The Federation of Vermont Lakes and Ponds

Spring 2021 Newsletter

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The Federation of Vermont Lakes and Ponds

"To preserve and protect Vermont's lakes, ponds and their watersheds for the benefit of this and future generations."

UPCOMING EVENTS

Leahy Summit 2021, Spring Meeting **May 13**
Education and Career Pathways for Sustainable and Resilient Communities
This year's Leahy Summit focuses on how Vermonters are creating innovative work-based learning opportunities for high school, technical center, and college students in STEM-related fields like environmental stewardship, health and biosciences, and advanced manufacturing.

The meeting will provide opportunity for educational institutions, businesses, organizations, and agencies across Vermont to: learn how State and Federal investments are supporting new programs and directions; and, hear about exciting wastewater treatment and brownfields learning initiatives that may provide opportunities for statewide collaboration.

Register here for this free virtual event, noon to 1PM.

National Invasive Species Awareness Week Part II Outreach and Education **May 15-20**

2021 Lake Seminar **June 4**
Phosphorus Pollution—A High-stakes Watershed Issue
Join us online for this ***virtual*** event. See **page 8** for details.

FOVLAP 2021 Annual Meeting **September 9**
Location TBD

The Natural Shoreland Erosion Control Certification Course **November 5-8**
Webinar; open to all contractors, shoreland owners, and anyone else interested in learning more about lake-friendly practices and bioengineering techniques. *See attendee testimonial on page 16.*

NECNALMS Webinars

The New England Chapter of the North American Lake Management Society is currently offering webinars at least twice a year in leu of in-person events.

For more information on NECNALMS, and links to webinars and updates click here.

NAISMA Webinars

The North American Invasive Species Management Association offers free webinars on the 3rd Wednesday of every month at 2PM. Click this link NAISMA 2021 Webinar Schedule for information and webinars.

cover photo: Harveys Lake, Barnet (Photo credit S. Sprague)

Message from President Don Weaver

Hello year 2021 and goodbye year 2020—a year I believe nobody wants to repeat. The COVID pandemic led to minimal socializing, working from remote locations or home, remotely held meetings, and the list keeps on going. However, we all seem to adapt. FOVLAP too made a rapid switch, allowing us to continue our important work of environmental education and outreach to move forward; the 2020 Lake Seminar was cancelled but two presentations were moved to the virtual Annual Meeting held on July 27, 2020.

I am happy to say our programs are back to near normal. The 2021 Lake Seminar scheduled for June 4th will be a virtual seminar due to safety concerns. Details on the program, "Phosphorus Pollution—A High Stakes Watershed Issue," are available on our website, www.vermontlakes.org/about-us/lake-seminar

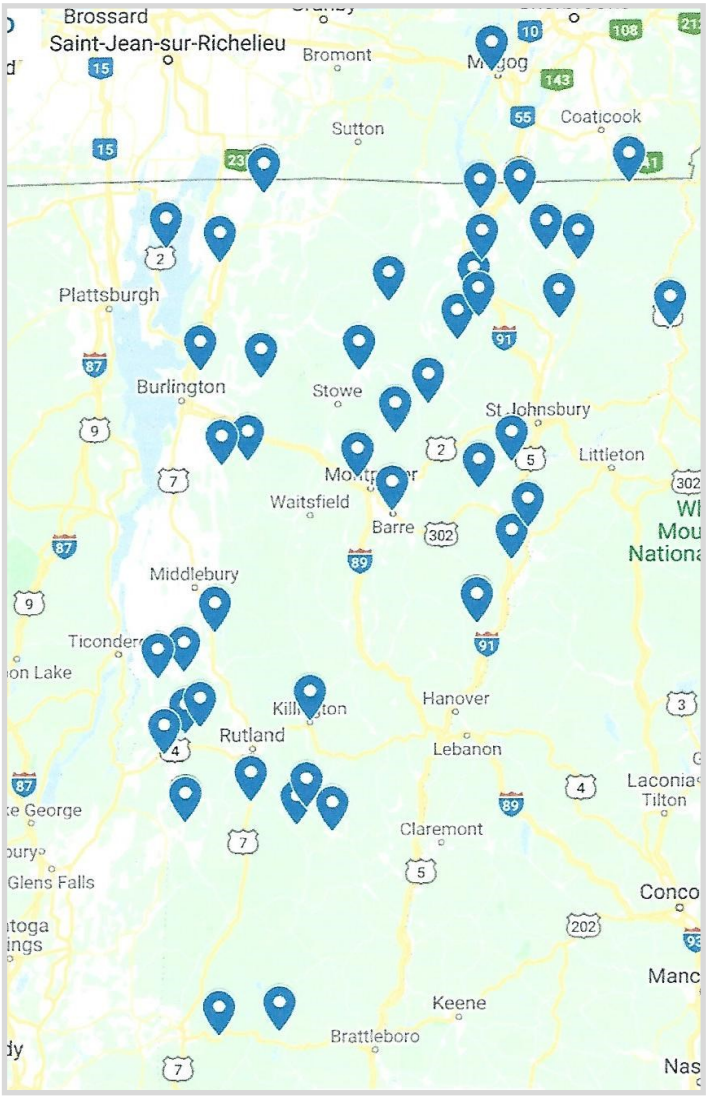
The FOVLAP Annual Meeting will be held September 9, 2021, and I am hopeful for a face to face get together. Check our web site for details, www.vermontlakes.org/about-us/annual-meetings/

An ad-hoc FOVLAP committee was appointed for the development of "Policies and Procedures" for the board of directors and axillary members. We are hopeful the most important issues will be addressed by the time we meet for our Annual Meeting. Also, three board directors formed an external committee, the "aquatic invasive species (or AIS) committee" to examine "Greeter Programs" operated by Lake Associations to determine if problems exist, collect information and report their findings to the Vermont Lakes and Ponds Management and Protection Program.

Have a great summer season, stay healthy and COVID-free, and think vaccine but more importantly, get vaccinated. We can ALL help to bring this pandemic to a close.

I hope to see you all at the 2021 Lake Seminar, Don

Member Lake Associations



FOVLAP has 47 member lake associations. Woo hoo!

Thank you to FOVLAP Treasurer, Bruce Tanner for producing and maintaining this map.

Consider Joining the FOVLAP Board!

Participating on FOVLAP's Board of Directors is an opportunity to get more involved and work directly with a dynamic team of fellow lake and pond enthusiasts. The Board is currently looking for a Treasurer and two director positions. Interested? Contact FOVLAP President, Don Weaver at dbweaver@att.net

Do Your Part. Grow Nature to Thrive.

Amy Picotte, Lakes and Ponds Management and Protection Program

Natural shores are home to many, especially during warm months when people and wildlife return to Vermont lakes. But not all shorelands are so welcoming. Twelve years ago, nobody wanted to go near the polluted shores of the Detroit River, a river that once caught on fire from industrial waste and was armored in 14 miles of car factory sprawl. Until now.

Restored Detroit Riverfront (Photo credit Detroit Riverfront Conservancy)

Less than 20 years ago, ecological designers, engineers and the Detroit Riverfront Conservancy started restoring the Detroit River, installing bioengineering wherever possible and softening the shoreline. The shore is now a welcoming place for people and nature. So beautiful that the Detroit International RiverWalk was named *Best Riverwalk* by USA Today 2021 Readers' Choice.

"Detroiters love their riverfront, and we are incredibly proud to be recognized and celebrated on a national level"

Mark Wallace, President and CEO,
Detroit Riverfront Conservancy

Wellness studies show that humans thrive from spending time in nature. And, maybe no surprise, but there has been a 20 percent increase in use of the Detroit riverfront since the start of the pandemic in March 2020 as people sought comfort from their local river shore. The community dependence on their restored riverfront during the pandemic also highlights the initiative for and importance of environmental justice. **New US EPA Director, Michael Regan has made environmental justice a priority and intends to clean up polluted water and air starting with our country's neglected communities.**

Naturally landscaped, Vermont lakeshores provide benefits for human wellness, water quality and wildlife, like the restored Detroit Riverfront. Shoreland owners can do their part to protect these qualities by growing nature along their shore.

