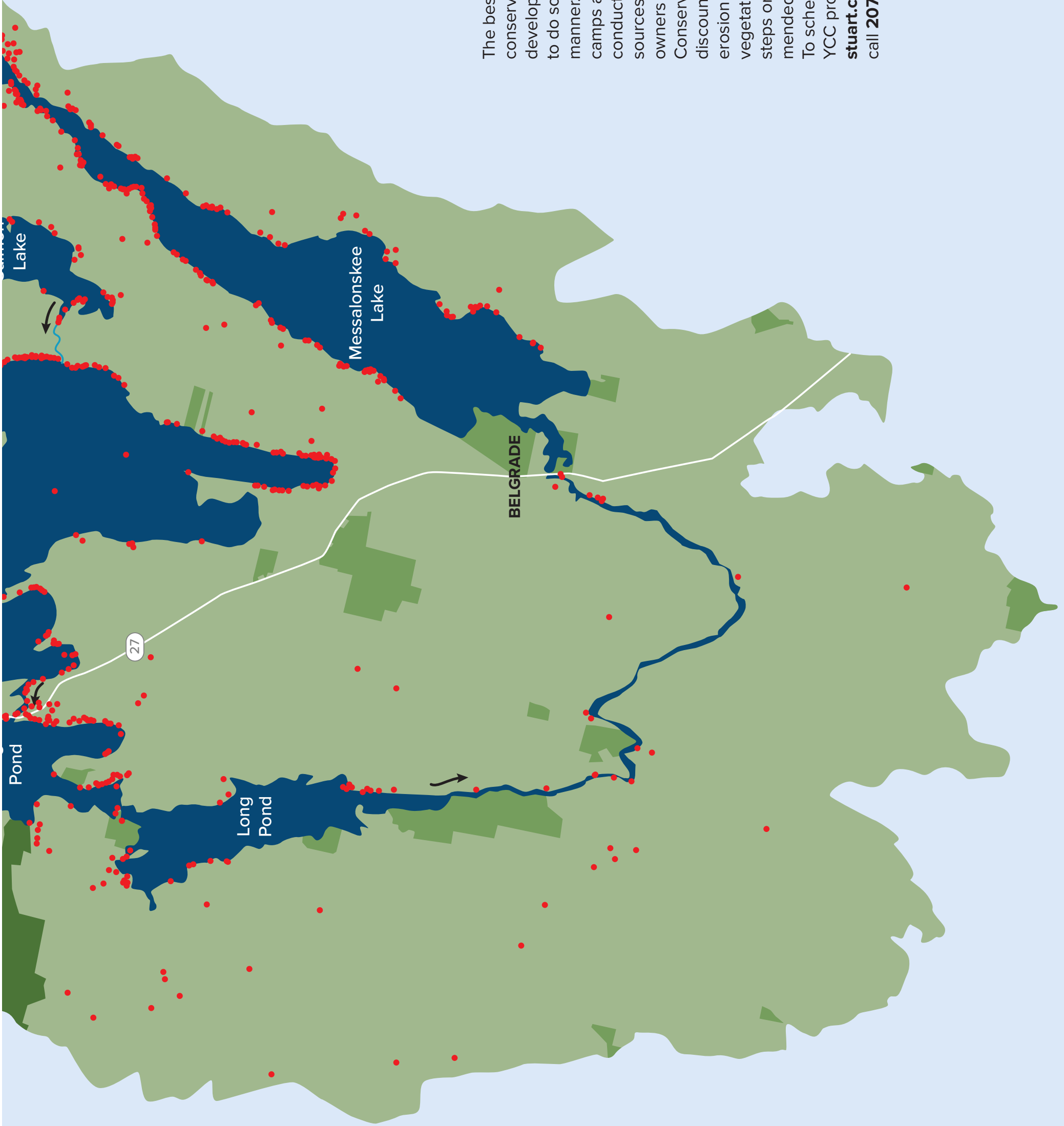
# Erosion in the Belgrade Lakes Watershed

