

the WATER COLUMN

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President's Message

Bill Monagle
President, VLMP Board of Directors

When I reflect on the twelve or so years (but who's counting?)

I've been a member of the VLMP Board of Directors, I am truly amazed at how far the Program has come, both in terms of the increased number of volunteer monitors, and in the overall scope of the program. Over this time, the VLMP has greatly expanded its outreach efforts through the development of the VLMP and Lakes of Maine websites—both valuable as sources of essential lake and program-related information, produced numerous printed and on-line publications that inform and guide individuals and organizations on an array of lake related topics, developed the increasingly vital Invasive Species Program, and established a permanent home base at the VLMP Lakes Center, a stone's throw from Lake Auburn, and the list goes on. Exciting stuff!

These accomplishments over the years have been absolutely necessary to enable the VLMP to confront the persistent and increasing threats to our treasured lake resources. Fortunately, the skilled and dedicated staff, under the direction of Executive Director, Scott Williams,

along with a committed Board of Directors, has maintained focus on the program's priorities and adroitly made necessary adjustments to stay on course with our mission. And, as the organization's name implies, at the foundation of the program are the volunteer contributions of time and effort by the hundreds of certified citizen lake scientists who monitor the water quality of our lakes and ponds, patrol their aquatic plant communities to seek out invasive species to enable early detection and swift mitigation, and help identify and resolve sources of pollution in their lake watersheds.

In my own humble opinion, there isn't a more capable or effective statewide lake organization than the Maine VLMP, and given the bounty of lakes and ponds in Maine and what is at stake environmentally, economically, and aesthetically, the program is vitally important, now more than ever before. There are certainly challenges and obstacles to be overcome, but with the continued support from individual volunteers and strong funding support from both the public and private sectors, I'm confident the future of Maine's lakes and ponds will be bright. ☀

VLMP Mission Statement

The Mission of the Maine Volunteer Lake Monitoring Program is to help protect Maine lakes through widespread citizen participation in the gathering and dissemination of credible scientific information pertaining to lake health. The VLMP trains, certifies and provides technical support to hundreds of volunteers who monitor a wide range of indicators of water quality, assess watershed health and function, and screen lakes for invasive aquatic plants and animals. In addition to being the primary source of lake data in the State of Maine, VLMP volunteers benefit their local lakes by playing key stewardship and leadership roles in their communities.

Lakeside Notes

Maine's Citizen Lake Monitors: *There When You Need Them!*

Most of you are probably aware that from the 1970's through the mid 1990's, the VLMP was capably managed by the Maine DEP. Budget cuts in state government in the 90's were the impetus for a group of individuals who had a vested interest in the program to explore options for the future. This steering group included staff from the DEP lakes program, a group of experienced volunteer lake monitors who recognized the many ways in which a citizen-scientist lake monitoring organization had benefited their lakes during the past two decades, lake association representatives, academics from Maine's educational institutions, and others.

evolution of the program, because it has allowed the organization the freedom of flexibility and experimentation as it has moved into the future. The success of the VLMP through the years has been due in no small part to strong inclusive collaborative partnerships that have been formed with the Maine DEP and other natural resource agencies, local and regional lake and watershed associations, County Soil and Water Conservation Districts, academic institutions, citizen lake monitoring programs in other states (and countries) and of course, the rapidly growing number of volunteer citizen lake scientists here in Maine.



By Scott Williams
VLMP Executive Director

program to expand the number of lakes monitored, we would need a strategy to recruit new lake monitors. It didn't take long for me to realize, much to my pleasant surprise, that I was mistaken. I had not fully appreciated how deeply committed people are to protecting our lakes. During the past two decades, there have been very few occasions when it has been necessary to search for new lake monitors for new lakes, or to replace retiring monitors. In fact, at times it has been a challenge to keep up with public interest in the program.

Continuous, strong growth of the VLMP benefits Maine lakes in so many ways. These extend well beyond the obvious benefit of gathering credible scientific data concerning the health of our lakes. *In addition to becoming local lake experts, VLMP citizen lake scientists play a crucial stewardship role in their lake communities.* With over 550 lakes in the program, that's a lot of committed people who bring experience, knowledge, and understanding to their communities about the nature of the threats to our lakes, how those threats can be monitored, and ways in which watershed residents can use lake-friendly practices to ensure that Maine will continue to have among the clearest and cleanest lakes in the nation!



During the 43 years that the VLMP has been growing and evolving, one thing has not changed: how deeply committed people are to protecting the health of Maine lakes.

