



the

Water Column

Annual Newsletter 2021

50th Anniversary Edition

Lake Stewards of Maine



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Layout and Design by Drew Perlmutter, Invasive Species Education & Outreach Projects Manager.

Cover: from Lake Stewards of Maine's archives. Can you identify any of the people in this photo?

Opposite: Wesserunsett Lake, John Bonsall

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President's Message

by Barb Welch, President, LSM Board of Directors

Dear Friends,

In October of 2021, a significant change occurred within the operations of Lake Stewards of Maine (LSM) when Scott Williams stepped down as LSM's Executive Director to transition to the position of Senior Program Advisor and Limnologist.

Scott accepted the Executive Director position with Lake Stewards of Maine (then known as the Volunteer Lake Monitoring Program) in 1995 when the Maine Department of Environmental Protection (DEP) turned over the program to the new nonprofit. The continued growth and success of LSM has been in large part due to Scott's relentless commitment to the Mission of the organization. Since its inception, over 5000 volunteers have participated in LSM programs. Scott took the organization from a couple hundred water quality monitors to over 450 and added a huge invasive plant monitoring component. He developed an organization with a reputation for scientifically credible information that for decades has provided most of the state's water quality and invasive plant survey data. Scott, with help from staff and the board, created a resilient organization with a diversified funding base that will help to sustain LSM into the future. Thank you, Scott!

This past year, we have enjoyed celebrating the 50th anniversary of citizen lake monitoring in Maine. The theme of our July 2021 Annual Conference, not surprisingly, was celebrating the long history of Maine's lake monitoring and LSM's dedicated citizen scientists. The speakers were lake leaders who attested to the volunteer power that

LSM has leveraged for the gathering and dissemination of credible, scientific lake data. For those who missed it, the conference can be seen in its entirety on our website (www.LakeStewardsOfMaine.org). Be sure not to miss the popular, heart-felt, and highly entertaining selfie video featuring our very own volunteers – in their element.

In October, Adam Zemans, the new Executive Director, was hired. Adam is familiar with LSM through working in 2017 as Visiting Outreach and Stewardship Coordinator, and he is passionate about our organization and its mission. Adam is deeply committed to helping cultivate cooperation, dialogue and leadership toward protecting Maine lakes. One of his priorities is promoting lake stewardship in the face of unprecedented environmental impacts caused by climate change. He is a transdisciplinary applied social scientist who is focused on organizational leadership and collaboration. He is an environmental and not-for-profit lawyer who recently moved back to the United States after living primarily in Bolivia for two decades. He has executive director experience at diverse non-profit organizations. Welcome, Adam!

Despite the pandemic, our staff accomplished a number of major achievements: Led by Invasive Species & Climate Change Program Director and Deputy Director Roberta Hill, a gigantic survey effort took place over the summer on Big Lake in Washington County, where invasive Variable Milfoil was discovered in 2019. The entire shoreline of this sprawling (over 10,000 acre) lake has now been mapped and

surveyed to determine the extent of the milfoil infestation. LSM staff, working with the Passamaquoddy Tribe, Downeast Lakes Land Trust, volunteers, and local businesses, created a new model for how to build community resilience, relationships, and collaborations in order to successfully execute this daunting task.

Staff hosted a summer webinar series which you can watch on our website. Topics covered can be found on pages 17 and 18 of this newsletter. Staff also offered technical support sessions for invasive plant and water quality monitors through weekly zoom sessions.

LSM launched the Maine Field Guide to Aquatic Phenomena. It is a convenient, reliable, go-to resource for all who love spending time on, in, and around the lakes of Maine. You can search a wide array of aquatic flora, fauna, and other lake phenomena from any of your electronic devices. Join us in the ongoing development of this crowd-sourced compendium. You can find more information about the app on our [website](#).

Finally, I hope you will enjoy this edition of the Water Column, with layout and design by Drew Perlmutter, our new Invasive Aquatic Species Education & Outreach Projects Manager. Her position was enabled through a generous staff expansion-focused grant from the Ram Island Conservation Fund. Highlighting 50 years of history, Drew spearheaded a new look to the newsletter and led a staff team that updated infographics.

Enjoy!



Building Citizen Science Leadership Through Mentorship and Internships

by Adam Zemans, Executive Director



Adam and his two sons. Photo credit: Adam Zemans.

Maine lake stewardship is reaching a critical moment in which citizen scientists, through mentorship and internships, are called to build the leadership skills of a new generation. In the face of unprecedented environmental impacts, Lake Stewards of Maine's (LSM's) citizen scientists' strength and numbers should be fortified and expanded upon.

Mentorship is noted in social science research as a central component of environmental and sustainability leadership. Erharbor (2018) cites Wong and Premkumar (2007), "human beings, like trees in an old forest, tend to thrive best when they grow in the presence of those who have gone before them. This is mentoring. Mentoring is the learning process where helpful, personal and reciprocal relationships are built while focusing on achievement and emotional support."

My own leadership trajectory is an example of the power of mentorships and internships for organizational development: I stand on the shoulders

of many giants in the field of citizen lake science. Fundamental for my own citizen science professional development have been the mentorship of Dr. Keith Williams and his late wife, Sally Breen, along with that of Scott Williams and Roberta Hill during my prior experience with them as an LSM Visiting Outreach and Stewardship Coordinator in 2017. The experience functioned as mid-career training for my current position as Executive Director.

LSM is fortunate to benefit from a cadre of senior citizen scientist volunteers with varied skills, talents, experiences and the willingness to share with a new generation. Vice versa, younger colleagues are teaching their elders— such as how to use an "app"! (Otherwise known as "reverse mentorship"). Internships are central to developing the kind of learning organization culture described above. They are ideally engineered to maximize both the intern's and organization's learning curves. In 2022, LSM's goal is to expand our internship program from 1-2 summer interns to 4-6, and extend

internships beyond the summer.

One of the most important lessons that I have learned in 25 years of developing internship programs is that the word "intern" is grossly inadequate in explaining the human resource potential of interns. For example, at one prior setting in which I worked, close to 30 interns ran much of our organization under senior staff's supervision. Among them were graduate students with a significant professional history and a wide array of skills. With proper guidance, the interns were able to organize and lead newer and less experienced interns, who brought their own set of unique strengths. A flourishing internship program also has an able coordinator, clear goals, and adds as much value for the intern as for the organization through quality experience and reflection on it. These are some of the key principles that we are already applying for success this year at LSM.

Currently, LSM staff and Board of Directors are dialoguing about what an expanded set of internships will look like and implementing our 2022 internship plan. For example, we have noted that the need for an LSM Northern Maine presence was well articulated by Maine Department of Environmental Protection scientist, Jeremy Deeds, in a webinar presented at one of our "Fridays at 4" talks this past August ([recording available on our website](#)), as he explained the complex diversity of Maine lakes, by state region (fascinating research)! Sparked by the interest of new board member, Joe Musante, a biologist with the Passamaquoddy Tribe at Indian Township Environmental Department, we are now offering an internship in Northern Maine to bolster the water quality and invasive aquatic plant citizen scientist

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Lakeside Notes: Transitions

by Scott Williams, Senior Program Advisor and Limnologist

I took my first Secchi disk reading in 1970, through a self-designed thesis under the guidance of Professors Robert Chute, who chaired the Biology Department at Bates College, and Robert Morrison, who taught geology. Bob Chute had a longstanding interest in Maine's lakes. He had spent many years at his family summer home on a lake in the Naples area, and at that time I had the good fortune to have spent nearly every summer of my life with my family on a lake in Western Maine. I had always been curious about phenomena such as the "lake foam" that periodically accumulated along the shoreline, the long white streaks that would sometimes form on the water surface during windy days, the football-shaped, gelatinous formations that appeared on the anchor lines of the swimming platform, and of course, the primordial call of the Loons that echoed around the lake on calm summer evenings. I was stunned when I first discovered limnology – the field that had the answers to all of my questions about the biological, chemical and physical characteristics of lakes.

Although we didn't know each other at the time, four of my former college classmates also ended up in lake-related careers, each of whom was also influenced and encouraged by Dr. Chute. One was Barb Welch, who is the current President of LSM's Board Of Directors. She and I first crossed paths in the late 1970's when she was coordinating what was then the "Volunteer Monitoring Program (VMP) at the Maine Department of Environmental Protection (DEP) – the first statewide citizen lake science program in the nation. At that time, the program was less than a decade old, and was being overseen by Biologist, Matt Scott, who is widely regarded as the visionary and father of the program, and who also developed and led the DEP's widely known and highly respected Lakes Program. Matt currently serves on

LSM's Advisory Board, often acting as the organization's historian.

Nearly two decades in the future (1996), the unthinkable happened when the Maine Legislature made budget cuts that resulted in the loss of funding to support the then VMP at the DEP. That unanticipated cut had multiple implications, not just for the nearly 300 volunteer lake monitors throughout Maine who depended on guidance from DEP staff, but for the DEP's mission mandate itself, which relied on the treasure trove of credible annual data on Maine lakes that had been gathered by volunteers for a quarter century. In response, a committee was formed to address the crisis, of which I was a member.

After much discussion, the group concluded that the best path forward to preserve Maine's volunteer lake monitoring program would be to form a nonprofit, which would continue to work closely with the DEP lakes staff. The committee proposed creating the

Executive Director position for the organization, and I was offered the job. I accepted, having no knowledge or experience in the realm of nonprofit management or fundraising. However, I did have 20 prior years of experience in the field of lake assessment and management, and I had worked with many volunteers and lake associations throughout Maine during that time.

My first duty as Executive Director (ED) was to apply to the IRS, and establish the 501(c) 3 nonprofit organization, to form a board of directors, and to quickly find funding to support the new entity, which we named the Maine Volunteer Lake Monitoring Program (VLMP). State government was able to provide limited funding to help the new organization get started – enough to support two part-time employees for less than a years' time. I asked Phoebe Hardesty, who I had previously worked with on a few lake watershed survey projects
Continued on Page 3...



In recognition of LSM/VLMP's 50th anniversary, intrepid Maine DEP staff (present and former/retired) recently met on frozen Marranacook Lake in Winthrop for this historic reunion photo. All present are/were biologists who played important roles in the first 25 years of the program.

The lettering reads "We Love You Scott" in honor of LSM former E.D. and present Senior Program Advisor, Scott Williams.

Back Row, L to R: Dave Courtemanche; Jeff Dennis; Barry Mower; Judy Potvin; John Sowles; Mary Ellen Dennis

Kneeling, L to R: Barb Welch; Roy Bouchard; Matt Scott; Linda Bacon

Photographer: Sarah Cormier (whose fingers are still thawing)

through the Androscoggin County Soil and Water Conservation District, to help me prepare grant proposals, and create structure for the organization outside of state government. Phoebe is a current member of the LSM Board of Directors.

As the full weight of responsibility for ensuring the future of the organization began to sink in, I pondered possible sources of startup funds, and soon discovered that we had a compelling case to be made to potential benefactors. A 10-minute phone call to one of Maine's prominent outdoor sporting retailers resulted in a very generous startup gift that greatly encouraged our small staff and board of directors. The stories of our dedicated volunteers who committed themselves to gathering data on the health of Maine's lakes was a potentially powerful tool for garnering financial support to ensure that they had the resources necessary to continue their good work.

From the start, the symbiotic and essential relationship between the newly-formed VLMP and Maine DEP was apparent to all. Linda Bacon, Web Pearsall, Dave Courtemanche, and additional DEP lakes staff played key roles in the smooth transition process from state government to the private nonprofit sector. This strong and mutually-beneficial relationship continues to this day. LSM would be hard-pressed to function without the powerful partnership that we maintain with the MDEP, and in turn,

our volunteers provide lake data to the agency that has been critical to the assessment and protection of Maine's lakes over time.

Nonprofit organizations are able to move quickly to take advantage of serendipitous opportunities that are in alignment with their missions, and are able to act more quickly on such opportunities than state agencies, especially when it comes to fundraising. On the other hand, our DEP partners have highly trained and focused technical staff who have been fundamental to incorporating high-level quality assurance oversight and guidance that has helped ensure the credibility of the lake data gathered by our volunteers. A more beneficial partnership would be difficult to imagine.

During the 26 years that I have been honored to lead the organization, which several years ago was renamed "Lake Stewards of Maine" (LSM), while still retaining the name Maine Volunteer Lake Monitoring Program, the organization evolved and expanded to include an internationally recognized Invasive Aquatic Species prevention program and a watershed assessment component. LSM has been widely recognized as a national model for its citizen/community lake science focus and accomplishments. In recent years, the LSM model has been incorporated by international partners. Thanks to our DEP partnership, we have been able to assure all users of the accuracy

and integrity of LSM volunteer data. Multiple layers of quality assurance protocol ensure that the data are on par with similar data gathered by trained professionals.

In recent years, the organization has been able to demonstrate resilience, and the ability to adapt to significant challenges, ranging from unanticipated funding losses to the recent widespread uncertainties caused by the pandemic.

My primary motivation for remaining with the organization for so many years has been directly linked to our remarkable volunteers. I had the privilege to directly and indirectly train and provide ongoing support to hundreds of these dedicated and determined individuals. I know that I speak for all of our staff in acknowledging our gratitude for the inspiration that we have received from working with LSM's volunteer water quality monitors, invasive aquatic plant patrollers and watershed stewards through the years.

And my personal fascination (enchantment, really) with the science of Maine's exceptional lakes, and the opportunities I've had to spend time on so many of them has also contributed to my "dream job." Even so, I've been thinking about stepping down from the Executive Director position for the past few years, hoping that I might be able to continue to train and provide

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Scott Willaims demonstrating how to use a Secchi disk in a 1999 workshop. (Photo credit: Lake Stewards of Maine Archives)

A Brief History of LSM

By Matt Scott



Matt Scott and Dean Bennet in 1971

The State of Maine, Department of Environmental Protection (DEP) developed a Biological Program that included Lake Studies beginning in 1970. Volunteers for collecting data were authorized in 1971 by the Maine Legislature; Title 38, Chapter 3; Section 572; Subsection 425. This legislation spawned the Volunteer Lake Monitoring Program (VLMP). It is the first and oldest legislative mandate for the monitoring of lakes and ponds by volunteers in North America. The program is now in its 50th year of existence, and is indeed a cause for celebration.

Use of the Secchi disk for light transparency was invented by Dr. Angelo Secchi in 1865. He was an Oceanographer and his disk was later adopted for freshwater transparency. The concept of having volunteers collect Secchi Disc Transparency (SDT) was to gather lots of data

points over time during the open water season on Maine lakes and ponds. This measure of long-term trends would become a beacon for observing change.

Robert Carlson of Kent State University employed the SDT and created the, "Great North American Secchi Dip-In", in 2001. He also developed a trophic state index utilizing SDT. The theory again was to collect as many data points possible over a long time period to measure change. Today Lake Stewards of Maine (LSM) has hundreds of volunteers sampling over 500 Maine lakes and collecting a number of data parameters.

Maine was ahead of the curve by enlisting the knowledge of lake scientists mostly from the University of Maine, as well as Bates, Bowdoin, Colby, Nason, and Unity colleges for opinions in developing the VLMP.

The burden of contact, training and feedback to the volunteers became the responsibility of the DEP Biological Division staff. As the program developed and grew, state funding became an issue with budget cuts. However in 1996, through adaptive management the program was outsourced and publicly funded as a non-government organization (NGO) currently under management by the Lake Stewards of Maine (LSM). The existing database of thousands of measurements taken over these past 50 years is priceless. This robust database is jointly maintained with quality control by the Maine DEP and LSM. As we see the shorelines and watersheds of our lakes and ponds in Maine becoming more developed, destination points for tourism, outdoor recreation, fisheries and year-round living, then all this accumulated data will be relied on to make future policy to hopefully protect the environs of Maine lakes. Lake scientists are currently utilizing the data in many published documents of peer reviewed journals.

Much thanks and appreciation go to all the volunteers who have been faithful and loyal to the monitoring program; having reams of data for the future decision-makers helps everyone in adaptive management of our future. I think we have lived up to Maine's motto, "Dirigo" (I lead). ■

Matt Scott, MS (Advisory Board)



Littorally Speaking: Cultivating Resilience in the Littoral Zone

By Roberta Hill

Perhaps it is the fact that we are now in year-three a Covid-induced shut-down, or perhaps it is the turn of the season providing more time to reflect upon recent events. Whichever the reason, and surely there are others, lately my mind has been keenly focused on the theme of resilience. Covid has been a resilience stress-test for humanity on a global scale, pointing out our vulnerabilities and weaknesses, but also teaching us what we can do to make our households, our communities, our country and the world more resilient in the face of such enormous challenges.

The Oxford dictionary defines resilience as “the ability of people or things to recover quickly after something unpleasant such as shock or injury, etc.” Ecologically (and therefore littorally speaking) resilience is the capacity of an ecosystem to ward off, tolerate, or recover from disturbances without collapsing into a qualitatively different state. A forest ecosystem that successfully regenerates after a fire and is

repopulated by the same and/or similar plants and animals to those that were there before is an example of ecological resilience.

Examples of disturbances in the littoral zone that may threaten and/or challenge the resilience of the littoral community and the lake ecosystem as a whole include: erosion and sedimentation, detrimental shoreline or watershed development, releases of septic waste and/or other pollutants, and, of course, the introduction of invasive plants or animals. But such disturbances do not only challenge lakes; they are also tests of resilience for the lake communities and the dedicated individuals that have committed themselves to the stewardship of these impacted waters.