ENVIRONMENTAL JUSTICE

is a movement to clean up and restore healthy environments, especially in impoverished communities, which exist closest to polluted, degraded areas.

It is time to feel grateful for the soon return to normalcy and approaching lake season. This summer consider what is best for your lake, and plant and protect native species along the shore because that is justice for lakes and for all lake users.

Failed hardscaped wall replaced with softscape bioengineering on Maidstone Lake (Photo credit H. Johnson')

For more information on bioengineering and restoring living shorelands in Vermont, visit the Vermont Lake Wise website The New Vermont Bioengineering Manual, featuring ecological shoreland stabilization designs, will be available summer 2021; stay tuned!

The Phosphorus Challenge

David Johnson, FOVLAP Board Member

Accelerated eutrophication

In a natural environment, most aquatic plants absorb the nutrients they need from a lake's substrate or water running off the land. Water erodes a watershed, carrying soil particles containing nutrients aquatic plants need to grow. The particles settle, adding to the sediment, slowly filling in a lake and providing a fertile substrate for rooted plants to thrive.

Eutrophication, a natural geological process occurring over the course of thousands of years, reflects the transport of sediments and nutrients from the land to a lake. This gradual process transforms a glacial lake with a barren lakebed into a productive, plant filled wetland for example. Human development in the watershed and along the lakeshore dramatically accelerates this natural process and is called 'cultural eutrophication'.

Risks from excess nutrients

Aquatic plants and algae are part of a healthy lake ecosystem, providing food and shelter for fish and other aquatic fauna. However, as nutrient concentrations in a lake increase to high levels through cultural eutrophication, plant and algae growth can accelerate and become a nuisance and unsightly. Thick stands of aquatic plants can make boat navigation and swimming difficult. Algae blooms are ugly, reduce water clarity and can turn toxic, forcing beach closures. Heavy plant growth or algae blooms can accelerate oxygen depletion, resulting in fish kills. Research shows that the loss of natural beauty and recreational opportunity significantly impacts shoreline property values and local economies. Parts of Lake Champlain and many other Vermont lakes are experiencing some of these problems.

Cyanobacteria bloom on Lake Champlain
(from 2020 Vermont Clean Water Initiative Report)

Transport of phosphorus into a lake

Phosphorus is an essential nutrient for aquatic plant and algae growth. Bound to the soil, phosphorus moves with soil particles transported by water. This erosion process is enhanced when stormwater flows quickly across soil surfaces directly into the lake or its tributaries. Natural shoreline vegetation and duff (decaying leaves and branches) can slow the downward flow of stormwater and allow it to infiltrate deep into the soil. When this happens, the water may still enter the stream or lake as groundwater, but the phosphorus and sediments are filtered out.

An important factor in the transport of phosphorus is the land use within the lake's watershed. Heavily fertilized farmland can be a significant source of phosphorus pollution in lakes if there is an insufficient buffer between the farm fields and the shoreline of the lake or tributaries. Natural vegetation buffers slow down stormwater flow and allow the water to be absorbed into the soil before it can reach a lake or tributary. Stores of manure from livestock and field manure spread need careful handling to avoid polluting nearby streams with phosphorus.

Near the lakeshore, stormwater runoff often occurs from buildings, roads, driveways, and other impervious surfaces. Incorporating best management practices to limit surface runoff and encourage ground infiltration will help stop erosion and phosphorous transport to a lake. In the absence of a shoreline buffer, grass lawns to the lake edge are ineffective in absorbing and preventing direct surface stormwater runoff and associated phosphorus pollution.

The pie charts on the next page show the estimates for relative contributions to phosphorus pollution from various sources for Lake

(Continued on next page)

(Phosphorus continued from page 5)

Champlain and inland Lake Eden. The story for each lake is unique.

Troubling phosphorus trends

Using data from lake water samples gathered by both volunteers and staff, the Vermont Department of Environmental Conservation routinely monitors phosphorus concentrations in many Vermont lakes. With data for some lakes spanning decades, trends in phosphorus concentration are now apparent (see https://dec.vermont.gov/watershed/lakes-ponds/monitor/lay-monitoring#Reports and "Is Vermont Losing Its Oligotrophic Lakes?" NALMS Lakeline – Summer 2018). Polluted lakes with the highest phosphorus levels at the start of the program (1980s) have generally improved. This is likely the result of more lake-friendly farming practices, the banning of phosphorus in lawn fertilizers and detergents, the improved treatment of wastewater by municipalities, and other best management practices used across Vermont. However, many lakes with low to moderate phosphorus concentrations at the start have seen a steady increase in this nutrient. Many other states record similar trends.

Potential causes for these troubling trends can be listed, however, quantifying the relative contributions is difficult. Experts rely on modeling with assumptions about the phosphorus contributions depending on the land use and the relative area of various land uses near the lake and in the watershed. Each lake is unique in these characteristics.

Legacy phosphorus

A further complication is the existence of "legacy phosphorus" bound to deep lake sediments. Under conditions of oxygen depletion (called anoxia), legacy phosphorus can be released into the water. Anoxic conditions occur in many deep lakes in Vermont during periods of thermal stratification. The stratification prevents the mixing of deep water with oxygen-rich surface water during the warm summer months. Bacterial decay of organic matter in the deep sediments depletes the oxygen resulting in legacy phosphorus release. In the fall, as the surface water cools and sinks, mixing resumes and the

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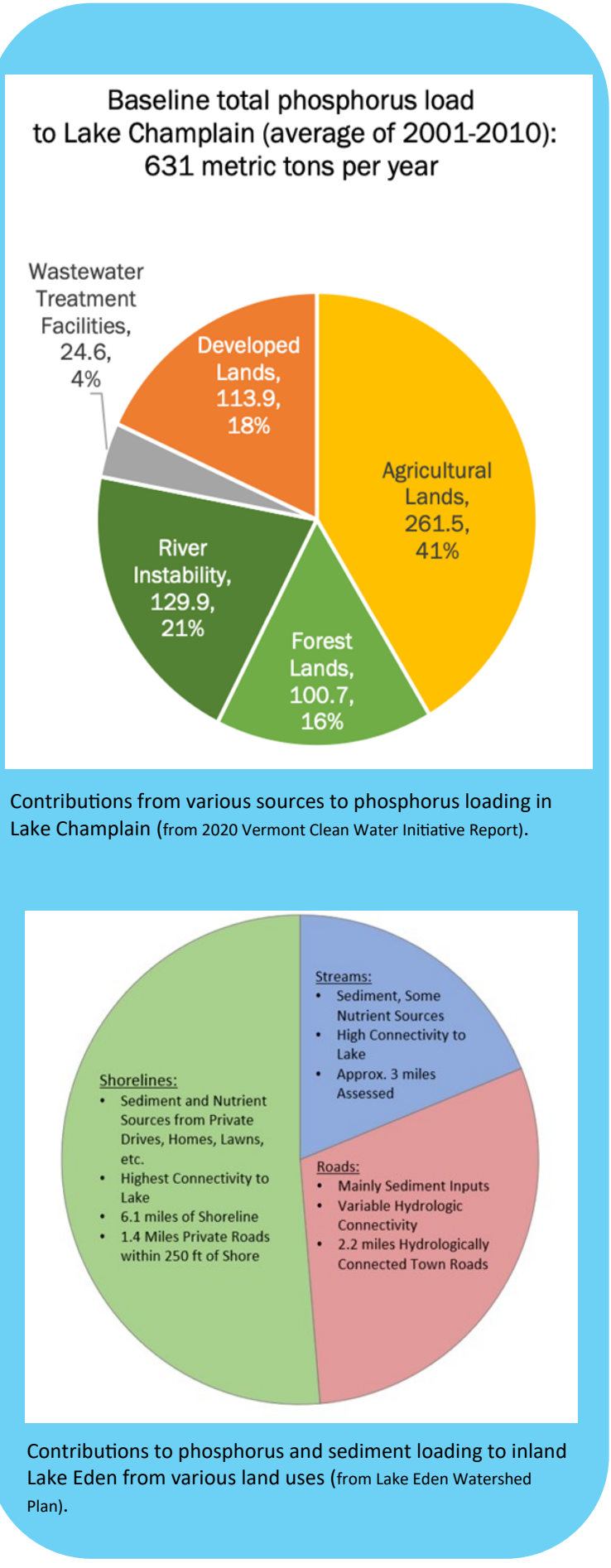


Contributions from various sources to phosphorus loading in Lake Champlain (from 2020 Vermont Clean Water Initiative Report).

