the WATER COLUMN

The Newsletter of the Maine Volunteer Lake Monitoring Program

Vol. 22, No. 1 Celebrating the Work of Maine's Citizen Lake Stewards Fall 2017

What's Inside:

Cover Photo: Kezar Lake in Lovell, by Roberta Hill

VLMP
Maine Volunteer Lake Monitoring Program
Keeping a watchful eye on the health of Maine lakes since 1971

Editorial Staff

Scott Williams	Alison Cooney
Roberta Hill	Christine Guerette
Jonnie Maloney, Layout	Steve Lambert

To Contact Us

24 Maple Hill Road, Auburn, Maine 04210
www.MaineVLMP.org | vlmp@mainevlmp.org
(207) 783-7733

President's Message

Bill Monagle
President, VLMP Board of Directors

As many of you know, for the past few years the Maine Volunteer Lake Monitoring Program has been actively campaigning to raise sufficient financial backing, via the Angel Campaign, to support a sustainable development program complete with a full-time Development Coordinator (DC). With the increasing demands on the continually growing VLMP and its staff, it had become clear that a DC was needed to procure outside funding and coordinate and support fundraising activities of the VLMP staff, members of the Board of Directors, and the Development Committee to meet these needs. I am happy to report that through the diligence of a DC search committee, comprised of members of both the board and the staff, the committee was successful in its charge and the VLMP recently welcomed Alison Cooney as Development Coordinator. I know I speak for all at the VLMP that we are very pleased and delighted to have Alison on board, and anticipate good success in securing the financial future of the VLMP.

I would like to also take this opportunity to thank you all, who through your continued dedication keep a watchful eye on the water quality of Maine's lakes and ponds, as well as the health and integrity of the respective aquatic plant communities. It is through the data that you collect that appropriate actions can be taken to either eliminate or control infestations of invasive aquatic species, or the myriad sources of nonpoint source pollution that degrade the water quality of our lakes and ponds. As a sign of the continuing growth of the VLMP, this past year the VLMP staff trained 48 new lake monitors, bringing 10 lakes previously not monitored into the program, as well as providing invasive plant patrol training to approximately 300 individuals at our numerous workshops. To all you who are new volunteer monitors, welcome to the VLMP! And finally, I would like to also recognize and thank the Regional Coordinators and Data Coordinators who help insure the integrity of the collected data by assisting in the volunteer monitor certification process and working to ensure that data is properly handled to ensure its reliability.

Although we have over a month to go, I believe 2017 has been a very good year for the program. There are always unexpected challenges that arise, but thanks to the very capable and expert staff of the VLMP, the program continues to proceed without a hitch, and the development program appears to now be better positioned to chart a stable future for the organization.

Thanks to all of you for your support; with your commitment of time, effort, and financial contributions the VLMP remains the preeminent citizen lake monitoring program in the country.

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If you would like to go green and receive *the Water Column* in electronic format, please contact the VLMP at vlmp@mainevlmp.org.

Lakeside Notes

Autumn 2017

By Scott Williams
VLMP Executive Director

Greetings, VLMP Lake Stewards! Whether you monitor lake water quality, screen your lake for aquatic invaders, or participate in watershed assessment projects, your work as a VLMP lake monitor – aka citizen lake scientist – fits the concept of stewardship. And, in fact, the surveys that many of you have completed during the past two years have revealed that many of you think of yourselves as "lake stewards". For more on this thought-provoking topic, please read VLMP Plant Patroller extraordinaire Bunny Wescott's wonderful essay on page 12.

During the past year, much of Maine has once again experienced wild swings in extreme weather, ranging from severe drought during the summer and fall of 2016, to major winter snowfall. This was followed by extended periods of heavy rain in the spring and early summer of 2017, which brought an end to the 35-year drought. But the rain stopped abruptly in early June, followed by little or no precipitation for the remainder of the summer through most of October, and as I write this, much of the State is now in a moderate drought again.

Like people, lakes have complex "personalities". Each responds to the influences of weather slightly differently. Drought may cause some lakes to be clearer, and others to be less so, and the degree to which changes occur varies, as well. Timing is a big factor. The full effects of the weather continuum may not be apparent for months, or in some case, years. In 2016, many lake monitors contacted us to report on the effect of the severe drought on their lakes, including low water levels and unusual Secchi readings. But, even though similar conditions prevailed this past summer, we received few such calls.

Many calls that we *did* receive in the summer of 2017 concerned metaphyton. Starting early in the summer, we received calls and email notes, many with attached photos of metaphyton, from concerned lake monitors. We did our best to provide information and support, but at this point in time, we can only speculate on the factors that may be driving greater metaphyton abundance in Maine's lakes, because there is very little research on the subject. Volunteer lake monitors can play a very significant role in finding the answers to metaphyton-related questions and concerns. To this end, we have recently developed a new, easy to use methodology, which we hope you will consider using in the future. Please see page 21 for more information.

Thank you so very much for all that you do on behalf of the VLMP and Maine's lakes! Your selfless commitment and determination is inspiring and humbling. All of us here feel privileged to be able to support your efforts. We wish you well for the remainder of this year, and look forward to seeing you again in 2018!

Seeking Candidates for the VLMP Board of Directors

We are seeking to fill several positions on our Board of Directors. Ideal candidates will have some experience with nonprofit organizations; a basic understanding of the work of the VLMP, and share our belief in the importance of the VLMP's mission. We are particularly interested in bringing on new board members who have knowledge and experience in the areas of marketing, fundraising and program development. These are volunteer positions.

The VLMP Board of Directors meets 4-6 times annually at the VLMP Lakes Center in Auburn, Maine. Meetings typically take place on weekday mornings, and may last until early afternoon. Committee meetings are often scheduled for the same day. Members of the Board of Directors agree to be active in at least one subcommittee.

Image from www.eaglesmark.com

Please contact VLMP Executive Director, Scott Williams, if you are interested in a position on the VLMP Board, or if you have questions. Following an initial discussion, candidates will be screened and interviewed by the Board of Directors, who will act upon all applications.

Save the Date!

2018 VLMP Annual Lake Monitoring Conference Will Be Held On Saturday, July 28th

Littorally Speaking

The Wonders of the Littoral Zone

And how citizen scientists are enhancing our understanding of these vital near-shore areas

by Roberta Hill
VLMP Invasive Species Program Director

Imagine... the last ice age in North America is giving way to warmer times, and the geological processes associated with the retreat of Maine's ice sheets are yet hard at work--carving, scraping, impounding, and otherwise molding the depth contours and meandering shorelines of the 6000 or so lakes and ponds that we know and love in Maine today. Fast forward over the next 12,000 years or so, as the seasons turn again and again, bringing the meltwater and rainwater that flows over the land, eroding the scarred earth, carrying mineral particles, organic debris, and dissolved nutrients into the receiving lake basins. These processes in turn fuel the natural cycles of growth and decay, set in motion the successional colonization of a dazzling array of flora and fauna, ranging from the single celled planktonic organisms to the mighty moose, and animate the intricate ecological web of life that connects them all. Through this natural process of eutrophication, Maine's rocky, barren, crystal-clear lakes slowly but steadily become more enriched, more productive, more biologically active and diverse, especially the sun-filled near-shore areas, the 'fertile fringe,' (or littoral zone) where vascular aquatic plants (macrophytes) reside.

Since the days of Thoreau, naturalists and scientists have been drawn to the sun-filled nearshore portions of Maine's lakes, to study plant taxonomy, species diversity, the role aquatic plants play in lake ecosystems, and more. These earlier scientific pioneers and their contemporary counterparts have provided us with a fairly thorough account of the macrophyte species native to Maine, a sense of their general relative abundance, and an understanding of the inherently dynamic nature of aquatic plant communities. But the littoral zones of most lakes in Maine have never been thoroughly surveyed in this way, and there are still many questions left unanswered, for example: How do species diversity and community composition differ from lake to lake, and from location to location within a single waterbody? . . . What are the physical, biological, chemical, and cultural factors at play? . . . Are all aquatic plants currently listed as 'rare' really rare? . . . Are Maine's macrophyte communities changing in response to climate change? If so, which species will likely do better, and which will do worse? How will these changes affect other members of the lake community? And, of course, the perennial (indefinitely ongoing) question: *Have any invasive plants become established here?*

The VLMP Invasive Plant Patrol (IPP) program started with this last question. Through this program we have worked to help build the statewide early detection system needed to answer this question on a lake by lake, year by year basis. Since our first workshop in 2001, we have now trained over 4,200 people through the program. Engagement at every level of this early detection system is encouraged, from those who are keeping a casual eye out for anything suspicious while they are out recreating on the water, to those who are conducting high-quality professional-caliber invasive species screening surveys on an annual basis, or leading lake-wide IPP teams, or coordinating IPP efforts at the regional level.

One of the outcomes of engaging in the careful, methodical search for possible aquatic invaders in a State where less than 1% of our lakes are known to be infested, is that one becomes naturally curious about the plants that one does encounter. For some, this curiosity grows into a great passion; in others, the desire to learn grows into something more resembling obsession! Thus, the VLMP have somewhat accidentally set off a whole new wave of serious interest in aquatic botany here in Maine. I actually think it quite safe to say that there has never been a time in the history of our State when there have been so many amateur botanists exploring Maine's lakes, ponds, streams and rivers.

IPP Plant Paddles are 3-hour guided explorations that takes place on shore and on the water. Participants learn about the threat of aquatic invaders how they can get involved in the early detection effort.

IPP 101 is a comprehensive 6-hour classroom experience that prepares attendees for conducting or leading invasive aquatic plant screening surveys, and satisfies the quality assurance requirement for IPP certification.

With the help and input of this growing cadre of citizen aquatic botanists we are continually finding new ways to keep this unique interest, energy, and momentum alive. In addition to our Invasive Plant Patrol workshop offerings *(IPP Plant Paddle, IPP 101,* and *IPP Field Methods)* the VLMP has for several years offered an *Advanced Plant ID* course that essentially picks up where IPP 101 leaves off, delving into the ecology and the distinctive physical characteristics of the native plants that inhabit Maine's lakes and ponds. Attendees hone their identification skills with live specimens, and have the option of participating in an Aquatic Plant ID Proficiency Certification exam.