This is where our work as invasive plant patrollers, lake stewards, and engaged lake-community members comes in. As we methodically monitor the shallows for aquatic invaders, observing, learning about,

valuing, celebrating and protecting the native aquatic plants and animals that inhabit our lake and sharing our passion and knowledge with others, we are serving as cultivators of resilience not only in our lakes, but in our lake communities as well.

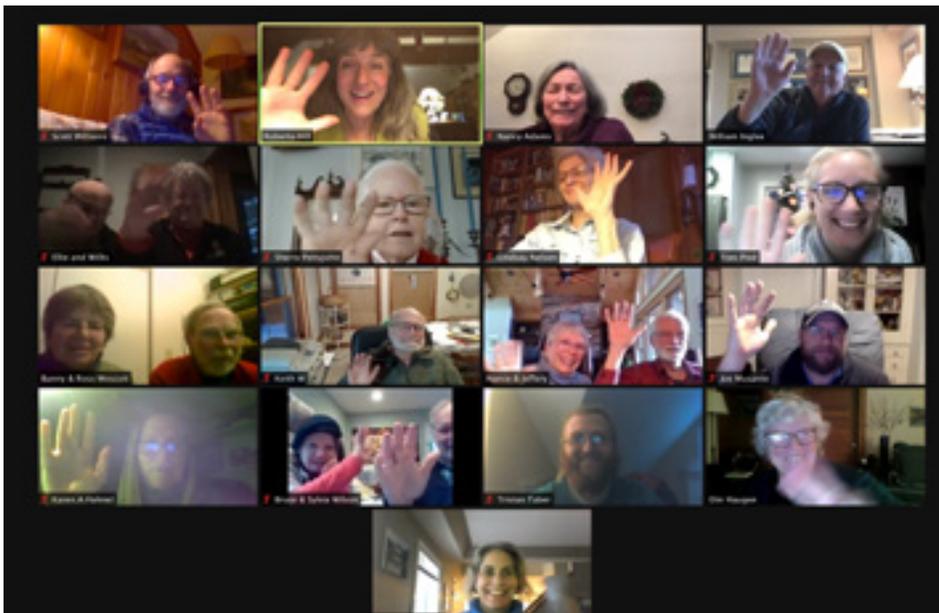
To more fully explore and appreciate the ways our unique IPP form of stewardship fits into the bigger picture of cultivating lake community resilience it might be helpful to draw upon a simple framework described by Daniel Lerch in *Six Foundations for Building Community Resilience* (2015). Lerch and his colleagues have identified six foundations that they see as essential for community resilience: **people power, systems thinking, adaptability, transformability, sustainability and courage.**

People Power

Whenever **people** in a community come together around a shared sense of the core values, including what the community should be like in the future, community resilience is strengthened. This foundation is clearly in evidence in many lake communities that share a deep appreciation for their local lakes and ponds, for the native plants and animals that inhabit them, for the watersheds that support them. It is this shared value that prompts people to become active in their local lake associations, to become a certified lake monitor, to join (or form) an Invasive Plant Patrol (IPP) team, to do a presentation at their local school.

Systems Thinking

Lake communities know more than most of the interconnectedness of things. The water in the lake is part of a wondrously vast and complex water cycle; lakes are connected to other waterbodies through a rich network of streams, flowages, and seeps as water winds its way through watersheds to the sea; invasive



In the Big Lake Milfoil Response, people power has been fortified and coordinated through regularly scheduled team meetings. (Photo credit: Roberta Hill)



IPP surveyors were shuttled to remote sectors of Big Lake by knowledgeable local guides. Here, seasoned Uber-IPPers (left to right) Bob French, Willis White and Ross Wescott team up with Big Lake resident and DLLT staff member Dylan Damon, exemplifying the value of people power! (Photo credit: Bunny Wescott)

plants from far away are poised to connect with suitable habitat here in Maine through any one of a myriad of vectors. Our lake communities too, are complex systems, with a diverse array of individuals, economic sectors and enterprises, neighborhoods, committees, clubs, systems, services and moving parts—all constantly changing and shifting and interacting with each other and with outside forces. **Systems thinking** helps us to keep this understanding of interconnectedness and complexity of things front and center as we work to address challenges as they arise. Systems thinking requires that we constantly seek a more comprehensive understanding of the issues at hand so that our decisions and actions will have the best possible chance of addressing the complex challenges before us.

Adaptability

Resilient communities have the capacity to adapt to changing circumstances. Ways to strengthen **adaptability** in communities include improving information systems, working to broaden inclusion and diversity, strengthening opportunities for communication and connection. The more adaptable the community becomes the more nimble and responsive it will be in the face of

internal and external challenges.

Transformability

Communities generally do find ways to adapt as the world around them changes. However, if adaptation is too slow or constrained, or if the changes are too abrupt or too impactful, challenges may be able to outpace a community’s ability to cope and may eventually threaten community resilience. **Transformability** allows communities to rise to this level of challenge by discovering and/or creating a new ‘identity,’ one that preserves the core values of the community while also allowing it to transform itself in ways that will provide greater resilience under the new circumstances. Where transformational efforts may also be disruptive to the status quo, they are the more controlled and intentional disruptions that are sometimes necessary to safeguard the community’s most valued qualities. Transformability is enhanced and enabled through the fostering of innovation, experimentation, and inclusion.

Sustainability

Making **sustainability** a foundation for community resilience provides a constant reminder that efforts to protect what we love for future

generations will only succeed if our strategies for achieving that resilience operate within both local and global ecological limits. Sustainability challenges us to confront the harm that has already been done in this regard, and, more importantly, to learn from our mistakes so that we do better moving forward.

Courage

Courage is the ability and willingness to do something we know is going to be difficult and challenging. Building community resilience in the face of serious environmental threats such as climate change and native species displacement, is going to be challenging indeed. An important resilience-building effort, therefore, is to support and cultivate courage in both individuals and the community as a whole, to confront challenging issues and take responsibility for our collective future. Courage begets courage; sometimes community courage begins in the determination of a single motivated individual. Courage also supports us through the practical challenges inherent in acts of collaboration. When we work in collaboration with others, things will not always go our way, and periodic breakdowns and failures are a given. It often takes courage to simply pick

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The community that has come together to address the Big Lake infestation exemplifies the kind of courage it takes to create resilience. (Photo credit: Ross Wescott)

ourselves up, dust ourselves off, and to get back to work.

The ongoing community response to the Big Lake (Washington County) variable milfoil infestation provides an excellent example of ways that lake communities may foster community resilience when faced with adversity. The primary goals of the effort this past summer were: 1. to complete (to the degree possible) a comprehensive (Level 3) survey of the lake to determine the extent of the infestation; 2. to continue to build and strengthen partnerships in the region; 3. to train and engage locals in the work of prevention and early detection; and 4. to continue milfoil removal efforts. In order to accomplish these goals, team members met regularly via Zoom to share updates, plan actions, discuss challenges, float ideas and brainstorm solutions. These weekly team meetings were open to all, regularly well-attended and enormously fruitful.

People power blossomed over the course of the year to include more than two dozen skilled and dedicated volunteer Invasive Plant Patrollers from 'away,' a broad coalition of local partners, (Big Lake Campmeeting Association, Downeast Lakes Land Trust, Grand Lake Stream Guides Association, Passamaquoddy Tribe at Indian Township, Princeton Rod & Gun Club, Woodland Pulp LLC, and others); members of Maine Department of Environmental Protection's (DEP's) invasive species unit; Lake Stewards of Maine, and a host of local volunteers and business owners, New England Milfoil's expert removal crew, and more.

Bringing together this diverse array of people from wide ranging backgrounds helped to keep complexity and interrelatedness in the foreground, ensuring a higher level of **systems thinking**. Holding regular meetings where time was always made for a bit of socializing and friendly banter helped to strengthen communications, knowledge-sharing, and trust, which in turn allowed the community to more effectively **adapt**

to new opportunities and findings as they arose.

Transformation takes time, but it is clear that—by taking on the challenge of managing and preventing the spread of aquatic invaders in that extraordinary, water-rich region of the state—the Big Lake Community has set off upon a new course. The fact that they have chosen a path of widespread inclusion, one where innovation and experimentation are welcome and encouraged, bodes well for a controlled transformation over time to a community not only more well suited to the challenges at hand, but also one that is ultimately more **sustainable**.

If **courage** is the ability to look ahead at a task that is difficult and challenging and then to roll up your sleeves and get to work anyway, the community that has come together to address the Big Lake infestation challenge has this foundational element of a resilient community in spades. It took courage for IPPers from all across the state to leave the comfort and safety of their homes during a pandemic to take part in the survey. It took courage for them to set off on their surveys day after day on an immense, unfamiliar lake, and to spend long hours in a state of hyper-vigilance and (in some cases) diving in dark waters to get an even closer view. It took courage for local folks to answer the call for help and to ask what they can do, and more courage yet to follow through. It took courage for people to open their homes and tight-knit communities to the IPPers from away, and especially to greet them with such abundant generosity.

There is no doubt that Maine's lakes and the communities that love them are in for some enormous challenges in the years ahead. Fostering community resilience will be key to addressing these challenges. The good news is that we are well on our way. Lake stewards across the state of Maine have long been engaged in laying the foundations for more resilient lake communities. Could we do more? Surely. But if

we work together, I believe we will not only prevail; we (and our lakes) will also gain a good deal more in the process. ■

People Power



8 current LSM employees



47 total interns over 50 years



5557 people trained through LSM workshops
(If everyone trained held hands they would stretch almost 6 miles!)



2828 certified lake monitors and stewards



Volunteers dedicate 10.5 years on average to monitoring their lake

IPP TEAM OF THE YEAR

2021



BIG LAKE

This certificate is to commemorate your participation in the Big Lake Invasive Milfoil Survey in 2021. You have played an essential role in the effort to effectively address the threat of invasive aquatic plants in the lake and in the region. We commend you for your dedication, perseverance, and positivity in the face of this challenge. Thank you for all that you do.

— Lake Stewards of Maine

Seven Ways To Monitor and Document the Effects of Climate Change on Your Lake

By Scott Williams



Maine lakes are increasingly likely to experience severe cyanobacteria (bluegreen algae) blooms due to several influences of a warming climate (Photo credit: John Eliasburg of George's Pond)

A warming climate has the potential to have multiple adverse effects on Maine's lakes. Some possible impacts may seem intuitive. However, lake ecosystems are complex, in no small part due to the unique characteristics of individual bodies of water. The dynamic interaction of the biogeochemical elements of individual lakes, combined with the influences of bathymetry (depth profiles), conditions in their watersheds, and actual geographic location and orientation, add to the complexity of the task of predicting how individual lakes and ponds will respond to potential climate change stressors.

Our ability to refine efforts to predict and recognize climate-related changes in individual lakes can be significantly enhanced through the consistent gathering of data by Lake Stewards of Maine's (LSM's) trained citizen lake scientists. Although sophisticated monitoring equipment will continue to add to our understanding of Maine's lakes, simple, easily obtainable, inexpensive, but highly valuable volunteer data will

continue to be essential to predicting how lakes respond to climate change (as well as other influences). Here are seven simple ways in which you can help:

1. Put Your Secchi Disk to Work:

The venerable Secchi disk continues to be one of the most valuable, and universally-employed tools used for lake assessment. Routine Secchi transparency readings are useful in identifying both long-term changes in lake health, as well as tracking the intensity and duration of shorter-term events, such as an algal bloom. However, Secchi readings may also be influenced by storm events, as well as extreme weather, including drought, heavy rain, strong wind, and significant fluctuation in temperature. Increasing the frequency of readings taken during such events may yield valuable information regarding the sensitivity of a lake to increasingly severe weather.

In recent years, a number of Maine lakes that have been relatively clear historically have experienced a significant algal bloom. During such

events, it is particularly important to track Secchi transparency during periods of declining water clarity, beginning when it is first observed that the lake is less clear (and sometimes distinctly more colored) than is typical, until such time when water clarity begins to improve. It is particularly critical to track any period when Secchi readings approach the 2.0 meter severe algal bloom threshold, below which toxic conditions may occur.

2. Carefully Monitor Temperature and Oxygen Levels in Your Lake:

Temperature and dissolved oxygen (DO) data gathered by certified lake monitors, following "ice out" in the spring, through the fall months has become increasingly important as Maine lake surface temperatures have reached and sustained historic highs in recent years. This concerning phenomenon is likely to have a profound negative influence on lake water quality, and on the diverse flora and fauna in lake ecosystems. Minimal monthly temperature and DO data gathered as frequently as possible during the open water period

can be very helpful in interpreting how shorter periods of ice cover influences individual lakes.

3. Track the Period of Annual Ice Cover:

For reasons discussed above, it is increasingly important to record the time when lake ice forms (and remains formed) in the fall/early winter, and when it “goes out” in the spring. It is particularly important to use a consistent method for making these determinations. Many lake communities have been tracking lake ice cover for several decades, and have clearly defined the methods they use. While there may be variability in the ways in which this is done from one lake to another, what is most important is to clearly define the criteria that you use, and make sure that everyone is following the same guidelines in your community. More information on this topic can be found on the LSM website:

www.lakestewardsofmaine.org

4. Document Extreme Weather:

Extreme weather associated with a warming climate may be highly localized. This is especially true of precipitation events, which can drop several inches of rain on the lake that you monitor in a short period of time, while other nearby bodies of water receive little or none. Recording rainfall in the area of your lake and

its watershed can be very helpful in interpreting the response of the lake to such intense localized storm events.

5. Document Watershed Responses to Extreme Weather:

Extreme precipitation events may destabilize existing water quality protection measures including road culverts that were installed decades ago, based on older hydrologic models that do not take into account the intensity and frequency of climate change era storms. Culvert and ditch failures during such events can lead to substantial soil erosion, and increase the likelihood of sediment, phosphorus and other pollutants in runoff reaching lakes. Vegetated buffers that have effectively protected lakes and their tributaries in the past may be inadequately sized, or experience erosion from intense runoff. Periodic inspection following major rain events can ensure that the functional integrity of buffers remains intact. Citizen lake watershed surveys conducted by lake communities are an excellent way to document, and ultimately resolve such problems. LSM provides startup grant funds to lake communities that are interested in conducting surveys throughout Maine

6. Be On the Lookout for Aquatic Invaders: A warming climate will likely lead to “range expansion” for aquatic invaders. Plants and animals that have not historically been able to survive in Maine waters may be able to do so now that winters are warmer, the period of ice cover is reduced, and summer water temperatures are higher. LSM provides multiple training workshop options for individuals who are interested in learning how to conduct invasive aquatic species screening surveys on lakes.

7. Use Tools and Technology to Help Document Your Observations:

LSM has created the [“Field Guide to Aquatic Phenomena”](#) app (now available through the app store), which allows users to identify and take photos of any unusual or suspicious phenomena observed in Maine lakes. Although the app is filled with high resolution photos for identification, your photos can also be sent through the app directly to LSM staff for assistance with identification. [BloomWatch](#) (see article in this edition of The Water Column) is another app that is specifically designed to help identify and document algal blooms. Photos taken using this app are sent to designated professionals at the DEP and LSM to assist with identification and documentation of your observations. ■



Natural vegetated buffers provide multiple benefits to lake health. But extreme weather associated with climate change may overwhelm buffer effectiveness. (Photo credit: Scott Williams)

“Code Red” for the Climate and for Lakes: What is Our Response as Lake Stewards?

By Roberta Hill

What you are about to read is very bad news. It is not hyperbole. I wish it was. It is a sound assessment grounded in mainstream climate science and consensus. It is as difficult to impart such news as it is to fully absorb it. But ignoring it will not make it go away. If we are to avoid the worst of the predicted outcomes, we must be willing to face the facts so we can take meaningful action, swiftly.

This past August, the United Nation’s International Panel on Climate Change Physical Science Working Group released its much anticipated “6th Assessment Report.” Prepared by 234 scientists from 66 countries, the report draws upon the latest advances in climate science while highlighting and synthesizing the most current findings from a wide range of scientific disciplines.

The findings are dire. “In 2019, atmospheric CO₂ concentrations were higher than at any time in at least 2 million years, and concentrations of methane and nitrous oxide were higher than at any time in the last 800,000 years.” The report goes on to document how human-induced climate change is not only causing weather and climate extremes in every region of the globe, it is altering the intricate balance of the Earth’s entire climate system.

And the impact on Maine Lakes? We dug into this question in earnest in the Winter 2018-2019 issue of *The Water Column*; please check it out on [our website](#) if you missed it. But to summarize: Maine lakes are getting warmer, greener (more prone to algal blooms, including toxic algal blooms) more vulnerable to new, climate-driven invasive species. Lake watersheds, with their enormous influence on the health of our lakes, are also threatened by more frequent extreme weather events (both droughts and floods) as well as a



At high concentrations, microcystis (a cyanobacteria or “bluegreen algae”) can be toxic to animals including humans. Sabbattus Lake; (Photo credit: Scott Williams)

steady tide of incoming invasive forest and agricultural pests. Alone, any of these threats would pose a serious challenge to our lakes. Together they spell potential disaster.

UN Secretary-General António Guterres, was unequivocal in his response to the Working Group’s report, calling it “a code red for humanity.” And continuing, “The alarm bells are deafening, and the evidence is irrefutable.” The only way to prevent climate catastrophe, he continues, “is by urgently stepping up our efforts, and pursuing the most ambitious path.”