Contributions to phosphorus and sediment loading to inland Lake Eden from various land uses (from Lake Eden Watershed Plan).

(Phosphorus continued from page 6)

released phosphorus that has accumulated in the deep water can reach the surface. This process may result in late fall algae blooms, even on some lakes with naturally low phosphorus concentrations. It is important to note that healthy lakes require the annual cycling of phosphorus from lake sediments into the water to support the food web.

Impacts of climate change

Climate change almost certainly contributes to the phosphorus problem. Rainfall is increasing in Vermont. Major storms cause most of the erosion and account for the most phosphorus inputs into our waterways. Water temperatures are rising increasing the risk of algae blooms in the late summer and fall. Summer stratification periods are getting longer, increasing the likelihood of anoxic conditions and the release of legacy phosphorus in deep lakes.

Government response

State and federal governments recognize increased phosphorus loading is a threat to our valuable lake resources. In response to these risks and to satisfy mandates from the Environmental Protection Agency, the State of Vermont committed to reducing phosphorus loading to specific target values over a 20-year implementation timeframe (2017-2038). The initiative is making good progress towards this long-range goal. The investment in the Vermont Clean Water Initiative, including federal contributions, reached over $80M for the year 2020, and since 2016 the investment in the program has been over $240M (see https://anrweb.vt.gov/DEC/CleanWaterDashboard/). This funding allowed implementation of lake-friendly agricultural projects, improvement of wastewater treatment, reduction of erosion along roads and shorelines, and restoration of wetlands and floodplains. Some of this funding is available to lake associations to improve conditions in their watersheds.

What can your lake association do to help?

Funding is available from the Clean Water Initiative and through the Lake Champlain Basin Program to create a "lake watershed action plan." The plan, usually created by an expert consulting firm, 1) identifies many specific phosphorus reduction projects within the lake's watershed, 2) prioritizes them using accepted criteria that consider reduction potential, cost, and practicality, and 3) provides preliminary engineering designs and cost estimates for a few of the projects with the highest priority. Such plans may also use established techniques to estimate the relative phosphorus contributions of different land-use types within the watershed.

Lake associations can also encourage individual members to take action to reduce stormwater runoff and erosion from their properties. An excellent way to do this is to follow the guidelines available from the Vermont Lake Wise Program. Individuals should also be encouraged to maintain septic systems regularly, avoid yard and garden products containing phosphorus, and obey the Vermont Shoreland Protection Act regulations. To learn more about other phosphorus reduction activities planned or underway in your watershed, visit Vermont's Watershed Planning Program website.

For more on phosphorus, FOVLAP's 2021 Lake Seminar will focus on phosphorus pollution in Vermont Lakes. Click here to register.

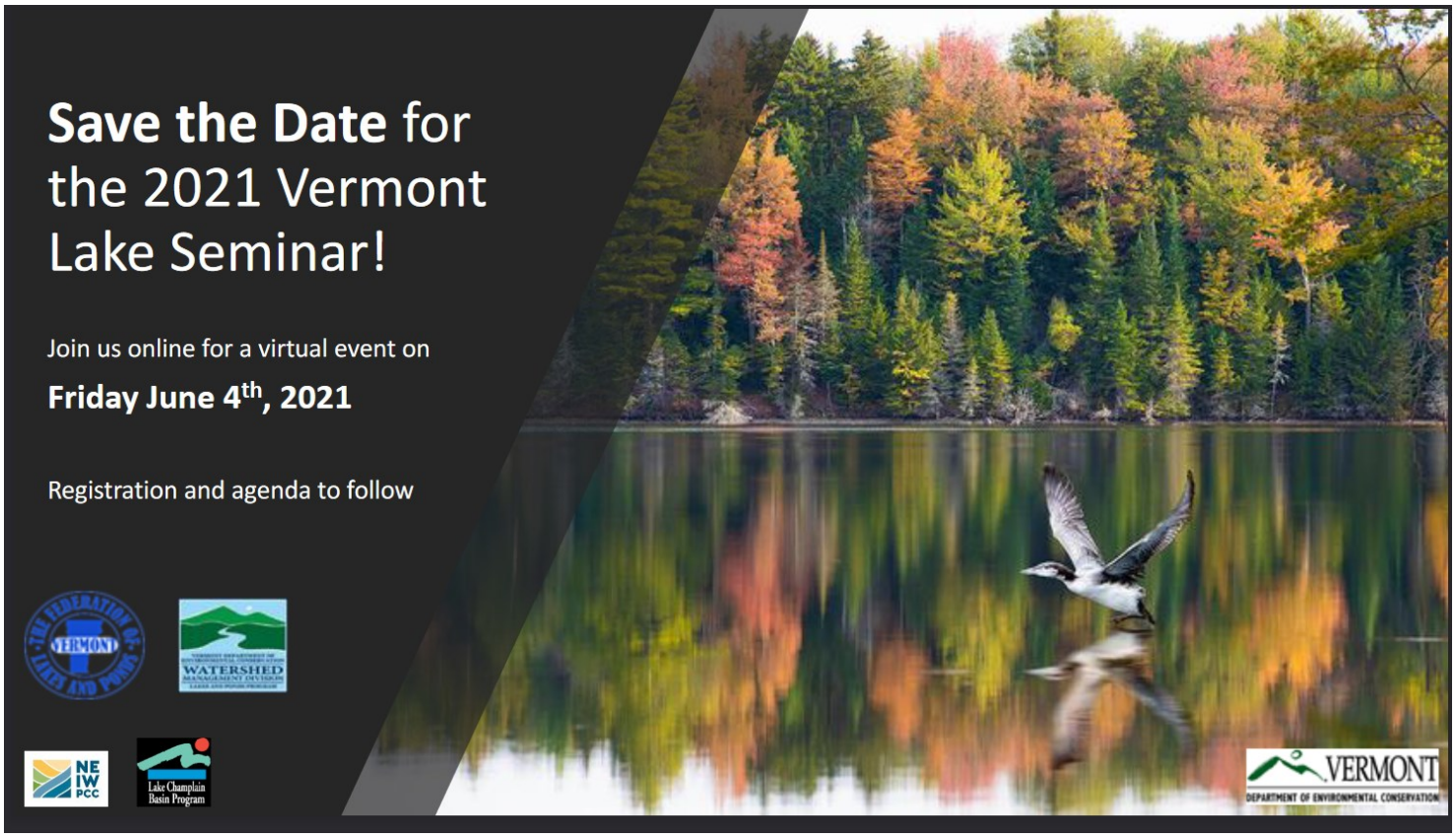
2021 Lake Seminar *Virtual* Event, June 4, 2021

Phosphorus Pollution—A High Stakes Watershed Issue

FOVLAP is delighted to offer our annual Lake Seminar on June 4th 2021albeit, virtually. The events committee worked tirelessly to offer a seminar that is informative, but also in shorter segments—to alleviate screen fatigue as much as possible! Before each break there will be a *Water Trivia* game and the winners will receive a "door prize!"

Since monitoring began in the 1970s, increasing phosphorus trends have been observed on many of Vermont's lakes, including on lakes that are considered high quality waters. Elevated concentrations of phosphorus in a lake or pond can lead to decreases in water clarity, abundant aquatic plant growth, and even cyanobacteria blooms. Elevated phosphorus levels can impact recreational opportunities, property values, and the natural ecosystem. During the first half of this seminar, participants will learn about the sources of phosphorus pollution and the risks of inaction. After lunch, the growing threat of large wakes produced by powerboats and the implications to Vermont's lakes and ponds will be discussed. During the second half of the seminar, participants will learn what is being done to prevent phosphorus pollution to protect lakes and ponds. Participants will leave the seminar with ideas they can take to their local lake association or their own property to help mitigate phosphorus pollution.

