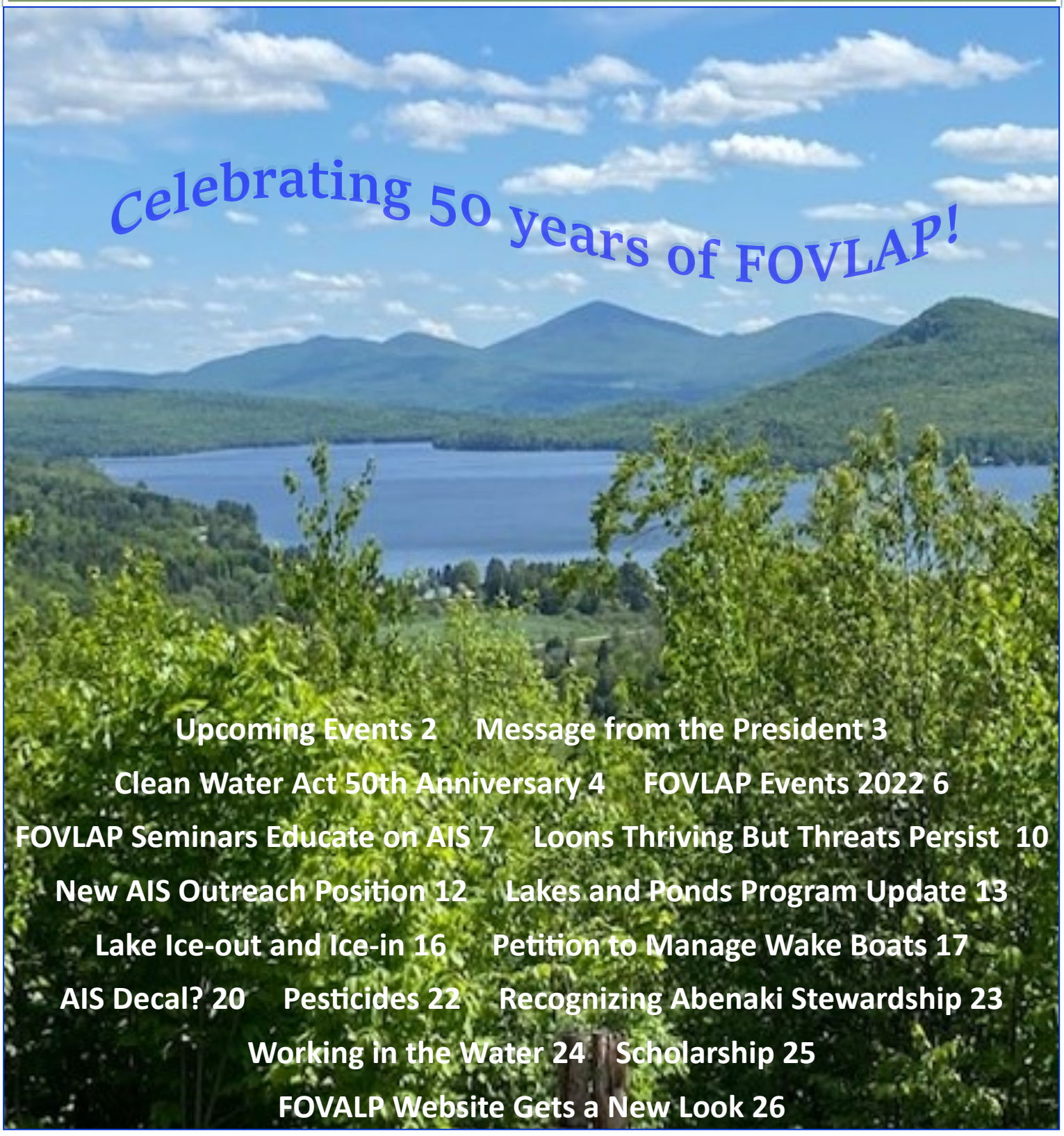
The Federation of Vermont Lakes and Ponds

Spring 2022 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."

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UPCOMING EVENTS

Visit FOVLAP's "Events" page on our website for up-to-date information on upcoming events and past webinar recordings. Click HERE.

2022 FOVLAP/VTDEC Lake Seminar (virtual) **June 3rd**
"**Vermont Lakes in a Changing Climate: From Issues to Action**" This event is free and open to all. Click HERE to register.

Community-Based Social Marketing Workshop **June 7-9**
Organized by Lake Champlain Sea Grant, this virtual workshop is intended for watershed groups working in the Lake Champlain basin and anyone working to educate to promote environmentally sustainable behaviors across the Lake Champlain basin, Vermont, northern New York and southern Quebec. Register HERE.

FOVLAP 2022 Annual Meeting **September 8th**
Save the date! Location to be determined; stay tuned.

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 future 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 HERE to register for future webinars.

cover photo: Seymour Lake, Morgan (Photo: R. Shippee)

Message **from President Pat Suozzi**

Happy Spring. At last, the daffodils are blooming, and we are gearing up for summer activities and projects. While winter is a quieter time around Vermont lakes, we at the Federation of Vermont Lakes and Ponds (FOVLAP) were busy with activities and events to support our lake community. We held two virtual events, one in January on funding for AIS programs and one in April on early identification of AIS. You can read more about these on page 7. And we're looking forward to our next event, the Annual Lake Seminar. This year it will focus on the effects of climate change on Vermont's lakes and actions we can take to help mitigate the effects.

Winter in Vermont not only means cold and snow but it also means the Legislature is in session. The FOVLAP Legislative Committee has been busy throughout the session tracking bills relating to lakes and water quality issues, keeping the board and our membership informed about legislation, and advocating with legislators. Find out more about this important work on page 20.

In March we welcomed a new member to the FOVLAP Board of Directors: Jerremy Jones. Jerremy lives in Poultney on Lake St. Catherine and is an active member of the LSC Board. Jerremy is diving right in working with the FOVLAP Website Committee on the website redesign project. I also want to remind you that we still have two openings on the Board. If you are interested in learning more about the work the FOVLAP board does and how you can become part of this vibrant and dedicated group, please drop me an email at: pasuozzi@gmail.com.

In April, I had the honor of speaking to the Vermont House Committee on Natural Resources, Fish and Wildlife on behalf of FOVLAP at their Lakes and Ponds Day event. You can find a copy of my testimony here.

As we look forward to summer, a large issue that most, if not all of our lakes, confront is the prevention or control of aquatic invasive species, in particular Eurasian watermilfoil (EWM). As is well known, EWM is an invasive aquatic plant that spreads easily through fragmentation within a waterbody and is easily carried to other water bodies on boats, trailers, or other equipment. As a non-native, it does not provide either food or habitat for native fauna and because it has no natural limitations on growth it can easily outcompete native aquatic plants, thereby reducing biodiversity in a lake ecosystem. It can also impede recreational uses of our waters and has the potential to adversely affect property values and tourism. For these reasons, it is vital that those lakes infested work to reduce, control, and, to the extent possible, eliminate EWM and those that are not infested do all that they can to ensure prevention. Ann Bove discusses this issue and the tools that are available in her article on page 22.

There is no question that AIS, including EWM, are noxious pollutants and that they pose a real and serious threat to the long-term health and viability of Vermont's lakes and ponds. Volunteer lake associations around the state are working tirelessly and courageously to protect our public waters, spending countless hours raising money, researching methods, and working through the complex and rigorous state permitting process to implement control and eradication methods. FOVLAP recognizes and honors the hundreds of volunteers and continues to fully support this difficult work. I hope you will continue to support your local lake association and FOVLAP as we work together to preserve and protect our precious lakes and ponds.

Honoring 50 years of FOVLAP

This 1977 newspaper clipping, "Lake Assoc. Elects Officers" is a reminder of some of the many individuals who helped lead FOVLAP into what it is today.

Standing, left to right: Newhouse, Kohl, Wood, Farrell, Saville, Kingsley, Street, Derry, Gorham, Abrams, Herge, Allbee, Welch. Seated: Dales, Mann, Pierce, Carl G. Simpson (Chairman and founder of the Federation), Buchler, Martin, Kingsley.

Lake Assoc. Elects Officers

Standing, left to right, Newhouse, Kohl, Wood, Farrell, Saville, Kingsley, Street, Derry, Gorham, Abrams, Herge, Allbee, Welch; seated, Dales, Mann, Pierce, Simpson, Buchler, Martin, Kingsley

Clean Water Act—Necessary, Strong and Present on its 50th Anniversary!

Amy Picotte, Shoreland Consultant

"PLANT," "CLEAN" and "WATER" are more than favorite "Wordle" game words, as together their concepts define shoreland successes of the 1972 Federal Clean Water Act. These fun words also represent the seasonal transition towards warmer waters and swimming in a clean Vermont lake or pond.

Fifty years ago, the passage of the Federal Clean Water Act made it illegal to discharge into navigable waters. The nation focused on cleaning up point-sources of pollution coming from identifiable sources like pipes and factories. Today, non-point sources of stormwater pollution from agriculture, gravel roads, forestry, and development remain a challenge to clean up as they are widespread and harder to control. The best solutions use native plants to intercept, soak up, stabilize, and treat stormwater while benefiting wildlife and property, hence "plant."

Vermont follows the Statewide Surface Water Management Strategy and the Vermont Water Quality Standards to protect surface waters best and meet the Federal Clean Water Act expectations. These state plans aim to prevent the degradation of surface waters used for drinking, fishing, swimming, wildlife habitat and recreational enjoyment.

Monitoring information is reported every two years to the US Environmental Protection Agency through the "305b Report." Specific lake information on current and long-term trend conditions can be viewed through the Vermont Lake Score Card. This display uses colors to convey complex metadata, including the summer weekly sampling results from the long-term, statewide volunteer Lay Monitoring Program.

The Clean Water Act increased citizen engagement and partnerships between state government and watershed groups. In Vermont, the Lay Monitoring Program was formed in 1979 as an important and cost-effective partnership between volunteers and the state to gather statewide lake monitoring data and "red flag" any threats to water quality. Along with New Hampshire, Maine and Michigan, the Vermont LMP represents the longest, continuous set of monitoring data on lakes worldwide.