We also provide a number of opportunities for volunteers to expand their IPP horizons geographically while getting valuable in-lake experience. The goal of the *IPP Jump-Start* is to promote and support citizen-based early detection efforts in areas of the state where such activities are currently lacking. We work to accomplish this through: 1) organizing a survey team—comprised primarily of seasoned volunteer Invasive Plant Patrollers, supported by VLMP staff—to conduct a comprehensive invasive aquatic plant screening survey; and 2) helping to "jump-start" a locally sustainable citizen-based monitoring program in the region through outreach, training, and direct interaction with the host community. Our first major project took place on Moosehead Lake and is featured in the short documentary, *The Hunt for Aquatic Invaders*. We are currently partnering with **Acadia National Park** and **Somes-Meynell Wildlife Sanctuary** on a similar project on the waters of Mount Desert Island.

IPP Rapid Responders work in partnership with Maine DEP and VLMP staff to survey areas that need immediate attention. This citizen-powered rapid response team has been officially deployed six times now, in most cases in response to a newly-identified infestation. As with the Jump-Start surveys, the entire littoral zone of the target waterbody is gone over with a fine-tooth comb. Given the inherent thoroughness of these surveys, Jump-Start and Rapid Response actions provide excellent opportunities to gather detailed information on the native aquatic plants that are observed. Specimens are collected during the course of the survey and are later examined in 'extreme-botanizing' sessions; the best specimens are pressed, dried, and mounted for the VLMP herbarium.

At the beginning of 2016, a small group of dedicated volunteers, with extensive collective experience in aquatic plant identification, plant systematics, specimen collection and preservation, decided to adopt the *VLMP Herbarium Project* and apply their zeal for lakes and lake plants to the task of bringing the it to full fruition.

Thanks to all of you who participate in this important work, native plant data has now been collected on close to 300 Maine waterbodies! Each year the data set becomes more robust, more revealing, and more scientifically useful. And because it is now readily available on the VLMP Lakes of Maine website, it is increasingly being used by researchers, students, lake associations, lake managers, and many others. Toddy Pond Association and East Pond Association, for example, have now both used their native plant inventory data to create customized field guides for their lakes. (Please see the Fall 2016 *Water Column* on our website for more on the Toddy Pond project.)

We may not yet be able to answer all of the pressing questions now emerging from the littoral zones of Maine, but thanks to VLMP Invasive Plant Patrollers, we are starting to gather the kind of data needed to do so.

Volunteers Helping to Answer Important Questions About Maine Lakes

When the call for help went out, IPP Rapid Response Team members Nick Cody, Bob French, Sibyl French, Marsha Letourneau, Dennis Roberge *(pictured)*, Bunny Wescott and Ross Wescott dropped what they were doing to help determine the extent of the variable water-milfoil infestation in Long Lake, Bridgton.

The VLMP Jump-Start Team continue the hunt for aquatic invaders on the waters of Acadia. The 2017 team was powered by the following IPP volunteers: Unn Bourcher, Sue Carrington, Bob French, Sibyl French, Janene Gorham, Ellie Hopkins, Sandy Larned, Tom Larned, Marsha Letourneau, Toni Pied, Sherry Pettyjohn, Dennis Roberge, Lea Stabinski, Steve Underwood, Keith Williams, Ellie White and Willis White.

Our Acadia Jump-Start partners and hosts: Jesse Wheeler (Acadia National Park) and Billy Helprin (Somes-Meynell Wildlife Sanctuary). Jesse and Billy are working with the VLMP to build a volunteer IPP team on Mount Desert Island. For more information, contact Billy Helprin at somesmeynell@gmail.com.

Quality Counts!

Buttoning Up your Data and Gear for the Season

by Linda Bacon
VLMP Quality Assurance Officer; Aquatic Biologist, Maine Department of Environmental Protection

As the days shorten, brilliant fall colors begin to fade and pre-winter chores are underway, please remember these end-of-season monitoring tasks. Most important is to submit your data, remove equipment from your boat, winterize appropriately and store equipment in a dry, preferably heated, location. You've put an incredible amount of effort into monitoring; these few steps will assure that your data sheets are ship-shape and your equipment will be ready-to-go come spring!

Data Sheets: Maintaining quality during the data update step is a constant challenge. Volunteers are on the 'front line' in this step. ***Please submit data on one form.*** Occasionally two volunteers submit the same readings on separate sheets, or one volunteer will submit the same data on two different types of sheets. This results in duplicate data, which takes time to find and purge from the system. ***Please review each sheet for accuracy and completeness,*** paying particular attention to the lake identification (MIDAS) and QA certification numbers. Your ***signature*** at the bottom indicates that you've taken this first quality control step. Every year approximately three thousand field sheets are submitted. Complete and accurate data sheets save us time and save the program money. And of course, remember to submit your sheets!

Secchi Disk and Measuring Tape: Inspect the Secchi Disk. If the black and white quadrants are discolored and can't be cleaned, request a "disk freshen-up" sticker from the program and install it before next season. Check the measuring tape for tears particularly near the grommet; if torn at the grommet or more than a quarter of the width of the tape, request a new tape. If any tiny tears are found, a small piece of electrical tape positioned over the tear to reinforce the tape will extend its life. If the tape does not operate freely, unwind the tape and wash the entire setup in warm soapy water, rinse with clean water then allow the unwound tape and reel to dry. If the winding mechanism still does not turn freely, spray the areas that rub against each other with a silicone-based lubricant, move the handle back-and-forth until the lubrication penetrates and the mechanism turns freely. Wipe off any excess lubricant and store in a plastic container or bag.

View Scope: Scopes tend to collect dirt, dust and spiders over time. Before storing, clean the inside and outside of your scope with warm water and a tiny bit of mild dish detergent. If necessary, use a soft cloth to dislodge dirt. Rinse with clean warm water a couple of times in order to remove any soapy film. Dry with a dry soft cloth that does not shed lint. Allow to air dry for an hour or two before covering the opening of the scope with a plastic bag and elastic to exclude dust and spiders.

Meters: If you use a **depth meter** having internal batteries, remove the batteries before storing the device. Acid leakage from batteries can destroy the internal electronics. Similarly, if you use a **temperature/dissolved oxygen meter**, remove the batteries before storage; if the batteries still have life in them, use them in a flashlight or a child's toy and plan to install high quality, fresh batteries in the spring. If you find moisture in your meter but the meter has been behaving properly, allow the inside to dry before closing. Remove the membrane or membrane cap and rinse probe with distilled water to wash off the electrolyte solution which will cause unnecessary corrosion to the probe. Blot excess water from the probe, allow to air dry, then insert into a plastic baggie to keep dust off. Some manufacturers suggest installing a new membrane or cap for storage; we recommend the plastic baggie approach so that come spring, it is clearly obvious that the probe needs to be re-installed with electrolyte before use. If you have an **optical dissolved oxygen meter** (ODO), the manufacturer recommends replacing the cap at the beginning of each year. It is critical that these probes never dry out, otherwise the cap will need replacement. So you can either plan to replace the ODO cap next spring, or, you can come up with a creative way to store the probe in water so that it doesn't dry out. If you have room, one possibility is placing the probe in a gallon jug of distilled water and then using electrical tape (because it is easily removed and does not leave much adhesive residue), seal the opening around the mouth of the jug and cable. Regardless of what storage method you decide to use, check the probe periodically to make sure the water level is adequate to cover the probe. Properly winterizing your dissolved oxygen meter will likely double the life of your probe and save money.

Water Samplers: Core tubes should be rinsed inside and outside with hot tap water for a few minutes then rinsed inside and outside with distilled water. Collection jugs and storage containers should be cleaned the same way. If necessary, touch up the depth marks using a permanent marker. Store the equipment in a closed container or plastic bag to keep the dust and spiders out. Grab samplers should be cleaned in a manner similar to the cores. Inspect the mechanism that snaps the sampler closed. If components are failing, a repair kit should be obtained from the manufacturer.

These few simple winterization steps should keep your equipment working for many years to come!

Under the Hand Lens:

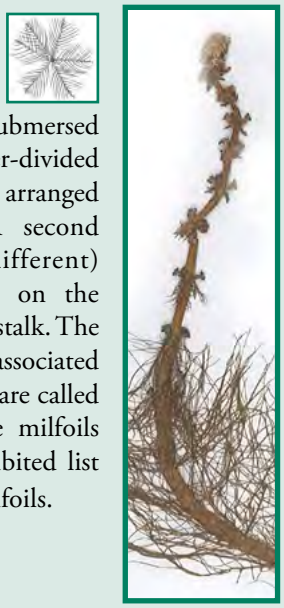
Three of the eleven invasive aquatic plants listed by Maine law as imminent threats to our waters are water-milfoils (genus *Myriophyllum*): variable water-milfoil (*M. heterophyllum*), Eurasian water-milfoil (*M. spicatum*), and parrot feather (*M. aquaticum*). The search for these invaders is somewhat complicated by the fact that Maine is home to six native water-milfoil species, five of which are considered 'look-alikes,' bearing at least some resemblance to one or more of the invasive species. (The sixth native water-milfoil, the toothpick-like dwarf water-milfoil lacks leaves entirely, and is not considered a look-alike.)

The stems of all leafy milfoils are elongated, and sometimes branching. All have finely-divided leaves arranged in a radiating pattern around the stem, like a bottle-brush. The submersed leaves in ALL cases are feather-divided. Indeed, if you find a submersed aquatic plant with true feather-divided leaves it IS a milfoil, which means it is suspicious until proven otherwise.

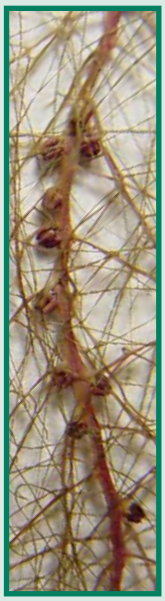
Leafy milfoils are recognized by their feather-divided leaves and 'bottle-brush' leaf arrangement.

Beyond these common features, milfoils could be sorted into two distinct groups:

Group 1 milfoils have two distinct leaf types. The submersed leaves are feather-divided and consistently arranged in whorls. A second (generally different) leaf-type occurs on the emergent flower stalk. The leaves that are associated with the flowers are called bracts. All three milfoils in Maine's prohibited list are Group 1 milfoils.



Group 2 milfoils, featured at right and below, have one leaf type only; they do not produce emergent flower stalks; fruits and flowers are formed along the submersed stems at the point at which the leaf meets the stem is known as the leaf axil; though the leaves radiate around the stem in bottle-brush fashion, the leaves do not consistently form whorls; at least some of them are offset, occurring along the stem in a scattered radiating pattern.



Group 2 Milfoils - Knowing the characteristics of the Group 2 milfoils can be very helpful to those who participate in the hunt for aquatic invaders. *Once you know you have a Group 2 milfoil you can rule out all three invasive milfoils.*

Farwell's Water - Milfoil
Myriophyllum farwellii

Farwell's milfoil has submersed leaves only. The leaves are arranged in an inconsistent whorl pattern with at least some leaves offset to form more of a scattered radiating pattern. The tiny flowers, followed by tiny fruits, are formed along the submersed stems in the leaf axils. The fruits, when mature, are comprised of four segments with bumpy ridges running along the length of each segment.