Register for the 2021 Lake Seminar here!



A Loon Rescue in January on Maidstone Lake

Christopher von Alt, FOVLAP Board Member

It was mid-afternoon, an overcast day in late January near 0 degrees Fahrenheit, as I stood at the window, looking out at a frozen, snow-covered Maidstone Lake. Movement caught my eye. "That looks like a mink loping across the middle of the lake," I said to my wife and pandemic partner. I grabbed our binoculars, and as I focused in, I saw the animal kick its foot out as I have seen loons do so often. "We have a loon stranded on the lake, there is no way it can take off." Questions began to pop up: How did it arrive on the lake? Was it sick? Will it die? Is there any way to help it? Just then, as the wind picked up from the west, the bird made a gallant effort to fly by flapping its wings as it struggled to race across the snow-covered lake for a couple of hundred feet. Then it stopped, just off the shore in front of our home. We turned to each other, asking, "How are we going to save this loon?"

We now know that loons do not mind the cold, and they can go for long periods without eating. Sometimes they inhabit open streams at the outflows of lakes late into the winter until they are motivated by a predator or hunger to move on. However it happened, a seemingly healthy loon—without an open water pathway to take to the sky or food—was stuck on ice-covered Maidstone Lake, and we wanted to save it.

Calls, emails and text messages went out to the local Game Warden, and the leadership of the Nulhegan Basin Division of the Silvio O. Conte National Fish and Wildlife Refuge, the Maine Loon Project and the Vermont Center for Ecostudies looking for answers and help but with no immediate success. As night settled in, we talked to a Refuge biologist about going out ourselves to rescue the bird; however, we decided against it because we had no "Maidstone Lake-in-January" idea about how to hold it or what to do with it if we captured it. In the end, we determined the bird stood a better chance staying where it was until we could get someone competent to help it. We spent a restless night, wondering if the bird would live through the subzero temperatures.

Morning came and brought success. Not only was the bird alive, looking around and still resting in the same spot on the ice-covered lake, but two of the people contacted the day before had reached loon expert, Eric Hanson of the Vermont Center for Ecostudies. Eric phoned and promised to drive over to rescue the loon. Eric came equipped with a net and a plastic box with air holes in it to transport the bird. He put on a pair of snowshoes and set out across the lake, returning in short order with the bird comfortably nestled in the box on top of a life preserver, which protected its underbelly and breast, something we would never have thought of.

"The loon is a relatively small adult," said Eric, "likely from mid to northern Quebec, coming through this area while migrating." Loons that breed in North America's interior are smaller than those from Vermont, Maine or Nova Scotia, where a male can grow to be 12-16 pounds. A Minnesota or Manitoba male loon might weigh 8-10 pounds. Females weigh 2-3 pounds less from each region. Other than

Eric Hanson with the rescued loon comfortable in safe transport. (Photo credit C. von Alt)

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(Loon continued from page 9)

size, it is hard to tell the difference between a male and female loon.

After a short chat, Eric set off on the three-hour drive to open water in the Burlington harbor on Lake Champlain. Releasing the loon into the lake, Eric reported it flapped its wings over and over to realign its feathers for waterproofing, called out to the winter sky, and then dove—something that is always amazing to watch.

Eric concluded in an email, "I've always wondered what they are thinking about being stuck in the snow for day (s), then 3 hours in a warm box, and then water and normalcy. Thanks so much for all your help in tracking me down. Thanks to Rachel (the Refuge biologist) for offering to go out there. I knew if we got the bird, it'd still involve transport, thus my coming over right away."

Now the bird was back in open water, where the fishing was good and the living a bit easier. That made us all feel relieved. Please help support the Vermont Center for Ecostudies so more great outcomes are possible.

Did you know?

In 2020, FOVLAP voted to add a membership category for students older than age16 and reduce the membership fee by 50% to $13.

Is there a young person you know who would welcome a membership in our organization? Click here to give the gift of a FOVLAP student membership today!

Clean Water Policy Forum Shares Resilient Recovery Vision

Barre Lampke, ECHO, Leahy Center for Lake Champlain

At the February Clean Water Policy Forum participants learned about a new Resilient Recovery Vision from Phil Huffman of The Nature Conservancy in Vermont. The "Vision" is a new initiative focused on ensuring COVID recovery investments and policies create a future in which both people and nature thrive. Its priority areas are:

1. Strategic investments in technology, career training, job growth and other assistance create a more renewable, sustainable, and energy-efficient modern economy for Vermonters;
2. Investing in Vermont's working and natural lands bolsters a critical part of our economy and our landscape; and,
3. All Vermonters have access to clean and healthy air, water, soil, and outdoor spaces.

The Vision is intended as a lens to evaluate how COVID recovery investments and policies accomplish this goal, including the use of Federal COVID stimulus funding, state budget decisions, and legislative and regulatory proposals.

A growing number of organizations, businesses, agencies, and other groups have signed on to the Vision as part of a "big tent" approach, focusing on what unites us, not divides us. It is not a coalition that collectively advocates for specific programs or initiatives. The Vermont Clean Water Network has signed on to the Vision.

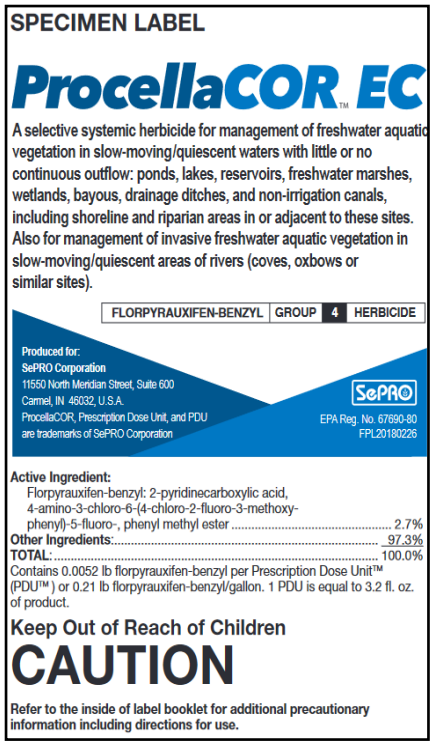
Want to Join? Organizations and businesses who sign on are using the Vision to: provide a broad context for their business decisions and program priorities; and articulate support for investments and policies that strengthen Vermont's economy and natural resource assets. Individuals who sign on are demonstrating their support for this approach and all who do this work.

If you are interested in joining or learning more, contact Zack Porter at the Conservation Law Foundation.

A New Chemical Tool to Manage Watermilfoils

Kara Sliwoski, Solitude Lake Management

ProcellaCOR (active ingredient florpyrauxifen-benzyl) is the most recent watermilfoil management tool in the aquatic toolbox. Registered with the US EPA in 2018 and northeastern states between 2018 and 2019, ProcellaCOR is a systemic herbicide used at lower application rates than other available systemic herbicides (parts per billion versus parts per million, ounces to the acre versus tens of gallons or hundreds of pounds) and a short, required exposure time (hours versus weeks or months). It may provide multiple years of watermilfoil control while having little to no impact on other non-target aquatic plant species.


SPECIMEN LABEL

ProcellaCOR™ EC

A selective systemic herbicide for management of freshwater aquatic vegetation in slow-moving/quiescent waters with little or no continuous outflow: ponds, lakes, reservoirs, freshwater marshes, wetlands, bayous, drainage ditches, and non-irrigation canals, including shoreline and riparian areas in or adjacent to these sites. Also for management of invasive freshwater aquatic vegetation in slow-moving/quiescent areas of rivers (coves, oxbows or similar sites).