The LMP water quality data was used in 1990 when

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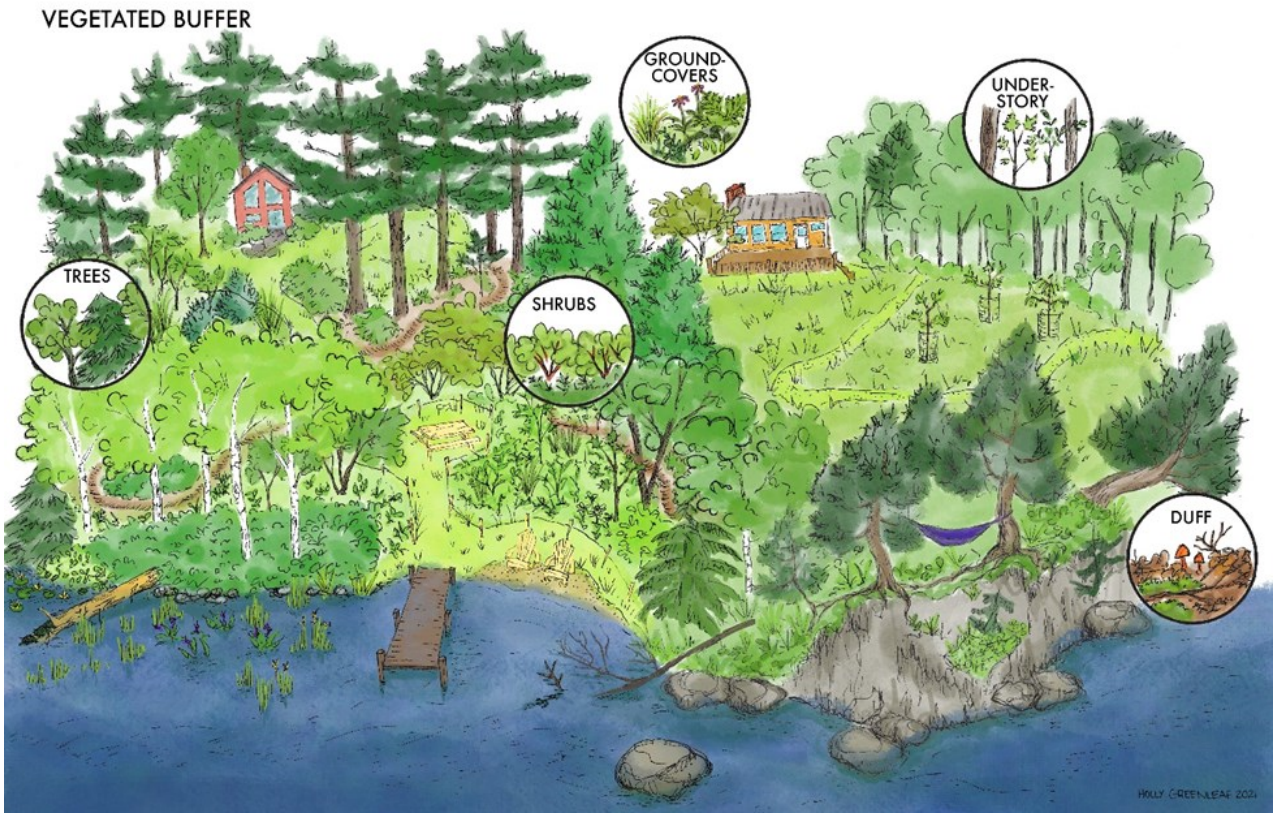

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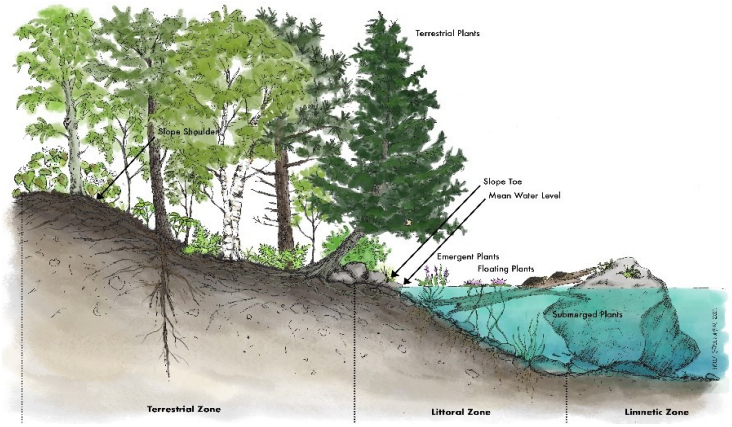
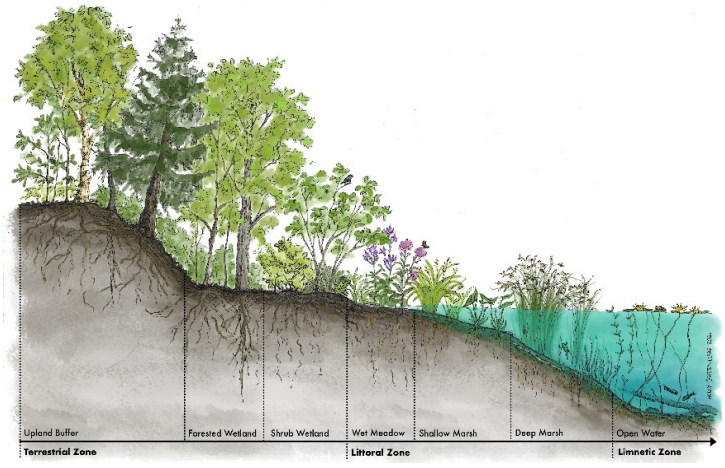


A Natural Forested Shore

Senator Leahy and then Senator Jeffords proposed and passed the Lake Champlain Special Designation Act as an amendment to the Federal Clean Water Act, recognizing Lake Champlain as a significant national resource and creating the Lake Champlain Basin Program to coordinate a basin-wide pollution prevention plan. The Lake Champlain Basin Program continues as an exemplary partner, funding beneficial watershed work throughout Vermont. Visit the LCBP website for a complete story of the Federal Clean Water Act and for upcoming events to celebrate the 50th Anniversary of this important and necessary legislation for the nation's waters.

In 2014, the Vermont Shoreland Act passed establishing shoreland vegetative standards and requiring permits to further cut or clear shoreland plants or increase the impervious area on lakes equal to or greater than 10 acres in size, about 435 out of 810 lakes in Vermont. Many highly developed Vermont lakes are in a period of shoreland restoration because several decades of clearing shores to plant lawns occurred before permits were required. Today restoring living shorelands is essential for ensuring a healthy future for Vermont lakes.

The Clean Water Act also directed the Vermont Wetland Rules, which protect a 100-foot vegetated buffer around wetlands. However, in Vermont, there is no statewide regulation to protect Vermont riparian areas along streams and rivers. In other words, despite what we know about the vital benefits of vegetated shores for clean water, unless regulated by a municipality, riparian areas are not protected from clearing or development. This leaves an Achilles heel in Vermont's approach to meeting the state and federal clean water goals. There is still much work to do under the Federal Clean Water Act, and partnerships will continue to play a key role in accomplishing the work.



A Natural Wetland Shore

The illustrations in this article are by Holly Greenleaf and are from VTDEC's Vermont Bioengineering Manual.

Simple Steps for Lake PROTECTION

Ecological standards to assess the health of any type of shoreland are available to property owners though the Vegetative Protection Standards, the Lake Wise Program, the new Stream Wise Program and though the Aquatic Invasive Species Management Program. More than 80 percent of Vermont is owned privately, shifting most of the responsibility for protecting clean water and biodiversity to the landowner.

Good News! Together, neighbors can take simple steps to protect their lake and watershed and by doing so will also be protecting biodiversity and clean air. Here is a list of responsible cultural habits to protect lake ecology and the economy.

1. Give back half your lawn to nature; use lawn in pathways.
2. Grow native plants on your shore.
3. Use lake-friendly practices on your shore; follow Lake Wise fact sheets.
4. Share information with your neighbors; join your lake association; and, join the Federation of Vermont Lakes and Ponds.
5. Don't waste water; manage and use up stormwater before it runs away.
6. Appreciate a lake's nature.

Everyone can agree that Vermont lakes and ponds are worth these simple steps. Now back to other spring Wordle words like, oh no, "Skunk!"

Happy 50th Anniversary to the Clean Water Act!

We Need You!

The Board is currently looking for TWO director positions to serve until September 2023.

FOVLAP
Director Responsibilities

- Support and promote the mission and work of FOVLAP.
- Be an individual member in good standing of FOVLAP.
- Commit to attend the board meetings, the annual meeting, and the annual lake seminar.
- Serve on one or more board committees.
- Adhere to FOVLAP policies and procedures.
- Ensure the continued viability, integrity, and accountability of FOVLAP.

Participating on FOVLAP's Board of Directors is an opportunity to get more involved, learn, and work directly with a dynamic team of fellow lake and pond enthusiasts.

Interested?

Contact FOVLAP President, Pat Suozzi at pasuozzi@gmail.com

FOVLAP Events 2022

Jackie Sprague, FOVLAP Vice President

The FOVLAP Events Committee has been busy this year. Typically, the committee works on two annual events: the Lake Seminar and the FOVLAP Annual Meeting. The FOVLAP Ad Hoc Aquatic Invasive Species and Water Quality Committee reached out with a request to host shorter events. At first, we were not sure if this could work, but the collaboration between the two committees made this happen!

The successful first event, "Funding for the Vermont AIS Greeter and Management Program" took place on January 12, 2022. The prevention and management of aquatic invasive species in Vermont Lakes are important shared goals involving lake associations and conservation groups, as well as local governments, and state and federal agencies. Looking to the future, needs for funding are increasing, while some sources of funding are expected to decrease, at least in the near-term. FOVLAP organized this virtual meeting to discuss funding needs from many perspectives, with the goal to inform stakeholders of ideas on how to bridge this funding gap.

The second event, "Early Identification of Aquatic Invasive Species: How to Launch, Grow and Nurture a Program" occurred on April 6, 2022. Aquatic invasive species (AIS), both plant and animal, are an ever-growing threat to all Vermont surface waters. Early identification of new invasives is critical so resources can be marshaled to mitigate spread. Trained volunteers can monitor their waterbody and be the first to detect invasives or other important changes to plant and animal life. The Vermont Department of Environmental Conservation offers several trainings every summer to educate new volunteers for the Vermont Invasive Patroller or VIP Program. FOVLAP organized this virtual meeting to help organizations and individuals learn how to get trained or improve existing programs.

More on these virtual events follows on page 7. Both the January and April events can be viewed on FOVLAP's website on the Events page, available here.

SAVE THE DATE! Virtual Lake Seminar, June 3, 2022 from 9AM-3PM

The 2022 Lake Seminar theme is, "***Vermont Lakes in a Changing Climate: From Issues to Actions.***" An amazing group of environmental professionals will respond to the increase in the discharge of pollutants into US surface waters in honor of the passing of the Clean Water Act 50 years ago. The act established the basic structure for regulating discharges into surface waters and surface water standards. Driving improvements in wastewater and stormwater management, the Clean Water Act improved surface water quality nationwide.