Low water-milfoil has submersed leaves only. The leaves are arranged in a scattered radiating pattern with few, if any, true whorls. The tiny flowers, followed by tiny fruits are formed along the submersed stems in the leaf axils. The fruits, when mature, are comprised of four smooth-sided segments (as opposed to the bumpy ridged fruits of Farwell's milfoil).

Low Water - Milfoil
Myriophyllum humile

Fulfilling the Need to Expand our Capacity

Conducting a Successful Search for a Development Coordinator

by Steve Lambert, VLMP Development Associate
& Alison Cooney, VLMP Development Coordinator

I am sure that you have all experienced periods of time in your life when you were so busy that you had to put some of your dreams on the back burner. Well, at the VLMP it feels like we are beginning to emerge from such a time.

Steve Lambert
VLMP Development Associate
(With his Seeing Eye Dog, Razz)

In 2012 the VLMP staff consisted of 4 full-time staff. During that year we conducted 19 workshops, and supported 1130 volunteers who monitored 413 lakes. As of August 1, 2017, still with only 4 full-time employees, we had conducted 45 training events and were supporting around 1,300 volunteers, who monitor 450 lakes. Throughout, we have had the invaluable support of wonderful interns, a dedicated Development Committee and our Board of Directors. I joined the staff about 1-½ years ago (part-time), spending the bulk of my time supporting development efforts. Nevertheless the lion's share of the ever-expanding workload over the past years has been carried, with unwavering commitment, by the four dedicated people making up the full time staff of the VLMP.

Since 2015 the VLMP has been deeply involved in a campaign to make possible much needed capacity expansion. The key components of that effort have been: to raise the funds needed to support a full-time Development Coordinator position; to conduct an extensive search to find the "right" person to fit the organization; and then to immerse that individual into the VLMP culture. We needed someone with acceptable levels of skill and experience, passion and commitment, and collaborative and leadership skills. Our highest priority was to find someone who clearly shares our passion for lake stewardship, and who thoroughly understands and appreciates the personal motivations of our dedicated volunteers in achieving the VLMP's ambitious mission.

The road we travelled in our search of a Development Coordinator had many twists and bumps! Given the importance of maximizing the likelihood of a successful campaign, the Search Committee put a great deal of effort and thought into clearly identifying the key requirements for the position, and then in crafting a search process that would help us find that "right person".

Our effort was successfully concluded in early August of this year when we selected Alison Cooney to be the Development Coordinator. From the initial interview, it was obvious that Alison had the one key qualification we were looking for; a strong, basic understanding of, and passion for our mission, made clear by her expressed appreciation for the essential value of our many dedicated volunteer lake scientists. She got it!!

During Alison's short tenure with the VLMP she has shown a deep and subtle understanding of our Mission. She has confidently jumped in feet-first, engaging herself through effective partnership with the rest of the staff in all aspects of her broad responsibilities. She has clearly demonstrated an understanding of our short term priorities, as well as our longer term goals and objectives. With what Alison brings to the organization, we can begin to explore our vision for the future of the VLMP's mission.

Alison Cooney
VLMP Development Coordinator

Please join me and the rest of the VLMP staff in warmly welcoming Alison to the VLMP family!

Introducing Our New Development Coordinator , Alison Cooney

"I love my job!" That is what I tell everyone who asks me how I like my new position as the VLMP Development Coordinator. It was by random chance that my husband emailed me the link to the open VLMP position last spring. I read the job description and immediately said "This is the perfect job for me!"

I have always enjoyed being outdoors in nature, whether it is sitting in an Adirondack chair lakeside or hiking on a trail in the mountains. My interest in learning more about my surrounding environment lead me to a degree in biology with a concentration in ecology. I was extremely fortunate to find a job after college working for the research division of the Forest Service in Alaska which allowed me to explore the wilds of southeast Alaska while collecting scientific research data. Over the past 20 years, I have also fulfilled my passion of helping others through volunteerism. I have volunteered with numerous organizations, participating on Boards and committees, frequently taking on the role as fundraising coordinator. It was almost surreal to have discovered the Development Coordination position as it truly encompasses many things that I am passionate about.

Additionally, my family has a long history residing on one of Maine's spectacular lakes! I grew up in southern Maine and spent many summers at our family camp on Square Pond in Shapleigh. The camp was purchased by my great grandfather in the early 1900's. We have four generations of memories with family and friends at Square Pond, making the lake an extremely special place for us. My parents met on Square Pond; my husband and I were married at "the Lake"; we even have a daughter named Laiken (nicknamed Lake).

It was clear before I even started my position as Development Coordinator that the organization was not widely known,

...continued on page 25

Grant Funding Available to Lake Groups for Conducting Watershed Surveys

Forest Lake watershed survey team, 2017 grant recipients.

The VLMP has received grant funding to support a limited number of Maine lake communities that are interested in organizing and conducting a volunteer citizen lake watershed survey in 2018. The funding is available on a competitive grant basis through the VLMP for surveys conducted within the next year.

Lake watershed surveys conducted by community volunteers can be a very effective tool for identifying and resolving land use problems that may be having a negative influence on lake water quality. Another typical benefit of watershed surveys is an increase in overall public awareness about threats to lake health. Citizen surveys of lake watersheds have been successfully conducted for many Maine lakes during the past three decades. The surveys generally identify significant numbers of relatively easy-to-detect and resolve problems associated with soil erosion. Details concerning the process of conducting a survey can be viewed at: **www.maine.gov/dep/land/watershed/materials/lakewsurveyguide.pdf.**

Hogan & Whitney Ponds watershed survey team, 2017 grant recipients.

Watershed surveys can be a very effective way of building community support for lake protection by bringing together people with diverse ecological, economic, recreational and social perspectives, thereby enhancing the long-term stewardship potential for lakes. Interested individuals representing lake communities (lake associations, conservation commissions, road associations, etc.) should contact Scott Williams at the VLMP for additional information.

McGrath Pond - Salmon Lake watershed survey team, 2017 grant recipients.

National Science Foundation Grant Supports Lake Vulnerability Research Project

For the past two years, the VLMP has worked with researchers from the University of Maine, University of Southern Maine, and the Maine DEP in a project focused on enhancing our understanding of the vulnerability of Maine's lakes to declining water quality. The project has focused on gathering both physical and social science data, and integrating the two with other known attributes of individual lakes, including hydrology and water quality data. The resulting information is expected to lead to a more refined model for characterizing the vulnerability of individual lakes.

Dr. Steve Norton discusses the influence of sediment geochemistry on lake vulnerability.

Year 3 of the project will be funded by a grant from the National Science Foundation. The project team includes: VLMP Advisory Board members Aria Amirbahman, Steve Norton and Firooza Pavri, VLMP Board member, Linda Bacon, University of Maine graduate student, Kacie Fitzgibbon, VLMP Executive Director Scott Williams, and participating VLMP lake monitors. The NSF found the focus of this multi-year investigating to be compelling, and worthy of funding to continue exploring the inter-relationships between physical and social science.

Invasive Plant

Notes from the Front Lines

Here we shine the spotlight on some of the many ways VLMP Invasive Plant Patrollers are working to protect Maine waters from the threat of aquatic invaders. What is your story? What is the status of early detection in your community? Your IPP experience may be invaluable to your fellow patrollers, as well as to those who may wish to become more involved. Please share your stories with us, so we can pass them along! Thank you all for helping to build one the most comprehensive invasive aquatic plant early detection programs in the nation!

Mobilizing the Community to Battle IAPs

By Wes Huntress

Something remarkable is happening in Lovell, Maine, home of Kezar Lake and most of the six ponds which comprise the Kezar Lake Watershed. A large number of people, both year-round residents and summer folks, are volunteering to prevent invasive aquatic plants (IAPs) from damaging their scenic, revered waters. After an infestation was discovered in one of the smallest ponds in the watershed, the town established the Lovell Invasive Plant Prevention Committee (LIPPC).

LIPPC's battle plan revolves around four main areas: *prevention* to keep IAPs from entering the lakes, *early detection* to find new infestations before they can spread, *eradication* to eliminate the infestation in Cushman Pond as well as any new infestations that may be found, and *education* to keep the community aware of the dangers of IAPs and encourage volunteer engagement. LIPPC receives funding from the town as well as from donations and grants, but what really makes the program work is *volunteerism*.

LIPPC offers Plant Paddles at various locations throughout the watershed and to recruit new volunteers and to help existing Stewards hone their skills.

The first line of defense against IAPs is to prevent them from entering the water. Key to this effort is our Courtesy Boat Inspection (CBI) program. Kezar Lake has two public launch ramps, and each is covered by both paid and volunteer boat inspectors. There are no commercial launch ramps on the lake, and LIPPC has convinced private launch ramp owners to insist that any boats unknown to them get inspections at the public ramps before launch. Courtesy Boat Inspections are also provided at other higher-use public landings in the watershed.

LIPPC now has 60 "Shoreline Stewards" keeping an eye out for aquatic invaders on the waters of Lovell.

The second line of defense against IAPs is early detection. The earlier the detection, the better the chances of eradicating the infestation. The key to early detection is regular surveillance of the shallow near shore areas, especially of vulnerable areas such as boat ramps and protected areas that provide good plant habitat. LIPPC accomplishes this with a cadre of 60 volunteer 'Shoreline Stewards,' each of whom has been assigned a section of shoreline to patrol. With about 30 linear miles of shoreline to patrol in the watershed, each steward is responsible for about 1/2 mile of shoreline. Stewards are asked to conduct at least one patrol of their assigned sector each season, but most elect to survey their area at least two or three times over the course of the summer.

LIPPC's Shoreline Stewards are volunteers drawn mainly from shoreline property owners. These owners have a strong attachment to the town, the environment and the watershed often born out of a long-term association with the locality, even from childhood. It took about four years of recruiting effort to assemble such a large number of volunteers. But once educated about the problems of IAPs, shoreline owners stepped up to the plate with enthusiasm and dedication. At the present time, the entire shoreline of Kezar Lake and the six major ponds in the watershed are covered by stewards. A level of participation on this scale (covering roughly 45 miles of shoreline annually) attests to the attachment that the people of Lovell have for their environment.