So, what does such an all-hands-on-deck moment mean for those of us who consider ourselves to be Lake Stewards of Maine? What can we do—independently and/or collectively—to step up our efforts? What is the most ambitious path lake stewards can take to protect our lakes and lake communities from devastating harm?

In truth we at LSM do not yet have any fully-formed answers to these questions. We believe we have some good ideas, but knowing for certain that we are adequately rising to this challenge, finding our most valuable and impactful role will require some rather intensive intelligence gathering and consultation with others. We feel fortunate to be starting from a strong position. There is no doubt that our mission and core work of monitoring water quality, screening for invasive species and fostering resilience in lake watersheds is already helping Maine lake communities hold the line with respect to climate-driven threats. This work will only become more critical as the climate warms and more extreme-weather becomes the norm. One of the most important ways LSM can ‘step up’ then, is surely to continue doing what we have been doing for decades and do more of it. But the stakes have never been higher and the current urgency of the

Continued on page 38

Quality Counts

by Linda Bacon

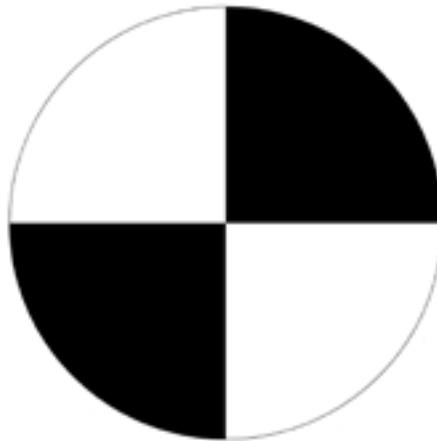
Nearly fifty years ago, the idea-seed of setting up a program that would allow DEP to use data collected by volunteers, began to sprout. Maine, being a big state, had lots of surface water resources. At that time, public awareness of water pollution spurred efforts to enact legislation to give the Federal Water Pollution Control Act of 1948 the ability to better address this issue via major amendments we now refer to as the Clean Water Act. Discussions ensued among DEP biologists and leading national experts about what parameter would be best for widespread use among volunteers and provide actionable information for DEP. The answer to that question was the Secchi Disk, a simple instrument with humble beginnings.

Water transparency was on the radar of scientists and sea captains as early as the 1600s. In his log of a trek from Wallis Island to Mulgrave off the coast of Australia, Captain Berard made mention of being able to see a dish trapped in a fishing net at a depth of 40 meters or 131 feet! German naturalist Adelbert von Chamisso was the first to record regular measurements of transparency of natural waters between 1815-1818. In the 1850s, Austrian scientist Josef Roman Lorenz von Liburnau, experimented with submersible objects, like white discs in Croatia.

Physicist Francois Arago (1786-1853) investigated controls on the velocity of light through air, water, and glass. In the mid-1860s, Commander Cialdi of the Papal Navy, interested in visibility through water, read Arago's works and started playing around with discs of different diameters and colors. Cialdi engaged Professor of Astronomy, Pietro Angelo Secchi, an Italian Jesuit Priest, to organize and conduct a study in 1866 aboard the SS L'Immacolata Concezione. After a month, Cialdi published results including a memorandum by



The Reverend Father Angelo Secchi (1818-1868)



The humble secchi disk

Secchi which detailed variables that influenced transparency readings in the Mediterranean, including surface refraction/reflection, shade, clearness of the sky, color of the water and disc, and, height of observer above water surface. Their method was actually demonstrated to the Pope! Their experiments were quite intensive as compared to previous studies, thus use of a white, 30-centimeter disc

to measure transparency became known as the Secchi disc method. In 1899, George C. Whipple modified the design to a disc 8 inches in diameter divided into quadrants alternating in color from black to white which is now the standard for fresh-water measurements.

So, why this excursion into the past? To make two points:

The first is to share that the consistency in how Secchi transparency readings are obtained, was demonstrated to be very important more than 100 years before our volunteer monitoring program began! This allows the data collected from Cross Lake in Aroostook County to be directly compared to data collected from Mousam Lake in southern York County. And it allows data collected by Eddie Mayer in 1971 from Long Pond, Belgrade, one of the first lakes in the program, to be compared to the data collected by Pete Kalin now. This same consistency applies to all the other parameters collected by volunteers and staff across the state. It is the striving for consistency that has resulted in improvements to equipment and monitoring techniques over the last 5 decades.

And second is to reiterate how the collaboration and cooperation among volunteer community scientists, staff in regional organizations, Lake Stewards of Maine staff, state and federal staff, has resulted in the oldest and one of the largest lake monitoring camaraderie in the nation! What you do, what we do, is greater than the sum of the individual parts. The synergy within the program, and that which results from our interactions with local community members, can't be measured. Have a safe and happy 2022! ■



The following is an excerpt from "The Lake," written by 9-year-old budding lake steward, Bonnie: "When we go to the lake we just looked at the big blue lake with green hills in the background. Splash swimming is so much fun. It is like the best thing ever. We had a water race from where the water met my head to the shore. My brother won the race. I think he always wins because he is a fast swimmer."

We reached our goal! 50k for the Future Lake Stewards of Maine

By Alison Cooney

Covid-19 has created many challenges for all of us. We have had to alter how we interact with others on both personal and business levels. For Lake Stewards of Maine (LSM) this meant re-creating how we operate and moving our operations to online training and support while mostly working from home. We have been fortunate to have had financial stability during the pandemic. Several foundations have reached out and provided us with extra opportunities to apply for additional grant support. Individuals as well as lake and regional watershed associations have also generously contributed to our appeals. This has helped us tremendously with our annual operations budget.

Transitioning to a new way of operating has required continuous evaluation and adjustments along the way. Our staff has been dedicated to the mission of the organization and we are pleased with all that we have been able to accomplish under the circumstances. However, we would be remiss if we didn't acknowledge that the change, along with the expansion of our training and support, has been at times overwhelming for our small staff. Early last year LSM was approached with a matching grant opportunity to assist with staff expansion. Creating new positions requires an increase in our annual budget. This can be challenging when funding is uncertain from year to year, especially during a pandemic. The 2-year, 50k matching grant challenge presented to LSM by the Ram Island Conservation Fund will provide LSM with the initial funding boost necessary to grow our annual budget, allowing us to hire additional staff. Thanks to many of you, we met the 2021 challenge! Because of this, we were able to create a new position that will primarily support LSM's Invasive Aquatic Species

program. Drew Perlmutter, LSM's new Invasive Aquatic Species Education and Outreach Projects Manager (see page 34) will fill this position. We are incredibly grateful for the support that has allowed us to permanently add Drew to the LSM team! Our second year challenge will be launched early in 2022.

The 50k matching grant not only supports the future of Lake Stewards of Maine, it also helps to protect Maine lakes for the next generation of Lake Stewards. A delightful story written by 9-year-old Bonnie was gifted to LSM this past summer. The story describes Bonnie's year-round lake experiences that she enjoys with her family, from swimming and diving off rocks in the summer to skating and ice fishing in the winter. Bonnie's story reminds me of my own childhood spending time on Square Pond in Shapleigh. Five generations in my family have floated on the water, built sandcastles, fished on the dock, rowed/paddled/kayaked around the lake, and sat on the porch watching the sky change colors as the sun sets over Goat Hill. Many of you have similar experiences that have brought immense joy and long-lasting memories. We love our Maine lakes and we want them to remain as they have been for as long as possible. Thank you for supporting Lake Stewards of Maine's Mission and the 50k for the Future Lake Stewards of Maine campaign! ■

Many hands make light work:



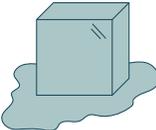
539 lakes have active monitors



LSM has collected data on 1221 Maine lakes



LSM has supported 50 watershed surveys over 50 years



Ice data has been collected on 370 lakes

Getting the word out:



LSM has held 1366 free in-person volunteer workshops over 50 years



Since 2019, LSM has hosted 115 virtual outreach sessions

BloomWatch: Harnessing the Power of Citizen Science Through Collaborative Monitoring of Cyanobacteria Blooms

By Tristan Taber

The galvanization of everyday people who care about their lake has been at the core of Lake Stewards of Maine (LSM) since its inception. Looking back 50 years we can see the progress of the organization from a small program within the Maine Department of Environmental Protection (DEP) to the non-profit with thousands of volunteers that it has become. The monitoring of lakes is a big job but many hands make light work. This idiom encapsulates the essence of what community science (also known as citizen science) is at its most fundamental level. As climate change takes place around us, the importance of community science has never been more clear. The Environmental Protection Agency (EPA) and a number of their partners have developed programs that leverage the knowledge and participation of communities to confront the dangers that climate change brings. One of these programs is the Cyano Monitoring Collaborative (CMC) led by Hilary Snook of EPA Region 1.

The first meeting of the CMC was held in 2013 and was composed of academic researchers, consultants, and state and federal managers. The purpose of this group was to discuss and develop the best ways to deal with the looming threat of Harmful Algae Blooms (HABs). According to Snook, "Prior to 2013, cyanobacteria was not really on the radar screens as a problematic issue in state waterbodies." The CMC "grew out of the need voiced by state water quality managers [as they saw] the prevalence of cyanobacteria blooms occurring more and more across the [northeast] region."

The CMC created a three-tier outreach structure for states and communities:

Tier 1: Development of an easy to use smartphone application (app): [BloomWatch](#). This capitalizes on what many community members already have (no special tools required) and allows for wide participation and near-real time notification of state officials and community members.

Tier 2: Development of a project in the iNaturalist platform: [CyanoScope](#). This project provides for the documenting of potential toxin producing species and waterbodies, and contributes to developing data for the analysis of regional trends.

Tier 3: Performing Cyanomonitoring, sampling water in the field and analyzing samples for pigments, taxa dominance, species composition, seasonal changes, and the ecology of the waterbody.

As development of these three tiers took place, the mantra that this must be accessible, engaging, inexpensive, reproducible, and educational always remained.

In 2016, the CMC released the BloomWatch app. BloomWatch helps community members take on an active role in observing their local waterbodies by photographing conditions on them and reporting any visually significant evidence of a cyanobacteria bloom. According to the website, "BloomWatch is a

citizen science app that allows users to report potential HABs. The data provided helps scientists to track and manage the water we all depend on to drink or swim in." (cyanos.org)

To better understand the need, we must also discuss the threat that HABs pose. HABs in a lake are a concern for several reasons: Foremost is the degradation of the ecological integrity and value of the resource, and the resulting loss of aesthetic and economic value. HABs can also pose a significant risk to human health, we well as that of pets, fish, and wildlife. The unsightliness, as seen in the picture below, is a significant deterrent for people recreating in and being near the water. Clear and clean lakes are a significant aspect of lake-front property value; a slimy, green lake is not. The health threat is more subtle, and, at present, is more costly to evaluate. Cyanobacteria have the ability to produce toxins. These can poison organisms in the water, decrease biodiversity, destabilize the balance of the waterbody, poison pets, and poison humans. Some research even suggests there could be long-term chronic exposure risks for humans.

What makes the potential HABs difficult is their heterogeneity. There can be significant variation in the composition, appearance, and toxicity



Photo of a cyanobacteria bloom on Sabattus Pond in 2016. Photo by Maine DEP staff.

of a HAB. In Maine, most HABs have appeared in the late summer due to their strong correlation with warming waters. Unfortunately, we cannot state with certainty if a HAB is toxic and what level of toxicity it exhibits without laboratory testing for each toxin; this is true even knowing what species are present.

Niamien-Ebrottie et al (2015) found that “physicochemical conditions influence the abundance and diversity of cyanobacteria and cyanotoxins.” BloomWatch provides an easy and powerful way to track and, after

analysis, differentiate HABs from one another. This may be what is needed for scientists and water quality managers to better evaluate risk and advise their communities.

As climate changes and we see increasing warming, the development of HABs will likely increase, appear earlier in the summer, and last longer. BloomWatch can be a critical form of tracking this change and I would use this, dear reader, as a call to action. ■

Niamien-Ebrottie, J. E., Bhattacharyya, S., Deep, P. R., & Nayak, B. (2015). Cyanobacteria and cyanotoxins in the World. *Ijar*, 1(8), 563-569.

More information is available at the [CMC’s website](http://caynos.org) (caynos.org)

The CMC hopes to discover insights from data gathered by [BloomWatch](#) and all data is available to the public. In addition to being publicly available, the data is near-real time, appearing within minutes of submission:

<https://tinyurl.com/2s3hhe7h>

More information is also available at the [iNaturalist website](#):

www.inaturalist.org/projects/cyanoscope



This is the BloomWatch dashboard. A. is a listing of all submissions to the BloomWatch application, this will filter based on the other criteria selected in the dashboard. B. is a map of where occurrences have been recorded. Using the map you can zoom in on a particular area. C. is a search for locations, such as Maine or a particular city. The map will zoom to that location. D. is the size of the bloom, surface water conditions, and weather condition. By clicking on the different tabs, you can see those different categories and by clicking on parts of each pie chart you can filter by that category criteria. E. will display the details if you click on an individual bloom report in A. This includes photos that were uploaded with the submission. F. is a timeline of when submissions were made. By moving the two white sliders at the top of this box you can filter to display only reports that fall within a certain timeframe.

2021 Webinar Series

In celebration of our 50th Anniversary, Lake Stewards of Maine hosted a series of informational webinars from June through August on a wide range of topics pertaining to Maine Lakes.



[Mountain Ponds as Sentinels of Change in the Northeast - Presented by Rachel Hovel, PhD \(UMF\)](#)

Mountain ponds in the northeastern US generally have few direct anthropogenic impacts, so may act as a regional background signal for changing atmospheric deposition and climate change. This talk discusses long-term trends on changing geochemistry in mountain lakes in the Northern Appalachians and Adirondack Mountains, using data collected from 257 ponds between 1978-2019. These ponds provide important evidence for regional changes and provide an opportunity to explore the mechanisms of physical and biological interactions.



[The Maine Loon Project- Presented by Tracy Hart \(Maine Audubon\)](#)

For nearly four decades, Maine Audubon has worked to conserve Maine's iconic Common Loon through the Maine Loon Project. 2021 marked the 38th year of this project. The data is displayed to the public on the Lakes of Maine data portal. Tracy Hart, the Director of the Maine Loon Project, discusses the Maine Annual Loon Count and statewide population trends. Find out how loons are doing in the state of Maine, what is unique and special about these fascinating birds, the challenges they face, and how Lake Stewards and CBIs can get involved in loon protection and conservation.



[What's in the Water? A Smartphone App for identifying Flora, Fauna, and other fascinating phenomena found in Maine Lakes - Presented by Roberta Hill \(LSM\) Tristan Taber \(LSM\) & Jon Donnelly \(ASAP, UMO\)](#)

Every lake in Maine is a place of wonder and discovery. LSM's new Field Guide to Aquatic Phenomena app has been developed to provide a knowledgeable pocket-held companion when you are out exploring on your lake, and to help you spot potential threats to lakes as early as possible. Version 1.0 allows users to search a wide array of fauna, flora and other lake phenomena, zeroing in on issues of possible concern through a series of simple keys. Roberta and Tristan provide participants with an onscreen tour of the app and its associated website, and show how users can play an active role in the ongoing development of this infinitely expandable compendium.

Check out all our webinars at:
tinyurl.com/2p88jpuu

[LSM's Lake Stories](#)



We were blown out of the (lake) water by the diversity, creativity, and heartfelt quality of these videos. Thank you to all those who shared why you volunteer and what motivates you to stay committed to your monitoring efforts. Your LSM "selfie-video" wouldn't have been brought to life without Norway Savings Bank and LSM volunteer and video editor Steve Underwood. Thank you! If you have not seen the video yet, check it out using the QR code or go to our website's video archive. Thank you for celebrating this very special anniversary year with us.



Gloeotrichia - Presented by Holly Ewing, PhD, (Bates)

Lakes are home to many organisms. One of those is the cyanobacterium *Gloeotrichia echinulata* (aka "gloeo") that blooms in many of our lakes in the summer. Holly discusses some of the mysteries of these blooms and their relationship to water quality, land-use history, and climate.



BloomWatch: EPA's Smart Phone Application for the Monitoring of Cyanobacteria - Presented by Tristan Taber (LSM)

Algae blooms, especially those of cyanobacteria, appear to be increasing in regularity on Maine lakes in recent decades. A US Environmental Protection Agency collaborative group has developed a smart phone application. Tristan provides an overview of cyanobacteria and then performs an easy-to-follow, demonstration of the BloomWatch application.



What kind of lake is that? Using monitoring data to organize Maine's lakes into categories for better water quality assessments and protections - Presented by Jeremy Deeds (Maine DEP)

Maine has thousands of lakes, and all are unique. However, many lakes share traits that help lake managers, watershed organizations, and researchers, compare and evaluate them. By determining which natural attributes of lakes and their watersheds have the strongest influence on lake condition, we can place lakes into categories. Learn how lake types were developed and how these types may be applied to lake assessment and protection.



Maine Lakes: from birth to death, and "everything" between - Presented by Steven Norton, PhD (UMO)

This presentation is a look into the geologic cycle of Maine's lake. Dr. Norton will explore the chronology and formation of Maine's lakes, the evolution of the soil chemistry and water chemistry. The case study Dr. Norton will use is a 5.3 meter core taken from Sargent Mountain Pond in Acadia National Park, spanning 16,000 years of time. ■

Thank you to Bee's Wrap for donating reusable wraps to give away during webinar presentations and at LSM's annual conference.