Surveys conducted as part of watershed management plans have identified about 1,000 sites where erosion is contributing to nonpoint source pollution (NPS). Unlike pollution from industrial plants, NPS pollution comes from many diffuse sources, such as residential lots. NPS pollution is caused by rainfall or snowmelt moving over and through the ground, picking up and carrying human and natural pollutants, including soil. Stormwater runoff deposits the pollutants into lakes, rivers, streams, wetlands and groundwater. Much of the external phosphorus in lakes and streams comes from dirt washing from developed lands into those waterbodies. Algae feeds on phosphorus. When algae grows, water clarity diminishes and blooms are possible.





The best way to prevent erosion is to conserve lands so they are either not developed or, if they are developed, to do so in a limited and lake-friendly manner. For developed lands, such as camps and lakeside homes, 7 Lakes conducts LakeSmart surveys to identify sources of NPS pollution that property owners can remedy. Through its Youth Conservation Corps (YCC) and for a discounted fee, 7 Lakes will perform the erosion control work – such as planting vegetative buffers, building infiltration steps or defining pathways – recommended by a LakeSmart survey or a YCC project this summer, email [stuart.cole@7lakesalliance.org](mailto:stuart.cole@7lakesalliance.org) or call **207-495-6039**.



## SAVE OUR SHORES; WAKE NO MORE

An amusing scene in the classic film “On Golden Pond” has young Billy asking crotchety old Norman Thayer if his boat is fast as they are pulling away from a dock. In classic curmudgeonly Norman Thayer fashion, he drops the throttle and the boat rockets forward, throwing Billy back into his seat.

Of course, “On Golden Pond” was made 42 years ago. Today there is thankfully a greater appreciation for how damaging wakes crashing into shorelines are to the health of lakes. Hence the rule to travel no faster than headway speed when in a stream or within 200 feet of shore. Headway speed is the slowest speed at which a motorized watercraft may be operated and maintain steerage. For most boats, that’s no more than 6 mph.

The State of Maine defines the area within 200 feet of shore as a water safety zone. The state normally does not buoy hazards within this zone except when marking critical, high traffic areas or a channel (as in the Mill Stream that flows from Great Pond to Long Pond). So safety is one reason to slow down to headway speeds in the 200-foot zone. But so is lake ecology.

As wakes ripple outward, they form waves. Waves eventually crash into shore. That pounding can create erosion, particularly on shores not fortified by riprap. That erosion loosens dirt into a waterbody. Dirt contains phosphorus. And phosphorus is the nutrient that feeds algae, which can turn lake water a sickening green.

So, a simple way to protect lakes (the mission of 7 Lakes Alliance along with conserving land) is to slow your motorboat or jet ski as it approaches shore. Wakeboats designed to create giant wakes should stay even farther from shore as they speed across the water.

For folks who rent their camps to summer visitors, for new camp owners and for businesses that rent boats, a reminder of the 200-foot no wake zone would serve both those clientele and the lakes well.

To view a short no-wake video message, visit <http://bit.ly/3noDbdQ>.



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THE CONSERVATIONIST

## STATE LAW BANS LEAD FISHING TACKLE TO SAVE LOONS

Lead fishing tackle kills loons.

That sad truth played out on Great Pond in September, when a lakefront property owner notified 7 Lakes of a distressed adult loon on his beach. The bird was taken to Avian Haven, a wild bird rehabilitation center, where an X-ray revealed a lead fishing weight in its gizzard and a clip from a jig in its intestines.

Avian Haven officials found a deadly level of lead in the loon’s bloodstream. Euthanasia was the only option to ending the bird’s misery.

“The takeaway is there are still way too many lead jigs, sinkers, et cetera that are no longer legal to sell in Maine but are still in too many tackle boxes,” said Dick Greenan, who leads the Loon Preservation Project for the Belgrade Lakes Association, the association for Great and Long ponds.