FLORPYRAUXIFEN-BENZYL | GROUP 4 | HERBICIDE

Produced for:
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EPA Reg. No. 67690-80
FPL20180226

Active Ingredient:
Florpyrauxifen-benzyl: 2-pyridinecarboxylic acid, 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoro-, phenyl methyl ester 2.7%
Other Ingredients: 97.3%
TOTAL: 100.0%

Contains 0.0052 lb florpyrauxifen-benzyl per Prescription Dose Unit™ (PDU™) or 0.21 lb florpyrauxifen-benzyl/gallon. 1 PDU is equal to 3.2 fl. oz. of product.

Keep Out of Reach of Children

CAUTION

Refer to the inside of label booklet for additional precautionary information including directions for use.

Since 2018, at least 100 ProcellaCOR treatments occurred in New England and New York. Treatments have targeted Eurasian (*Myriophyllum spicatum*), variable-leaved (*Myriophyllum heterophyllum*) and hybrid (native northern watermilfoil x Eurasian watermilfoil) watermilfoil species in waterbodies ranging from small, backyard ponds to large, multi-stakeholder waterbodies.

In Vermont ten ProcellaCOR treatments authorized by aquatic nuisance control permits have been conducted, the first in 2019. These treatments targeted Eurasian watermilfoil and hybrid watermilfoil:

Eurasian watermilfoil

Lake Morey (Fairlee) 2019
Burr Pond (Sudbury) 2019
Lake St. Catherine (Poultney, Wells) 2019 and 2020
Lake Dunmore (Salisbury, Leicester) 2020
Sunrise Lake (Benson) 2020
Lake Pinneo (Quechee) 2020

Eurasian and hybrid watermilfoils

Lake Hortonia (Hubbardton) 2019 and 2020
Beebe Pond (Hubbardton) 2020

Prior to ProcellaCOR, Renovate (active ingredient triclopyr) and Sonar (active ingredient fluridone) systemic herbicides were permitted in Vermont for Eurasian watermilfoil management with a valid aquatic nuisance control permit. Like Renovate, ProcellaCOR is suited to spot applications; Sonar is applied as large-scale or whole-lake applications. The ProcellaCOR management approach pairs well with the new Vermont Department of Environmental Conservation permit requirement that limits chemical and non-chemical (e.g., diver-assisted suction harvesting, benthic mats) treatment to 40% of a lake's littoral zone, the area of a waterbody where sunlight penetrates, and aquatic plants grow in any given calendar year.

What have we learned so far using ProcellaCOR? Dosing (application rate), timing and how the chemical is applied are even more critical than with previous watermilfoil management herbicides.

Dosing has, and will continue to be, one of the most important factors of an effective herbicide application. Not unlike a person taking ibuprofen, too much use may cause negative impacts, while too little may be ineffective. Each invasive watermilfoil species has its own appropriate ProcellaCOR application rate. Application rates consider parameters such as average depth, configuration of the treatment area, the potential for dilution, and even the density of all aquatic plants target and non-target in the treatment area. Each individual treatment area is designed and approached accordingly, to ensure maximum efficacy.

For maximum efficacy with ProcellaCOR, application timing is recommended between mid-June and early September for central Vermont waterbodies (weather pending). The further north a waterbody is located, the window becomes a little narrower given the relatively shorter duration of optimal water temperatures.

(Continued on page 13)

Critters Down Under

Tracey Shadday, FOVLAP Auxiliary Board Member

With all the attention given to human health these days, we are more aware of our body's physiology and the many ways to measure health. Our lakes and streams function in the same way. Chemical and biological measures of health can signal threats to lake health. Lakes that are fortunate to have lay monitors who measure clarity, total phosphorus and chlorophyll-a, give us a partial picture of lake health, especially over time.

Scientists also use biological measurements including the presence of benthic macroinvertebrates (BMI), a term that includes water bugs, worms and mollusks. "Benthic" or bottom dwelling, and macroinvertebrates are aquatic organisms that lack a backbone and are large enough to be seen with the naked eye or a magnifier. When found in high numbers or when a large variety are present in a water body, it can serve as a bioindicator of good water quality.

Finding and catching these critters using a sieve or net offers young and old an easy and inexpensive way to observe interesting lifeforms in the part of lakes and streams typically overlooked or ignored the bottom! Observations of BMI not only point to the state of health of a water-body, but they teach citizen scientists about the food chain and their effect on the population of Vermont's larger fish, birds, reptiles and amphibians.

Some BMI are highly sensitive to environmental changes and pollutants coming from stormwater nutrient runoff and chemical contaminants while other BMI are less sensitive and can thrive in all kinds of conditions. Animals such as mussels and crayfish, for example can often withstand high levels of pollutants without being impacted. On the other hand, mayfly nymphs, caddisfly larvae and stonefly nymphs are highly sensitive to pollution and require higher dissolved oxygen levels.

Lakes that support life allow sunlight to penetrate to aquatic plants and diatoms, a phytoplankton and major type of algae that serves as food for macroinvertebrates such as the caddisfly, stonefly and midge. These water bugs become a primary food source for stream fish which in turn, provides nourishment for larger lake fish.

Collecting and observing macroinvertebrates is as easy as using a dip or kick net along the shoreline. Resource #7 and #8 on the next page can assist in identifying the most common ones.

body builder mayfly
(Credit https://nrca.uconn.edu/teachers/docs)

caddis fly
(Credit https://nrca.uconn.edu/teachers/docs)

common stonefly
(Credit https://nrca.uconn.edu/teachers/docs)

Older children and adults may prefer a more challenging method described below. To collect and record BMIs from multiple sites you will need a light-colored bucket or bin, a dip net (aka kick net), a magnifier, pipette, small dishes for sorting BMI and a journal.

Locate a local stream and look for target substrates where the collection will be optimal. These include areas where water moves over pea-sized gravel to rocks the size of a basketball. If this type of substrate is unavailable, look for substrates with woody debris, submerged plants or make leaf packs to colonize invertebrates. In your journal, sketch the stream bed and mark areas where samples will be obtained with an X. Place an arrow to indicate the direction water is traveling (see Figure 1).

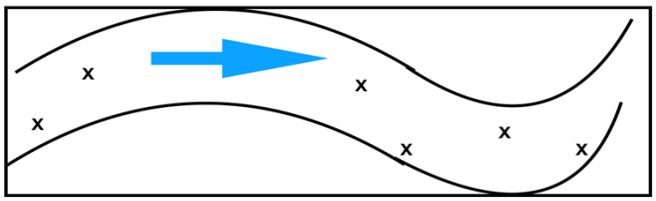


Figure 1. Sketch of stream bed with sample sites.

To collect samples, follow these directions:

1. For each site, fill the bucket/bin with stream water.

(Continued on page 13)

*(Critters continued from page **12**)*

2. Make sure your net opening is facing upstream to direct water flow into the net.
3. Collect all available BMI, disturbing substrate with your hand and picking up larger organisms such as mussels and snails. You may need to dislodge organisms by washing them into the net.
4. Empty contents into the bucket/bin.
5. Place more stream water in the bucket if necessary, to cover the collected material.
6. Use the pipette to suck up organisms and place them in a smaller dish (ice cube tray or muffin tin) to observe, sort and identify.
7. Sketch organisms and use an Identification key to identify (see ** in Resources, right).
8. List the name of each BMI and the number collected from each sample site. The greater the diversity, especially of pollution-sensitive organisms that require clean water, the healthier the stream.
9. Compare your BMI with those on VT Audubon's (see *** in Resources, right) to determine how many species live only in streams with high water quality.

Care of our lakes and streams is a multigenerational endeavor. Studying benthic macroinvertebrates over time with younger family members can contribute to a biological method of determining the health of streams and appreciation of stream and lake ecology.

Studying benthic macroinvertebrates over time builds a knowledge base of appreciating healthy streams' vitality and connects us to become stewards of stream and lake ecology.