LSM's 50th Anniversary Annual Conference Video



We had a great time at our 50th Anniversary Virtual Conference. Many volunteers and colleagues participated in the event and as always we enjoyed celebrating the achievements of our dedicated volunteers. Since it is our 50th Anniversary, we took time to reflect upon the history of this unique, volunteer-powered enterprise we have all come to know as Lake Stewards of Maine. Presentations included first-hand stories of LSM's decades-long evolution, the special role LSM has played in safeguarding Maine lakes, and how the data collected by volunteers has been used to better understand, manage, and protect Maine's exceptional lakes. Check out the recording on our website, or use this QR code!

Thank you to our Donors!

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~Anonymous Donors

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David & Sara James	Paulette & Harry McNally	Louise Proulx
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Neil & Peggy Jensen	Ronald D. & Edith L. McPherson	Edward Quinn
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Meredith Jones & Dana Murch	Sue Mello	Lea & José Ramirez
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Norton Lamb	Sue Neal	Craig & JuleAnn Rule
Dennis & Judith Landry	Mark & Lindsay Nelsen	Mary M. Ryan
John E. Laskey	Melanie & Steve Ness	Deanna Sainati

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James Salsich
Robert & Marti Sampson
Sara & Eric Sandberg
Bob Scaccia
Nancy Winetrout Schenck
Rich & Lonny Schneider
Claudia & John Scholz
John Schooley
Debbie Broderick & Dale Schultz
Matt Scott
Robert & Pat Severance
Carl Plassmann & Cheryl Shattenberg-Plassmann
Tim & Danny Sholtis
Paul & Susan Shook
Drs. David & Ann Simmons
Edward & Priscilla Simmons
Lee Sligh & Tom Prescott
Debra & Douglas Smith
Dennis & Ellen Smith
George Smith
Heather & Jane Smith
Jeanette Smith & Paul Rucha
Susan Sokol & Ted Webersinn
Rick & Becky Southwick
Cheryl & Kirk St. Peter
Lea Stabinski
Cynthia & Paul Stancioff
Rebecca Stanley & Charles Jacobs
Jeff Stern
Ed & Bobbie Stevenson
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Bob & Peggy Susbury
Iva & Ted Sussman
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Patricia Sylvester
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Tom Tedeschi
Barbara & Patrick Tedesco
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Hall & Debbie Thompson
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Stephanie Thornton
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James & Janet Timmins
Joyce Toman & Scott Lessard
Matt & Terri Towle
Robert & June Tracy
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Kim & Wayne Vaccaro
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Sidney Wade

Gerri Wagner
Bob & Jackie Warren
Virginia & Paul Warren
Cathy Watson
Barb Welch
John & Cheryl Welch
Ross & Bunny Wescott
Miriam Wetzel
Carl & Sookie Weymouth
Dian White
Kim & Ray White
Willis & Eleanor White
G.E. Mary Williams
Keith Williams
Robert C. & Ann K. Williams
Sally Williams
Scott Williams & Roberta Hill
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Robert Winship
Mary & Len Winsky
Bob & Ursula Withrow
Debbie Wolozin
Jeanne & Brian Wright
Linda & Heinrich Wurm
Joani & Glenn Yankee
Stephan Zeeman
Jon Zemans

In Honor of

Katie Greenman
~ Cliff & Ulrike Guthrie
Stephanie Levine
~ Randolph Widmer
Stephen Lewis
~ Adam Atkinson-Lewis
James McCormick
~ Trisha Cheney, Lakepoint Real Estate
Sabbathday Lake Association
~ Tom & Mary Beth Johnson
The Underwoods
~ Virginia & Paul Warren
Dr. Keith Williams
~ Adam Zemans
Pixie Williams
~ Susan Montgomery & Michael Williams
Scott Williams
~ Sydney Lea

In Memory of

Luis Ampuero
~ Ken Sparkes
Reina & John Berg
~ Patty & Mike Gustafson

Louis & Claire Boeri
~ Charles & Linda Whitten
Carleton Brodie
~ Hubene W. Brodie
Norman Carle
~ Loren Carle
Gordon Carlson, Maine Guide 1965-1999
~ Diana Lucek
Bob Dreves
~ Anonymous
Richard Fivek
~ Barbara Fivek
Diane Fucetola
~ Rocco Fucetola
Don Hall
~ Susan Motley
Ron Hall
~ Lisa Hall
Peggy Hallee
~ Karen E. Holmes
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Rich Haslip
~ Patricia McGillivray
Thomas C. Hughes
~ Sandra Small-Hughes
George B. Ice
~ Valyrie Ice
Carolyn Johnston
~ Larry Johnston
Diane Jordan, Georges Pond
~ Brian Friedmann
Elizabeth Lyons
~ Robert Kramer
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Irene Nelson Welsh
~ The Ann & Carden Welsh Charitable Fund
James K. Nelson
~ Muriel Maxwell Nelson
Mary K. Nelson
~ Terry & Lorelee Nelson
Edward Reinke
~ Susan Marie Reinke

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Dr. Joseph Sataloff

~ Malcolm & Ellen Dawson

Ron Schutt

~ Elisabeth C. Huebner

Kathleen Scott

~ Matt Scott

Carl H. Snow, Jr.

~ Betty P. Lee

Dick Thibodeau

~ Denise McCourt & Charles Buikema

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Lew Wetzel

~ Rick Sullivan

Bill White

~ Lorraine White

Karen A. White

~ Norman E. White, Jr.

Legacy Gift

Estate of Gerald S. Nelson

Lake Associations

Abrams Pond Association
 Alamoosook Lake Association
 Alford Lake/Lermond Pond Association
 Allen Pond Improvement Association
 Androscoggin Lake Improvement Corporation
 Annabessacook Lake Improvement Association
 Basin, David, Tilton Ponds Association
 Bauneg Beg Lake Association, Inc.
 Bear Pond Improvement Association
 Berry Dexter Wilson Ponds Watershed Association
 Branch Lake Association
 Cathance Lake Association
 China Lake Association
 Clary Lake Association
 Clearwater Lake Improvement Association
 Coastal Rivers Conservation Trust
 Cold Stream Camp Owners' Association, Inc.
 Community Lakes Association
 Craig Pond Association
 Crawford Lake Association
 Crystal Lake Association
 Dexter Lake Association
 East Pond Association
 Embden Pond Association
 Five Kezars Watershed Improvement Association
 Friends of Cross Lake
 Friends of Lake Winnecook
 Friends of Quimby Pond
 Friends of Wilson Lake
 Georges Pond Association

Great East Lake Improvement Association
 Greater Pushaw Lake Association
 Green & Mirror Ponds Association
 Green Lake Association
 Gull Pond Association
 Highland Lake Association
 Hobbs & Fish Ponds Association
 Howard Pond Preservation Association
 Island Falls Lakes Association
 Kennebunk Pond Association
 Keoka Lake Association
 Kezar Lake Watershed Association
 Lake Wesserunnett Association
 Lakes Association of Norway
 Lakeville Camp Owners Association
 Little Sebago Lake Association
 Long Pond Association
 Loon Lake Association
 Lovejoy Pond Improvement Association
 Maranacook Lake Association
 Meddybemps Lake Association
 Mousam Lake Region Association
 Muscongus Pond Association
 No Name Pond Watershed Management Association
 North Pond Association
 Panther Pond Association
 Parker Pond Association, Inc.
 Pequawket Lake Preservation Association
 Piper Pond Association
 Pleasant Lake & Parker Pond Association
 Pleasant River Lake Association
 Pocasset Lake Association
 Portage Lake Association
 Porter Lake Association
 Property Owners of Lovewell Pond
 Raymond Waterways Protective Association
 Rock Haven Lake Association
 Sabbathday Lake Association
 Sand-Locke Pond Association
 Saturday Pond Watershed Association
 Seabasticook Lake Association
 Sheepscot Lake Association
 Spring Valley Association
 Square Pond Improvement Association
 Summer Haven Lakes Association
 Swan Lake Association
 Taylor Pond Association
 Thompson Lake Environmental Association
 Three Cornered Pond Owner's Association
 Toddy Pond Association
 Torsey Pond Association
 Washington Lakes Watershed Association
 Webb Lake Association
 West Harbor Pond Watershed Association

Wilson Lake Association
 Worthley Pond Association

Major Funding

Major funding for LSM is made possible through grants from the Maine Department of Environmental Protection, and the US Environmental Protection Agency.

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 Trisha Cheney @ Lakepoint Real Estate
 Two Lakes Campground

In Kind

Many thanks to those of you who have donated your time, shared your expertise, and have been dedicated to supporting LSM's Mission!

list current as of 11/30/2021

Lovejoy Pond IPPers Lead Citizen Science Class for Teens

by Sookie Weymouth and Mary Becker,
Lovejoy Pond Improvement Association(LPIA)



Sookie Weymouth and Mary Becker leading a workshop (Photo credit: Ted Baker)

Inspired by Lake Stewards of Maine's (LSM's) webinar on how to lead an invasive plant patrol, the we (Sookie and Mary) "took our show on the road" to campers from The Summer Camp, a camp for girls that relocated to Lovejoy Pond this year. Thirteen campers, three counselors and members of both LPIA and 30 Mile River Watershed made up the group.

We started class with trivia questions about the lake and plants, such as What is the name of this lake? What town(s) is this lake in? Who owns this pond? How do aquatic plants help the lake?

We used LSM Quick Keys and sample plants to demonstrate distinguishing characteristics like leaf arrangement, leaf margins, and

metric measurements. Then campers were given directions about what to look for and how to collect sample plants. Counselors made sure all the campers wore life vests and adhered to camp safety regulations as we took to our canoes.

Once on the water, campers collected a large selection of plants, both floating and erect, for identification. Returning to shore and using their Quick Keys, each canoe team selected which bin/category to put their samples in. They worked through the decision trees in the Quick Key and ruled out invasive plants. Each team had time to discuss their plants and confer with leaders, often using the LSM Guide to Aquatic Plants to identify their specimens. We talked about what to do if they found any suspicious plants and how to safely dispose of the plants they had collected.

Campers were smart, excited and engaged. This was fun and educational for everyone

Hints for leading a class:

1. Secure your group, location and time. Confirm that there will be adequate numbers of watercraft, safety equipment and camp staff for the paddle. (For this outing this was The Summer Camp, their waterfront, and 3 hours.)
2. Tools: rakes, scopes, bins and labels, plant identification guides, scissors, magnifying glasses, Quick Keys. We hope to add white frisbees for examining specimens next year.
3. Have a support team to aid in safety and plant retrieval. ■

An Interview with Sookie Weymouth

By Maggie Denison

Q: How and when did you become involved with LSM?

Sookie: I think a lot of things happened all about the same time 10 years ago. I've been a member of our lake owners' association since we moved here 20 years ago, but about 10 years ago the awareness of invasive plants in waterbodies near here, it just all of a sudden seemed to be happening. Someone from a nearby lake in our chain of lakes gathered us from each of the waterbodies to meet with Roberta Hill from Maine Volunteer Lake Monitoring Program (VLMP) (now LSM). Roberta Hill came out and she met with us and these people were already invested in plant patrols and, you know, monitoring lake quality, so I was...it's kind of like when you learn to play tennis? If you play with somebody better than you then you'll improve? Well, I was around a lot of people who were already doing this sort of thing and helping each other and encouraging each other. Then that's when Maine VLMP offered a class for all of us who wanted to become certified invasive plant patrollers, so it all happened... together! So, it's been about 10 years. I did get certified, and when our lake group meets every year they expect that I will be the one reporting on what I see, encouraging other people to...or inviting them to come paddle with me, and I've been doing that for 10 years.

Q: What's your schedule for conducting surveys?

Sookie: We have probably never done a full annual survey. We do the best we can. I've probably worked with 8 or 10 different people from the pond, I think 2 of them are certified as IPPers and the rest are people who are just interested. So, I've tried various strategies to get more people interested, you know, just saying: every Monday I'm going to do a plant

patrol, if you are interested, give me a call - you know, that sort of thing. Or sometimes I'll just send out an email to people just saying, you know, Wednesday looks like a great day to be out on the pond, you want to join me at 1:00? So, that's how I've gathered some interest.

Q: Most of the people who are joining you are fellow residents of Lovejoy Pond?

Sookie: At least summer residents, I think other than working with a girls' camp, everybody has had property on the pond.

Q: What do you find the most compelling about being an invasive plant patroller and volunteer with LSM?

Sookie: Well, first of all it's fun. You get out there and it's just beautiful. The whole world of aquatic plants is something most people aren't enjoying. So, just the peace, the beauty... sometimes the social life,

just because it is fun to do with other people...but then, the threat that you know, Androscoggin - which is another waterbody in our chain of lakes - and Cobboosee, which is very close, have invasives and then folks can bring their boats, their canoes, their fishing gear here, and you know, introduce an invasive here. So, it's the threat. I have done some Courtesy Boat Inspections (CBI) in the past, it hasn't happened for the last couple years, and also, I've been to some other ponds, either as a CBI or helping them look for invasives.

Q: Do you have a favorite memory of your time as an invasive plant patroller and volunteer with LSM?

Sookie: I guess a favorite time was this past summer when Mary Becker and I - she's somebody I paddle with a lot - went over to a girls' camp on our pond and worked with their campers to introduce the whole world of aquatic plants, and we used that Quick Key - I think that's the easiest way to get people to let you know if they see something that concerns them. You don't have to know a whole lot to use the key. So, I would

Continues on page 25...



Lovejoy Pond (Photo credit Ted Baker)



Sookie Weymouth on LoveJoy Pond (Photo credit: Ted Baker)

say that's my favorite thing was working with 13- and 14-year-olds at a summer camp.

Q: How would you describe LSM to someone who may not be familiar with the work they do?

Sookie: They are a wonderful resource for anyone who has any concerns about waterbodies – whatever happens on them or in them or around them. They are very responsive, they are well-educated, they care. I love...I can't say I love every webinar because you know, you get tired of them...but they're there for you if you want to watch half of it and go back later or recommend it to someone, so they're just excellent resources, I think. And you meet people through them. I don't know that I told you yet: the two men who kind of got things started 50 years ago were being recognized when the 50th anniversary year came about and I never realized it, but Ron Davis, the one that wasn't part of the celebration, was one of my college professors at Colby – just one of the very, very best, most influential fantastic professors, so...I never knew that he did that because I graduated more than 50 years ago and he had moved onto University of Maine so I wasn't following what he did at the time, but it was really neat. You know, he inspired me more than 50 years ago and again, doing this sort of work it's more biology and ecology that is current and...you know, needed.

Q: What do you love best about the waterbody you monitor?

Sookie: We like, my husband and

I, both like the size of it. It's not too big so you don't have a lot of boats racing by all the time. Uh, it's more of a paddling kind of pond, so that's just a friendly kind of thing...I guess that's just it – we like the small, quietness of it.

Q: Is there a particular threat to Maine's freshwater systems that concerns you the most?

Sookie: Erosion. People that just aren't aware or...I look across the pond and I see a lot of trees and then I see a big lawn sloping down to the pond, that sort of thing – camp roads, so. We did a watershed survey, not this year, just one year ago. It's still in the works as far as getting letters out to everybody. We did meet a lot of people – a lot of people were interested in what we saw and what we suggested, but there's still more to be done. So, I would say erosion, run-off, if you will...phosphorus...those are my concerns.

Q: What do you wish everyone knew about protecting the health of Maine's aquatic systems?

Sookie: Letting nature be. Leaving it alone as much as possible. Not making a big footprint. ■

Lake Stewards of Maine

a recipe by Cheryl Welch

- 2 cups love of Maine lakes
- 2 cups desire to protect Maine lakes
- 1 heaping cup imagination
- 2/3 cup ingenuity (for best results use Maine brand)
- 3/4 cup Maine sense of humor (dry form works best)
- 2 cups dedicated volunteers
- 2 cups dedicated LSM staff (use no substitutions)
- 1 cup of a good brand of Website
- 1/4 cup frozen plant samples (thaw before use)

In a large bowl combine dry ingredients: love, protection, imagination, ingenuity and humor. Blend and set aside.

In another bowl place volunteers, staff and Website. Beat until smooth. Stir in plant samples. Add the dry ingredients and blend until well combined. Drop by tablespoonfuls onto baking sheet.

Bake at 90 degrees in the sun of a Maine summer until the job is done

Yield: enough to serve the entire State of Maine

Enjoy, as we all have for 50 years!



Reflections on LSM's 50 Years

We asked our volunteers to share how they got involved with LSM and why they love lake stewardship.

Shelley Gavett (Craig Pond Water Quality Monitor, 4 years)

Craig Pond is a very special place for so many who own a camp, with many passed down from an older generation. Our pristine pond has been monitored by committed Craig Ponders for many years and in my recollection it began with my father, Clyde Hutchins, who used to take Secchi readings. In fact, the measuring device he used is still hanging in the shed at camp as a reminder of his work. Before I took the reins, a very devoted Craig Pond member, Janie Crowell, began monitoring the pond with gusto. She was instrumental in many monitoring duties to make sure the pond remained a pristine and clean body of water. She, along with other members of the Craig Pond Association, organized the boat inspection program in order to make sure that invasive's were found and kept out of the water. Sadly, Janie lost her life to cancer but before her death, she made sure that someone would continue her important work. That person is me and everytime I go to the buoy I think of Janie and am proud to continue her legacy. Although our pond is small, the grateful camp owners do not take it for granted and we continue to insure that it remains pristine for future generations.