Shoreline Stewards do not need to have any prior knowledge of aquatic plants. Their main task is to become familiar with their shorelines and to keep watch for any change or unfamiliar new plants. Stewards are made acquainted with what IAPs look like and are encouraged to attend LIPPC-run Plant Paddles and VLMP Invasive Plant Patrol Workshops to learn how to identify both native and invasive plants. They are provided with a handbook, a patrol kit for examining plants, and identification tools including VLMP Quick Keys, Aquatic Species Cards, and other plant identification tools developed by LIPPC, including ID spreadsheets with images and an iPhone plant identification application developed locally. Any suspicious plants are submitted to a local rapid response group for quick identification. If there is any uncertainty, the specimens are submitted to the VLMP to confirm the identification. Stewards also keep an eye out for the loons during their patrols, noting the number of loons and chicks, the status of any nests, and removing any abandoned fishing line that can entangle them. Monthly patrol reports keep the energy going.

The entire shoreline of Kezar Lake and the six smaller ponds in its watershed (collectively measuring roughly 45 miles) is now covered by LIPPC Shoreline Stewards.

LIPPC's CBI's provide the first line of defense

by preventing IAPs from entering our lakes. In the event that an IAP should slip through our best defenses, the Shoreline Stewards are in place to make sure that the invader will be detected as early as possible. Meanwhile our volunteers on Cushman Pond are working diligently to mitigate the infestation that first mobilized the Town. Keeping up their vigil even after no milfoil had been detected in the pond for two years, everyone was disappointed when one new milfoil plant was discovered in Cushman this summer. Disappointed but undaunted, the painstaking work of freeing Cushman Pond from the grip of invasive plants will continue until the job is done once and for all!

*LIPPC was awarded the **VLMP Invasive Aquatic Plant Prevention Award** for excellence in 2017. The spirit of volunteerism and lake stewardship shown by the people of Lovell is an example for all of us!*

Traveling Volunteer Plant Paddle Leaders

The VLMP Plant Paddle is a 3-hour guided exploration that takes place on shore and on the water. It is a fun, informal way for people to learn about the threat of aquatic invaders, and how to get involved in Maine's early detection effort. Originally, the VLMP offered Plant Paddle Training as a 'train-the-trainer' program for experienced and/or certified IPPs who wished offer Plant Paddles in their communities to help recruit volunteers for their local IPP team. The value of this fun, hands-on entry-level activity soon became evident, and three years ago VLMP staff began offering to lead Plant Paddles in communities that did not yet have trained volunteer leaders. Since then, the demand for VLMP led Paddles has grown steadily, and we are now at the point where annual demand exceeds VLMP capacity. So--as is our inclination when we reach such hurdles--we decided to ask our volunteers to help! In particular, we put the call out to the VLMP's elite group of highly-experienced "uber-IPPers," to see if one or more of these intrepid individuals might be willing to travel to a somewhat distant community to share their expertise and enthusiasm as a Plant Paddle leader. We were incredibly heartened when not one, but six IPPers stepped up to help, resulting in two additional Plant Paddles being conducted in 2017, and many new trained eyes on the waters of Maine. Special thanks to Bob and Sibyl French, Elin Haugen, Dennis Roberge, Bunny Wescott, and Mark Whiting for your generosity, dedication and leadership! This experiment was so successful, we have made sure that we are all geared up to fully support its continuation next season. Our new Travelling Plant Paddle Leader's Loaner Kit will provide travelling IPP volunteers all the equipment and materials needed to take a Plant Paddle on the road! Please contact Roberta if you would like to help!

Travelling Uber-IPPers Sibyl French (in orange PFD), Bob French, Elin Haugen, and Dennis Roberge joined forces with their IPP counterparts on Echo Lake, Alison Smith and Lea Stabinski, to lead a Plant Paddle.

Uber-IPPer Mark Whiting travelled over an hour each way to lead a flotilla of novice patrollers out onto Pleasant Lake in Stetson to hunt for aquatic invaders. Mark and his wife Catherine Fox are the VLMP's new Regional IPP Coordinators for Hancock County.

Collaboration with Gulf of Maine Reseach Institute's *Vital Signs* Program

Vital Signs (VS) partners Maine students with scientists and citizen scientists to investigate a number of issues and contribute valuable data to real environmental research. Participants explore local habitats, collect evidence, and post their observations to the *Vital Signs* website – a powerful online learning environment that connects them to a community of experts and each other. Through the site, students and citizen scientists can comment on each other's observations, species experts can confirm findings, and scientists can pose research questions and then use the data to inform their studies.

The *Friend or Foe?* Discovery Kit provides a quick, easy, hands-on method for teaching people with no previous plant identification experience how to quickly determine if a plant in question is a "friendly native" or a "suspected invader."

In addition to being a VS "species expert" providing feedback to student investigators, this year VLMP staff collaborated with the Gulf of Maine Research Institute on a Maine Outdoor Heritage Fund grant project to help train and support Maine educators through VLMP's Invasive Plant Patrol (IPP) program. A special IPP 101 workshop was conducted at the VLMP Center for Citizen Lake Science as part of this collaboration, with all educators in attendance receiving a free *Friend or Foe?* Discovery Kit.

Stewardship is a selfish act. At the same time it is a selfless act.

By Bunny Wescott; *VLMP-Certified Panther Pond Monitor*

Bunny in her element!

It is dichotomous as it is active and passive, both for oneself and for others; it is giving and it is taking, sowing and reaping, doing and desisting. It is the perfect quid pro quo arrangement. What we endeavor to do in caring for or managing or shepherding requires knowledge and wisdom for a future gain or maintenance of that which we care about. It can be seen as an act of gratitude in the biblical sense; being grateful for God's gift and paying back, or it can be a paying-it-forward as a longing for continuance, which can be a joyful expression or, at least a pragmatic acknowledgement of necessity for a purpose deemed beneficial.

It implies future, as it is a commitment over time, not a one-shot deal. An action or purposeful non-action implies hope or expectation of reward. And that reward has a personal element that can take any direction, as one being cannot take care of all of creation. So it is a cultivating, a symbiosis, a sustainability, a responsibility for something inherited, not created, all of which implies gratitude, whence cometh joy and expectation and hope and gain. And so we come full circle. Being a steward means sustained tending for something one cares about, and having faith in its bearing fruit.

Crescent Lake Watershed Association Lake Monitoring Team

by Ray Bersch; *VLMP-Certified Crescent Lake Monitor*

Monitoring team members inspect new Pro-ODO Dissolved Oxygen Meter purchased by the Crescent Lake Watershed Association. From Left: Pam Akers, Joanne Stinson, Charlie Bradbury.

When long-time lake monitor Elden Lingwood wanted to step aside a few years ago he first handed off the water sampling tasks to father/son team Rex and Charlie Bradbury, lifetime Crescent Lake residents. But finding replacements for the Secchi Disk and dissolved oxygen recording tasks at the Cumberland County lake was a bit more difficult. At just over 700 acres and approximately 3 miles long, the lake is monitored at two locations, certainly not a daunting chore by any means, but lakeside residents at this, and many Maine lakes, arrive to get away from work, not to take on additional chores.

Crescent Lake Monitoring Team on Pontoon Boat; from aft to bow: Ray Bersch, Charlie Bradbury, Pam Akers, Joanne Stinson.

Broadcasting the need for additional volunteers via the Crescent Lake Watershed Association, Elden found the call answered by three recent retirees, Pam Akers, Ray Bersch and Joanne Stinson. They soon joined Charlie Bradbury as certified lake monitors and formed a rather capable team to complete twice-monthly monitoring trips from May thru October. Some may think that four people on the same boat staring at a dissolved oxygen meter is a bit much for mundane data gathering, but the increased skills and synergy that has developed among team members will benefit the health of the lake for many years. The time on the boat has led to lively discussions on issues important to lake health, has fostered a greater interest in honing monitoring skills and inspired investigation into both the equipment being employed and the quest for greater accuracy and consistency. No longer is only one Secchi Disk reading taken and recorded during each session. Readings observed by different individuals are compared and a third taken when there is doubt. Dissolved oxygen and temperature readings are read aloud by one team member and recorded by another and then compared to previous readings to improve the understanding among team members of how the lake changes throughout the season.

Completing its second year of operation, the lake monitoring team at Crescent Lake has not only gained confidence in the work product but has taken steps to encourage greater participation among lakeside residents. Early this season a banner announcing the presence of Volunteer Lake Monitors has been draped from each side of a pontoon boat while on lake monitoring duty. Large black letters against a bright yellow background can be clearly seen from both shores of the lake. The result has been perhaps less-than-remarkable, but notable none-the-less. Ski boats and fishing boats have generally given wider berth while passing, making work on the boat more comfortable but more importantly, fishermen, paddlers in kayaks and canoes and on paddle boards have all approached the boat with curiosity, and asked us about our work, as have some neighbors along the lake. What a wonderful opportunity to discuss the heartbeat of the lake. The goal, of course, is to make more lakeside residents aware that volunteers from the Crescent Lake Watershed Association and the MVLMP are at work, and to pave the way to an increase in membership and donors to both organizations. The banners were a brainstorm of team members, after a discussion that revealed that only about 30% of lakefront owners are actually members of the watershed association. The banners are now one more spoke in the wheel that makes our volunteer associations a success.

Welcome, New Lake Monitors!