RESOURCES

More information about Vermont's Lay Monitoring Program: https://dec.vermont.gov/watershed/lakes-ponds/monitor/lay-monitoring

Kid-friendly demonstrations explaining sampling of benthic macroinvertebrates: https://youtu.be/HtE70kzYDPM (New York DEC) https://youtu.be/fz-wz-B4R7w. (Utah Enviro-thon)

To order pipettes: https://www.ebay.com and search for "pipettes"

To find a fine mesh dip net: https://www.acornnaturalists.com

Article about macroinvertebrates: https://vtwatershedblog.com/2014/01/16/hidden-stream-life/

To colonize macro invertebrates using leaf packs, check out these videos: https://leafpacknetwork.org/news/check-out-our-new-youtube-channel/

**Helpful diagrams and a key to identify specimens are here (go to "Identification Key"): https://www.macroinvertebrates.org

***VT Audubon has an easy-to-use index chart and video to determine water quality: https://vt.audubon.org/news/macroinvertebrates

(ProcellaCOR continued from page 11)

ProcellaCOR-impacted Eurasian watermilfoil stem following the spring treatment at Lake St. Catherine, September 2019. (Photo credit K. Sliwoski)

Although ProcellaCOR is rapidly taken up by target plants and broken down within a waterbody (e.g., sunlight, microbial organisms), the watermilfoil plants do not visually react as quickly. Typically, one week after treatment, watermilfoil plants lean over within the water column; two weeks after treatment, they further collapse and begin to discolor and brown, easily breaking apart if touched; and three weeks after treatment, they may drop out of the water column and be difficult to find. Slow decomposition of target plants and limited treatment area reduces oxygen depletion in a treated waterbody, which may be harmful to fish and other organisms.

Use of ProcellaCOR is a new tool in Vermont's permitted toolbox for managing watermilfoil species. ProcellaCOR results to date seem positive. Use of this watermilfoil management tool is not a one-size-fits-all approach, however. Treatments must be tailored to each individual waterbody *and* even each treatment area within a waterbody. Lakes treated with aquatic herbicides, are required by permit to be evaluated annually for management success as well as other factors. As these annual evaluations of Vermont ProcellaCOR-treated lakes become available, look for result summaries for the lakes mentioned above in a future FOVLAP newsletter article.

Sweet Gale: The Perfect Native Shrub for Shorelines

Christine Cano, FOVLAP Board Member

(Photo credit J. Makin)

My all-time favorite native shrub is sweet gale (*Myrica gale* L.) an attractive plant and praiseworthy for shoreline naturalizing, stabilization and restoration projects.

Native distribution: The shrub is indigenous to the northern hemisphere, has a wide circumpolar range: north and western Europe, Asia, portions of the US, including Alaska and all of Canada. Hardy to USDA Zone 1, sweet gale is long-lived and maintenance-free.

Habitat: This perennial deciduous shrub grows naturally and in abundance in wetlands, the marginal slopes of bogs and fens, in the borders of flood plains, brackish estuaries, along river banks and streams, and occurs in scattered clumps around the edges of many Vermont lakes and ponds. Sweet gale requires wet soil, adapts well to various soil types and pH, is shade tolerant, and thrives in full sun.

Description: At first impression, the shrub can be overlooked as a common willow due to its narrow leaves and catkin flowers until experiencing its pungently fragrant leaves leading to its popular common name, "sweet gale." The pleasant resinous and balsamic-like scent comes from the volatile oil secreted from glands on its leaves and flowers when bruised. This charming plant is an herb and a member of the Bayberry family with numerous herbal properties and a long tradition of use in many countries for various purposes. All Bayberry family species favor moist areas, but sweet gale is the only one well adapted to truly flooded conditions.

Shoreline Protector: Sweet gale's shrubby growth produces a loosely branched and rounded shape, usually low in height from 1-4 feet (1.2m) occasionally upwards to 6 feet (2m) and is a good choice for maintaining a sightline to the water. It spreads slowly by suckers to form handsome thickets, colonizing along the water's edge, securing the shoreline, and discouraging geese from coming onshore. Notably, this extensive root system firmly anchors the lakeshore to protect it against high water, and wave and ice action.

A sweet gale shrub on the shore of Shadow Lake. Left: in May, flooded and iced in. Right: the same shrub in June, no worse for winter's harsh annual impact and thriving in the lake's stony shoreline. (Photo credit C. Cano)

Wildlife Attractor: Sweet gale provides cover for many species of wildlife and nesting sites for small birds. The flowers are wind-pollinated but will attract pollinators. The foliage can be a host plant for various moths, and native birds will eat the plant's fruits in small quantities. The lower curved branches droop over the shoreline's edge, providing needed cover and shade for fish and birds. Sweet gale is deer resistant.

Propagation: Seedlings are rare in the field. Propagation is mainly vegetative through ground-layering suckers in the spring and root division during dormancy. The most straight forward way is by stem air-layering on half-ripe wood in early summer. (See these illustrated layering methods: https://www.groworganic.com/blogs/articles/how-to-propagate-plants-by-layering)

You may have to search for a nursery source offering sweet gale, but it is available in our region. Do seek out sweet gale, winter hardy and a perfect shrub to plant for enhancing and protecting our Vermont shorelines.

VTDEC Lakes and Ponds Management and Protection Program Update

Oliver Pierson, Program Manager

Next Generation Lake Assessments

The Lake Assessment Program monitors Vermont's inland lakes status and trends. The program is funded by Clean Water Act Section 106 Funds, which support ambient water quality monitoring and assessment, monitoring strategy enhancement, participation in the National Aquatic Resource Surveys, water quality standards development, surveillance and enforcement, water quality planning, assistance to local agencies, and public information efforts.

The Vermont Water Quality Standards, based on the federal Clean Water Act, describe in detail Vermonters' expectations of the condition of lakes and ponds. These standards limit the amount of change Vermonters will allow to all waters, depending on the waterbody class. For example, some lakes and ponds are exceptional or rare and should be maintained in this state for future generations. For all other waters, the standards attempt to strike a balance between the use of lakes and ponds, along with the inevitable impacts those uses will have on them, and the desire to maintain high-quality waters. To accomplish this, both status and trends need to be established.

Annually, high-priority lakes are targeted for an intensive multi-day survey during the summer index period known as a Next Generation Lake Assessment, a comprehensive, quantitative study of a lake's condition began in 2010. Lakes are prioritized based on the Lakes and Ponds Program's information, tactical basin planning process, and other groups within and outside the Agency of Natural Resources. A suite of physical, chemical and biological parameters (see Table 1) is sampled at three areas: the deep open water 'index site,' ten randomly distributed shoreland and littoral habitat sites, and the inlets and outlet.

2021 Next Generation Lake Assessment sites are still being finalized but stay tuned for more information.

LaRosa Partnership Program

Since 2003, the Department of Environmental Conservation's LaRosa Partnership Program has helped watershed organizations and monitoring groups across Vermont implement new or ongoing monitoring projects for surface waters in need of water quality assessment to help alleviate the financial burden of laboratory analysis costs. This testing allows community members to engage with their local streams and rivers firsthand, learn about water quality issues, and use water testing to identify impacts. For 2021, the LaRosa Partnership Program is adopting a new model that resembles the Lay Monitoring Program and more information about this new model is available here. Tributaries around 12 Vermont lakes are currently *being considered* for inclusion in the 2021 Program: Caspian Lake, Echo Lake, Lake Carmi, Lake Dunmore / Fern Lake, Lake Fairlee, Lake Iroquois, Lake Morey, Little Averill, Shadow Lake, Ticklenaked Pond and Lake Willoughby.

Table 1. Next Generation Lake Assessment Sampling Parameters

PARAMETER	LOCATION(S) MEASURED
TotalHard, RegAlk, TCa, TMg, TurbNTU, Secchi, Sediment Diatoms	Index site
Conductivity, Dissolved Oxygen, DO%, pH, Temperature C, Chlorophyll a	Index site, tributaries, outlet
Macroinvertebrates, physical habitat complexity, shallow water habitat, lakeshore habitat, lakeshore disturbance	10 random sites around the lake
Crayfish	3 sites with good crayfish habitat
Aquatic plants, algae and maximum depth of colonization	10 random sites around the lake and tributaries
Area and depth of deltas	Tributaries and sites of significant erosion

NATIVE SPECIES SPOTLIGHT: Blue Flag Iris

Peggy Barter, FOVLAP Auxiliary Board Member

Consider the blue flag iris if you want to add color to your lake shore while also providing wildlife habitat, preventing shoreline erosion and maintaining good water quality.