Today's challenges to water quality in Vermont's lakes and ponds are complex, and many are amplified by the expected impacts from the changing climate. Our 2022 Lake Seminar highlights the Clean Water Act, explores the present climate-related challenges to water quality, and describes actions that can mitigate the associated risks to our lakes.

Visit the FOVLAP website www.vermontlakes.org for the 2022 Lake Seminar agenda and registration. This event is free and open to all.

FOVLAP Seminars Educate Members on How to Prevent and Manage Aquatic Invasive Species Events

Dave Johnson, FOVLAP Treasurer

In the Spring of 2021, several FOVLAP Directors along with other Vermont lake lovers began meeting regularly to discuss ways to help lake groups meet the challenges posed by aquatic invasive species (AIS). Aided by FOVLAP and VTDEC, they began by compiling an email list of more than 65 contacts from Vermont Lakes. This ad hoc AIS group created and launched an online survey last summer to gather detailed information about the broad range of greeter programs and AIS management programs that exists around the state. The results of this survey can be found here AIS survey. The survey also queried participants about what information they needed to make their programs more effective.

Early last fall, the FOVLAP President appointed the group to be the FOVLAP Ad Hoc AIS/Water Quality Committee, leveraging FOVLAP's experience in hosting seminars. Using the survey results, the Committee identified two topics worthy of half-day seminars. Nearly everyone polled wanted to know more about public funding opportunities to support AIS programs. This resulted in the seminar summarized in the table below.

(Continued on page 8)

Funding for Vermont AIS Greeter and Management Programs
January 12, 2022 – Virtual Meeting via Zoom

Start	Topic	Speaker(s)	Content
9:00	Welcome: Pat Suozzi, FOVLAP President, and Jack Widness, FOVLAP AIS/Water Quality Committee Chair		
9:05	Overview of 2021 AIS Survey	Dave Johnson - FOVLAP Director	Summary of 36 responses to AIS Survey open May - July 2021
9:25	AIS Funding Horizon from DEC	VTDEC Lakes and Ponds Manager - Oliver Pierson	Anticipated reductions in AIS Prevention and Management funding, out-of-state boat stickers and other potentially new funding sources
9:45	Overview of AIS Funding Sources	Kim Jensen - VTDEC Aquatic Invasive Species Manager	All available funding sources for AIS Prevention and Management Funding
10:05	LCBP AIS Funding	Meg Modley - LCBP Aquatic Invasive Species Management Coordinator	Current and future AIS funding through Lake Champlain Basin Program
10:25 Coffee Break (15)			
10:40	Role of Conservation Districts in AIS Funding	Cory Ross - District Manager Windham County Natural Resources Conservation District	Consolidation of grants to DEC, Conservation District funding opportunity?
11:00	Round Table Discussion - AIS Funding	Glenn Schwartz, Jack Widness, Chris von Alt, Dave Johnson – FOVLAP AIS/WQ Committee	Overviews on approaches to funding for different lake scenarios
11:20	Participant Discussion	All	General Q&A
12:00 Adjourn			

(Seminars continued from page 7)

Sixty-seven participants learned about the growing gap between the total year-to-year AIS program budget requests and the public funding available to support these programs. Unfortunately, due to state funding constraints, the gap, particularly for support in the 2023 season, is expected to grow even bigger - placing more of a burden on lake groups to find funding. The two main sources of public funding are the Vermont Department of Environmental Conservation and the Lake Champlain Basin Program. Grant administrators for both programs described available grant opportunities and how to apply for these grants. One of 15 regional conservation district managers described the helpful role that such organizations can play to support AIS programs.

Many ideas to increase funding were presented. These included the passage of legislation to require an "AIS Sticker" on boats using Vermont inland lakes. Many states already require such stickers. The round table discussion featured actions at a local level, including reminders on property tax bills to donate to lake associations. Lake association social events can provide funding support. One lake association successfully created an endowment to aid in the support of AIS management programs. Another lake association created a "rapid response fund" to support a crash program to eliminate newly found AIS. A lake rep gave creative examples of stakeholders around the lake who might be willing to contribute to AIS funding needs. A video recording of the entire seminar is available here: AIS Funding Seminar video. The agenda and individual presentations can be found here: AIS Funding Seminar agenda and presentations.

Only about a quarter of respondents to the summer 2021 survey indicated that their lake had a Vermont Invasive Patroller program, and nearly all the lakes without such a program were interested in possibly starting one. This interest gave rise to the second half-day seminar summarized below.

(Continued on page 9)

Early Identification of Aquatic Invasive Species in VT Lakes and Ponds
How to Launch, Grow and Nurture a Lake Inspection Program
April 6, 2022 – Virtual Meeting via Zoom

Start	Topic	Speaker(s)	Content
9:00	Welcome: Pat Suozzi, FOVLAP President, and Jack Widness, FOVLAP AIS/Water Quality Committee Chair		
9:05	Overview of VIP Program	Kim Jensen - VTDEC Aquatic Invasive Species Manager	History and why important, how to start a program, training process, quick response, what makes a good program, historical data on positive IDs
9:35	NH lake inspection programs	Amy Smagula – NH Department of Environmental Services Exotic Species Coordinator	What is NH's approach to engage lake volunteers identify aquatic invasive species in lakes and ponds?
10:05	Alternate approaches using iNaturalist	Julia Pupko – ECO AmeriCorps Community Science Outreach Naturalist	How can iNaturalist and Seek apps be used by volunteers to identify aquatic invasive species in lakes and ponds?
10:35 Coffee Break (15)			
10:50	Round Table Discussion – VIP Experience and how to improve it - with audience participation	Beth Torpey and David Wieselmann – Lake Seymour; Jerilyn Bergdahl - South Pond; Martha Winston - Peacham Pond; Peggy Stevens – Echo Lake	Experience at various lakes regarding VIP programs – getting started, recruiting volunteers, training of volunteers, mapping, sharing and reporting of information, what works and what doesn't, …
11:30	Q&A	All Participants	
12:00 Closing Remarks and Adjourn			

(Seminars continued from page 8)

Again roughly 50 participants enjoyed this morning of talks about lake inspection for early detection of AIS. Perhaps excited about getting out on the water again, this enthusiastic group shared ideas on how to engage lake lovers to share in the enjoyment of becoming familiar with the underwater environments of their lakes and how to best optimize that effort. Vermont and New Hampshire Project Directors described their state's AIS inspection programs, showing maps and graphs illustrating the history and geographic spread of AIS using data gathered over the years by lake volunteers.

The group was then introduced to very powerful, free tools for identifying and mapping aquatic plants and animals – iNaturalist and Seek. A group at Maidstone Lake has already used iNaturalist for this purpose. For those who like to exploit new technology, this can make identification easier, more fun, and add valuable background information.

The last session was a stimulating round-table discussion with leaders from four lake inspection teams speaking of their experiences. One leader described the establishment of a new program, and others gave practical and down-to-bottom advice on successful approaches in programs active for up to 15 years.

This meeting was also recorded, and the video is available here. The agenda, presentations, chat text, and the results of a post-meeting survey can be found at Lake Inspection Seminar materials. Also included is an informative slide deck intended for showing prior to the meeting and during the break. Results of the survey will be used to inform the FOVLAP Board of future seminar topics.

Photo credit J Rathert

VTDEC public waterbody access sign

Vermont Common Loons Are Thriving but Threats Persist

Jan Parsons, FOVLAP Board Member *with notes, comments and references from Eric Hanson, Center for Ecostudies*

Eric Hanson, Vermont's loon biologist since 1998, is always busy in the spring. As coordinator of the Vermont Loon Conservation Project (VLCP), a joint effort of the Vermont Center for Ecostudies (VCE) and the Vermont Department of Fish and Wildlife. Eric's work begins with vegetating over 40 nesting rafts, checking on reports of wounded or ill loons, organizing intern activities, and initiating communications with 350 volunteers who observe loons on over 160 lakes and ponds in Vermont throughout the spring and summer.

Loon on raft, Norton Pond, Norton, Vermont. (Photo: E. Hanson)

This year Eric will be planning new initiatives due to a five-year $446,393 grant award received by the VCE from the US Fish and Wildlife Service to support the VLCP. VCE was one of six organizations in New England and New York selected through a competitive grant process to receive funding. The grant is part of a larger settlement from the Bouchard B-120 oil spill in mid-April 2003 that killed over 500 loons in the middle of migration. Since loons are long-lived, 20-35 years, and can produce 4-5 chicks over a 10-year period, the settlement addresses lost breeding potential and repairs habitat damages through land conservation, management around nest sites and other conservation measures.

Many of the projects to be implemented across the six states include plans that have long been part of the focus of VLCP in Vermont. These involve managing nesting rafts near nest warning signs. Raft placement is in out-of-the-way spots that mimic islands to reduce conflicts from human shoreline activity. A different project initiated in Maine involves the translocation of loons from northern New England to southeast and western Massachusetts, where loons were extirpated in the 1800s.

A new initiative in Vermont is the purchase of safety gear for ice rescues. Rescues involve two to eight loons a year and require two to three weeks outside the work season for the loon biologist. Another major undertaking seeks to decrease the mortality rate from loons ingesting lead fishing gear. The lead law has dramatically reduced mortality, but recently there has been a spike with six loon mortalities from lead fishing gear in the past three years.

VLCP will place collection tubes at boat access areas to collect lead fishing gear. and encourage the use of the collection receptacles. This project is still in the planning stages. Eric will be discussing this initiative at a presentation during the FOVLAP annual Lake Seminar on June 3, a virtual event.

Other management projects for VLCP will focus on regions of the state with low loon populations and include deployment of new nesting rafts on specific lakes with low productivity.

To summarize, this five-year grant allows VCE to pursue strategies and purchase equipment that might otherwise be out of reach for years. The ultimate goals are to increase nesting success and reduce loon mortality. The plans outlined above look like a promising start to achieve these goals.

A SNAPSHOT OF THE VERMONT LOON NUMBERS IN 2021 AND HISTORICAL COMPARISONS

- Vermont's breeding loon population had a very successful year in 2021, documenting a record 109 nesting loon pairs and 137 territorial pairs.
- There were six new nesting pairs and 85% of the known territorial pairs nested. There were 37 pairs whose first nest attempts failed. Of these, ten pairs renested and five were successful in hatching chicks. Known causes of failed nests were: depredation (9), flooding (1), and intruder loon disturbances (3).
- The previous high for nesting pairs was 101in 2019, with 77 pairs successfully hatching 125 eggs and 84 of those chicks surviving through August (a 67% chick survival rate).