To protect loons, the State of Maine in 2017 outlawed the sale and use of unpainted lead-headed jigs and sinkers containing 1 ounce or less of lead and measuring 2.5 inches or less in length. Lead poisoning caused by ingesting lost or discarded fishing gear is a leading cause of death for adult Common Loons.

Loons ingest lead tackle by eating a fish that has swallowed a jighead or sinker, striking at a line with lead tackle attached, or mistaking small split-shot sinkers for pebbles, which loons ingest to aid in digestion.

Early signs of lead poisoning include abnormal behavior, progressing to diarrhea, weakness, tremors, gasping and muscle paralysis. Loons with late-stage lead poisoning will pull themselves up on shore. Loons die within four weeks of ingesting lead tackle.

Lead poisoning also impacts bald eagles, common mergansers, mallards, American

black ducks, Canada geese, herons, terns and gulls.

Dead loons can be reported to the Portland-based Biodiversity Research Institute at 207-839-7600. BRI collects dead loons from across New England to determine causes of death. Greenan, the BLA’s point person on loon preservation, may also be contacted at 770-833-1085. Dead loons should be photographed, and their location and if they are banded noted. They should never be touched by a layperson.

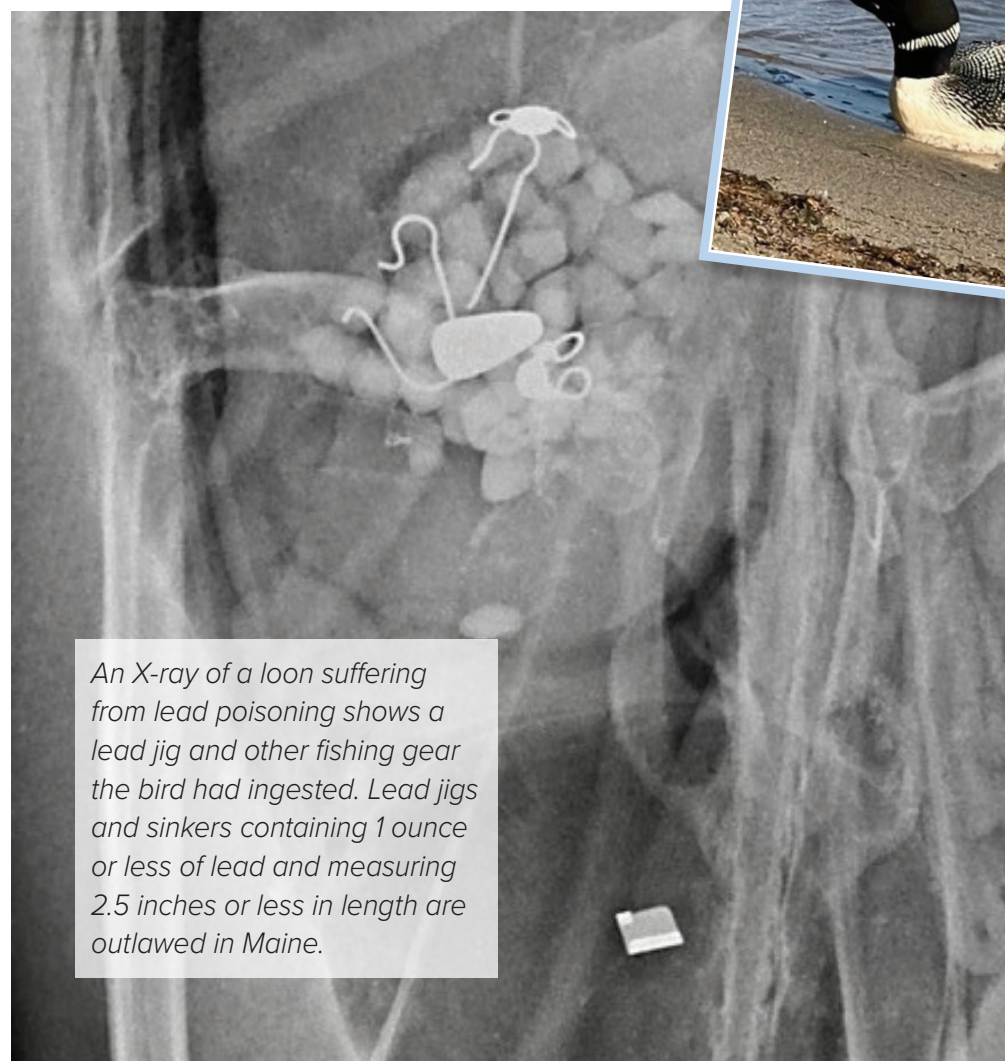
Along with switching to tackle made from tin, tungsten, steel and ceramics, anglers should examine their tackle boxes and properly dispose of lead tackle. A list of Maine retailers who sell non-lead tackle is posted at [fishleadfree.org/me](http://fishleadfree.org/me), as is a list of lead tackle collection sites, including the 7 Lakes Alliance headquarters at 137 Main St. in the Belgrade Lakes village.