Blue flag iris is a colorful, native plant for the water's intersection with the lakeshore. Scientifically known as *Iris versicolor*, this graceful plant with bright blue blossoms highlighted with white and yellow patches can be found in Vermont on lakeshores, stream banks, bogs and the wetland edge. Blue flag iris is also drought tolerant and perfect for rain gardens. The plant is native throughout the northeastern US and in most of eastern Canada, where it is so beloved that it is the Quebec official flower. But beware a similar not native yellow iris (*Iris pseudacorus*) is invasive and grows to heights of 4 to 7 feet. It should never be planted and when found should be removed by digging out with a shovel to remove all roots. The roots and rhizomes should be dried out and then can be composted. Wear gloves if doing so; yellow iris is poisonous, and contact may cause skin irritation in some people. Visit vermontinvasives.org for more information.

Blue flag iris is a clump-forming, marginal aquatic plant with bluish-green, sword-shaped leaves about 2 to 3 feet high, and in early summer, it bears gorgeous flowers which are 2 to 4 inches in width. It can thrive in water up to 6 inches deep but grows well in moist, acidic soils located upland of the shoreline where it is not attractive to deer. Ecologically it contributes by attracting pollinators such as hummingbirds, bees, moths and other insects. The insects, in turn provide food for many native birds. Blue flag foliage provides a shelter source for animals that live along the shoreline, while its thick rhizomes help prevent erosion of the shore.

If you choose to add this plant to your lakeshore, it is relatively easy to find and propagate. Find a friend or neighbor who regularly divides clumps growing in their upland garden. It can be grown from seeds, but the plants require three years of growth before producing flowers. It is relatively easy to purchase in stores where flowering plants are sold.

Native blue flag iris, above (Photo credit Lady Bird Johnson Wildflower Center); invasive yellow iris, right (Photo credit vermontinvasives.org)

The Natural Shoreland Erosion Control Certification Course, November 5-8, 2021

(Photo credit https://dec.vermont.gov/watershed/lakes-ponds/lakeshores-lake-wise/what)

"I decided to attend the very first Erosion Control course presented by the Department of Environmental Conservation, because Amy and I had decided to build a new house, and we wanted to be knowledgeable about what could and could not be done with a site within 250 feet of the shore. Although the course is designed for people who work along our shoreline, such as landscapers, builders, excavators, and site planners/engineers, we felt it would benefit us so that we could plan for a way to implement Best Management Practices. In practical terms it helped us eliminate a number of landscapers we interviewed, because they were not knowledgeable about BMPs and had their own ideas as how our property should look. We wanted a landscaper who had some familiarity with BMPs, and who agreed with us about using only native Vermont plants, shrubs, and trees. For instance, instead of grass we incorporated native Vermont white clover and red clover, which is Vermont's state flower…"

Tom Wagner, 2016 Shoreland Erosion Control Certification Course attendee

Increasing protections for certain Vermont lakes via reclassification under Vermont's Water Quality Standards

Oliver Pierson, Lakes and Ponds Management and Protection Program

The Vermont Water Quality Standards (VWQS) is a document pursuant to the US Clean Water Act that lays out standards to protect water quality; protect surface water uses (e.g., swimming, fishing, boating); and prevent degradation of public trust waters. Designated uses include swimming, boating, fishing, aquatic biota, aquatic habitat, aesthetics, drinking water source, and irrigation. The protection of water quality and water-related uses can be promoted by establishing specific management objectives for bodies and stretches of water, describing the values and uses of the surface water to be protected or achieved.

The Agency of Natural Resources is responsible for determining the presence of existing uses on a case-by-case basis or through the Tactical Basin Planning process. The Agency is also responsible for defining water resource management objectives to maintain or enhance those classifications.

To protect Vermont's surface waters and their designated uses, the VWQS establishes water quality classes with associated management objectives. As specified in the VWQS, all Vermont's surface waters are managed to, at a minimum, support designated uses valued by the public at water quality class B(2), also known as "good condition."

The VWQS also contains pathways to increase protection of high-quality waters. One such pathway is a process called **reclassification.** This process allows for water bodies demonstrating "excellent," also known as A(1), or "very good," also known as B(1), water quality to be reclassified to a class that better represents its actual conditions. The reclassification process measures various monitoring criteria and could include a higher standard of protection if specific criteria are met.

Under the VWQS, all Vermont waters are classified as the B(2) class mentioned above, the default water quality class unless specifically designated as another classification. An example of this specific designation is the classification of all waters above 2,500 feet as A(1), the best or highest quality classification. Other classifications include A(2), reserved for public water sources, and B(1), which relates to very good water quality (see VWQS Table 3).

Management objectives for class A(1) surface waters are to provide the highest level of protection (afforded by the VWQS) for these waters. The criteria for a water body to be reclassified to A(1) vary depending on which use type is at play and what type of water body is being assessed for reclassification. For Vermont's lakes and ponds, the VWQS contain numeric nutrient criteria that water bodies must meet or exceed, to maintain water quality in full sup-

VWQS Table 3. Combined Nutrient Criteria for Aesthetics Uses in Lakes Ponds and Reservoirs Except for Lake Champlain and Lake Memphremagog[1,2]

From: Vermont Water Quality Standards, Environmental Protection Chapter 29A, page 30

	Class A(1)	Classes A(2) & B(1)	Class B(2)
Nutrient Concentrations			
Total Phosphorus (TP)[3](µg/l)	12	17	18
Nutrient Response Conditions			
Secchi Disk Depth (meters)[4]	5.0	3.2	5.6
Chlorophyll-a (µg/l)[3]	2.6	3.8	7.0
pH	Not to exceed 8.5 standard units.		
Turbidity	Consistent with the criteria in § 29A-302(4) of these rules.		
Dissolved Oxygen	Consistent with the criteria in § 29A-302(5) of these rules.		

[1]Compliance with nutrient criteria shall be achieved either by compliance with the nutrient concentration values specified above or by compliance with all nutrient response conditions. In situations where the applicable nutrient compliance conditions are not met as a result of nutrient enrichment, the Secretary may establish alternate nutrient concentration values on a site-specific basis, as necessary, to achieve compliance with the nutrient response conditions. All waters shall maintain a level of water quality that provides for the attainment and maintenance f the water quality standards of the downstream waters.
[2]Applies to lakes and reservoirs greater than 20 acres in surface area with a drainage area to surface area ratio less than 500:1, excluding Lake Champlain and Lake Memphremagog.
[3]June thru September mean no to be exceeded in the photosynthetic depth (euphotic) zone in a central location in the lake.
[4]June through September mean not to be less at a central location in the lake.

(Continued on page 18)

(Lake Reclassification continued from page 17)

port of existing aesthetic uses at the A(1) level. However, reclassification **does not** mean there can be no land-based activities or active management in the watersheds, lakeshores, or stream corridors of watersheds that are (re) classified to A(1) for one or more uses. Instead, the activities must be carried out in such a way as to maintain the excellent condition of water bodies for those uses. The VWQS defines different water use types and how A(1) waters are intended to be managed to protect and maintain these uses: aquatic biota and wildlife; aquatic habitat; aesthetics; swimming and other primary contact recreation; boating and fishing; and, public water sources.

The Lakes and Ponds Management and Protection Program (Lakes Program) is studying the possibility of reclassifying certain high-quality water bodies to a higher water quality class using nutrient criteria linked to maintaining the aesthetics use category mentioned above. Simply put, if a lake meets or exceeds certain thresholds for Total Phosphorus concentrations or related nutrient response conditions, it is eligible for reclassification (see VWQS Table 3). The linkage between these nutrient concentrations and the aesthetics used must meet the nutrient concentration thresholds in Table 3 to maintain excellent aesthetic water quality. The Department of Environmental Conservation (VTDEC) has yet to establish a data standard for reclassification from B(1) to A(1). However, we are using the data standard required to list a water body as impaired: five straight years of data showing that the lake's mean Total Phosphorus concentrations meet or exceed the A(1) criteria of 12 micrograms per liter (µg/L) (see VWQS Table 3). The Lakes Program is also currently performing statistical analysis of our lakes dataset to determine how many years of data are needed to be confident that a lake is maintaining a value at or below the A(1) threshold. Once this analysis is complete, we will update the VTDEC Listing and Assessment Methodology accordingly.