Tom Hannula (Sebasticook Lake Water Quality Monitor, retired after 34 years)

My family had just moved to the shores of Nasty Sebasty (my daughter's name for Sebasticook) in the early 70's when I saw a notice for a seminar sponsored by the Department of Environmental Protection (DEP) on Lake ecology at Unity College. The seminar was to educate interested souls on the basics of limnology and lake sampling. At the seminar I met Matt Scott (DEP), Ron Davis (UMaine limnologist),

Steve Norton (UMaine geologist) and others involved in lake research in Maine. All of whom along with Dave Courtemanch (DEP) helped me in my quest to understand Sebasticook. One of the key take aways from the seminar was instructions to make basic water sampling equipment. This was before DEP had money to supply water monitors with equipment and the Sebasticook Lake Association was in the formative stage. I used this material to make a secchi disk, viewing tube, and a water sampler. The viewing tube was just a length of black plastic pipe with a door handle. The water sampler was a rube-goldberg device made from a length of black plastic sewer pipe, two plumber helper ends, a length of bungee cord, a small closable drain, and complex hand made trap. The sampler worked by releasing the plumber helpers to close the ends of the sampler enclosing the water sample. I added a Hach chemical kit to measure water Dissolved Oxygen (DO) levels and Phosphorus (P) concentration.

I used this equipment for a number of years. After years of using the chemical kit to measure DO and P

levels, the Newport Garden Club bought the destitute Lake Association a DO meter and DEP started processing P samples. Eventually, DEP provided a real secchi disk, viewing tube, and a water sampler making my weekly sampling efforts easier. I enjoyed my 34 years of working with DEP's Lake Division, Lake Stewards, UMaine faculty, and the Lake Sebasticook Association. All these efforts proved to be successful in restoring Sebasticook.

Teg Rood (Wilson Lake Water Quality Monitor, 24 years)

32 years ago, [Scott Williams] and John Nadeau transformed the Wilson Lake community. We've been fighting for the Wilson Lake environment ever since, and our commitment has grown stronger as Invasive plants and metaphyton remind us that we are increasingly vulnerable. VLMP/Lake Stewards of Maine has been -and is - key to our success. Congratulations! [Scott's] vision and leadership is what makes this 50 year celebration possible. ■



Lake Stewards of Maine Plant Identification Session hosted with Lakes Environmental Association (Photo credit: Drew Perlmutter)

A Plant Paddling Summer

by Charleyne Gilbert, Alamoosook All Clear Team

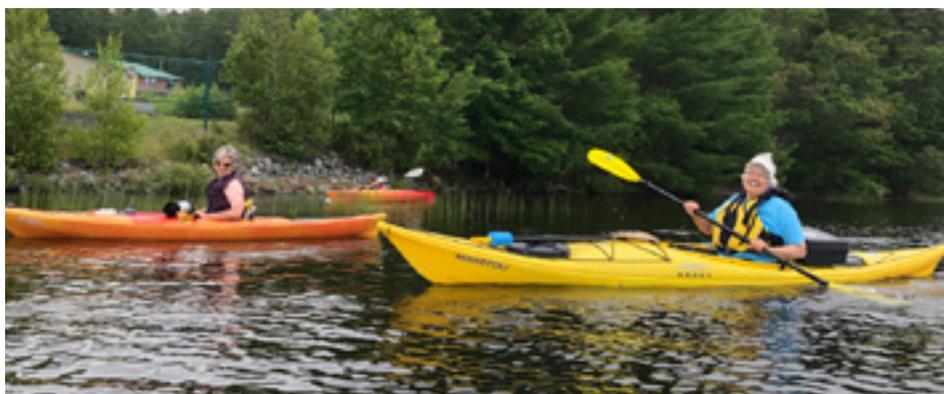


July 12, 2021 Plant ID post Plant Paddle with Alamoosook All Clear Team members and Lucy Leaf - L to R Martha Pedrick, Lucy Leaf, Mimi Tatum, Charleyne Gilbert, Caroline Van Leer and Katie Greenman (not pictured). Photo credit

Of all my plant paddling capers, sharing experiences with fellow volunteers, surveying with visiting guide (and uber-IPPer) Lucy Leaf, hearing stories people share as I scour the shoreline, exploring hidden gems of the lake...my favorites remain the adventures with my grandnieces, Emma and Amelia. A credit to their curiosity, they've learned the names and characteristics of all the native floating-leaf plants--and a few more. Though they sometimes express frustration at not discovering invasive plants, they appreciate the value that native plants (and animals such as freshwater mussels) contribute to the quality of our lake, as well as the threat posed by invasive species. In fact, when asked what I should write for this article, Emma responded "Tell them invasive plants are bad for the lake!" Their curiosity has continued for three summers. And for now, the call of the lake--as in the stories I hear along the shoreline--remains strong. Perhaps another generation of the Alamoosook All Clear Team is on the horizon or this lake.

At this writing, our team has submitted a suspicious invasive water-milfoil for analysis. Let's hope that by the time this newsletter is released we will have received "all clear" results. Either way, our lake community owes Katie Greenman a debt of gratitude, and her Alamoosook All Clear Team welcomes more volunteers. All it takes is a little interest and whatever time (as much or as little) you have.

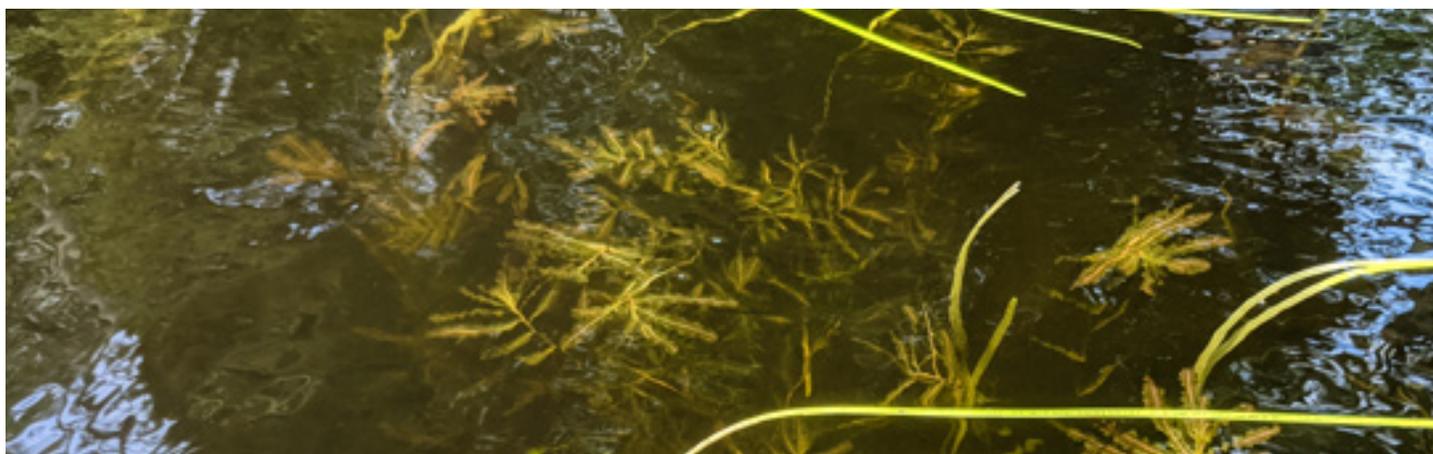
NOTE: As this issue was going to print the results finally came back, confirming invasive variable milfoil. A collaborative team involving Alamoosook Lake Association, Lake Stewards of Maine, Maine Department of Environmental Protection, and others mobilized immediately to begin development and coordination of a comprehensive response plan. Please stay tuned for more updates and ways to get involved. ■



Martha Pedrick and Lucy Leaf on the water.

New Invader found in the Belgrades

By Sharon Mann, 7 Lakes Alliance



Curly leaf pondweed mixed in with native macrophytes in the Serpentine (Photo credit: Sharon Mann)

While kayaking in August on the Serpentine Stream, which connects North and East ponds in the Belgrade Lakes Region, trained volunteer Bonnie Jones, noticed an aquatic plant she had not seen before. She decided to collect a sample and then quickly notified the 7 Lakes Alliance. The sample was soon confirmed to be curly leaf pondweed (CLP), one of eleven invasive aquatic plants listed by Maine law as imminent threats to Maine waters.



Lake Stewards of Maine, 7 Lakes Alliance, and North Pond Association survey areas of North Pond for curly leaf pondweed. (Photo credit: Sharon Mann)

As a result of Bonnie's diligence, action was taken immediately. Concerned that this new invader to the Belgrade region could spread to nearby waters, 7 Lakes Alliance quickly mobilized a team comprised of staff and volunteers to conduct a series of surveys, beginning in the Serpentine and extending out to upstream East Pond and downstream North Pond. LSM staff took part in these excursions. Results of the 2021 surveys indicate that the CLP infestation is largely contained to the section of the Serpentine where it was first noticed, with a few patches upstream and some more near the outlet of the tributary in North Pond. No CLP was found in East Pond. A survey of North Pond was attempted but soon called off due to low water transparency. Ongoing surveys of all of these areas will resume next

April, and though 7 Lake Alliance is working to expand the number of trained Invasive Plant Patrollers in their region, they would also greatly appreciate any help that experienced IPPers from 'away' might care to lend. For more information, please email sharon.mann@7lakesalliance.org or call (207)-495-6039. ■

(Right) Bonnie and Maine Department of Environmental Protection's Denise Blanchette scrutinize a suspicious plant. (Photo credit: Sharon Mann)



Bonnie shows Department of Environmental Protection and 7 Lakes Alliance staff where she has already surveyed and marked. (Photo credit: Sharon Mann)



Milfoil Mission Accomplished- Cushman Pond in Lovell “milfoil free” after a 27 year battle!

By Jim Buck

The friends and residents of Cushman Pond in Lovell, Maine completed their final scheduled 2021 milfoil survey on Sunday September 5th with no milfoil plants found. This was the seventeenth consecutive survey finding no plants since August 2018 and fulfilled the Maine Department of Environmental Protection’s (DEP’s) criteria of three consecutive years with no plants in order for Cushman to be considered “milfoil free.”

Cushman Pond is a small and peaceful 37 acre pond in the Kezar Lake Watershed. No motors of any kind are permitted. Variable-leaf milfoil was found in 1995 by residents Gerry and Mary Nelson and is widely believed to have been brought in by baitfishing which was prevalent at that time.

After an initial attempt to contain and remove the plants through herbicide, the residents, supported by the Town of Lovell and the Kezar Lake Watershed Association, developed and refined a process where scuba divers and snorkelers manually mark

and remove plants and cover the infested area with benthic mats to block the sun from fostering additional plant growth.

The divers and volunteers have conducted hundreds of surveys over the past 27 years supported by more than 150 different volunteers through many ups and downs. In several years only one or two plants were found and removed only to have outbreaks follow. More recently they turned the corner and the last plants were found in August 2018. According to John McPhedran, Invasive Aquatic Plant Biologist of the Maine DEP, three complete years without any invasive plants are required to be considered “milfoil free.”

Both McPhedran and Roberta Hill, Invasive Species Program Director of Lake Stewards of Maine, point out that successful eradication of invasive aquatic plants is a rare and noteworthy event reportedly achieved by only five other waterbodies to date in Maine.

Cushman’s September 5th survey was conducted by four scuba divers, six snorkelers and approximately thirty-five other supporters in boats, kayaks, and on the ground. Their success was celebrated with a “Milfoil Mission Accomplished!” cake and trophy and the participants sprayed champagne in a World Series-style celebration covered by local newspapers, New Hampshire Public Radio, and WGME TV in Portland. ■



Cushman Divers Scott Gregory (left) and Doug Faille celebrate with the “Milfoil Mission Accomplished!” Trophy. (Photo credit: Charlie Boyle)



Cushman divers (left to right) Toby Bottorff, Doug Faille, Scott Gregory, Scott Buck, Ken Patroliia & Marissa Nicol celebrate with a champagne toast. (Photo credit: Charlie Boyle)



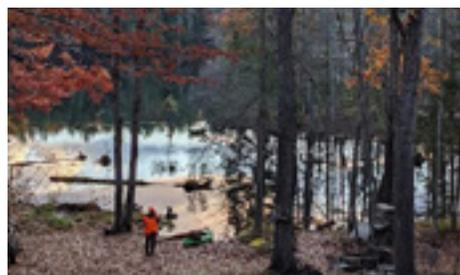
Gerry and Meg Nelson lived on the shoreline of Cushman Pond. Both were trained and certified LSM water quality monitors and invasive plant patrollers. One morning in the late 1990’s, they were canoeing the shoreline of the lake, when they noticed an aquatic plant that they had never before observed in the pond, and which they suspected to be variable watermilfoil. They quickly contacted LSM and MDEP staff, who met with them on site and confirmed the identification. Gerry and Meg’s vigilance and training greatly reduced the spread of this invasive plant not only in Cushman Pond, but also in several downstream waterbodies, including Kezar Lake. The success of this story is due in no small part to their efforts.

A Day in the Life of an IPPer

by Debbie Broderick, Lake Arrowhead



A rainy day on Lake Arrowhead.



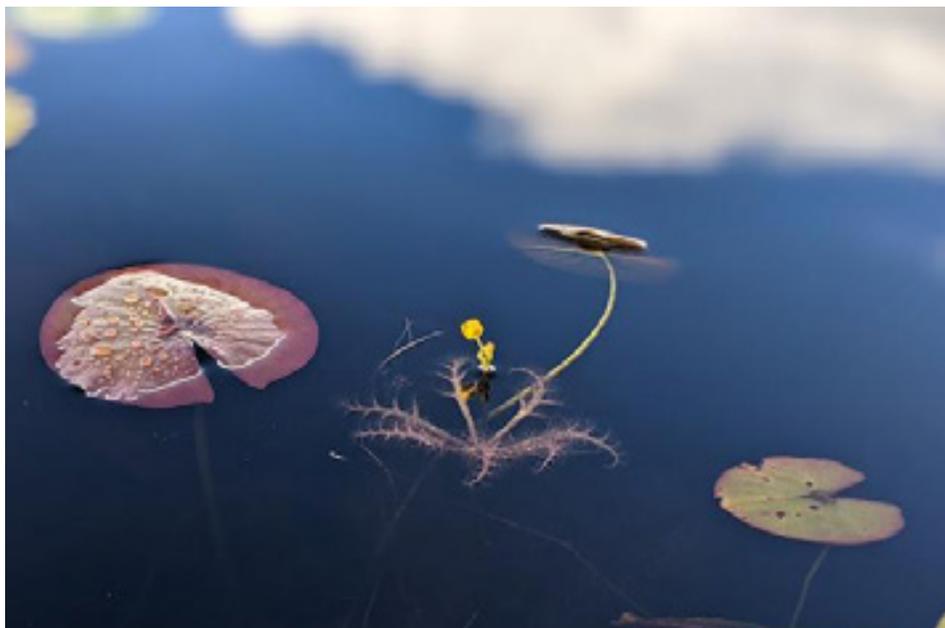
Debbie Broderick setting out to survey.

I set off in my kayak on a day in early November that had a very low chance of rain (10%) to do a late season plant survey. Yet as I set off, soft hail unexpectedly began to fall.

I wasn't deterred, though at one point in my expedition, I had to take shelter under some trees since my pants were getting wet. Equipped with a waterproof jacket on my upper body, I covered my legs with my life vest and carried on.

Sometimes it rained and sometimes it hailed! It looked bleak, but I could also see a band of blue sky peeking through. So, I continued on to my goal: a beautiful, shallow wetland, where blades of *Carex lasiocarpa* created languorous curves, forcing me to stop for photos to capture their beautiful arches.

More and more blue sky appeared and the sun came out in full glory. It felt wonderful. But then I started seeing small yellow flowers emerging from the surface, which I recognized as bladderwort flowers, but the plants themselves were like no bladderwort I had ever seen. They were exquisitely



Floating Bladderwort (*Utricularia inflata*) on Lake Arrowhead.

alien-looking plants with flowers rising from large, spongy, branching tendrils that form a floating star on the surface. The plants were later confirmed to be invasive inflated bladderwort (*Utricularia inflata*), an invader that checks all of the boxes for 'best survival strategies.' I began to get a sinking feeling and my hands were freezing from dipping them into the water to pull up the underwater foliage. My mood sank even lower as the flower count in the survey went up - at 35, I decided to stop and head home to drown my devastated spirits.

But thank goodness for sunsets! I was cheered by this glorious light on my way home.

As soon as I was back on dry ground, I called Roberta Hill to tell her of my awful discovery. ■



Carex lasiocarpa



Sunset on the shoreline foliage.

Photo credit: Debbie Broderick

Botanically Yours

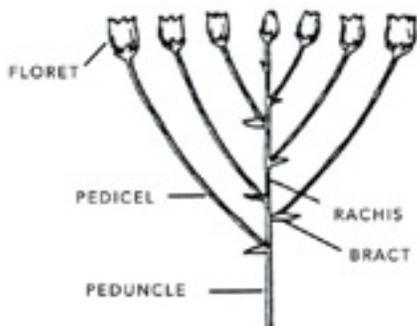
A whimsical meandering through the botanical lexicon.