### LEAD TACKLE COLLECTION SITES

- 7 Lakes Alliance, 137 Main St., Belgrade Lakes village
- Any Maine Inland Fisheries and Wildlife office, including:
  - 270 Lyons Road in Sidney
  - 353 Water St. in Augusta
- Transfer stations
  - Belgrade Transfer Station, Dunn and Transfer Station roads
  - Skowhegan Transfer Station, 29 Transfer Station Drive



*Suffering from lead poisoning from ingesting lead tackle, this loon pulled itself onto a Great Pond beach in September. The bird was euthanized.*



*An X-ray of a loon suffering from lead poisoning shows a lead jig and other fishing gear the bird had ingested. Lead jigs and sinkers containing 1 ounce or less of lead and measuring 2.5 inches or less in length are outlawed in Maine.*

## SUMMER HELP WANTED

7 Lakes Alliance seeks summer workers to assist in our Courtesy Boat Inspection, Youth Conservation Corps and Outreach programs.

The Youth Conservation Corps and Outreach positions involve working up to 40 hours per week. Courtesy Boat Inspectors can also work up to 40 hours per week, though their schedules can be tailored to accommodate personal schedules.

For job descriptions and applications, visit [7lakesalliance.org/careers](https://7lakesalliance.org/careers). Here's a brief description of each position:

- **COURTESY BOAT INSPECTOR** – CBIs inspect boats for invasive plant fragments and organisms as watercraft enter and leave the lakes via public boat launches from late May to mid-October. This helps prevent invasive species from spreading between waterbodies. CBIs are trained to identify invasive aquatic plants such as milfoil and curly-leaf pondweed.

CBIs will use a scheduling app to sign up for the shifts they wish to work. For more information, contact Invasive Aquatics Program Director Sharon Mann at [captainmann88@gmail.com](mailto:captainmann88@gmail.com).



*Courtesy Boat Inspectors inspect watercraft as they are entering or leaving the lakes to ensure that invasive plant fragments and organisms are not being spread between waterbodies.*

- **YOUTH CONSERVATION CORPS** – The YCC is comprised of high school and college students who install erosion-control best management practices at shoreline residential properties. These measures include vegetative buffers, infiltration steps and meandering paths. YCC members work once school is out of session until classes begin again in late summer. For more information, contact Erosion Control Project Coordinator Stuart Cole at [stuart.cole@7lakesalliance.org](mailto:stuart.cole@7lakesalliance.org).
- **OUTREACH STAFF** – The Outreach staff often serves as the “face” of 7 Lakes during the summer season, greeting and assisting visitors in the gallery of our building, and planning and executing educational and recreational programming. The job requires comfort in interacting with the public. Outreach staff work from the time classes end in the spring until school begins in late summer. To learn more, contact Communications and Operations Director Anthony Wilson at [anthony.wilson@7lakesalliance.org](mailto:anthony.wilson@7lakesalliance.org).