New Volunteer Lake Monitors Certified in 2017

Laura Jean Adler - Embden Pond
Pamela Albertsen - Webb Lake
Heather Almeda - SCIWC Lakes
Lynn Andrews - Panther Pond
Ellen Attaliades - Saturday Pond
Katie Baker - Maranacook Lake
Connie Barnes - Green Lake
Dawna Blackstone - Shirley Pond
Lise Bofinger - Webb Lake
Jacqueline Boudreau - Kezar Lake
Frank Braun - Washington Pond
Rich Brereton - Kezar Lake
Jerome Brown - Ell Pond
Otis Brown - Moose Pond
Joe Burke - Sheepscot Pond
Ursula Burke - Sheepscot Pond
Daryl Burmeister - Abrams Pond
Pilar Burmeister - Abrams Pond
Don Bushnell - North & Little Ponds
Bette Bussell - Abrams Pond
Richard Chevalier - Wilson Lake
Jeff Childs - Moose Pond
Richard Chilson - Moosehead Lake
Amanda Christian - Beaver Mountain Lake
Connor Christian - Beaver Mountain Lake
Ernest Colvin - Maranacook Lake
David Conant - Webb Lake
Gretchen Conant - Webb Lake
William Cousins - Androscoggin Lake
Richard Cranston - Kennebago Lake
Charles Crespi - Great East Lake
Paula Curcio - Forest Lake
David Daigle - Wilson Lake
Daniel Davis - Spectacle Ponds 1&2
Barry DeNofrio - Woods Pond
Valerie Doebler - Branch Lake
Stephanie Donaldson - Pleasant Pond
Craig Doremus - Sabbathday Lake
Alanna Doughty - Long Lake
Alex Douwes - Somes Pond
Sebastien Dumont - 30MRWA Lakes
Jason Duryea - Alamoosook Lake
Joanne Eaton - Keoka Lake
Eric Ernst - Kezar Lake
Steve Feite - Silver Lake
Brenda Fekete - BRCA Lakes
Kenny Fergusson - Jerry Pond, Mitchell Pond, Third Lake
Darrell Field - China Lake
Gary Fish - Flying Pond
Patty Frackleton - Balch Lake
Marcia Gartley - Panther Pond
Shelley Gavett - Craig Pond
Lorraine Gilbert - Adams Pond
Jerry Haber - Saturday Pond

Nancy Hasenfus - Androscoggin Lake
Lou Haskell - Panther Pond
Mike Heskanen - Taylor Pond
Len Hirsh - Echo Lake
Laura Hurst - Little Pushaw Pond
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Steve McMullin - Kennebago Lake
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Logan Parker - BRCA Lakes
Ben Peierls - Sand Pond
Elaine Philbrook - China Lake
Tiger Picard - Mousam Lake
Arthur Plourde - Silver Lake
Lynn Roberts Reed - Maranacook Lake
Irene Reilly - Brandy Pond
Tom Renckens - Togus Pond
Carol Robertson - Branch Lake
Matthew Rowe - Green Lake
Gladys Russell - Clearwater Pond
Alisha Sauvageau - Nequasset Lake
Anne Schmidt - Maranacook Lake
Jim Schmidt - Maranacook Lake
Bradley Stuart - SCIWC Lakes
Rebecca Thompson - Spectacle Ponds 1&2
Stephanie Thornton - Wilson Lake
Meg Thurrell - Highland Lake
Mary Ellen Tracy - Friends of Cobbossee Watershed Lakes
Christopher Warack - Branch Lake
Katia Westcott - Deer Pond
John Westerman - Balch Lake
Richard Whittier - Cargill Pond
Bill Young - Tilton Pond

30MRWA = 30 Mile River Watershed Association BRCA = Belgrade Regional Conservation Alliance SCIWC = St Croix International Waterway Commission

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In Kind

And for those of you who have donated your time, expertise, and dedication to the work of the VLMP in the past year- many thanks!

Metaphyton

What is it? What Do We Know? Should We Be Concerned?

by Scott Williams

Metaphyton appearance can vary, and may or may not produce surface "scum".

"Help! Our lake is being overtaken by slimy green clouds of algae!"

During the past several months, many people have voiced their perception and concern that metaphyton growth in their lake(s) was the *"worst that we have ever seen it"*. Even though such statements are "observational" and difficult to quantify, when many people throughout Maine express a similar concern, it's likely that something noteworthy is taking place!

What is Metaphyton?

"Metaphyton" is a collective term used to describe an algae that is filamentous (unbranched, stringy), often forming clouds or "globs", and is frequently described as having the appearance of greenish-yellow cotton candy. Metaphyton is found primarily, but not solely, in shallow (littoral) areas of lakes and ponds (typically, protected coves). The clouds form when filaments become entangled in the stems and foliage of rooted aquatic plants, sticks, and other littoral debris as a result of wind-induced water movement. The clouds may range in size from several inches to several meters, and in rare instances, cover acres.

Stringy metaphyton fragments.

What may appear to be a large, dense mass in the water, typically collapses to a stringy, slimy film when removed from the water by hand or with a rake (see photo at bottom left of page). This algae is neither rooted, nor attached to a substrate, or truly suspended. However, some species have hook-like structures that can catch on rooted plants, thus favoring the development of a cloud.

The appearance of metaphyton in lakes typically changes during the course of the open-water season, ranging from bright green/yellow following ice-out in the spring, to degraded brown residue on the lake bottom sediments in late summer. While normally below the surface, the release of gases associated with intense photosynthetic activity during the peak of the growing season, and decomposition later in the year, can cause the formation of slimy mats on the lake surface (see photos).

Unlike planktonic algae, which can reduce the overall water clarity in lakes when phosphorus levels are high, the density of metaphyton does not appear to correlate with the trophic state of individual lakes. In other words, clear lakes with deep

Early summer metaphyton, on surface and below.

Initial decay of metaphyton on lake sediments.

Degraded metaphyton residue in late summer/fall.

What do we know?

With a few exceptions, metaphyton consists of a number of species of algae that fall in the *Zygnemataceae* family. They are primarily *chlorophytes* (green algae), as opposed to the *cyanobacteria* which are more likely to be associated with planktonic algal blooms and algal toxins.

Metaphyton is not new to Maine lakes. It is a naturally-occurring algae that exists in balance with other flora and fauna in aquatic systems and is often observed in wetlands and road ditches. However, anecdotal information during the past several years suggests that it may be increasing, quite substantially in some lakes, which has led to speculation about whether such an increase might be an indication of change or stress to lake ecosystems, possibly associated with one or more climate change related influences.

Secchi readings, and low concentrations of phosphorus and planktonic algae are as likely to experience pockets of dense metaphyton as less clear lakes with lower Secchi readings and higher concentrations of phosphorus.

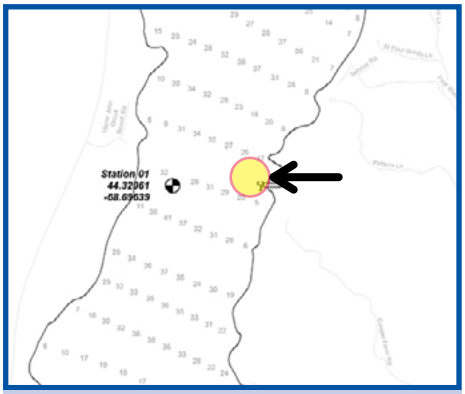
Planktonic algae bloom in Sabattus Lake.

Lakes and ponds with a high percentage of sheltered littoral habitat and rooted aquatic plants are more likely to experience areas of metaphyton growth simply because shallow lakes provide more suitable habitat. For example,

Hosmer Pond in Camden is a shallow lake with an average depth of about 9 feet, and surface area of 54 acres. Secchi readings are often limited by the depth of this pond. Phosphorus and planktonic algae growth are in the moderate range. In recent years, large clouds of metaphyton have been documented in Hosmer Pond, some of which cover multiple acres. The aereal photo below, provided by the lake association, shows the extent of one such cloud.

Large metaphyton bloom in Hosmer Pond. *Aerial photo courtesy of Chip Stratton.*

However, deeper, clear lakes have also been observed to support dense metaphyton growth in shallow, sheltered coves. For example, last summer Walker Pond in Sedgewick/Brookville (693 acres, average depth 30 feet), experienced an estimated 60% metaphyton bloom in a shallow, protected cove, covering an area of a few acres. During this time, Secchi readings in the lake were in the 7.5 meter range – very clear water, indicating low phosphorus and planktonic algae growth.



Walker Pond bloom location.

Should we be concerned?

Speculation about what may be driving increasing metaphyton growth (if, indeed, metaphyton is increasing) has focused on possible influences of climate change, such as a shortening of the duration of ice cover, which is directly related to an increase in the annual period during which light is able to penetrate the water column. This influence alone, has the potential to cause profound changes to lake ecology. However, there does not appear to be a year-to-year direct correlation between metaphyton blooms and ice-out dates. Others have suggested that the increasingly frequent occurrence of extreme weather events may be a factor that could favor an increase in metaphyton growth.

The wispy filaments of metaphyton are not easily removed from lake water because they easily break into fragments. Moreover, as indicated above, the actual amount of biomass in a typical cloud is minimal. The use of suction devices and de-watering bags has been shown to be cumbersome and minimally effective. Some benefit has been achieved in Hosmer Pond with the use of a large fine-mesh scoop attached to a barge (Note: DEP permit is required for widespread removal of metaphyton). A better understanding of the forces that drive metaphyton blooms would likely be helpful in efforts to control this algae.

Large net used to scoop metaphyton from Hosmer Pond. *Photo courtesy of Bill Buchholz.*

This article is sprinkled with the words *possible, may, appear, speculation,* etc. That is because nearly all of the information regarding metaphyton in Maine lakes is anecdotal, observational, and speculative. Without considerably greater quantitative documentation regarding this algae, the many questions being asked about it will continue to go unanswered.

You can help!

Our lack of understanding about metaphyton ecology provides an ideal opportunity for VLMP's citizen lake scientists to make a very substantive contribution to the body of knowledge on this subject. Individuals who have a history with the lake they monitor are often best suited to help identify and document possible changes to the ecosystem. This can contribute significantly to the long-term understanding of metaphyton ecology, and to overall stewardship efforts for their lake.

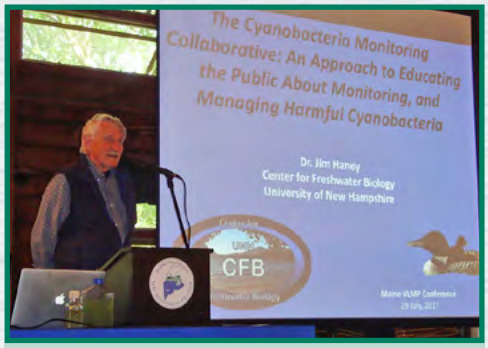
If you are willing to conduct a metaphyton density survey of your lake, or a portion thereof, please consider using the protocol presented in this newsletter on page 21. The information is also available on the VLMP website: www.mainevlmp.org.

EPA Mobile Lab at Annual Conference

One of the highlights of the conference was the US EPA "Mobile Lab", which was set-up just outside of the conference hall. The lab is designed to do rapid assessment of lake algal samples, and specifically, to identify the presence of cyanobacteria (aka: bluegreen algae). The facility is also used for educational purposes, for lake groups that have an interest in undertaking algae identification, using a group of instruments that can be used in the field to collect and analyze samples.

Many conference participants cycled through the mobile lab during the early afternoon. Thanks to Bart Hoskins from EPA for driving the lab to Turner from Boston, and to Dr. Jim Haney, for explaining the function and operation of the equipment. We will have the equipment on display at our **VLMP Center for Citizen Lake Science** next summer, and at designated workshops during the summer.

2017 Lake Monitoring Conference



Dr Jim Haney presents an overview of cyanobacteria in lakes.

Bill Mann receives his 35-Year Service Award for his dedicated work monitoring Round Pond.

Wendy Dennis won the kayak!

VLMP Board President Bill Monagle provides opening remarks.

Lake monitors Mike Cloutier and Bob French (L - R) present the concept of the *Angels Challenge Match* to the audience.