Let us look at a specific example. As a result of the hard work of many, water quality in Lake Willoughby (Westmore)—currently listed as a B(2) lake—is excellent and exceeds the Class A(1) requirements: the 5 year mean value for Total Phosphorus (TP) concentrations is 9.7 µg/L, chlorophyll-a is 1.5 µg/L and Secchi is 9.0 meters. Lake Willoughby is therefore eligible for reclassification as an A(1) lake. The designation of Lake Willoughby as a National Natural Landmark also adds weight to the concept of increased protection. Interestingly, given the excellent condition of Lake Willoughby's lake trout community, VTDEC could also consider reclassifying the lake to A(1) for fishing uses, which might help bring in additional stakeholders.

It is also worth considering how to increase protections today for lakes with stable TP concentrations and excellent water quality. Lake Raponda (Wilmington), currently classified as B(2), is a good example. Lakes Program research shows increases in TP concentrations in oligotrophic waters across the state, even in watersheds with relatively little disturbance. Lakes with an A(1) or B(1) classification would allow VTDEC and other stakeholders to mobilize resources to address water quality challenges if nutrient concentrations deteriorated from the higher classification to the next level down, and before the lake became "impaired," or not meeting the B(2) requirements. In other words, if Lake Raponda was reclassified to A(1) status, and then slipped to B(1) status, VTDEC would be able to implement activities to restore Lake Raponda's A(1) status.

If any lake association believes their associated lake(s) meet the criteria for A(1) reclassification and is interested in having a discussion on the benefits and challenges associated with reclassification, I encourage you to contact the Lakes and Ponds Program. There is no legal requirement to reclassify lakes that meet the standards for additional protection. However, certain lakes are eligible for reclassification because they meet or exceed the requirements for an A(1) lake under the numeric nutrient criteria as defined in Table 3. They include Raponda, Shadow (Glover), Caspian (Greensboro), Seymour (Morgan), Rescue (Ludlow), Maidstone (Maidstone), Harveys (Barnet), and Willoughby. Lakes can also be reclassified to B(1) via the numeric nutrient criteria; however, initially the Lakes Program is most

(Continued on page 19)

(Lake Reclassification continued from page 18)

interested in increasing protections for lakes meeting the A (1) criteria, as part of its effort to protect the "best of what's left."

There is a compelling argument for increasing protections for lakes with excellent water quality today but where summer TP concentrations are increasing to ensure water quality deterioration doesn't lead to decreased usage and reduced recreational opportunities. While the Lakes Program is in the process of defining the data requirements for reclassification, we anticipate that any lake or pond with five consecutive years of mean summer TP concentration at or below the threshold for A(1) or B(1) waters will be eligible for reclassification to that status. VTDEC Lay Monitoring Program data and VTDEC-conducted summer lake assessments are generally used to assess a lake's status. To assess any given lake with the required data against the numeric nutrient criteria, a lake association can visit the VTDEC Lay Monitoring Program webpage or review the Lake Scorecard.

Questions? Contact Oliver Pierson at oliver.pierson@vermont.gov or 802-490-6198.

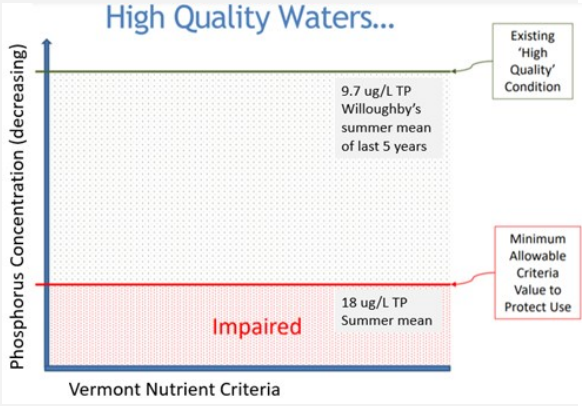
Lake Reclassification Frequently Asked Questions

What are the management implications of reclassification to A(1)?

The benefit of reclassification is that the lake is placed into a water quality class that better reflects its actual condition, and the threshold for declaring the lake as a lake with deteriorating water quality is dramatically lowered. There are also certain existing management restrictions for A(1) waters in Vermont (see "Why consider reclassification?")

Where are most lakes classified currently?

Most lakes in the state are classified as B(2) waters, meeting the nutrient requirement of a mean summer Total Phosphorus (TP) value at or below 18 µg/L. See this line shown in red in the figure to the right. Any B(2) lakes in the state with a mean summer TP values exceeding 18 µg/L would be considered impaired.



Taking the example of Lake Willoughby again where the mean summer TP value for the last 5 years is 9.7 µg/L (but annual values are increasing), there is a lot of assimilative capacity left on the lake for phosphorus levels to increase before the lake's summer TP concentration reaches the current B(2) criteria of 18 µg/L and it is listed as impaired for aesthetics. Now, where TP concentrations in Lake Willoughby continue to increase, listing Lake Willoughby as impaired for aesthetics or nutrient enrichment will not happen until degradation is so far gone that restoration is less likely, at least not without expensive and potentially unpopular interventions in the watershed, along the lakeshore and in the lake. It would also take a significant amount of restoration work if action was delayed until TP levels exceeded the current B(2) criteria of 18 µg/L. There is a good likelihood that by then it would be too late to fully restore the lake. By reclassifying to A(1), means the mechanism to initiate lake restoration actions earlier is being put into place, when the lake's TP concentration exceed 12 µg/L. The Lakes Program believes the A(1) nutrient criteria better fit the expectations for Willoughby's aesthetic use. A more appropriate criterion and threshold to use for this lake given our available data is 12 µg/L. The nutrient response conditions we measure, chlorophyll-a and secchi, also support reclassification to A(1) and better reflect Lake Willoughby's current state.

Does reclassification guarantee TP levels will not be exceeded?

Reclassification is not a guarantee that the TP levels will not be exceeded. Rather, reclassification puts into place a mechanism for action sooner when the likelihood of restoration success could be achieved at much lower cost. In the Lake Willoughby example, reclassification presents the tool of legal requirements that come with listing a water as im-

(Continued on page 20)

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(FAQ continued from page 19)

paired [in this case for A(1)] and in particular, helps make funds available sooner for restoration work. This 'increased protection' is afforded the lake even if no other legal lake protections are established by the state through the reclassification process.

Why consider reclassification?

Reclassification to A(1) status introduces some new water quality protections required under statute in Vermont. Activities in the watersheds or stream corridors of Class A(1) surface waters can be continued with some exceptions (e.g., direct discharge of any wastes that, prior to treatment, contained organisms pathogenic to human beings,10 V.S.A. § 1259). A secondary goal and possible outcome of reclassification is the identification of additional protections or "management implications" to address current *and* anticipated stressors to a lake (e.g., increased external nutrient loading from surface water runoff) and ensure that the overall effort to reclassify a waterbody is worthwhile.

What is the process for reclassification?

The Agency of Natural Resources can reclassify water bodies, or respond to petitions from local organizations, which is preferable as it demonstrates local support for this approach. The process for submitting a petition is available on the VTDEC webpage and follows a formal rulemaking process.

Has reclassification been done before?

In 2016, VTDEC reclassified a series of surface waters in the Green Mountain National Forest, re-designating them as class A(1) for specifically identified designated uses. This was the first protective reclassification of surface waters conducted in Vermont since 1988. More info is available here and here.

This newsletter was funded by a grant from the Lake Champlain Basin Program in cooperation with New England Interstate Water Pollution Control Commission.