(Continued on page 11)

(Loons continued from page 10)

- During LoonWatch, the annual state-wide loon census, on July 17, 2021, 200 volunteers found loons on 124 of 167 lakes. Observers counted 349 adults, 86 chicks, and one subadult loon. The 349 adult total is similar to recent years.
- Since 2018, totals have ranged between 337 and 358. These numbers are considerably higher than in the 2013-2017 time frame when the tally was 297-308 loons. In the previous ten years, volunteers counted 179 adult loons in 2003 (123 lakes) and 225 (148 lakes) in 2008. These numbers demonstrate that the recovery plan has succeeded. We have a far more robust population of loons in Vermont now compared to forty years ago, with a large percentage of chicks surviving through the summer.

WHAT ABOUT THE FUTURE?

Vermont Loons face continued short-term and long-term threats, as described in the 2021 Loon Breeding Status Report. Natural sources of mortality include predation of eggs and chicks and competition between breeding pairs and "intruders" or rogue loons seeking to take over a territory. Other significant threats include:

- Water level fluctuations in lakes where water levels are regulated;
- Shoreline development and human disturbance;
- Mortality through lead poisoning, entanglement with monofilament fishing line and fishing gear ingestion;
- Environmental background of bio-accumulating mercury;
- Oil spills in wintering coastal areas; and
- Though not common in Vermont, diseases such as aspergillosis (an infection caused by a fungus that attacks the lungs) and botulism, have killed tens of thousands of loons in the Great Lakes in the past 20 years.

Flooded loon nest with two eggs (Photo: L. Kane-Rohloff)

A newly recognized threat to loons is malaria, first identified in northern New England in a dead loon at Lake Umbagog in New Hampshire in 2015. Since then, scientists have confirmed several more dead loons have died from malaria. A study funded in 2021 enabled Dr. Ellen Martinsen and her team at University of Vermont to study this newly emerging threat-by performing molecular-based screening for malaria parasite infection on tissues collected from archival and freshly collected specimens. In addition, donations will fund the complete necropsy and microscopic analysis of 100 loons found dead in the northeastern United States and recovered during the summer breeding season of 2021. This work will promote the discovery of signs of malaria-induced illness and resulting death for a large sample. In addition, this summer, a Tufts University veterinary student will work with Eric Hanson and other VCE staff to collect samples from live loons to add to the pool of samples tested for signs of malaria.

The presence of malaria is tied to climate change as mosquito species and bird species have migrated north in recent decades. The New Hampshire Loon Preservation Committee website predicts that climate change will significantly affect loons in the coming decades. As Eric points out, “High temperatures can stress loons on the nest and rain events can flood nests.” These factors are undoubtedly present in Vermont as well. A recent climate assessment report issued by the University of Vermont states that loons “are particularly susceptible to human interference and to water quality with acid rain and lake acidity as one of the key stressors. While current water quality provides suitable pH levels for wildlife health, the prediction is loons will have few areas of suitable habitat by 2050 “due to a combination of water quality and annual temperatures.” These are profound conclusions to ponder.

Another recent threat drawing attention in Vermont and New Hampshire is the increased presence of eagles

(Continued on page 12)

(Loons continued from page 11)

nesting on or near lakes where loons nest. In recent years, there has been ongoing drama at Harvey's Lake in West Barnet when eagles began flying in from nests along the Connecticut River to fish the lake. A sudden midday disappearance of one of two loon chicks in August 2019 may have resulted from an eagle swooping in and carrying one away (although this was not observed or confirmed).

Loons are more adept than we give them credit for as Eric points out, "In Vermont, we have had a few confirmed cases of eagles taking chicks, but more often it's a draw with the adult loons calling out chicks either staying close to shore or stashed near shore and most of the time they are fine. We had some eggs taken from a raft nest on Great Averill Lake in 2020 with the egg found over 100 feet away on a beach…likely an eagle. Eagles can take adult loons especially if they do not leave the nest, leaving them vulnerable. Again, the mortality rates are pretty low for adults and chicks. Between eagles and intruder loons interrupting nesting, causing pairs not to nest (too much time defending) or killing chicks, it's all a part of a loon's life and will help stabilize the Vermont loon population for the long term good of the species. It's just hard when it's YOUR loon family being affected."

As I start my 12th year as a volunteer loon monitor for Harvey's Lake, I can attest to Eric's final sentence. It is really hard when it's your loon family! But that disappointment is minor compared to the privilege and enjoyment of watching these beautiful birds raise their families on Vermont lakes. Thanks to Eric Hanson and the VLCP, we can help loons continue to overcome threats and help them thrive on our lakes. Several FOVLAP directors are VLCP volunteers, monitoring loons at the lakes where they reside.

As we look forward to another summer of loon watching and monitoring, remember that you can help by volunteering to be a casual observer or loon monitor.

Information cited in this article:

Vermont Loon Report 2021

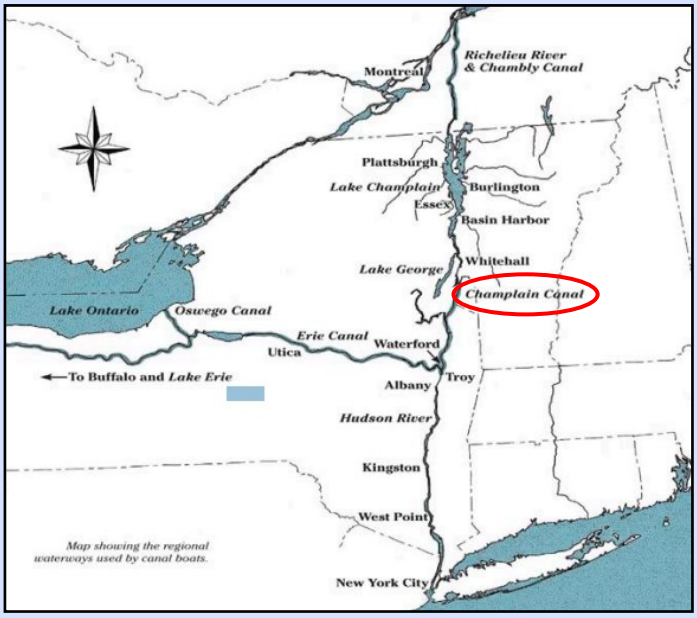
Vermont Climate Report, 2021

Loon Preservation Committee website

Malaria and loons

New AIS Outreach Position in the Works!

Thanks to a Lake Champlain Basin Program/US Fish and Wildlife Service partnership, the Lake Champlain Canal corridor will soon support an aquatic invasive species (AIS) outreach position. Hosted by the NY Department of Environmental Conservation, this full-time position will focus on community and angler/angling groups AIS education and outreach along the Lake Champlain Canal corridor from Whitehall to Troy/Albany, NY.



Map of canal system from New York to Canada.
(https://semspub.epa.gov/work/01/454657.pdf)

The 60-mile-long Champlain canal opened in1823 and can be a pathway for AIS because it connects the Great Lakes and Hudson River to the south end of Lake Champlain. Invasive species can be introduced by hitchhiking on boats, trailers, and other water-based recreational equipment or by the release of bait or aquarium dumping. The position will also work with municipalities and others to understand future efforts by the US Army Corps of Engineers to construct an AIS barrier at Lock 9 in the canal.

VTDEC Lakes and Ponds Program Update

Oliver Pierson, Program Manager

A hearty hello to our Vermont lakes and ponds community. I hope everyone had an enjoyable, active, and productive winter, and despite the below-freezing temperatures and snow falling as I write this in late March, I am excited for the ice to melt soon and for the many months of lake-focused life to begin. We've had a busy winter in the VTDEC Lakes and Ponds Program, with progress in certain areas of shared interest as well as lots of planning work for our upcoming field season. Here are a few updates of interest to share:

Recruiting for Lake Shoreland Coordinator: VTDEC is in the process of recruiting for a Lake Shoreland Coordinator position, who will carry on much of retired Lakes and Ponds Program staff member, Amy Picotte's work, including lake wise assessments, support for Lake Watershed Action Plan development and implementation, delivering the Natural Shoreland Erosion Control Certification Training, and helping develop and fund shoreland restoration projects. We hope that the new employee will begin in May 2022. The Lakes and Ponds Program is also recruiting seven summer seasonal employees, three UVM Rubinstein summer interns, and is in the early stages of seeking approval for a full-time position to oversee community-based participatory research programs, like the Lay Monitoring Program and the LaRosa Partnership program.

Clean Water Initiative Program Funding for Shoreland Restoration Best Management Practices (BMPs): The good news here is that VTDEC's Clean Water Initiative Program (CWIP) will continue to provide funding for the identification, development, design, and implementation of shoreland restoration projects aimed at reducing phosphorus loading to our lakes and ponds. This is a complex subject with many moving parts, the majority of CWIP funding will be managed either by block grant recipients managing water quality restoration formula grants or water quality enhancement funds, Clean Water Service Providers (CWSPs) implementing projects to meet five-year phosphorus reduction targets for watersheds draining to Lake Champlain and Lake Memphremagog. Block grant recipients and CWSPs will have different pots of money for shoreland restoration projects/BMPs, including project identification (planning, assessment, and analytics to identify priority projects), project development, project design, and project implementation for the two categories of projects below; please contact me if you would like more information about how to access these funds:

- Lake shoreline restoration (phosphorus reduction through bank stabilization and restoring living shorelands)
- Lake shoreland runoff treatment (phosphorus runoff treatment through nature-based solutions)

Lake Reclassification Update: VTDEC has received four petitions from lake associations and adjacent municipal organizations in Glover, Maidstone, Greensboro, and Charleston requesting VTDEC reclassify the specified lakes (Shadow, Maidstone, Caspian and Echo) to A(1) or excellent status for aesthetics uses and, in some cases, fishing and swimming uses (Echo and Maidstone respectively). These petitions are administratively complete and VTDEC has initiated the technical and legal review, as per our 2013 petition review guidelines. However, we haven't begun to take public comment on these petitions as VTDEC leadership wanted to explore the possibility of seeking a "legislative fix" on the provision of 10 VSA 1259(d) limiting new septic systems in class A watersheds to a design flow of 1,000 gallons per day (gpd).

This provision dates back to the 1980s and was put in place to protect pristine watersheds from what was, back then, considered a risk of degradation from large septic systems. Septic system technology has improved since then, and today it is possible to design and site septic systems larger than 1,000 gpd and still avoid water quality degradation. Also, this limit on new septic in class A watersheds of 1,000 gpd may be a barrier to increased late protections via reclassification if land owners in a given lake watershed have development plans that require a larger system. For example, Maidstone State Park has plans to improve the quality of services they offer to the public which may require new and large septic systems, which would not be possible if the lake is reclassified to A1

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(Update continued from page 13)

status. Therefore, amending this statute in a way that still promotes water quality protection but recognizes the existence of modern wastewater management techniques and has a more flexible upper limit on new septic could be desirable.