Pixie Williams is presented with a plaque for the VLMP Herbarium that now bears her name.

At the **Angels Challenge Match** donation table, over $4,000 was raised! *Thank you!*

There were many 10-Year Service Awardees this year: (L - R) Dennis Roberge, Sandy Graham, Bob French (back row) Ed Graham, Bunny Wescott, Sibyl French, Penny Jaskalen, and Cheryl Welch.

Paddling Southern Maine authors Kimberlee Bennett (L) & Sandy Moore (R) sign books while meeting and greeting VLMP paddlers.

Rob Crosby explains the use of PVC tubes to prevent old fishing line from polluting lakes and entangling wildlife.

Doug Suitor discusses lake littoral zone assessment.

Kitchen staff Sibyl French (L) and Emily McAlpine (R). *Not pictured is Bev Haas.*

15 Year Service Award volunteer lake monitors (L - R) Sue Glann, Willis White, and Sue Motley.

Adam Zemans gave a dynamic presentation on lake stewardship and sustainability.

40 Year lake monitor Rick Offinger commented on his many years on Cathance Lake.

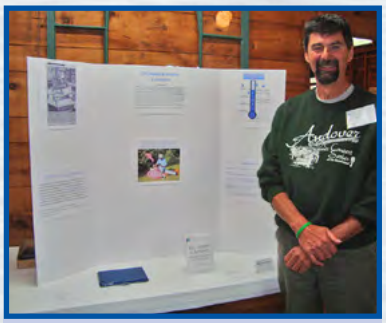
Buddy Cummings receives the IPP Team of the Year Award for the *Androscoggin Lake Improvement Committee*.

5 Year Service Award recipients (L - R, front row) are Lisa Hall, Bruce Wilson, Karen Draper, Richard Windecker, and Patricia Windecker.

Mark Whiting was honored as the 2017 Invasive Plant Patroller of the Year.

20 Year lake monitors (L - R) Rich Bray (Bear Pond) and Tom Hamilton (Lake Anasaguntcook).

Bunny Wescott offers her personal recollection of growing up on a Maine Lake.



Ross Swain on using social media to raise funds for a new DO meter.

Dr Jim Haney demonstrated equipment used to identify cyanobacteria in the EPA Mobile Lab *(more info on pg. 17)*.

Roberta Hill presents on 'How Citizen Scientists are Enhancing our Understanding of Maine's Lake Plants'.

Scott Williams presented on metaphyton in Maine lakes.

VLMP Board Vice President Mary Jane Dillingham presented the longevity awards to the monitors.

What does Lake Stewardship Mean to You? Contest participants Elaine Burnell, David Hodsdon, and Bunny Wescott.

The IAP Prevention Award was granted to Lovell Invasive Plant Prevention Committee. Marty Prox displays LIPPC's plaque.

Jeff Dennis addresses the audience after receiving the Lifetime Achievement award.

2017 VLMP Interns

Spencer Harriman

I was very happy to have been given the opportunity to return to the Maine VLMP for a second summer, after having an incredible experience the summer before. From my experience last summer, I was eager to begin this season and build upon what I had learned previously. After spending another summer working with everyone there, it really solidified for me the desire to continue working with non-profits on environmental issues. The Maine VLMP is truly an incredible organization with dedicated team members.

Through the work at the Maine VLMP I have gained valuable experience and skills that I will take with me indefinitely. These experiences have given me the opportunity to learn about lake ecology and aquatic plant communities first hand, and gain experience communicating and working with the amazing volunteers.

Dezso (L) and Spencer (R) got quite proficient at making bucket scopes for the IPP workshop attendees that opted to become certified patrollers.

Following this summer I will return to Clark University to finish my degree in geography and graduate this coming spring. In the future I hope to continue doing work with environmental non-profits, helping conservation efforts and working with communities to build awareness. I am sincerely grateful to have had this second opportunity with the Maine VLMP. To work closely with the astounding staff and wonderful volunteers again helping to protect Maine lakes was a great experience that will stay with me.

Dezso Lovicsek

This summer, I was fortunate enough to have had the opportunity to work with the amazing staff and volunteers of the VLMP, as one of their summer interns. From mid-May to mid-August, I helped administer several aspects of the program, such as Invasive Plant Patrol training workshops, and the annual Lake Monitoring Conference; and I also assisted staff with routine tasks such as data management, clerical matters, and equipment assembly (e.g. bucket scopes), among others. Over the course of the summer, I was struck by the dedication and generosity of not only the core staff, but also the wider volunteer community. I am proud to have worked within such a wonderful group of people, and am very grateful for all that you do.

Currently in my second year of study, I am an undergraduate student at McGill University in Montreal, Canada, specializing in the subject-area of Human (i.e. social) Geography. My time at the VLMP has also taught me a lot about how sustainability can be fostered on an individual and community basis. I look forward to using this insight to promote greater environmental accountability during the remainder of my studies and throughout my life and career.

Katia Westcott is expected to graduate in December, 2017 from the University of Southern Maine, majoring in Environmental Planning and Policy. She is the mother of a nine-year-old son, and is proud to announce she is expecting a daughter in January, 2018. In her third and final internship with the Maine VLMP, she has come to appreciate the passion of water quality stewardship, and is eager to bring her experiences with the VLMP to her future career. Over the summer, she received her Secchi Water Quality Monitoring Certification, and is now gathering data at Deer Pond, in Hollis. During the remainder of the year, she will be completing her work-study for Karen Wilson in the aquatics lab as Student Research Associate dissecting Alewives and Blue-back Herrings.

Katia Westcott

Maine VLMP Guidelines for Monitoring Metaphyton Density in Lakes

Note: *"Metaphyton" is a term that is used to describe filamentous algae that is typically observed in lakes in shallow littoral areas, where it becomes entangled in the stems of rooted aquatic plants (macrophytes). Metaphyton is sometimes characterized as having the appearance of a mass of "green cotton candy". There is relatively little substance to this filamentous algae, as anyone who has attempted to grasp a handfull can attest.*

The masses/balls/pillows can vary in size from a few inches to several feet. They are most commonly found below the water surface, but will sometimes float on the surface, due to entrapped gas bubbles.

Metaphyton often appears in lakes soon after "ice-out", and may persist through the summer, but often begins to degrade by late summer (August-September), at which time, the masses sink to the bottom and decompose, appearing as scattered brown residue.

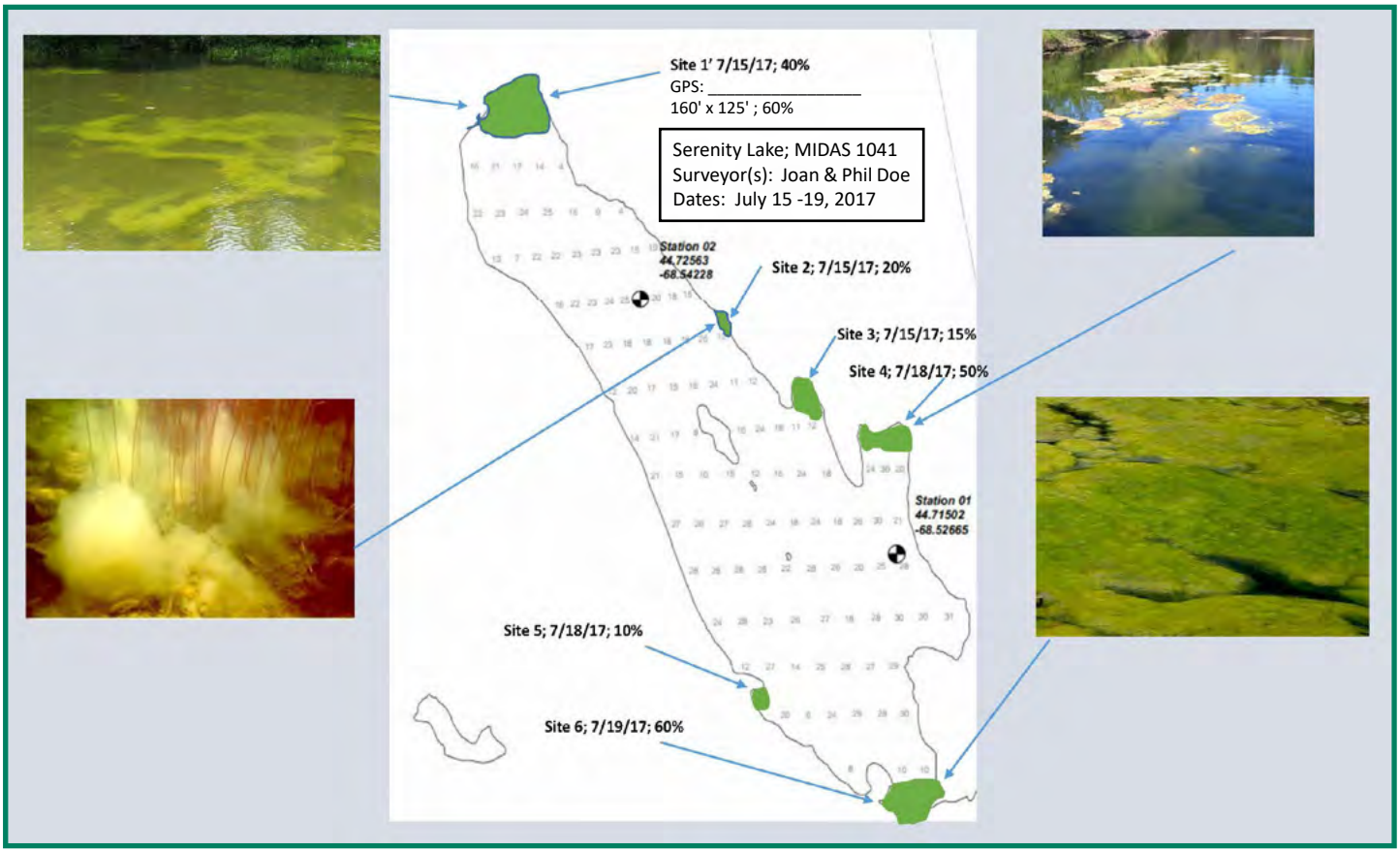
Documenting Metaphyton Density in Your Lake:

Download and print a bathymetric (depth) map for your lake at **www.lakesofmaine.org**.