## CHEWONKI TO OFFER VARIETY OF SUMMER PROGRAMS

Chewonki, a Maine environmental education organization that teaches appreciation and stewardship of the natural world, will again bring its children's nature programs to 7 Lakes Alliance in summer 2023.

The Chewonki lineup will span from late June through early August, mostly occurring on Tuesday afternoons at 3 p.m. at the 7 Lakes headquarters, 137 Main St. in the Belgrade Lakes village. All of the hour-long programs are free and open to the public. Chewonki educators typically bring live animals as part of their presentations.

This summer's lineup is:

- **JUNE 27 – ANIMAL ADAPTATIONS.** Webbed feet, camouflaged fur or spiny backs are all amazing ways that animals use adaptations to survive in the wild every day.
- **WEDNESDAY, JULY 5 – BIOMIMICRY.** Join us as we explore the ways engineers have taken advantage of nature's bright ideas through biomimicry. And meet some live animals that help us draw comparisons between human-made products and animal adaptations.
- **JULY 11 – FINS & FLIPPERS.** A presentation examining the four major groups of marine mammals, their special adaptations for keeping warm, finding food and breathing air in the marine environment, and the many threats they face. Children then work together as a group to reconstruct a Pilot Whale skeleton.

- **JULY 25 – OWLS OF MAINE.** Three live owls are the highlights of this program, which introduces participants to the owls native to Maine and New England.

- **AUG. 1 – SCALES & TAILS.** Many people conjure up images of slimy skin and bloodthirsty monsters when they hear the word “reptile.” This hands-on program works to dispel some of those fears by allowing students to examine snakeskins, turtle shells, skeletons and other unique reptilian artifacts.

- **AUG. 8 – THE BUGMOBILE.** Is a bug an insect? Is a spider a bug? Chewonki's “Bugmobile” transports the world of arthropods — insects and their relatives — into the classroom.

- **AUG. 15 – VERNAL POOLS.** Let's dive deep into these shallow waters to take a closer look at the seasonal nature of a vernal pool and the impact it has on amphibian and invertebrate life cycles.

7 Lakes Alliance is planning other educational and recreational programming for summer 2023. See the events already on tap at [7lakesalliance.org/allevents](https://7lakesalliance.org/allevents).

7 Lakes is dedicating the 2023 Chewonki summer series to honor the memory of Pat Klingenstein. Along with her entire family, Pat has been a dedicated friend and steadfast supporter of 7 Lakes. She was deeply committed to education and forever loyal to her roots in Maine, where her philanthropy will have a lasting impact.

*One of the popular features of Chewonki's Owls of Maine presentation is the presence of three live raptors.*





*The view of Maine's western mountains from the conserved lands atop Vienna Mountain.*

## WATER QUALITY CONTINUED FROM PAGE 1

management strategies we must employ to protect the lakes.

Finally, the water samples we collect finish telling the story. The ways in which phosphorus, chlorophyll (a proxy for algal biomass), and the structure of the algal community change over the course of the year tell us about how a lake's ecosystem is functioning.

Lakes are not swimming pools. (They would be bad for fishing if they were!) A well-functioning ecosystem provides all sorts of services to the human and ecological communities they serve. When a lake's ecosystem is out of balance (namely, too much phosphorus), we see nuisance algal blooms and stressed fish populations.

Ultimately, all the monitoring we do helps us tell the story of the lakes each year and why some are "good" years and others "bad." Each lake is unique, and only by collecting this data can we effectively understand and tell this story.

## GRASS CONTINUED FROM PAGE 2

- **Let lawns revert to their natural states**, mowing only once a year.
- **Regrade lawns** to flatten slopes and reduce the speed of runoff.
- **Install a rain garden** – a vegetated, low-lying area that collects runoff.

For more information, contact Cole at the email address above or 207-495-6039.

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