However, as of late April 2022, it doesn't appear likely that a legislative fix will be achievable during the current legislative session, and therefore the reclassification petitions should move forward under the current legal framework. As a result, the current plan is to begin to take public comment on these petitions this summer when more Vermonters and seasonal residents are using the lakes regularly and these issues are back on people's minds. Stay tuned!

Lake Assessment Tools: VTDEC Lakes and Ponds Program's website now has the high-resolution land cover maps and interactive next generation lake assessment web reports available for dozens of lakes.; available here. Coming soon is a new lake scorecard format with data through 2021 that is also interactive!

Lake Bomoseen Herbicide Permit Application: As folks may have read about in Vermont media, the Lake Bomoseen Association has applied for an Aquatic Nuisance Control permit to treat the lake with the herbicide ProcellaCor as part of a broader plan to limit the spread of invasive Eurasian watermilfoil. This application requests permission to treat approximately 200 acres per year over 3 years. Local opposition to the permit, led by the angling community, has also developed. Vermont Agency of Natural Resources (ANR) leadership held one meeting with this group at the request of the Governor's office. The Lakes and Ponds Program is currently performing an internal technical review of the application and seeking input from the Vermont Department of Health and the Vermont Department of Fish and Wildlife. If we determine we can issue a draft permit, it will likely be put on public notice in May 2022.

Wakeboat Petition: On March 9th, VTDEC received a petition from an ad-hoc group called "Responsible Wakes for Vermont Lakes," requesting that VTDEC introduce a new rule to regulate wake boats/wake sports on certain public waters in Vermont. The petition essentially asks VTDEC to establish a new specific rule under the Use of Public Waters Rules that:

1. increases the 200 ft no-wake shoreline safety zone distance from shore to 1,000 ft for wake sports to reduce their resulting wave impacts to a more acceptable level;
2. reduces the negative impact of the slipstream, the powerful jet of water driven by the propeller towards the lakebed, by permitting wake sports only in water depths greater than 20 ft; and,
3. requires a minimum 60-contiguous acre area for a wake sport zone to provide an enjoyable experience for wake sporting boats that is compatible with other water recreational uses.

The petition has been marked administratively complete. VTDEC will initiate our technical and legal review process in May and will eventually hold public informational meetings in June to obtain public comment on this proposed rule.

2022 marks the 45th year of the VTDEC Lakes and Ponds Spring P sampling program which occurs after ice out annually. (Photo: Lake Seymour, Morgan, R. Shippee)

Monitoring Update: We are gearing up for a busy field monitoring season in 2022, including a return to lay monitoring at 75+ sites, deployment of a new monitoring buoy at the mouth of the Lamoille River on Lake Champlain, redeployment of the Lake Carmi monitoring buoy, continued cyanobacteria and chemical/biological monitoring on 20+ sites on Lake Champlain and its tributaries, expansion of the LaRosa Partnership Program to more inland lake tribu-

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FOVLAP Student Memberships

Is there a young person you know who would welcome a membership in our organization?

In 2020, FOVLAP voted to add a membership category for students older than age16 and reduce the membership fee by 50% to $13. Click here to give the gift of a FOVLAP student membership today and inspire future generations to protect lakes!

(Update continued from page 14)

taries than ever before, and participation in the EPA-funded National Lake Assessment at around ten lakes. Keep your eyes peeled for the VTDEC Lakes and Ponds scientists at a water body near you (the orange suits we wear on cool days are a dead giveaway).

Funding for Aquatic Invasive Species (AIS) Prevention Efforts: VTDEC would like to thank those that made an effort to initiate and support H.554 (*An act relating to an aquatic invasive species decal*), and even though this bill didn't advance prior to crossover, I hope that the initiative succeeded in raising some awareness about the disconnect between stagnant levels of funding for this critical work despite increased AIS threats and increased municipalities requesting funding from the Grant-in-Aid Program. The Lakes and Ponds Program will continue to work with ANR leadership to try to prioritize this work for both increased staffing and funding, and FOVLAP's continued voice in this effort will be essential.

Lake Watershed Action Plans (LWAPs): VTDEC will award a contract to develop an additional 3 Lake Watershed Action Plans at Lake Willoughby, Lake Morey, and Shadow Lake (Glover), bringing the total number of these plans to 13. As the number of LWAPs and the number of practitioners involved grows, we've had some requests to establish a central repository of information about these plans, focusing on templates, water quality data, and spatial data. To that end, we've set up a preliminary LWAP page on the VTDEC website here. You will see there is limited information there to date, but we are hoping to expand this content over time.

Bioengineering Manual: Be sure to check out the recently published Bioengineering Manual, available here on VTDEC's website. It is an amazing document that compiles information gleaned from many years' worth of shoreland restoration work on our lakes and ponds, led by Amy Picotte and other partners. Let me know if you would like a hard copy – we will have them to distribute free of cost soon. Also, stay tuned for revised shoreland BMP sheets that are nearing completion, thanks to Ecological Designer Holly Greenleaf's hard work.

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

Lake Ice-out and Ice-in in Vermont

Mark Mitchell, UVM Lake Champlain Sea Grant and Vermont Lakes and Ponds Program

Spring is upon us in Vermont and it is the time of year when the ice on our lakes melts away to reveal open water once again. This annual happening is known as lake "ice-out" and is the reverse of "ice-in" when lakes freeze over in the fall/winter. Lake ice-out and ice-in dates can be recorded to track Vermont's changing climate trends.

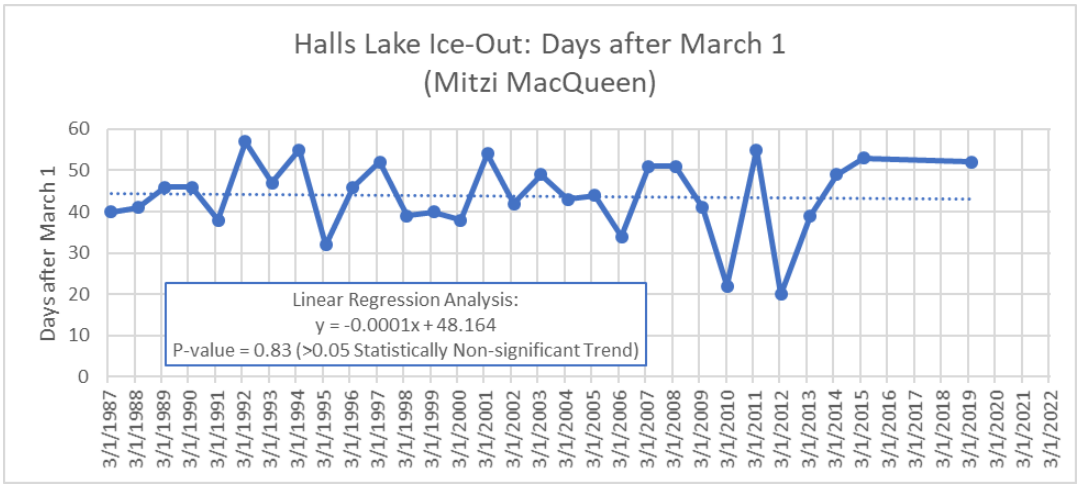
Earlier lake ice out trends and later ice-in trends are an indicator of warming temperatures. Such trends can lead to a longer growing season for aquatic plants, and allow algae and cyanobacteria to proliferate. A longer season is also true for bacteria that decompose lake bottom sediments while depleting dissolved oxygen and releasing nutrients into the water column. These changes can all impact the balance of our lake food webs.

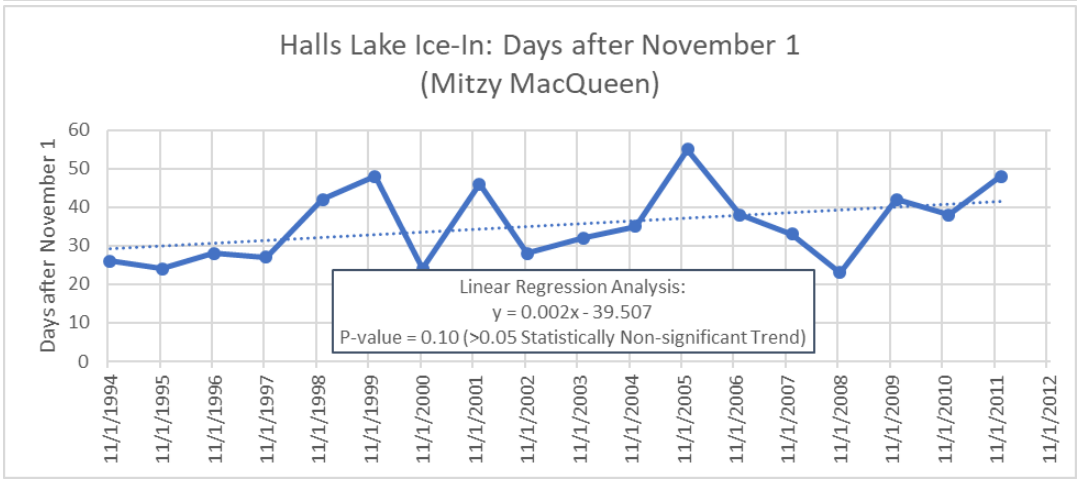
A recent US EPA study of ice-out data for selected lakes around the country from 1850 to 2019 shows earlier ice-out trends by about one day every decade on average. A USGS study of lake ice-out data in New England from 1850 to 2000 shows earlier ice-out trends by 9 days in northern and mountainous areas of New England (primarily northern and western Maine) and by 16 days in more southerly locations. This USGS study also estimates late winter/early spring air temperature warming in New England of about 2.6 deg F based on the relation between lake ice-out dates and air temperatures.

Ice out on Shadow Lake in Glover (Photo: C. Cano)

According to the Lake Champlain Basin Program State of the Lake Report, winter minimum and summer maximum air temperatures in Burlington show increasing trends since the early 1900s, especially in recent decades. Lake Champlain froze nearly every year in the early 1900s but currently freezes over about once every 4 years.

The VTDEC Lay Monitoring Program webpage has an online ice-out and ice-in reporting form where the public can submit their observations with a description of what they see. There are also other volunteer opportunities, including cyanobacteria and aquatic invasive species monitoring. Having volunteers who, anytime they're at a lake, can report visually what they see will aid in our understanding of these trends. The more information we have, the better to help track these changes and see what's going on from lake to lake as well as in the region.