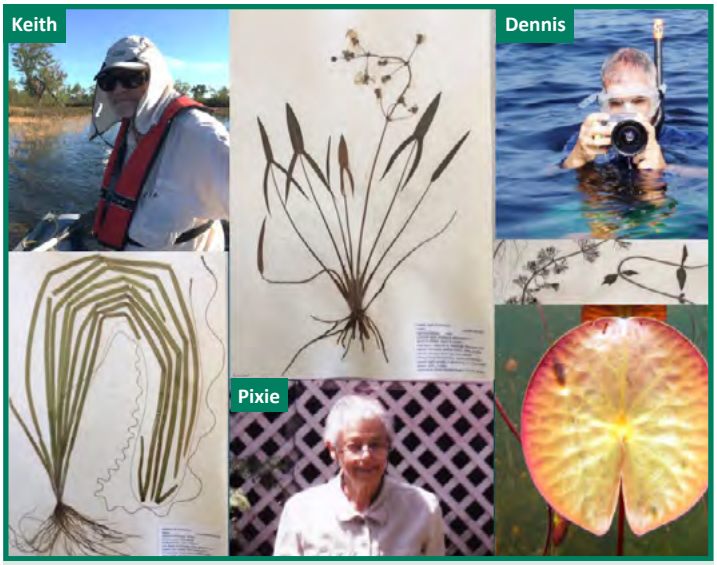
The map can serve as your survey form, or you can attach an additional sheet of paper with the required documentation below:

1. Use a highlighter to shade areas of the lake where significant metaphyton growth is observed, and record GPS coordinates for the site, if you are able to (see example). Metaphyton occurs primarily in shallow areas that are protected from wind and wave action. Metaphyton is not rooted, but it commonly becomes entangled in the stems of rooted aquatic plants, where it can form clouds or "pillows".
2. For each highlighted area that you have identified, indicate the approximate dimensions of the area where metaphyton is observed (example 100 feet x 50 feet), and the percentage of that area covered with/by metaphyton. This can be written in the shaded area, or included in a text box (see example).
3. Indicate on the map: Your name; the lake name and MIDAS; current and recent weather (cloud cover, wind, precipitation, air temperature); the date(s) when the survey was done, as well as a location/site number for each area. For example: " July 18, 2017; Site 3".
4. If possible, include a photo for each site number. Photos can be taken from the surface if conditions are relatively calm and surface glare is minimal (see examples). NOTE: If you submit photos as attachments, be sure to label the electronic files clearly, including the lake name and site number. Photos pasted on a field sheet (as illustrated) are more easily associated with your survey.
5. Ideally, all sites should be visited within a one week period. Additional maps can be used to document changes in metaphyton density throughout the open-water season.

Example of metaphyton survey documentation:



2017 Year In Review



The VLMP is pleased to announce its latest resource for citizen lake scientists and stewards: a state-of-the-art herbarium devoted specifically to vascular plants that grow in and around the lakes of Maine. ***The Pixie Williams Herbarium***, when complete, will contain at least one representative specimen of all Maine's 200 or so native aquatic plants, as well as the eleven aquatic invaders considered to be the most imminent threats to Maine waters, and a wide variety of common and not-so-common wetland "edge" species. Special thanks to Pixie Williams, Dennis Roberge, and Keith Williams for their collective efforts and extraordinary commitment to Maine's newest herbarium!

WE INVITE YOU TO HELP! We could use help collecting, pressing, mounting and labeling specimens; and also with administrative and organizational tasks. If you are interested in contributing in any way to helping make this unique herbarium a reality, please contact Roberta Hill (roberta@mainevlmp.org).

Everyday life at the VLMP includes continuously looking for the funding needed to support, expand or enhance our ongoing programs, and this year we were fortunate to received a **$5,000 grant from Patagonia** in Freeport to help us reprint one of our essential publications. In addition, Patagonia also gave us the opportunity to exhibit some items on the walls of their Freeport store. We decided to make four posters that reflect our mission, and our three areas of programmatic focus; monitoring water quality, surveying lakes for invasive aquatic species, and conducting watershed surveys. Jane Swan, a friend of the VLMP's new Development Coordinator, Alison Cooney, volunteered to do the layout and design of the posters for us. The staff at Patagonia in Freeport were exceptionally friendly and very supportive of our efforts. The VLMP posters were on display most of September and October. Maybe some of you saw them? Let us know if you did, and what you thought of them.

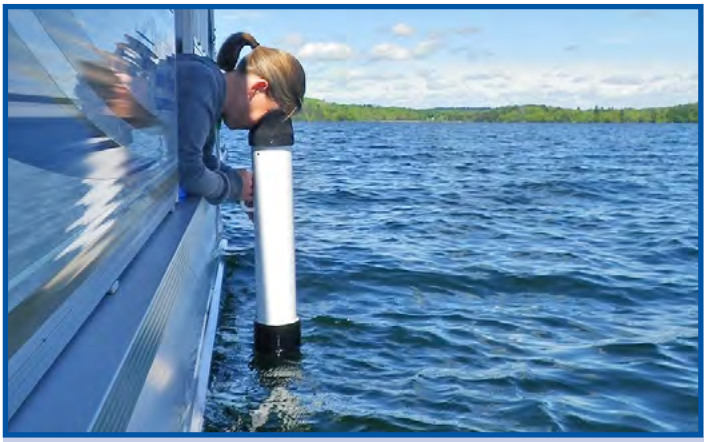
The 4 VLMP posters adorn the stairwell of the Patagonia store in Freeport.

This summer, 29 VLMP lake monitors were trained and certified to monitor dissolved oxygen (DO) in their lakes. Volunteers who opt for **advanced DO certification** receive high-level technical training that includes comprehensive background information to ensure that their data meet quality assurance standards. They are certified along with the devices that they use to measure water temperature and DO. VLMP and DEP staff also help certified DO monitors maintain their equipment throughout the year through an annual "Meterfest" QA/QC check in April, and at required annual recertification workshops during the summer, of which there were over 16, sprinkled across the state.

The **18th Annual Maine Milfoil Summit** took place on Friday, March 3, 2017 at the USM Lewiston-Auburn Campus. The keynote speaker, Meg Modley, Lake Champlain Basin Program Aquatic Invasive Species Management Coordinator, presented 'Invisible Invaders.' The Maine Invasive Species Panel (with representatives from Maine DEP; DIFW Warden Service; Lakes Environmental Association; Maine Lakes Society; and Maine VLMP) provided updates, answered questions and took comments from the audience. The 'Trade Fair' that followed allowed summit goers to tour demonstrations, displays and exhibits featuring the latest innovations in prevention, early detection, rapid response and management. The VLMP exhibit focused on the Invasive Plant Patrol program and provided an opportunity for summit goers to practice aquatic plant identification skills. The VLMP led an afternoon session for IPP leaders titled: How to Lead an IPP Plant Paddle.

Alamoosook Lake IPP Team

VLMP's **Invasive Plant Patrol** took another quantum leap forward in 2017. Over 330 individuals participated in one or more of 18 IPP workshops conducted across the state of Maine including: 8 IPP Plant Paddles; 6 IPP 101 workshops; 2 Invasive Aquatic Plant Manual Control workshops; 1 How to Conduct a Plant Paddle for IPP team leaders; and 1 Advanced Aquatic Plant ID. None of this would have been possible without the generous efforts of our 2017 IPP Hosts. *Many thanks to all who contributed to this enormously successful training season!*



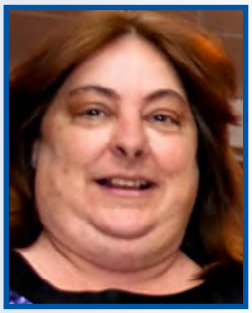
During the past several months, the VLMP trained and certified 48 new volunteer lake water quality monitors. Maine's **newest citizen lake scientists** consisted of replacements for retiring volunteers, alternates, or partners for existing lake monitors, and 10 who will be monitoring lakes that have previously been unmonitored (or in a few cases, lakes that have not been monitored for several years). As always, all VLMP lake monitors receive lifetime technical support, and are qualified to receive training for more advanced levels of lake water quality monitoring. Congratulations to all, and welcome to the VLMP family!

Ten previously unmonitored lakes were added to the more than 450 lakes currently being monitored by VLMP citizen lake scientists. Prominent among these is Moosehead – Maine's largest lake – and one for which very limited historical data is available! The water depth at the Moosehead deep station is more than 300 feet, and calm days on this 75,471 acre lake are few and far between, which is likely why there are so few Secchi readings. However, multiple additional monitoring stations exist on this majestic lake, and we look forward to receiving the first readings taken in years. If you are interested in monitoring Moosehead lake, please contact us. Thanks to Kay and Ralph Johnston (Lower Wilson Pond monitors) for helping achieve this significant milestone. Pictured here (L-R) are **Moosehead Lake Monitors** Richard Chilson and Eric Johnsen, and Shirley Pond monitor, Dawna Blackstone.

The VLMP teamed up this summer with L.L. Bean to extend the VLMP message and mission to new audiences. On the weekend of June 10 - 11, we participated in the **L.L. Bean Paddle Sports Event** at the L.L. Bean Flagship Campus. Our tent was buzzing as we met and mingled with event goers, handed out free literature and prizes, gave some short talks, and offered interactive activities for all ages.

On July 22, we converged on Runaround Pond in Durham for an **L.L. Bean 'Meet-up'/IPP Plant Paddle** to introduce L.L. Bean Outdoor Discovery School guides and interested members of the public to the threat of aquatic invaders.

Passings



Michelle Broyer

Michelle Louise Broyer passed away unexpectedly last November at age 56. She was employed by the Saco River Recreational Council as manager at Swan's Falls Campground in Fryeburg. She was a passionate champion for the environment, and was instrumental in establishing multiple conservation educational programs in the support of community awareness to keep the Saco River clean and healthy for future generations. Michelle enjoyed her days kayaking along the Saco River, taking in the natural beauty of the area. She was a VLMP-certified volunteer Invasive Plant Patroller on Lovewell Pond in Fryeburg for eight years.

Bruce Eastman

Bruce Eastman passed away peacefully at age 61, in February. He was also interested in the water quality of Worthley Pond in Peru, and recorded water transparencies for the VLMP for 23 years. He enjoyed being at camp, as well as traveling, camping, boating, motorcycling, family and friends, and most of all snowmobiling. He went on several snowmobiling saddlebag tours all over Maine and parts of Canada. Bruce married the love of his life and best friend, Sharon Arsenault, on Oct. 18, 1975, who survives in Buxton.

Mary Harmon

Mary L. Harmon, a former lake monitor of Pequawket Pond, passed away at age 95. She proudly kept her VLMP "pin" from services of many years. Hers was the very first camp built on the north side of Pequawket Pond, after the 1947 forest fire. It was called Rattlesnake Pond then, and the trains ran regularly right across it, on a causeway. Mary acquired a teaching degree in her adult life, and most of her interests centered on the geography, geology and wildlife of Maine. A true observer of all things natural, her students and family were made richer through her sharing this with all she knew. She was always an advocate for preserving the wetlands, and passed along her knowledge and interest to future landowners.