By Roberta Hill

When it comes to describing plants, (and therefore identifying them) botanists have terms for just about everything. Some of the terms are quite intuitive, with cross-over into the standard lexicon. A good example of this is the term “serrated,” used to describe both the edge of a kitchen knife and a leaf. Other botanical terms are less so. In our first installment of this new column, we will focus on terms used to describe the flowering parts of plants, particularly the more complex flower structure known as the inflorescence.

Let's start with the basics. An inflorescence (in-*floh*-res-uhns) is the reproductive portion of a plant in which a cluster of flowers are arranged in a structure that follows a relatively consistent pattern. A flower that is not part of an inflorescence is called a solitary flower.

Next, we'll skim right through the words used to name the various parts of the inflorescence. The stem supporting the entire inflorescence is called a peduncle (pi-*duhng*-kuhl), and the specific portion along which the flowers are arranged (basically the main axis of patterned structure) is called the rachis (rey-kis). The specialized leaves that are directly associated with the flowers are called bracts. Any flower in an inflorescence may be referred to as a floret (*floh*-it), but the term floret is most commonly used to refer to smaller, more tightly-arranged flowers. Stalks

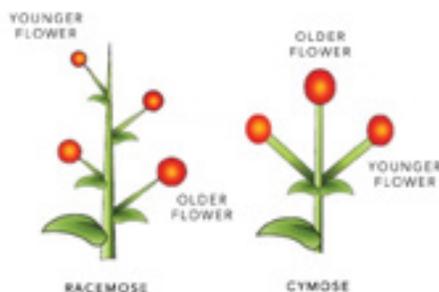


attaching flowers to the rachis are called pedicels (ped-uh-sel). When flowers (or florets) are attached to the rachis by pedicels, they are said to be pedicellate (ped-uh-sel-it). Fun, right?

Now, diving a bit deeper, note that an inflorescence is categorized on the basis of: 1) the arrangement of flowers on a main axis (rachis), and 2) by the timing of its flowering.

Let's start with the timing issue. . .

When an inflorescence is indeterminate, also referred to as racemose (ras-uh-mohs), the central axis of the inflorescence is capable of growing continuously until all floral energy is expended, producing a series of lateral flowers as it grows. Older flowers are at the base of the rachis and younger flowers and buds occur towards the growing tip or apex.



When an inflorescence is determinate, also referred to a cymose (*sahy*-mohs), the central axis stops growing when the first flower is produced at the apex; further growth occurs by means of axillary buds. The older flower, therefore, occurs at apex and younger flowers at base.

To keep things interesting, of course, some plants produce inflorescences that include both of these timing strategies; others seem to follow none of the above rules. We'll leave these for another day.

Each of the two basic types of inflorescences we just described (racemose and cymose) may then be broken down further by the specific arrangement of the flowers upon the rachis. Here are some examples that most of us who spend time on lakes are already familiar with (even if we did not formerly know what they were called):

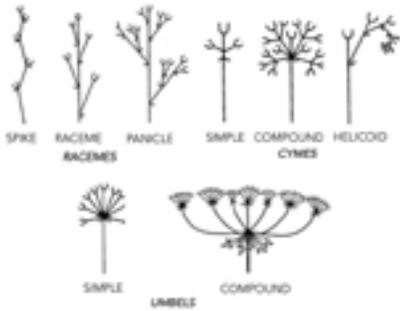
A raceme (rey-seem) is an unbranched indeterminate inflorescence with pedicellate flowers along the rachis. (Wow, doesn't this sentence make a lot more sense now than it would have a few minutes ago?) The inflorescences of arrowheads, *Sagittaria* spp., are racemes.

A spike is a type of raceme in which the flowers are sessile, meaning they lack stalks or pedicels and are attached directly to the rachis. Pickerel weed, *Pontedaria cordata*, and emergent flowering milfoils such as variable water-milfoil *Myriophyllum heterophyllum*, produce spikes.

A branching raceme is called a panicle (*pan*-i-kuhl). The bushy spray-like inflorescence of soft rush, *Juncus effusus*, provides a good example of a panicle.

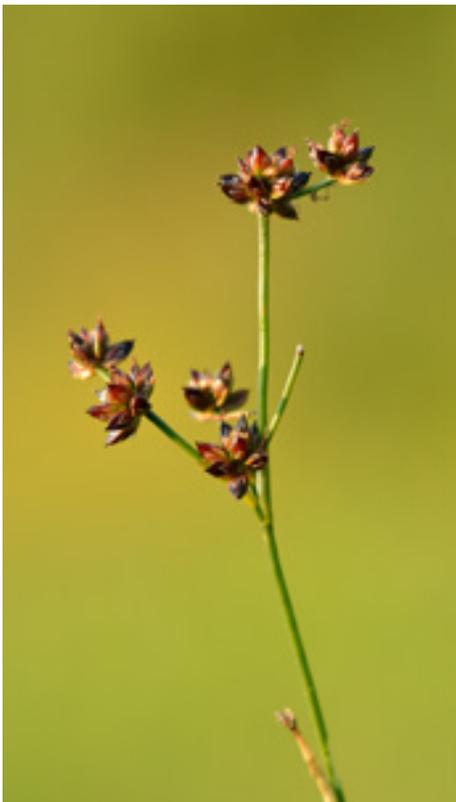
An umbel (um-bul-luhl) is a type of raceme with a short rachis and multiple floral pedicels of equal length that appear to arise from a common point. When an umbel is branching, comprised of and array of smaller umbels called umbellule, it is said to be a compound umbel. Water parsnip, *Sium suave*, produces compound umbels.

A less common aquatic plant, water forget-me-not, *Myosotis scorpioides*, provides a good example of a cyme (*sahym*). Just like racemes, cymes come in different configurations, simple, compound, helicoid (*hel*-i-koid), etc. Water forget-me-not is



a scorpioid cyme, meaning that the main axis terminates with the first flower and each successive axillary branch below gives rise to one branch only, and those branches alternate from side to side. If the branches were to emerge repeatedly from one side only, it would be called a helicoid cyme.

Inflorescences come in so many wonderful forms, and yes, there is a name for all of them! Have fun finding more examples of the inflorescence types we have described above and discovering others as well! ■



Juncus articulatus inflorescence.

Photo credit: Wikimedia

Implementing Survey123 with the Invasive Aquatic Species Program

By Tristan Taber

In 2019, Roberta Hill, Christine Guerette, and Tristan Tristan met with Becky Schaffner of the Maine Department of Environmental Protection (DEP). The focus of the meeting was to develop and launch an easy to use but robust digital application (app) for the collection of invasive species data in Maine.

The DEP had been experimenting with a program called Survey123 which had been acquired by Esri (formerly the Environmental Systems Research Institute). Becky Schaffner led the development of a new survey form that would combine the needs of the DEP with that of LSM volunteers and stakeholders. A 2020 pilot involving a willing group of invasive plant patrollers (IPPs), revealed that the app had some significant advantages over the paper form, but also some room for improvement. LSM staff led feedback sessions to understand the challenges that existed for volunteers, and then worked with Becky to redevelop the app for 2021. The 2021 version streamlined areas of confusion, allowed for significantly greater geospatial capture by volunteers, and has been rolled out to the broader IPP community.

Survey123 offers the ability to collect geospatially referenced data via web or mobile devices, even when disconnected from the Internet. To date, over 350 IPP surveys have been entered into the LSM-DEP Invasive Plant Survey form. If you would like more information about the program, please visit our website or follow this link:

<https://tinyurl.com/26dr6xpy> ■

Maine Field Guide to Aquatic Phenomena

Every lake in Maine is a place of wonder and discovery. Lake Stewards of Maine has developed a convenient, reliable, go-to resource for all who love spending time on, in and around the lakes of Maine.

We welcome you to search a wide array of aquatic flora, fauna, and other lake phenomena from any of your devices, and urge you to join us in the ongoing development of this crowd-sourced compendium. The current catalog provides a great start, but is still far from complete! With your help, the catalog will be continually updated with new information and photos, and expanded to include many new phenomena.

You can find it in the Apple Store or the Google Play store. For more information or to submit a suggestion for expanding the app content, please check out the app below.



Inflated Bladderwort (also Swollen Bladderwort)

by Roberta Hill

A perennial native to the southeastern coastal plains of the United States, inflated bladderwort (*Utricularia inflata*) has in recent years expanded its range northward to New England and the Pacific Northwest. Once introduced into a waterbody with suitable habitat, this aggressive carnivorous plant can become quite invasive, displacing native aquatic plants and dominating the aquatic plant community. Though most carnivorous plant species require very specific environmental conditions to thrive, *U. inflata* appears to have the ability to thrive in a wider variety of habitats giving it an advantage over its fussier kin.

Though it is not yet officially on Maine's list of legally-prohibited invasive aquatic plants, inflated bladderwort, a species not native to Maine, is considered invasive by the Maine DEP. *U. inflata* was first spotted several years ago in Horseshoe Pond in Chesterville. By late summer 2021 a second infestation had been spotted in Lake Arrowhead, in Limerick by LSM certified monitor, Debbie Broderick (yes the same Debbie Broderick who found the invasive spiny naiad in Lake Arrowhead in 2020). Subsequent surveys by Debbie and others confirmed the invasive bladderwort to be quite widespread throughout the lake.

So, it is important that we all become familiar with this new invader in our midst. Though inflated bladderwort has some unique and diagnostic features, portions of the plant also bear a strong resemblance to two of Maine's most common bladderworts. The submersed stems and leaves are a close look-alike to common bladderwort, *Utricularia vulgaris*. Once the emergent yellow flowers and the floating structures that support them begin to emerge, they might be overlooked by the casual observer as those of native floating bladderwort (*Utricularia radiata*).



The float typically has 6 to 8 spokes (sometimes 5 to 10), with each spoke 3–10 cm long and up to 8 mm wide. The tips of the spokes bear numerous, dichotomously branched leaf-like segments that can also possess some traps. (Photo credit: Roberta Hill)



Comparison of the tips of the submersed stems in the late season. (L) the globular winter buds of native common bladderwort (R) the feathery-duster-like spray of new leaves of the invasive inflated bladderwort. (Photo credit: Roberta Hill)



The 20–50 cm long erect flower stalks are produced from the center of the floating whorl and are usually solitary or few in number. An individual plant can produce several whorls and inflorescences, but they are typically distant from each other. The inflorescences produce 4–17 flowers with unequal calyx lobes, 3–5 mm long (compared to *U. radiata* producing 1 - 5 flowers). The entire corolla can be 2–2.5 cm long and is bright yellow with brown-colored veins on the spur and brown markings on the lower corolla lobe. (Photo credit: John Bradford)



Submersed leaves are branch divided, 2 – 10 cm long and alternately arranged (one leaf per node) along the stem. Each leaf is divided into two equal roughly oblong parts; each part has five or more additional levels of division. 2. INSET - The stalked, ovoid traps, 1–3 mm long produced along the submersed leaf segments are very numerous, and like those of common bladderwort, may turn black as they mature. (Photo credit: Roberta Hill)

Below is a quick primer on Maine's newest invasive aquatic plant, and some tips on what to watch for.

The plant produces its most noticeable and diagnostic feature--the float--when it is in its flowering phase. The float is a radiating whorl of spongy, buoyant, leaf-like appendages that support the flower stalk. ■

Resources:

Urban, R.A., Titus, J.E., and Zhu, W.-X. (2006). An invasive macrophyte alters sediment chemistry due to suppression of a native isoetid. *Oecologia*, 148: 455-463.

Taylor, Peter. (1989). The genus *Utricularia* - a taxonomic monograph. Kew Bulletin Additional Series XIV: London.

Washington State Department of Ecology. (2006). Swollen Bladderwort (*Utricularia inflata*). Accessed online: 23 December 2007.

Meet our new staff and intern at LSM!

Drew Perlmutter



These first few months working with Lake Stewards of Maine have truly been a dream. As LSM's new Invasive Species Education and Outreach Projects Manager, I have been able to combine my passion for conservation, education, and creativity in a way I had never believed possible. After graduating from Bates, I worked as a classroom teacher for three years and while I adored my students with their endless enthusiasm and earnest curiosity, I felt that something was missing. It turns out that "something" was lake conservation. At Big Lake during my first week with LSM, I experienced the magic of this work first-hand through the incredible volunteers. I was immediately blown away. Our volunteers' altruistic passion for this work and care for our lake communities runs deep. The threat of invasives is omnipresent, but our volunteers are inexhaustible in rising to meet the challenge. I count myself incredibly privileged to get to work alongside such a fantastic team. I am eager to contribute my creative skills and educational background to LSM's mission and inspire even more people to protect their lakes. See you all on the water! ■

Topher Castaneda



Hello everyone! I am the newest staff member with LSM, Topher Castaneda. I spent my senior year at Bates College working with Holly Ewing, Professor of Environmental Studies and Advisory Board Member for LSM, on modeling the ecological productivity occurring in Lake Auburn from 2013-2016. Holly exceeded her obligations as an advisor and served more as a mentor, cultivating and broadening my understanding of the natural world. As a first-generation college student, the behemoth of moving 3,000 miles to an entirely new place and culture was daunting. Having Holly as a mentor my last two years of education helped me gain confidence in my ability to call myself a scientist and realign my values to encompass the work of environmental stewardship. Since onboarding with LSM, I have been in the office working through all the lovely data our volunteers have gathered this past year. As much as I enjoy understanding these lakes through the stories the data tells, I am waiting in anticipation for the day I can join our volunteers on the water and lend a helping hand. I cannot wait to meet all our volunteers and partners to ensure our goals of lake stewardship are met. ■

Charlotte Nutt



My name is Charlotte Nutt, and I am a part-time data analytics intern employed through a University of Southern Maine-funded program for the 21-22 academic school year. I am a master's student at USM's Muskie School of Public Service where I study public policy with a concentration on sustainable development and community planning. In my undergraduate career, I studied Earth science and economics, fueled by my curiosity for the apparent ways in which economic and environmental priorities often conflict. Having grown up in Midcoast Maine, working at Lake Stewards of Maine fit both my interests and sense of place. In the future, I plan to work towards making Maine's people, economy, and environment resilient to climate change. While working remotely, I am spending the winter in Prescott, Arizona where I am training on my mountain bike for races and multiday bikepacking excursions. I am having a great time out west, although I already miss the landscapes and communities in Maine, and I look forward to returning home next summer. ■

Passings



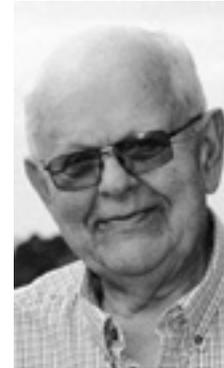
Donald J. Rycroft (2018)

We have just learned of the passing of Donald Joseph Rycroft on February 1, 2018. He passed away unexpectedly and peacefully in his home in Portsmouth, NH at the age of 79. Donald loved being on the water and enjoyed sailing and boating. After purchasing a camp on Great Pond he fell in love with the Belgrade region. In particular, he loved taking his big boat out on Great Pond and his tin boat out on Long Pond. In his retirement he had hoped to spend all his time on the lakes. He began volunteering as a Water Quality Monitor in 2016.



Daniel J. Orino (2020)

Daniel J. Orino passed away while surrounded by his loved ones on August 13th, 2020 at the age of 85. After working as a teacher, Daniel opened his own insurance agency, Kalman-Orino with his best friend, Keith Kalman. He loved spending time on Wilson Lake and was a skilled fisherman and enjoyed making his own flies. Dan volunteered as a water quality monitor on Wilson Lake for 10 years.



Cliff Rowe

Cliff Rowe passed away on August 25, 2021 at the age of 84. Cliff was dedicated to his land. After retirement, he moved to Cushman Pond in Lovell, Maine where he was active in his community. He was known as the "Mayor of Cushman Pond" and boosted morale during milfoil surveys.



Dr. James J. Orino (2020)

Dr. James J. Orino passed away on February 8th, 2020 at his home in Rumford at the age of 87. He became a doctor of dental surgery after two years with the U.S. Army Infantry. He practiced dentistry for more than 52 years. He spent more than 50 summers at his camp on Worthley Pond where he enjoyed sharing his love of the outdoors with his wife Wanda, his four children, and his grandchildren. He enjoyed hunting, fishing, water skiing, and snow skiing. James was trained as a Water Quality monitor in 2003.



Robert B. Warren

Robert (Bob) B. Warren passed away on November 12, 2021 at the age of 92. Bob worked as an Estate Planning Specialist for a Farm Family Insurance Company. He is survived by his 11 grandchildren and 16 great-grandchildren. Bob loved spending time at his camp in Maine with his family. He began volunteering as a Water Quality monitor for Center Pond in 1999. Since becoming Secchi disc transparency certified in 1999, Bob consistently took readings starting early in the season (May) all the way through October.

Horatio Castle

Horatio Castle passed away surrounded by loved ones on March 27, 2021, at the age of 81. For several decades he wintered in West Pond Beach Florida and summered in Belgrade, Maine where Horatio and Valerie owned and operated Castle Island Camps for thirty-two years. Horatio's family had a camp in Fayette on Echo Lake for all his life and when he & Valerie retired in 2005, they built a year-round home there. Horatio loved Echo Lake and served for many years on the Echo Lake Association Board. Horatio lead ELA's Courtesy Boat Inspection Program for several years and was also certified as an Invasive Plant Patroller. He was loved by many and is missed by all.

We care deeply about Maine's lake volunteer monitors. If you would like to share news of a monitor's passing please contact us at stewards@lakestewardsofmaine.org.