The graphs on the left show ice-out (top) and ice-in (bottom) data for Halls Lake in Newbury, Vermont. (M. Mitchell)

Citizens Group Petitions ANR to Manage Wake Boats

Jack Widness, Tom Ward and Mark Milazzo, members of Responsible Wakes for Vermont Lakes

Responsible Wakes for Vermont Lakes is a grassroots citizen group formed in March 2021that believes Vermont's lakes and ponds are to be treasured and protected, and provide a vital source of enjoyment and nourishment for the souls of those that use them - residents and visitors alike. RWVL was formed to foster protection for these resources. Jack Widness is a member of RWVL and a FOVLAP board member. This article represents the views of RWVL and not necessarily the opinions of the FOVLAP board.

Responsible Wakes for Vermont Lakes' (RWVL) growing awareness and concerns regarding wake boats and wake sports in Vermont resulted in the submission of a petition on March 9th to the Vermont Agency of Natural Resources (ANR). The petition asks for a change in the Vermont Use of Public Waters Rule (i.e., "Proposed Change to § 3 for Managing Wake Boats and Their Activities on Vermont Lakes and Ponds" https://dec.vermont.gov/watershed/lakes-ponds/rulemaking). The RWVL request for the state to manage wake boats is not without precedent; more than a decade ago, a similar petition requested restrictions on the use and operation of personal watercraft and was adopted for certain lakes and remains in effect today.

Wake boats are large boats (20 to 25 ft) with powerful (200 to 600 hp) inboard motorboats specially designed to create large enhanced wakes for recreational wakesurfing and wakeboarding. These boats differ from conventional motorboats traditionally used for waterskiing, tubing, fishing, etc., by having built-in ballast tanks or removable bladder bags to hold from 2,000 to 5,000 pounds of water. The tanks are located predominantly towards the stern, adding weight to the vessel - the equivalent weight of a sedan automobile. With full ballast tanks, these boats generate large wakes like the one shown below on Lake Raponda from last summer (with a wakesurfer riding hands-free in an enhanced wake).

As a result of the growing popularity of wake boats and the accompanying water sports of wakesurfing and wakeboarding, RWVL members are concerned about public safety issues and the health of Vermont's lakes and ponds. Based on RWVL's extensive review of the scientific literature, first-hand reports of lake users, and members' personal experiences, RWVL has become concerned that wake boats are inconsistent with the water uses embodied in Vermont water use statutes since the early 1990s. The 2021 Vermont Use of Public Water Rules Environmental Protection Rule Chapter 32 "establish[s] several general management rules to protect normal uses on all lakes, ponds, and reservoirs," stating:

Wake surfing on Lake Raponda (Photo: J. Widness)

"The public waters shall be managed so that the various uses may be enjoyed in a reasonable manner, considering safety and the best interests of both current and future generations of citizens of the State and the need to provide an appropriate mix of water-based recreational opportunities on a regional and statewide basis."

RWVL also believes wakesporting may conflict with two other Vermont statutes:

The Water Quality Standards (WQS) Environmental Pro-

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(Petition continued from page 17)

tection Rule Chapter 29A due to their potential negative impacts on aesthetic uses, aquatic biota, aquatic habitat, and other recreational water uses such as boating and swimming.

The Shoreland Protection Act due to their potential adverse impacts on water quality, wildlife habitat, the natural stability of shorelines, and the economic benefits of Vermont lakes and their shorelands.

In preparing a petition to ANR, RWVL reviewed available scientific evidence and public comments relevant to the recreational use of wake boats. RWVL concluded wake boats and their sports significantly impact personal safety, the environment, and private and public property. RWVL's petition argues that establishing new Vermont Public Water Use Rules to apply specifically to the management of wake boats and wakesport activities is urgently needed to minimize their negative impacts while allowing wake sports enthusiasts to enjoy their activities fairly and equitably.

RWVL is not alone in having concerns about the inappropriate use of wake boats and wake sports. Vermont is one of a growing number of states - currently totaling 17 - with groups seeking to manage wake boats and wakesport activities.

In our petition to ANR, RWVL proposes three amendments to the rules:

Increase the shore protection zone width to 1,000 feet for wake sports. This will provide the distance required to make wake boat waves that reach the shore equivalent to typical water ski boats. Vermont's standard 200 feet "shoreline safety zone" distance included in the *Use of Public Waters Rules* provides inadequate protection for other boats, swimmers, moorings, and others, against waves produced by wake boats. Based on RWVL's review of the scientific literature, a much greater distance for wake boats to operate from shore is warranted. The 1,000 feet needed is due to the long distance required for the greatly enhanced waves to attenuate before they reach shore causing turbulence, erosion, and destruction of wildlife habitats, e.g., nesting loons (see photos below).

Photos of a floating loon nesting platform ("raft") anchored to a small island at Kezar Lake, Maine. *Left:* A large wake created by a wake boat about 250 feet away moving towards the shoreline. Based on the height of this nesting platform, the wake shown is about two feet high. *Right*: Tilting of the loon platform appears sufficient to dislodge an egg from the nest, flushing it into the water and/or sufficiently strong to crack the egg. While loon nesting platforms are designed to absorb natural wave action, they are not designed to withstand waves such as these. (Photo: Kesar Lake Watershed Association trail cam, 2020)

Require that wake boats operate in water depths of greater than 20 feet. This reduces the negative impacts of the propeller slipstream directed toward the lake bottom. The heavy stern-placed wake boat motors create a powerful, downward–directed propeller jet ("slipstream") of water-extending much deeper into the lake than other motorboats. This propeller jet velocity disrupts the lake-bottom habitat and aquatic ecosystem by stirring up sediments and activating nutrient release that contributes to algae blooms in shallow water. The deeper churning of wake boat propellers and slipstream turbulence can also fragment aquatic invasive plants, e.g., Eurasian watermilfoil, thus contributing to the spread of invasive plants within

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New Wave Study

A notable February 2022 wave study from the University of Minnesota's prestigious St. Anthony Falls Laboratory (SAFL)* suggests that wakesurf boats operating in wakesurfing mode require distances greater than 500 feet from shoreline/docks and other watercraft to attenuate the wakes to energy levels equivalent to those of traditional ski boats.

According to the study data, the wakesurf boats produced the largest waves in height, energy, and power under-slow and fast speed conditions compared to the non-wakesurf boats. Future SAFL research will study propeller wash interactions with lake bottoms and examine the effects of large waves on aquatic vegetation and shorelines.

To read the SAFL research study, "A Field Study of Maximum Wave Height, Total Wave Energy, and Maximum Wave Power Produced by Four Recreational Boats on a Freshwater Lake" click here.

**Established in 1938, the St. Anthony Falls Laboratory is an interdisciplinary fluid mechanics research lab and educational facility under the College of Science and Engineering at the University of Minnesota.*

(Petition continued from page 18)

lakes and increasing the high cost of their management.

Require that regions satisfying shore protection distance and minimum depth include a minimum of 60 contiguous acres. This will provide an adequate center mid-lake area to enjoy wake sports while decreasing wake boats' adverse impacts.

Regions of Vermont lakes and ponds satisfying all three conditions would be designated as "wake sport zones."

Although not included in our petition, RWVL is also concerned about the potential for wake boats to introduce new, and spread existing, aquatic invasive species (AIS). Unlike fishing boat live wells, wake boat built-in lake water-filled ballast tanks are impracticable to completely empty, inspect, clean, and thoroughly drain and dry. This wake boat feature significantly increases the risk of lake-to-lake spread of AIS relative to other boats. Importantly, because wake boat ballast tanks cannot be inspected, RWVL believes their use conflicts with Vermont's aquatic nuisance species transport law. Our petition recommends the prohibition of vessels with functional ballast tanks on lakes without a "wake sport zone" to minimize the risk of spreading AIS.

RWVL is confident that if our petition is adopted restricting wake boat activities to water bodies that are appropriate for their use, Vermont will better balance the enjoyment of wake boats and wake sports with other traditional public lake uses. RWVL's proposed rule change does *not* seek to regulate conventional boats used for wakeboarding, tubing, and water skiing, nor does it apply to Vermont lakes with portions in other states and Canada, including Lake Champlain and Lake Memphremagog.

As of May 1, 2022, RWVL's petition to ANR is currently undergoing internal ANR review. To learn more about RWVL's petition and this topic, contact RWVL directly at responsiblewakesvt@gmail.com. For those seeking more information, RWVL also offers these videos: RWVL "Community Conversations" presentation to the Sierra Club's Vermont Chapter on July 14, 2021; and a 1.5-min video of Lake Raponda in Wilmington for a better understanding of wake boats, wake sports, and enhanced wakes, click here.

Vermont Aquatic Invasive Species Decal?

Christine Cano, FOVLAP Board Member

With current funding resources for aquatic nuisance control (ANC) management just not sustainable, the FOVLAP Board believes the state must be more proactive in increasing and maintaining support for aquatic invasive species prevention and control programs. A new revenue source is needed, especially in light of the 2021 Vermont Department of Environmental Conservation (VTDEC) reports of declining revenues expected in 2023 to fund the ANC Grant-in-Aid municipal grants program.

According to recent reports from Oliver Pierson, VTDEC Lakes and Ponds Management and Protection Program manager, the (FY 2021) current total of $450K available funds (state and federal dollars combined) to support aquatic nuisance control management and ANC Grant-in-Aid grant awards will likely reduce in **2023 to only $350K**.

In response to this significant deficit of critical funding, the FOVLAP legislative committee, with Board approval, reached out to legislators to advocate for introducing a bill to establish new state funding sources. In January 2022, the introduction of bill H.554 proposed an aquatic invasive species (AIS) decal program for all motorboats accessing state waters. The funding aimed to support aquatic invasive species prevention and management programs, Department of Fish and Wildlife enforcement of Vermont aquatic invasive species laws, and expand state aquatic invasive species education to out-of-state boaters accessing Vermont waters.

In 2021, 42 municipalities and 6 other eligible entities requested $1.8 million in state assistance to manage aquatic invasive species, but due to limited funds, on average, VTDEC funded a mere 25% of the requested funds. Even with VTDEC grant awards, the day-to-day burden and high expense of managing and controlling aquatic invasive species infestations in Vermont's freshwater resources fall on municipalities, local volunteers, and lake associations.

Can Vermont afford continued spread of aquatic invasive species in its lakes, ponds, rivers, streams and wetlands?

(Photo: Eurasian watermilfoil bed in Lake Iroquois, Pogo Senior)

Aquatic invasive species are a significant concern for our freshwater lakes and rivers. Any hope of achieving effective control takes resources as they can spread rapidly into new locations through numerous pathways, primarily through transient recreational boats moving between water bodies. Lakes frequently visited by boaters, especially after the boat last accessed an AIS infested waterbody, have a far greater chance of being infected and becoming the source of new invasions because invaders “hitchhike” on boats from one body of water to another.