Frank McIver

Franklin Cole McIver was born in 1943, by the shores of Moosehead Lake, the son of William and Ethel (Cole) McIver, and passed away on Christmas Eve, 2016. He graduated from Greenville High School in 1961, and went on to the Maine Maritime Academy; class of 1965. While in the Merchant Marines, he met and married his wife, Linda. Frank's love of Maine's woods, her mountains, lakes, ponds, rivers, streams, graced him with many opportunities for simply BEING in the great outdoors. The camp at Upper Wilson Pond was his place for solitude and reflection; a place where he could watch the sun rise with his dog, Molly, at his side, and sit under the stars with his wife to look at the moon over Blue Ridge. As a board member and past president of The Friends of Wilson Pond/and Association, Frank was committed to helping maintain and preserve the pristine presence of that entire area, and was also a VLMP lake monitor for over a decade. Over the years, Frank planted some 2,000 trees in the vicinity of Upper Wilson Pond.

Karen White

Karen Ann (Hartford) White, passed away peacefully at her camp on Lake Wassookeag in Dexter, on May 24, 2017, surrounded by family and her husband of nearly 52 years, Norman E. White, Jr. She attended Dexter schools, graduating in 1963. Karen graduated from USM in 1991 with a bachelor's degree in education, and went on to earn her master's in library science from University of South Carolina in 1997. She was a very active member of her community, as well as the Dexter Lake Association, served as a VLMP Invasive Plant Patroller for several years, and would also accompany Norm every time he went out on the lake to gather water quality data. He commented that their camp was, "As close to Heaven as you could get, so all she had to do was cross over to the other side." There was a quote Karen always loved: *"In 100 years, it will not matter what kind of car I drove, what kind of house I had, or what kind of clothes I wore; but it will matter that I was important in the life of a child."*

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

~*Expanding Capacity*... continued from page 8

considering the number of people who utilize Maine lakes. The very small staff hasn't had time or funds to invest in increasing awareness as they have been extremely busy keeping up with the strong public demand for workshops, trainings, certifications and the extensive ongoing support that they provide to all VLMP volunteers. One of my goals as Development Coordinator is to get the word out to every Maine lake user that the Maine Volunteer Lake Monitoring Program exists, that we have AMAZING volunteers, IMPRESSIVE lake related workshops and trainings, YEARS of lake data available to everyone, and that we are EDUCATING and SUPPORTING people to become citizen scientists and lake stewards of their lake communities throughout the state. It is all a very beautiful and wonderful mission to be a part of and I am grateful to have been selected to join the VLMP family.

> ***"I alone cannot change the world, but I can cast a stone across the waters to create many ripples."***
>
> **~ Mother Theresa**

Thank you for everything that you do to support the VLMP and Maine's volunteer lake monitoring community!

The Development Committee and VLMP staff are extremely excited about our future! Our many goals include greatly increasing awareness of who we are, as well as expanding the scope of volunteer stewardship. We greatly appreciate all the time and energy offered by our volunteers. If you would like to further help us reach our goals, there are many ways in which you can help*...

- Talk to your family, friends, coworkers and neighbors about the VLMP
- Like us on Facebook "Maine Volunteer Lake Monitoring Program"; post lake related photos using #mainevlmp; let your facebook friends know that you support the VLMP; share VLMP facebook posts about workshops, trainings, fundraisers and campaigns
- Go to AmazonSmile when shopping on amazon.com and select Maine Volunteer Lake Monitoring Program as your nonprofit of choice (0.5% of your purchase will go to the VLMP)
- If you are 70-½ years or older and have an IRA, you can direct some of your RMD (required minimum distribution) as a charitable rollover to the VLMP and it is tax-free! Contact your IRA administrator for details on IRA Charitable Rollover
- Include VLMP in your estate planning
- Contribute to our annual Spring and Fall appeals
- Join our Development Committee and help with our fundraising efforts
- Connect us to a person or business that might be willing to help support us either financially or with some other service or product

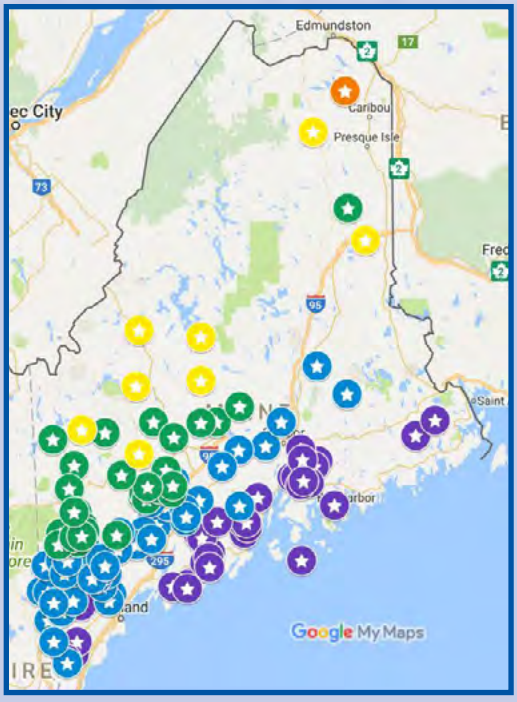
*Please contact Alison or Steve with any questions, comments and/or suggestions regarding VLMP awareness and fundraising efforts. VLMP office: (207) 783-7733

Alison Cooney: alison@mainevlpm.org Steve Lambert: steve@mainevlmp.org

Remember to Document and Report Your Lake's Ice Cover

The winter season is upon us, so please be sure to document your lake's ice cover. The VLMP acts as a state repository for **ice-in** and **ice-out** records, some stretching as far back as the mid-1800's. Your lake's ice cover data, when paired with water quality data, may improve our understanding of the relationship between the duration of ice cover and water quality. You can report ice-in/out dates via e-mail directly to Christine@mainevlmp.org, or you can report by phone at 207-783-7733. View our new Ice-In Map online! We will be actively updating a map of reported ice-in dates on our website as part of the Near Real-Time Lake Data initiative. Send in your ice-in dates, including your name, and the name and town of the lake, to have your data included in the statewide map on the Maine VLMP website.

Photo of Clary Lake Ice Cover, courtesy of David Hodsdon



Paying It Forward, Keith and Sally Style

By Adam Zemans
VLMP Stewardship & Outreach Coordinator

I first learned of Maine VLMP in 2008 when my friend, Dr. Keith Williams and the late Ralph Johnson (both, long-serving VLMP lake monitors) took me out to the deep hole of Highland Lake to teach me how to use a Secchi disk and scope. I wanted to learn more, to become more engaged in the VLMP, and I even started thinking how I might incorporate water monitoring into my doctoral thesis. When my family moved to Bolivia my dream of having Keith, who is both an aquatic biologist and a statistician, as a doctoral mentor and my aspiration to becoming a volunteer lake monitor for the VLMP both had to be put on the back burner for a while.

Keith Williams and Sally Breen exemplify the spirit of the VLMP: passionate and dedicated, interested and eager to learn, generous and eager to share. Sally refers to this spirit as 'the call to pay it forward.' (L - R) Keith Williams, Sally Breen, Adam Zemans.

As luck—and determination—would have it, in the summer of 2016, I found myself back in Maine. Inspired by Keith and other members of Windham's Highland Lake Association, I signed up for VLMP's water quality monitor training. After completing both a *Secchi/Water Clarity Workshop* and *Dissolved Oxygen Workshop*, I was so enthusiastic, I went on to participate in *Invasive Plant Patrol 101*. Full of new knowledge and ideas, in August of 2016, I began working on a plan to "export" Maine VLMP's citizen-based lake monitoring model to Bolivia (see page 21 of *the Water Column* Fall 2016 newsletter). One thing led to another and, after only a little extra persuasion on my part, VLMP Executive Director, Scott Williams, offered me a visiting staff position, effective March through July. As many of you know, the VLMP does amazing good work on a very tight budget (I have never seen an organization that does so much with so little), and I was very excited about the prospect of working at the VLMP. The only stumbling block was this: the funding to support my proposed (unplanned but opportune) position was minimal, and the pay would be correspondingly modest. The only way to meet my financial obligations while serving my short tenure at the VLMP would be if I could reduce my immediate cost of living somehow. Subsidized housing during this four-month period would certainly help!

This is where Keith and his dear wife Sally (also a VLMP volunteer) come back in. Keith and Sally not only offered me a room in their home free-of-charge; Sally also offered me her car to commute to work, as well! Although it was a bit uncomfortable to accept such extreme generosity, in the end I accepted their hospitality, knowing that ultimately it was all for a good and worthy cause.

I finished work for Maine VLMP on my 50th birthday, which I celebrated with the staff. I now look back with great fondness on the Summer 2017. The major highlight was working with the salt-of-the-earth Maine VLMP staff, particularly Steve Lambert, whose desk was directly across from mine. For those of you who have never had the pleasure to meet him, Steve is an organizational creative genius! Another highlight was playing a key role in developing a rigorous search and hiring process for our new Development Coordinator, Alison Cooney. My sea kayak guiding experience helped lead Maine VLMP and L.L. Bean to rekindle an old partnership. My experience in citizen diplomacy was put to work at Moosehead Lake and Fields Pond Audubon Center as a point person in developing new relationships and programs. The climax of my summer was presenting at the VLMP's Annual Lake Monitoring Conference, where I mixed my fanatical enthusiasm for Beyonce's singing, with my passion for citizen lake science to produce: *"Citizen Lake Stewardship and Beyoncé's 'I Was Here': Finding Our Engagement Groove for Maximum Lake Resilience."*

In spite of the considerable effort that went in to bringing me up to speed with the day-to-day operations of the VLMP (particular thanks to Jonnie Maloney, Christine Guerette and our amazing summer interns, Deszo and Spencer for your patient assistance), I am proud of what I accomplished this past summer, and feel that I served the organization and the lakes of Maine well as a valued member of the Maine Volunteer Lake Monitoring Program community.

Thank you, Keith and Sally, Scott and Roberta, VLMP staff and community for so readily and welcomingly opening your doors, minds, and hearts to me, my passions and my ideas. It has been an honor to work with you all in support of Maine's citizen lake monitors: the dedicated stewards of Maine's most cherished water resources. I look forward to seeing you all when I visit with my sons this winter, and look forward to that day in the future when we all may be able to call Maine 'home.'

Save the Date!

2018 VLMP Annual Lake Monitoring Conference

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