Passings



Richard Allan Fivek

Richard Allan Fivek passed away on February 17, 2021 at the age of 81. When not in Maine, he spent his time

in Concord, MA where he shared his passion for Concord with visitors. He was a board member of the Kennebago Lake Camp Owners' Association and was an active Invasive Plant Patrol Monitor. Richard was passionate about the beauty of the natural world and in particular enjoyed hiking and fly fishing. Richard had been a certified Invasive Plant Patroller for LSM since 2011.



John E Farrell

John Farrell passed away on January 26th, 2021 after suffering a stroke at the age of 62. John loved his family and the

outdoors. He grew up in Winthrop and demonstrated his skill in the outdoors through his Master Maine Guide certification. He loved hunting, fishing, and sharing his knowledge of the outdoors with the children in his life. He and his wife Debbi spent countless hours on Cobbossee Lake and were very involved with the lake community through the Cobbossee Yacht Club Lake Association. John began volunteering as a Water Quality Monitor on Cobbossee Lake in 2011.



Peter Barber

Peter Barber was a catalyst; a spark plug; and most certainly a passionate lake stewardship leader for

Pleasant Lake and Parker Pond in Casco, where he was a certified lake monitor. We first met Peter at an LSM lakes water quality training workshop in 2010. He will long be remembered (and missed) for his good natured, insatiable curiosity, having posed a great many relevant questions to workshop conductors, followed by not infrequent phone discussions and email exchanges. In many ways, he was the ideal citizen lake scientist, always seeking more information to ensure the accuracy and value of his good work. Peter's lake stewardship extended beyond monitoring the health of Pleasant Lake and Parker Pond – well into watershed protection and remediation work, as well. He and his wife, Marygrace, were also trained LSM Invasive Plant Patrollers.



Jordan Pond



Ron Hall

Ron Hall passed away on January 29, 2021 at the age of 76 after battling cancer. He worked at Noyes, Hall, and Allen Insurance Company for 30

years. Ron loved spending his summer on Crescent Lake in Raymond where he collected his vintage boats. He was a prominent member of the lake community and was known as "the man in the Chris Craft." Ron was trained in 2011 and often monitored Crescent Lake with his wife, Lisa. ■

Gerald Nelson Memorial Fund

Gerry Nelson was a Lake Stewards of Maine (LSM) certified lake monitor and plant patroller for many years on Cushman Pond in Lovell. We first met Gerry and his wife, Meg (also a certified lake monitor) more than two decades ago, when he discovered and documented the variable milfoil infestation in Cushman Pond. His passion for LSM's work was contagious and unflappable. In addition to his work as a lake monitor, Gerry (and Meg) served on LSM's board of directors for many years. He acted as an ambassador for the organization, and was a relentless cheerleader for the work of the organization. Gerry will long be remembered by LSM staff and board members for his enthusiasm and optimism, his cheerful laugh, and perpetual vision for the organization.

A passionate outdoorsman, expert and tutor in tying flies, obsessive angler, and warm friend, Gerry lived as close to the land as possible. Although he and Meg had a beautiful year round home along the shoreline of Cushman Pond, for many summers, they pitched a tent close to the lake, so that they might be closer to the resource that they worked to protect. The land between their home and the shoreline represented the ultimate wooded buffer, in order to protect the lake, and their driveway was designed with input from several individuals who had expertise in minimizing the impact of development on lakes.

Through the years, Gerry worked passionately to ensure that LSM would be able to continue to fulfill its essential Mission to protect Maine's lakes through citizen science and stewardship. Toward that goal, he provided LSM with a generous bequest that will be used to establish a sustainable program to help provide support for future student internships.

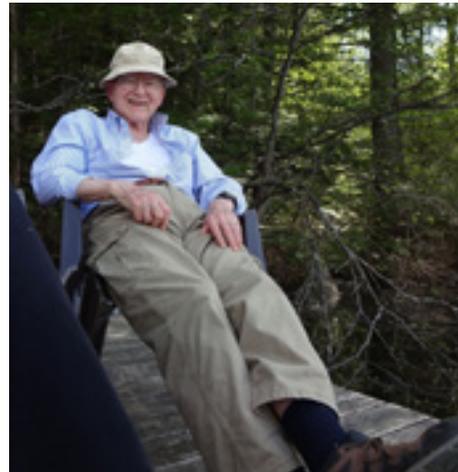
We are deeply honored to announce the formation of the Gerald Nelson Memorial Fund, which will be formally launched in early 2022. We anticipate

that this fund will be sustained over time by LSM supporters: those who knew and worked with Gerry over time, and others who are interested in ensuring that the benefits of his legacy will be available to eligible LSM student intern candidates in the future.

Gerry will be missed by those of us who were fortunate to know and work with him. We are deeply grateful for his vision and support. If you would like to contribute to this sustainable fund, please send your donation to Lakes Stewards of Maine, 24 Maple Hill Rd. Auburn, ME 04210 (note Gerald Nelson Memorial Fund with your donation). ■



Gerry Nelson on the water.



Gerry Nelson at his favorite spot on the water.



Gerry Nelson and his grand children.

A Legacy for Lake Stewardship

Legacy gifts truly make a difference in long-term sustainability for Lake Stewards of Maine:

Lake Stewards of Maine- Volunteer Lake Monitoring Program

Tax ID # 01-0502630

24 Maple Hill Rd.

Auburn, ME 04210

*Notifying us of your intentions is not necessary, but helpful.

presence that currently exists.

Finally, we are fortunate at Lake Stewards of Maine to benefit from the expertise of young leaders such as our new Programs Coordinator and Bates College graduate, Topher Castenada, who is running point on our internship program along with Dartmouth graduate and current USM graduate student, Intern Extraordinaire, Charlotte Nutt. Working with me, Topher and Charlotte are bringing lived knowledge, energy and enthusiasm to building our expanded internship program, which is central to serving our certified volunteers, building a learning organization culture at LSM, and, in these ways, stewarding the lakes of Maine. Nothing less is needed as we face our lakes' and watersheds' futures in Maine. If you are interested in supporting the internship program or being supported by it, please contact me directly at adam@lakestewardsme.org. ■



Autumn colors on Damariscotta Lake. (Photo credit: Hannah McGhee).

support to our new and existing volunteers, while letting go of most of the administrative responsibilities. In early 2021, I decided that the time had come to make a change. Our board of directors recognized that finding a new ED could be a complex and lengthy process.

Three summers ago, Adam Zemans worked with LSM in the capacity of Visiting Outreach and Stewardship Coordinator. From our first impressions, we recognized Adam as someone who thoroughly understood and embraced the Mission of the organization. He was full of innovative ideas for ways in which the work of LSM could be sustained for the future. As the board and staff were preparing to initiate the search process, we learned that Adam had recently returned to Maine, where he was exploring options for employment that was in alignment with his PhD dissertation process. Preliminary discussions with him eventually led to his application for the LSM Executive Director position. Soon thereafter, he was unanimously chosen for the position by the board of directors, with enthusiastic support of the decision by the staff, who participated in the interview process.

As of October 1, I stepped down as ED, into my new position with the organization: Senior Program Advisor and Limnologist. I look forward to continuing work with the organization in a number of ways, but in a reduced capacity, allowing me to continue to provide support to volunteers and the organization, while also spending more time with family, reconnecting with friends and continuing my lifelong learning process about Maine's lakes.

I am deeply grateful for having had the experience of working with so many wonderful individuals through LSM – volunteer monitors/stewards, staff, board members, colleagues, lake dwellers and so many others. I hope to see and hear from many of you through my new role in the organization. ■

moment demands that we stretch beyond our comfort zone to ask . . .

Given our particular strengths as an organization—the ability to help mobilize and support the knowledge, skills, and innovative can-do spirit of lake-minded people across the state of Maine—what more can we be doing?

Over the coming weeks and months, we will be putting this question out to our vast network of partners, meeting with some of Maine's top climate scientists, State agency personnel, our fellow NGOs, Maine Climate Council members, community leaders, educators and of course, YOU! With input from all quarters, our initial objectives, at minimum, will be to: begin to develop our Climate Resilient Lake Communities program; help bring more climate education programming to Maine Lake communities via conferences, summits, webinars, trainings, etc.; and strengthen our partnerships with Maine climate researchers and innovative sustainability leaders. And importantly, we want to help make sure that everyone who cares about lakes has a better understanding of the integral connection between actions taken to address climate change and acts of lake stewardship.

If you are interested in learning more about LSM's new climate initiatives, if you have some thoughts on any of the above that you would care to share, and/or if you wish to get involved at any level, **please let us know!** ■

LSM Volunteers Are Among the Longest-Serving Volunteers in the Nation!

The following active volunteers have been monitoring their lakes for at least 10 years; some have been collecting lake data for nearly 5 decades! THANK YOU to all of the lake stewards who are no longer monitoring, but also volunteered with LSM for multiple years.

We are grateful for everyone's dedication and commitment!

Sharon Abair, Damariscotta Lake	Melissa Brandt, Multiple Lakes	Denis Coffey, Crystal Lake (Dry Pond)
Herb Adams, Heald Pond	Kendall Brann, Pease Pond	Rose Marie Collin, Long Lake
Dr. Donald Ahern, Lower Patten Pond	Rich Bray, Big Bear Pond	Dake 'Ian' Collins, Stevens Pond
Jessica Ahern, Lower Patten Pond	Linda Breslin, Multiple Lakes	John Conley, Rangeley Lake
Sarah Ahern, Lower Patten Pond	Bertrand Breton, Round Pond	Marie Connolly, Panther Pond
Pam Albertsen, Webb (Weld) Lake	Matthew Brettler, Upper Range Pond	Poppy Connor-Crouch, Lower Range Pond
David Alling, Quantabacook Lake	Jennifer Brockway, Multiple Lakes	James Cook, Pitcher Pond
Dorothy Alling, Quantabacook Lake	Robert Brown, Mattakeunk Lake	Terri Coolidge, Multiple Lakes
Linda Stetson Amar, Multiple Lakes	Art Bubar, Long Pond	Kathleen Cotter, Abrams Pond
Carl Anderson, Saturday Pond	Denise Buckley, Multiple Lakes	William Cotter, Abrams Pond
Charles Andrews, East Pond	Joe Bukata, Holbrook Pond	Janet Coulter, Ingalls (Foster's) Pond
Elyse Andrews, Rangeley Lake	Yvonne Burckhardt, Lawry Pond	Richard Cranston, Big Kennebago Lake
Meryl Araps, Flying Pond	Barry Burgason, Multiple Lakes	Retha Crawford, Lake Wassookeag
Dwight Aspinwall, Long Pond	David Burnell, Watchic Pond	Mel Croft, East Pond
Gayle Aspinwall, Long Pond	Eileen Burnell, Watchic Pond	Connie Cross, Panther Pond
William 'Biff' Atwater, Lake Anasagunticook	Ryan Burton, Multiple Lakes	Albert P. 'Buzz' Croston, Lake Anasagunticook
Charles Backenstose, Webber Pond	Dick Butterfield, Damariscotta Lake	John Crouch, Lower Range Pond
Roy Bagley, Holland (Sokosis) Pond	Charles 'Chip' Byrne, Graham Lake	Claire Cullinane, Great East Lake
Susan Bailey, Branch Lake	Halina Byrne, Graham Lake	Fred Cummings, Multiple Lakes
Rick Baker, Quimby Pond	Dave Cabana, Square Pond	John Cummings, Androscoggin Lake
Tom Bannen, Multiple Lakes	Roger Cady, Multiple Lakes	Chris Dadian, Toddy Pond
Charla Bansley, Multiple Lakes	Mike Caiola, Forest Lake	Carlyn Daigle, Square Pond
Marygrace Barber, Pleasant Lake	Jim Caldwell, Saint George Lake	Nick Davidson, Great Pond
Peter Barber, Pleasant Lake	Laurie Callahan, Multiple Lakes	Jane Davis, Multiple Lakes
Martin Bartlett, Quantabacook Lake	Amy Campbell, Megunticook Lake	Charles Day, Worthley Pond
Bill 'Skip' Bartosch, Mousam Lake	Brian Canwell, Flying Pond	Diane Day, Buker Pond
Carol Bassett, Kimball Pond	Carol Carey, Little Ossipee Flowage	Buffy DeMatteis, Multiple Lakes
Robert Beal, Branch Lake	Kim Caron, Square Pond	George Derby, Stanley Pond
Caroline Beard, Seven Tree Pond	Rob Caron, Square Pond	Ernest Desrosiers, Pleasant (Stetson) Lake
Michael Becker, Annabessacook Lake	Sue Carrington, Kennebunk Pond	Megan Devine, Clearwater Pond
Ewald Bender, Thompson Lake	Steve Carroll, Damariscotta Lake	Wendy Dennis, Multiple Lakes
Donald Berry, Quantabacook Lake	Deborah Cayer, Parker Pond	Peter Devine, Garland Pond
James Bisesti, Allen Pond	Katharine Giovanella Chaiklin, Bickford Pond	Laura Diemer, Multiple Lakes
Kerry Black, Saint George Lake	Jim Chapin, Mooselookmeguntic Lake	Mildred Donahue, Buker Pond
Noreen Blaiklock, Sewall Pond	Peggy Chapin, Mooselookmeguntic Lake	Alan Dorr, Donnell Pond
William Blaine, Multiple Lakes	Nini Christensen, Haley Pond	Bruce Doyle, Buker Pond
Cathy Blair, Branch Lake	Peter Christensen, Rangeley Lake	Ginger Doyle, Toddy Pond
Ainsley Bodman, Loon Lake	Scott Cianchette, Multiple Lakes	Loraine 'Rainey' Doyle, Buker Pond
Joe Bodnar, Damariscotta Lake	Marsha Clark, Flying Pond	Paul Doyle, Toddy Pond
Bradford Boone, Cold Stream Pond	Toni Clark, Saint George Lake	Donal Drew, Watchic Pond
Victor Borko, Gull Pond	Diane Clay, Multiple Lakes	Dave Drouin, Parlin Pond
Robert Boulette, Sabattus Pond	Patricia Clifford, Big Clemons Pond	Peter Duffey, Seven Tree Pond
Judy Bourget, Multiple Lakes	Dorothy Cloutier, Pushaw Lake	Ann Dugovic, Estes Lake
Virginia Bourne, Branch Lake	Louis Cloutier, Pushaw Lake	George Dugovic, Estes Lake
Joan Boyce, Beech Hill Pond	Mike Cloutier, Sabbathday Lake	William Dunham, Parker Pond
David Bradbury, Watchic Pond	Christine Clyne, Barker Pond	Joan Dunlap, Rangeley Lake

Debra Duplisea, Pocasset Lake
 Suzanne Dwyer, Damariscotta Lake
 Patricia Dyer, Beech Hill Pond
 Charles Elvin, Echo Lake (Crotched Pond)
 Catherine Erdman, Varnum Pond
 John Erdman, Varnum Pond
 Robert Estes, Jewett Pond (Five Kezar Ponds)
 Charlie Evans, Saint George Lake
 Josephine Ewing, Sewall Pond
 Cindy Fahey, Long Pond
 Mark Fahey, Long Pond
 Eileen Fair, No Name Pond
 Peter Farnsworth, Flagstaff Lake
 Debbi Farrell, Cobbosseecontee Lake
 Bruce Fenn, Multiple Lakes
 Peter Fischer, Boyd Pond
 Barbara Fivek, Big Kennebago Lake
 Rich Fivek, Big Kennebago Lake
 Fred Flammia, Cox Pond
 Cheryl Fortier, Sabbathday Lake
 Dan Fortin, Lake Auburn
 Paul Fortin, Lovewell Pond
 Ralph Fowler, Sebasticook Lake
 Larry Fox, Green Lake
 Robert French, Panther Pond
 Sibyl French, Panther Pond
 Kevin Frewert, Saint George Lake
 Susan Frewert, Saint George Lake
 Brian Friedmann, Georges Pond
 Fred Frodyma, Estes Lake
 Rocco Fucetola, Georges Pond
 Carol Fuller, Echo Lake (Crotched Pond)
 David Fuller, Echo Lake (Crotched Pond)
 Carol Gabranski, Branch Lake
 Jim Gameros, Forest Lake
 Wayne Gautreau, Little Ossipee Lake
 Bill Gawley, Multiple Lakes
 Sal Gebbia, Kennebunk Pond
 Paul Geisler, Crawford Pond
 Carol Gestwicki, Multiple Lakes
 Frank Getchell, Multiple Lakes
 Robert Giffin, Toddy Pond
 Leslie Gilliland, Hills Pond
 Sue Glann, No Name Pond
 Robert Gobeil, Loon (Spear) Pond
 Rose Marie Gobeil, Loon (Spear) Pond
 Cathy Goddard, Great Pond
 Meghan Goff, Multiple Lakes
 Peter Goffin, Flying Pond
 Janene Gorham, Forest Lake
 John Gorham, Forest Lake
 Heidi Gosselin, Dodge Pond
 Joyce Gosselin, Kezar Pond
 Alexandra Graham, Multiple Lakes



Bob Susbury is currently one of LSM's longest standing Certified Water Quality Monitors. With the assistance of his wife Peg, Bob has consistently monitored the health of Howard Pond in Hanover for almost five decades.