The Vermont Motor Boat Registration Fund (MBR) total for SFY21 was approximately $1.2M. If out-of-state motorboat traffic aligned with the instate MBR fee scale and is roughly 20% of Vermonter motorboat traffic, and if a proposed AIS decal fee for out-of-state boats is $20, Vermont could see approximately $249K revenue from out of state motorboats from an AIS decal. The annual projected revenues from a decal that includes Vermonters (at $10 per motorboat) would be roughly $500K projected.

The FOVLAP Board believes out-of-state motorboats accessing Vermont‘s waterbodies should contribute to Vermont‘s efforts to prevent and manage AIS. Currently, out-of-state motorboat operators are only required to purchase a Vermont validation sticker after 60 days of use on Vermont public waters.

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(Decal continued from page 20)

Preventing new introductions of aquatic invasive species into Vermont waters before they cause substantial environmental and economic impacts is a concern for Vermonters and visitors alike. If populations of aquatic invasive species are left unchecked or additional aquatic invasive species enter Vermont and spread, current levels of impact will only increase, amplifying the likelihood and seriousness of further spread.

Public health and safety are also a concern. Zebra mussels, for example, can potentially facilitate the cycling of heavy metals and other toxins into aquatic food webs, ultimately resulting in increased exposure to humans.

The 2022 Vermont legislature's top priorities continued much of their focus on the pandemic response, recovery measures, and climate change. Given the variety of issues and priorities, policymakers concentrate on each legislative session; many of the hundreds of bills introduced, including H.554, did not receive a hearing by the mid-March deadline.

FOVLAP's legislative committee will reconnect with the bill sponsors to revive H.554 for the 2023 biennium. We look forward to advocating for legislative policies to improve water quality and gathering support from FOVLAP members and partners.

The table on the right represents a summary of states with aquatic invasive species decals: the year decals became effective; in- and out-of-state, and motorized and non-motorized boat requirements; decal cost; and estimated annual revenues. (C. Cano and A. Bove)

Other states fund their Aquatic Invasive Species control and spread prevention efforts with revenue from *mandatory* boat decals as a user-fee based approach

State	Year Effective	In-state Motorized Sticker	Out-of-state Motorized Sticker	In-state Non-motorized Sticker	Out-of-state Non-motorized Sticker	Estimated Annual Revenue
ME	2002	Fee included in boat registration	$45	N/A	N/A	$1.85M
OR	2009	Fee included in boat registration	$22	$7/$19/$32 7-day/1-yr/2-yr	$7/$19/$32 7-day/1-yr/2-yr	$880,195 FY 2019
ID	2009	$7 combined with boat registration	$30	$7	$7	$1.2-2M
WY	2010	$10	$30	$5	$15	$662,459 FY 2018
NV	2013	$13	$13	$6	$6	unknown
CA	2014	$16	$16	N/A	N/A	$2.5M
NE	2016	$5 combined with 3-yr boat registration	$15	N/A	N/A	unknown
WA	2017	$2 combined with boat registration	$24 includes seaplanes	N/A	N/A	$412,000 by 2023
CO	2019	$25 includes sailboats	$50 includes sailboats	N/A	N/A	$2.4M
NH	2019	N/A	$20	N/A	N/A	$200,000 projected
CT	2020	$5	$20	N/A	N/A	$400,000
LA	2019	$9 combined with boat registration	N/A	N/A	N/A	unknown
MT	2019	N/A	$30	N/A	$10	$800,000
ND	2019	$15 prorated with a 3-yr boat registration cycle	$15	N/A	N/A	unknown
UT	2020	$10 combined with boat registration	$20	N/A	N/A	unknown
VT	No Law	None	None	None	None	None

Use of Pesticides in Vermont Waters and Aquatic Invasive Species

The following article was submitted as a commentary to VTDigger.org in April by FOVLAP auxiliary member, Ann Bove.

We are fortunate in Vermont to have one of the strictest laws in the country regarding the use of a pesticide in water to control an invasive species. Vermont law requires five positive findings for authorization to use a pesticide in water: negligible risk to public health, acceptable risk to non-target organisms, no reasonable non-chemical control options, the development of a long-range management plan incorporating pesticide minimization, and that a public benefit can be achieved. If one of these five findings cannot be made in the affirmative, by law, a permit for use *cannot* be issued.

Invasive species are "non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health" (1999 Executive Order 13112 - Invasive Species). They are a biological pollutant. Extremely difficult if not impossible to contain, control, or eradicate, invasive species can interfere with our ability to enjoy lakes, ponds, and rivers.

Dense stands of invasive aquatic plants provide unbalanced and substandard physical habitat for many fish species and macroinvertebrates due to the lack of mixed structure normally provided by a diversity of native aquatic plant species. These monocultures also pose a threat to game and nongame species populations alike, and via competition, cause losses or reduction of native plant species.

There is much scientifically supported evidence that native aquatic plant communities benefit significantly from aquatic invasive plant management. Control of invasive species like Eurasian watermilfoil protects recreational uses of our waters - boating, swimming, fishing - as well as the biological integrity of plant and animal populations of Vermont's surface waters. Citing Vermont law 10 V.S.A, Chapter 50. §1451, "*It is the policy of the state of Vermont to prevent the infestation and proliferation of invasive species in the state that result in negative environmental impacts, including habitat loss and a reduction in native biodiversity along with adverse social and economic impacts and impacts to the public health and safety.*"

While some Vermont lake and pond users who fish may have adapted strategies to embrace a monoculture of Eurasian watermilfoil, research indicates such monocultures are not reflective of a healthy ecosystem and cause negative impacts over time, and supporting these monocultures does not reflect Vermont policy.

Spring arrives at Seymour Lake in Morgan
(Photo: R. Shippee)

Vermont has over 120 species of native aquatic plants growing submersed in, floating on, or emerging from our lakes and ponds. Such diversity provides habitat and cover and is used as a food source by many aquatic critters. Aquatic plants - native or invasive - need light to thrive, just like plants that grow on land. In most Vermont lakes, the zone where light penetrates, and aquatic plants grow, is typically from shore to 20 feet deep.

Invasive aquatic species first turned up in Vermont in Lake Champlain in the 1940s, either because of our direct connection to infestations in New York via the canal system, via hitching a ride on recreational-based water equipment like boats and trailers, or via another pathway.

Some of our largest and most heavily used recreational lakes do indeed have infestations of Eurasian watermilfoil - Champlain, Memphremagog, St. Catherine, Bomoseen, Fairlee, among others. Many of these lakes are fortunate to have informed municipalities, active lake associations, and engaged lake enthusiasts dedicated to control Eurasian watermilfoil infestations as well as prevent the introductions of other invasive species, including invasive animals like zebra mussels and spiny water fleas. However,

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(Pesticides continued from page 22)

roughly 75 percent of Vermont's 800 plus lakes and ponds *do not* support an invasive species. Yes, 75 percent! Significant resources - time and money - are expended by many of our local communities to keep it this way: Preventing an introduction is far less costly than managing one once an invasive species like Eurasian watermilfoil takes hold.

Use of a pesticide in a water body is nothing to take lightly. For many Vermont communities, this method reflects a last resort control option. A decision to consider such use to manage an invasive aquatic species like Eurasian watermilfoil in a Vermont lake or pond should be community based - whether one is a recent transplant or one's history is rooted in Vermont for generations - and based on science and facts.

Before closing the door on Eurasian watermilfoil management, seek advice from known experts. The Vermont Lakes and Ponds Program is delegated to manage aquatic invasive species in waters of the state - species like Eurasian watermilfoil. This state program reviews submitted applications for pesticide use in water and must make the findings required by Vermont law to determine if a permit authorizing use can be issued or not.

To learn more about Eurasian watermilfoil, other invasive aquatic species and Vermont's strict aquatic nuisance control permitting law, contact Vermont's Lakes and Ponds Program: https://dec.vermont.gov/watershed/lakes-ponds.

Ann Bove is an auxiliary board member of the Federation of Vermont Lakes and Ponds, and was the aquatic invasive species lead for the Vermont Department of Environmental Conservation from 2002 until she left state government in 2017.

An Opportunity: Recognizing Abenaki Lake and Pond Stewardship

Christine Cano, FOVLAP Board Member

The region most of us refer to as "Vermont" has been the historical ancestral homeland of the Abenaki since time immemorial. The FOVLAP Board of Directors recently voted unanimously to acknowledge and recognize the indigenous Abenaki stewardship of Vermont's land and waters, representing ongoing board efforts to build positive relationships and collaborations around water.

A statement by the FOVLAP Board would demonstrate:

- The board's broadening of perspectives and understanding of the different ways of knowing water;
- Collaboration with indigenous leaders to promote environmental management; and,
- Continued support of the state's environmental justice and equity policies.

The board will reach out to Abenaki leaders on how best to incorporate respectful speaking and language in a public statement and will consider other opportunities to engage with this community. Examples could include:

- Offering memberships on the board or auxiliary board.
- Offering a student scholarship for environmental studies.
- Inviting Abenaki people to share their cultural traditions and speak at our events.
- Extending an invitation to submit articles for our newsletter.

We are thankful for the opportunity to share in the beauty and bounty of these lands and waters and look forward to future collaborations with the Abenaki people.

https://wellcomecollection.org/works/swje2h3u

What to Know When Working in the Water

Laura Dlugolecki, Lakes and Ponds Management and Protection Program

When spring arrives and the ice goes out on Vermont's lakes and ponds, many shoreland property owners may see issues in need of fixing along the shoreline. As the ice retreats, you may see damage to retaining walls, boathouse foundations, or the shoreline. While there are many solutions to address damage or erosion along the shoreline, there are regulations to ensure that projects do not cause unintentional impacts to water quality, recreation, or fish and wildlife habitat. Before beginning any project at the water's edge, be sure to reach out to your regional Lakes and Ponds contact.

It is important to remember that:

- Placement of any rock, stone, or blocks at the water's edge or in the water requires a Lake Encroachment permit
- Replacing existing retaining walls or boathouse foundations at the shoreline requires a Lake Encroachment permit
- Permitted Lake Encroachment projects require the use of a turbidity curtain around the project area to contain sediment
- Permitted Lake Encroachment projects restrict the time of year when work can occur in the water to protect fish spawning habitat. In general, work in the water is not allowed to occur between March 15 and July 1
- Even if an older retaining wall or other encroachment was in existence before 1968 (when Lake Encroachment regulations went into effect), any alterations to that encroachment, like enlarging, adding material to, or conducting repairs, requires a Lake Encroachment permit.

Lake Encroachment Permitting

Shoreland property owners in Vermont most commonly interact with two different Lakes and Ponds regulations. Activities like construction and vegetation removal are regulated under the Shoreland Protection Act on land within 250 feet of the mean water level (commonly the average summer water level). Lake Encroachment regulates activities occurring at the mean water level and extending into the lake.

A Lake Encroachment is the placement of any material beyond the mean water level or the alteration of the lakebed. The most common lake encroachments observed in Vermont lakes are stabilization methods like seawalls or rip rap, boathouses, docks, marina systems, and dredging projects.

Most noncommercial docks do not require a Lake Encroachment permit, provided they don't impede navigation and they meet the following criteria:

- The docks are either floating or supported on posts.
- They do not extend more than 50 feet from the shoreline.
- The combined square footage of all docks and swim rafts is 500 square feet or less.
- No use of concrete, earthen fill, rock material, bulkheading, or similar construction.

When a lakeshore property owner requests to stabilize their shoreline, the Lakes and Ponds Program works with the landowner to find the best possible solution for the location that is also consistent with the standards of the Lake Encroachment permitting process. Projects must be designed to reduce environmental impacts and provide a public benefit.

When taking on a shoreline stabilization project, remember that timing is essential! Lake Encroachment permits can take up to 90 days from submission to issuance. Plus, working at the shoreline or in the water during the spring is prohibited to protect fish spawning habitat. Plan ahead and acquire your permits before starting the project.

Best Practices for Working in the Water

Lake Encroachment permits include measures that the landowner and/or contractor must take to protect lake water quality and fish and wildlife habitat. The following requirements are written into most Lake Encroachment permits:

- A turbidity curtain or similar barrier must be installed around the project area to protect the lake by containing sediments disturbed during the project construction. The barrier must remain in place until the area is stable and turbidity is no longer present.

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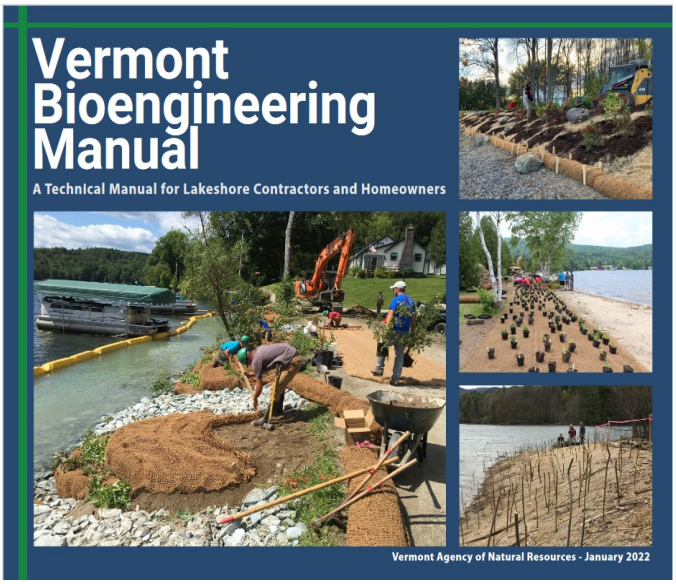
(Working in Water continued from page 24)

- Heavy machinery should work from shore only. Driving equipment into the water is not typically allowed.
- Leave all large boulders and dead trees in the water. These are a part of the natural lake habitat and should not be altered as a part of a stabilization project.
- If a project involves using fluid concrete, sealed forms must be used to pour the concrete.



VTDEC's *NEW* manual provides resources to successfully implement shoreland bioengineering practices to protect and restore Vermont's shorelands.

What Should I Do to Fix Erosion Problems at the Shoreline?

When erosion damages a structure at the shoreline like a boathouse, a retaining wall, or a concrete dock, repairs often need to be authorized under a Lake Encroachment permit. Several options are available to stabilize an actively eroding shoreline, depending on what may be causing the erosion, the severity of the erosion, and the characteristics of the shoreline. When repair or replacement projects are proposed, they are reviewed by Lake Encroachment permit staff to ensure that the project does not increase in size or encroach further into the lake.

When thinking about using an erosion control method, it's practical to ask yourself where the erosion originates. Could runoff from developed areas above up on shore be causing gullies or bare soil near your shoreline or behind your existing retaining wall? Perhaps ice push or wave action from the lake is the most significant contributor to erosion at your shoreline?

When you have an idea of the erosion sources, it's good to reach out to your regional Lakes and Ponds contact to discuss potential solutions. Although there are many solutions at the shoreline, upland solutions to slow the flow of runoff and infiltrate water from developed areas will help stabilize the shoreline over the long term. Gentle slopes, establishing vegetation, and using natural materials like stone will provide long-lasting shoreline protection and won't need as frequent maintenance as a concrete retaining wall. Be sure to check out the new Vermont Bioengineering Manual for some fantastic, lake-friendly stabilization techniques!

Questions? Contact Laura Dlugolecki at laura.dugolecki@vermont.gov or 802-490-6133

Scholarship

Jackie Sprague, FOVLAP Vice President

For 14 years, FOVLAP has offered a $500 scholarship annually to a student pursuing a career in environmental studies. This year we are fortunate to offer two $500 scholarships.

The FOVLAP Board agreed that this would be important for the health of our beautiful lakes and ponds for generations to come. We organized a committee to discuss how to get the word out and make a selection. Vermont Students Assistance Corporation (VSAC) was chosen to help publicize our scholarships.

The FOVLAP scholarship was created to encourage and support students pursuing environmental science studies at the college level. Eligibility requirements include:

- Attend an accredited school approved by the federal Title IV funding.
- Seek a degree in environmental studies (preference given to students seeking a degree in aquatic environmental

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FOVLAP's Website Is Getting a New Look!

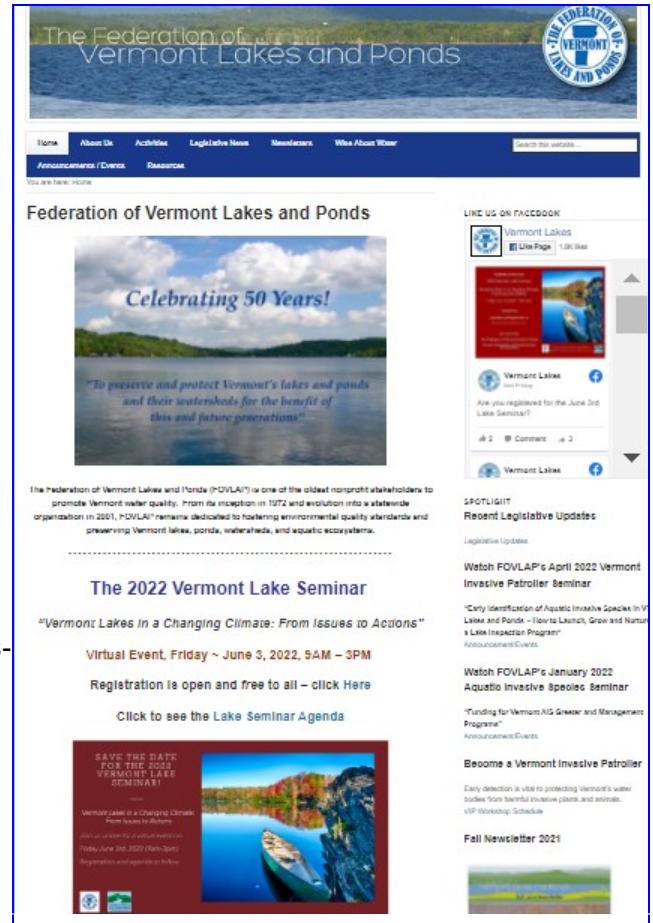
Angela Shambaugh, FOVLAP auxiliary board member

It's time to update our current site to make it easier for our members and visitors to use. In January, our website committee sent the website redesign project out to bid. Three competitive bids were received and carefully reviewed. The winning proposal came from Marketing Partners, Inc. - located in Burlington, Vermont. They have worked as our website consultant for many years and understand FOVLAP's mission and vision for the new site, and what is achievable within our budget.

Over the next few months, our website committee will work with Marketing Partners to select a new website design and migrate materials from our existing site into the new one. We will also be adding considerable new material and pictures to the website. We plan to launch the new website in late summer, unveil the new website design and walk through the new features at our annual meeting on September 8th. We are excited about a fresh design and future possibilities!

In the meantime, the website committee is busy updating the existing site to share new science, opportunities to learn more about lakes, and our Board activities. If there is something you'd like to learn about or an opportunity you think others in FOVLAP might enjoy, please let us know via email (vtlakesandponds@gmail.com) or our Facebook page.

Thank you to the website committee: Ann Bove, Christine Cano, Tracey Shadday, Angela Shambaugh, Jerremy Jones and Pat Suozzi.



FOVLAP's current website homepage

got ideas?

The FOVLAP Newsletter Committee Seeks Contributions from Members

With help from the newsletter committee, FOVLAP produces a bi-annual newsletter, now available in electronic format *only*. The committee seeks member ideas on newsletter content and also welcomes article contributions.

Reach out if you can help!
vtlakesandponds@gmail.com

(Scholarship continued from page 25)

studies such as watershed management, water resources education and limnology).

- Demonstrate academic achievement.
- Demonstrate financial need.
- Demonstrate community involvement and/or service.

This year, FOVLAP's scholarship committee reviewed applications submitted by 18 incredible students (some were repeat applicants from 2021). The committee spends a significant amount of time reading and rating each applicant on their essays, recommendations, financial need and transcripts. This amazing committee - Kathi Apgar, Linda Darrow, Tracey Towle, Jan Parsons, Angela Shambaugh, and myself - volunteered to take on this task. FOVLAP could not undertake annual scholarship awards without their generous assistance.

FOVLAP extends an invite to each scholarship recipient annually to attend our annual Lake Seminar and Annual Meeting. If you know of a student who shares our passion for lakes and ponds, please have them contact VSAC at www.vsac.org. For more information, send us an email at vtlakesandponds@gmail.com.

2022 Lake Seminar

Registration is Now Open

2022 Vermont Lake Seminar

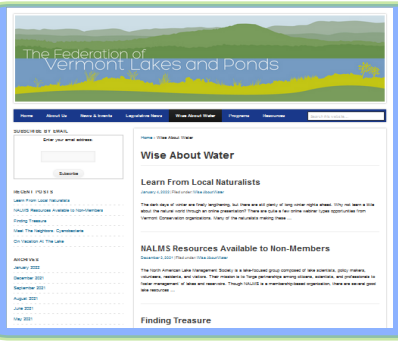
Vermont Lakes in a Changing Climate: From Issues to Actions

Join us for a day filled with wonderful presentations!

Friday June 3rd, 2022 (9am-3pm)
Virtual/Free
Full Agenda on Website

Any problems with registration?
Email: vtlakesandponds@gmail.com

Registration is open and *free* to all. To register, click HERE.
The full agenda is available on the FOVLAP website; click HERE.



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