Edward Graham, Multiple Lakes
 Whitney Grass, Multiple Lakes
 Thomas Greene, Whetstone Pond
 Christine Guerette, Sabattus Pond
 Dan Guerette, Sabattus Pond
 Karen Hall, Forest Lake
 Dana Hallowell, Madawaska Lake
 Elizabeth Hamilton, Forest Lake
 Thomas Hamilton, Lake Anasagunticook
 Bruce Hanke, Damariscotta Lake
 Adeline Harris, Clearwater Pond
 Norm Harte, Multiple Lakes
 Lou Haskell, Panther Pond
 Elin Haugen, West Harbor Pond
 Phyllis Heineman, Little Pushaw Pond
 Steve Herrick, Sebago Lake
 Ted Hesson, East Pond
 Bob Heyner, Forest Lake
 Bill Higgins, Branch Lake
 Erika Higgins, Branch Lake
 Barb Hildreth, Pushaw Lake
 Brandy Hilliard, Multiple Lakes
 Roberta Hodson, Thompson Lake
 Elaine Holcombe, Mooselookmeguntic Lake
 Janice Holden, Beaver Mountain Lake
 Jack Holland, Multiple Lakes
 Brie Holme, Sebago Lake
 Colin Holme, Multiple Lakes
 Paul Jay Holweger, Swan Lake
 Ellie Hopkins, Locke Pond
 Richard Horr, Thomas Pond
 Charles Hudson, Stevens Pond
 Betsy Huebner, Jewett Pond (Five Kezars Lake)
 Donald Hughes, Forest Lake

Jen Hughes, Forest Lake
 Dan Hutchins, Lake Wassookeag
 Laurel Jackson, Sebago Lake
 David James, Dodge Pond
 Sara James, Dodge Pond
 Penny Jaskalen, Pleasant Pond
 Susan Jasper, Buker Pond
 Neil Jensen, Panther Pond
 Peggy Jensen, Multiple Lakes
 Dawn Jepson, Locke Pond
 Dennis Jepson, Locke Pond
 Jennifer Jespersen, Multiple Lakes
 Rick Johnson, Middle Pond (Five Kezar Ponds)
 Carolyn Johnston, Beech Hill Pond
 Rob Jones, East Pond
 Barbara Jonsson, Branch Lake
 Denise Joy, Cox Pond
 Peter Kallin, Long Pond
 Audrey Kalloch, West Carry Pond
 Norman Kalloch, West Carry Pond
 Ed Keenan, Forest Lake
 Joan Kelly, Big Bear Pond
 Margaret Kennedy, Back Pond (Five Kezar Ponds)
 Cindy Kennett, Mooselookmeguntic Lake
 Joanne Kimball, Walker Pond
 John Kimball, Walker Pond
 Barbara Kinney, Multiple Lakes
 Carol Knapp, Mccurdy Pond
 Tom 'Rusty' Knight, Lake Anasagunticook
 Dan Konieczko, Echo Lake (Crotched Pond)
 Robert Kramer, Mooselookmeguntic Lake
 Eileen Kreutz, Clearwater Pond
 Irene Krysko, Middle Pond (Five Kezar Ponds)
 Mike Krysko, Middle Pond (Five Kezar Ponds)



Invasive Plant Patrollers Bunny Wescott (standing) and Sibyl French (in kayak) were trained and certified the same year and have been monitoring their beloved Panther Pond in Raymond for 15 years. Key participants in Maine's statewide early detection effort, here they are seen lending their extensive expertise to the 2021 Big Lake survey.

- Barry Kutzen**, Middle Range Pond
- Robert LaBelle**, Little Ossipee Lake
- Sandra LaBelle**, Little Ossipee Lake
- Sarah Lafond**, David Pond
- David Lamon**, Multiple Lakes
- Ted Lane**, Biscay Pond
- Beth Langton**, Multiple Lakes
- Tom Larned**, Kennebunk Pond
- John Laskey**, Tripp Pond
- John Laslie**, Alamoosook Lake
- Bill Latham**, Echo Lake (Crotched Pond)
- Shari Latulippe**, Multiple Lakes
- Sally LaVertu**, Green Lake
- Margaret LeBlanc**, Mooselookmeguntic Lake
- Paul Leeper**, Multiple Lakes
- Joanna Lerish**, Big Clemons Pond
- Victor Lerish**, Big Clemons Pond
- Marsha Letourneau**, Multiple Lakes
- Patricia Levesque**, Multiple Lakes
- Robert LeVine**, Toddy Pond
- Sarah LeVine**, Toddy Pond
- Stephen Lewis**, Multiple Lakes
- David Lind**, French Hill Pond
- Elden Lingwood**, Crescent Lake
- David Littell**, Farrington Pond
- Michael Long**, Great East Lake
- Joseph Longtin**, David Pond
- Patricia J. Macfarlane**, Graham Lake
- Connie Mahaffey**, Donnell Pond
- Denis Mancine**, Brettun's Pond
- Bill Mann**, Round Pond
- Donald Mantovani**, Mooselookmeguntic Lake
- Pam Mantovani**, Mooselookmeguntic Lake

- Stephen Markarian**, Saturday Pond
- Mark Mattson**, Thomas Pond
- Larry Mayer**, Clark Cove Pond
- David McAllister**, Pleasant Pond
- Dorothy McAllister**, Pleasant Pond
- Bob McClatchey**, Mooselookmeguntic Lake
- Sharon McClatchey**, Mooselookmeguntic Lake
- Judy McGeorge**, Branch Lake
- Bill McGuckin**, Mooselookmeguntic Lake
- Carol McGuckin**, Mooselookmeguntic Lake
- Richard McKeen**, Echo Lake (Crotched Pond)
- Candy McKellar**, Pleasant Lake
- Pamela McKinley**, Sebasticook Lake
- Ellen McLaughlin**, Multiple Lakes
- Karen McLean**, Saint George Lake
- Joseph P. McMenimen**, Lower Kimball Pond
- Jeff Melanson**, Saint George Lake
- Rich Melanson**, Horn Pond
- Steve Mendrzychowski**, Manhanock Pond
- Carole Merrifield**, Cargill Pond
- Tim Merten**, Damariscotta Lake
- Bill Messer**, Androscoggin Lake
- Linda Miller**, Sebasticook Lake
- Kent Mitchell**, Big Bear Pond
- Paul Mitnik**, Spectacle Pond
- Amanda Moeser**, Damariscotta Lake
- William Moore**, Horne (Pequawket) Pond
- Andrea Morris**, Collins Pond
- Susan Motley**, Quimby Pond
- Leslie Muir-Volpe**, West Harbor Pond
- Sandra Muller**, Wilson Pond
- Wynn Muller**, Wilson Pond
- Janet Murphy**, West Lake
- Joe Musante**, Multiple Lakes
- Linda Nelson**, Parker Pond
- Kirsten Ness**, Sebago Lake
- Emile Nicol**, China Lake
- Steve O'Bryan**, Multiple Lakes
- Richard Offinger**, Cathance Lake
- Jim Olson**, Damariscotta Lake
- Pat Onion**, Flying Pond
- Susan Onion**, Parker Pond
- Christian Oren**, Thompson Lake
- Tyler Oren**, Thompson Lake
- John Orne**, Multiple Lakes
- Jody O'Rourke**, Big Kennebago Lake
- Tom O'Rourke**, Big Kennebago Lake
- Ivan Ossander**, Forest Lake
- Ellen Paige**, Toddy Pond
- Mike Paige**, Toddy Pond
- Pamela Parvin**, Multiple Lakes
- Wallace 'Wally' Penrod**, Lovejoy Pond
- Michele Petryk**, Great Pond
- Liz Petterson**, Multiple Lakes

- Sherry Pettyjohn**, Multiple Lakes
- Dennis 'Denny' Phillips**, Watson Pond
- Doug Phillips**, Echo Lake (Crotched Pond)
- Jessica Pierce**, Adams Pond (Rock Haven)
- Christian Poulin**, Horseshoe Pond
- Dave Preston**, Alford Lake
- Helen Presz**, Horne (Pequawket) Pond
- Joseph Presz**, Horne (Pequawket) Pond
- Bruce Purdy**, Webb (Weld) Lake
- Judy Purdy**, Webb (Weld) Lake
- Lea Ramirez**, Great Pond
- Shelley Rau**, Sandy Bottom Pond
- David Raye**, Little Ossipee Lake
- Linda Rice**, North & Little Ponds
- Frank Richards**, Webber Pond
- Jack Richardson**, Kennebunk Pond
- Louise Riley**, Pemaquid Pond
- Aaron Rinehart**, Eagle Lake
- Karen Robbins**, Sewall Pond
- Lidie Robbins**, Multiple Lakes
- Dennis Roberge**, Mousam Lake
- Ed Roche**, Scituate Pond
- Debra Roe**, Flying Pond
- Karen Rogers**, Parker Pond
- Adrienne Rollo**, Toothaker Pond
- Teg Rood**, Wilson Lake
- Donna Rosenkrans**, Square Pond
- Carol Rothenberg**, Bear Pond
- Shelby Rousseau**, Mooselookmeguntic Lake
- Mike Rowland**, Norcross Pond
- Lois Ruff**, Bryant Pond
- Julie Rumrill**, Somes Pond
- David Russell**, Forest Lake
- Mary Ryan**, Wilson Pond
- Susan Rylander**, Branch Lake
- Richard Salminen**, Toddy Pond
- Joe Saunders**, Multiple Lakes
- Donna Savastio**, Middle Pond (Five Kezar Ponds)
- Lonny Schneider**, Indian Pond
- Richard Schneider**, Indian Pond
- Claudia Scholz**, Loon Lake
- John Scholz**, Loon Lake
- John Schooley**, Watson Pond
- Doug Sears**, Embden Pond
- Susan Sebestyen**, Crystal Lake (Dry Pond)
- John Shambroom**, Middle Pond (Five Kezar Ponds)
- Maggie Shannon**, Multiple Lakes
- Roger Shannon**, Multiple Lakes
- Robert Sherman**, Haley Pond
- Tim Sholtis**, Damariscotta Lake
- Chris Silsbee**, Multiple Lakes
- Ed Simmons**, Mooselookmeguntic Lake
- Donald Simoneau**, Androscoggin Lake
- Jeanne Siviski**, Damariscotta Lake

Kim Skaves, Branch Lake
 Alison Smith, Echo Lake (Crotched Pond)
 Dorothy Smith, Great East Lake
 Duncan Smith, Forest Lake
 Jeanne Smith, Big Clemons Pond
 Jeff Smith, Toddy Pond
 Mike Smith, Big Clemons Pond
 Nancy Smith, Great East Lake
 Peter Smith, Hancock Pond
 Carroll D. Snyder, Branch Lake
 Susan Sokol, Lower Patten Pond
 Rebecca Southwick, Estes Lake
 Richard Southwick, Estes Lake
 William Spitzinger, Forest Lake
 Debby Spurlock, Long Pond
 Ken Stabinski, Echo Lake (Crotched Pond)
 Lea Stabinski, Echo Lake (Crotched Pond)
 Nancy Staples, Halfmoon Pond
 Christine Stevens, Little Pushaw Pond
 James Stewart, Webb (Weld) Lake
 Norman Stiles, Echo Lake (Crotched Pond)
 Carl Stillwell, Damariscotta Lake
 Fred Stine, Walker Pond
 Nancy Stine, Walker Pond
 Michele Stowe, Woodbury Pond
 Charles Strandberg, Barker Pond
 Keith Strange, Cold Stream Pond
 Robert Susbury, Howard Pond
 Christine Swain, Ellis (Roxbury) Pond
 Ed Swain, Mooselookmeguntic Lake
 Ross Swain, Ellis (Roxbury) Pond
 Laura Swauger, Abrams Pond
 Ozro Swett, Webb (Weld) Lake
 Michael Tafas, Little Ossipee Lake
 Robert Taylor, Multiple Lakes
 Janet Terry, Pleasant Pond
 Susan Therrien-Fenn, Multiple Lakes
 Dick Thibodeau, Little Wilson Pond
 Pat Thomas, Kezar Pond
 Chad Thompson, Sebago Lake
 Hall Thompson, Panther Pond
 Dan Tozier, Multiple Lakes
 Martha Tracy, Jaybird Pond
 Elwood Trask, Taylor Pond
 Aaron Tripp, Kezar Lake
 Elizabeth Trouant, Meddybemps Lake
 Pete Trouant, Meddybemps Lake
 Suzanne Uhl-Melanson, Saint George Lake
 Kay Van Woert, Whittier Pond
 Ned Van Woert, Whittier Pond
 Laura Warren, Little Kennebago Lake
 John Wasileski, Kennebunk Pond
 Bill Watson, Damariscotta Lake
 Priscilla Watson, Damariscotta Lake

Alden Wattles, Porter Lake
 Ann Wattles, Porter Lake
 Beatty Watts, Lower Sysladobsis Lake
 Ted Webersinn, Lower Patten Pond
 John Wedin, Multiple Lakes
 Mike Weinstein, Multiple Lakes
 Penny Weinstein, Multiple Lakes
 Cheryl Welch, Crystal Lake (Dry Pond)
 Dave Welch, Little Moose Pond
 John Welch, Crystal Lake (Dry Pond)
 'Bunny' Marilyn Wescott, Panther Pond
 Roberta 'Sookie' Weymouth, Lovejoy Pond
 Nate Whalen, Sebago Lake
 Ralph Whedon, Branch Lake
 Jesse Wheeler, Multiple Lakes
 Paula Wheeler, Songo Pond
 Ellie White, Big Kennebago Lake
 Willis White, Big Kennebago Lake
 Norman E. White, Jr., Wassoogeag Lake
 Mark Whiting, Graham Lake

Mike Whitmore, Embden Pond
 Tamara Whitmore, Multiple Lakes
 HL Whitney, Little Pond
 Cathy Whorf, Forest Lake
 Randolph Widmer, Mooselookmeguntic Lake
 John Wilcox, Highland (Duck) Lake
 Susie Wilding-Hartford, Woodbury Pond
 Keith Williams, Highland (Duck) Lake
 Mary 'Pixie' Williams, Caesar Pond
 Scott Williams, Multiple Lakes
 Bill Williamson, Damariscotta Lake
 Bruce Wilson, Whitney Pond
 Laura Wilson, Branch Lake
 Michele Windsor, Stearns Pond
 Gordon Woods, East Pond
 Joan Yankee, Rangeley Lake
 Jay Young, Allagash Lake
 Barbara Zamierowski, Beaver Mountain Lake

The Essential Role LSM Volunteers Play in Gathering Critical Data for the Monitoring of Maine's Lakes



Volunteers have collected **49,430** temperature and DO profiles



Early detection of invasives have allowed **6** lake communities to successfully eliminate an infestation



LSM staff process an average **2412** WQ data sheets annually - if each data sheet over the last 50 years was laid end to end, it would be longer than the height of Mt. Everest!



95% of lake water quality readings in Maine are taken by volunteers



134,138 secchi readings have been performed - if all those secchi disks were stacked, it would be taller than the Empire State Building!

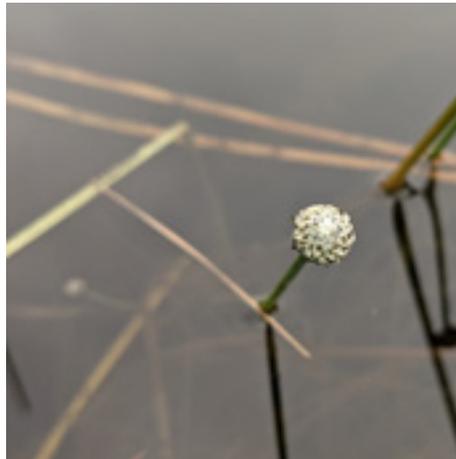
Aquatic Haikus

by Debbie Broderick, Lake Arrowhead



Duckweed

A green floating mass
Duckweed, like guacamole
Curling as I pass



Pipewort

Small stars on a stick,
Raise their tiny dimpled orbs
Miniscule flowers



Metaphyton

Not blisters of pus -
A chemical factory:
Fixing oxygen.

Thank you to the following businesses whose contributions helped with the expenses associated with printing this year's newsletter. LSM is grateful for their support!





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Watershed Survey Grants Available

LSM is happy to continue to provide the citizen lake watershed survey small grants program to lake associations and communities in 2022. Lake watershed surveys conducted by community volunteers are an effective tool for identifying and resolving land use problems that may be having a negative influence on lake water quality. Watershed surveys also increase overall public awareness about threats to lake health. These surveys are intended to identify relatively easy-to-detect and resolve problems associated with soil erosion to Maine's lakes.

Details concerning the process of conducting a survey can be viewed at: www.maine.gov/dep/land/watershed/materials/lakewatersurveyguide.pdf. Help build community support for long-term lake protection!

Interested representatives from lake communities (lake associations, conservation commissions, road associations, etc.) should contact stewards@lakestewardsmaine.org for additional information.

Interested in Interning with LSM?

We at Lake Stewards of Maine (LSM) are thrilled to announce that we will be offering at least five internship positions this spring and summer season. These thrill-seeking interns will be working alongside LSM and partnering organizations such as the Passamaquoddy Tribe at Indian Township to learn about citizen science work, science education, lake health monitoring, data management/certification, and program design. Through one-on-one support, we hope to inspire our interns to continue to address larger issues such as climate change and who gets access to science education. We are eagerly anticipating their hiring and arrival, and ask that you join us in welcoming them all. Whether you meet them at a workshop, at the office, or virtually correspond please don't shy away from saying hello and maybe share a story or two about your involvement with LSM. Position details are available on lakestewardsofmaine.org and on the Internships page under the About tab. Applications will be reviewed on a rolling basis with a deadline of March 15th, 2022.