It took several months for the group to explore – among other options – the potential for the VLMP to exist as a free-standing nonprofit organization. It was a decision that carried some risks, but today it is widely acknowledged as having been a pivotal point in the

When I first assumed the responsibility – and distinct honor – of working for the VLMP nearly two decades ago, I made a few assumptions about the nature of the challenges the organization would likely face in the future – one of which was that in order for the

Thanks to all of you, who do so much for so many, on behalf of Maine's exceptional lakes! ☺

Littorally Speaking

Milfoil in Annabessacook Lake

*a cautionary yet hopeful tale of prevention,
early detection, and rapid response*

Late in the summer of 2013, a vigilant Courtesy Boat Inspector (CBI) stationed on Annabessacook Lake spotted a single milfoil fragment floating near the public boat landing. DNA testing confirmed the plant to be variable water-milfoil (VWM, scientific name: *Myriophyllum heterophyllum*), the most prevalent invasive aquatic plant in Maine. Though Annabessacook Lake was not known to be infested, it *is* in fairly close proximity to several waterbodies that *do* have known VWM infestations. Were the wayward fragments left behind by a visiting boat, or did they originate from a new—as yet undetected—infestation in Annabessacook Lake?

The only way to answer this question with certainty was to conduct a comprehensive “level-3” survey of the lake’s entire littoral zone (all shallow areas of the lake, anywhere that sunlight reaches the bottom and rooted plants may grow). Conducting a level-3 survey on a lake that is nearly 1500 acres in size, with over 17 miles of shoreline, can be challenging in the best of circumstances. In the case of Annabessacook Lake, the challenge was intensified by several factors: 1) DNA analysis of the milfoil fragment found by the CBI took longer than usual. When the results finally arrived in December 2013, it was too late to conduct even a cursory survey. This delay would significantly cut into greatly needed planning and preparation time. 2) Though invasive aquatic plant (IAP) screening survey activity was being done regularly on Annabessacook Lake, these surveys were generally limited in scope. Conducting a full level-3 survey would require a significant increase in survey capacity. The community elected to accomplish this by building a locally-sustainable volunteer Invasive Plant Patrol (IPP) team, an undertaking that would require a good deal of local outreach, and the development of a comprehensive training program. 3) Most



Is this invasive milfoil? Lacking the vibrant red stem that is often associated with this invader, none of the milfoil plants found in Annabessacook Lake looked glaringly suspicious; but neither did they present the features needed to confidently rule out the target invader. This “plain-Jane” milfoil specimen was indeed confirmed as VWM.

lake plants in Maine are fully mature and easiest to view and identify from mid to late summer. But in Annabessacook Lake, the growth of planktonic algae in late August can significantly reduce water clarity, and potentially impede survey visibility, thus shrinking the survey window of opportunity. In a nutshell, the local community had barely half a year to plan, gather the resources, and build the volunteer capacity needed to accomplish a high-quality, comprehensive survey within a very short (one-to-two-week) timeframe. A coalition of project partners quickly assembled and mobilized. The VLMP’s role in the alliance, which included Annabessacook Lake Improvement Association (ALIA), Friends of Cobossee Watershed (FOCW), Cobossee Watershed District (CWD) and the Maine Department of Environmental Protection (DEP), was primarily to assist in informing, engaging, training, and activating a local team of trained citizen Invasive Plant Patrollers.

With Annabessacook Lake Improvement Association playing the vital role of workshop host—securing workshop venues, organizing food, publicizing the workshops locally, etc., the IPP training program was rolled out through the summer of 2014. The program was



by Roberta Hill
VLMP Invasive Species Program Director

launched in June with an IPP Plant Paddle led by Friends of Cobossee Watershed staff. This engagement-level event helped to spur local interest in the Annabessacook survey project and to encourage participation in the more extensive trainings to follow. The IPP Intro Workshop and IPP Survey Field Methods Workshops, which took place in July, were both well-attended, resulting in a formidable cadre of well-trained, certified, locally-based patrollers. The Annabessacook IPP team was born!

While VLMP and ALIA were busy with the trainings, Maine DEP staff began conducting preliminary surveys of the areas closest to the public boat landing. A local leadership team was formed, comprised of one representative from each of the local partners: CWD, FOCW and ALIA. This group took on the task of organizing the full, lake-wide survey, and working out the various logistics needed to ensure its success. The necessary survey equipment was gathered and/or constructed. A series of public and private launch sites were identified around the lake; in the case of the private launches, permission to launch was sought and obtained. Nine survey regions were delineated, each with its own launch site. Each region was divided into several smaller sectors, with



VLMP's Roberta Hill teaches Annabessacook Lake volunteers how to recognize an aquatic invader when they see it.

most sectors covering roughly 1000-feet of shoreline. As surveyors signed on to the new Annabessacook IPP Team, they either adopted, or were assigned, one or more survey sectors.

The preliminary survey activity by the DEP revealed yet another challenge. Annabessacook Lake was home to three native milfoil species, all similar in appearance to VWM. The presence of these and other native look-alikes would certainly complicate things, especially for novice patrollers. Survey planners addressed this challenge by teaming more experienced patrollers—acting as “region leaders”—with the novice patrollers in their assigned areas. The team had now grown to thirty-six members, the majority of whom were trained and certified IPP volunteers.



Training of the Annabessacook Lake IPP Team continued with on-the-water instruction and guided practice.

This story cannot be properly told without mentioning the vital role played by Maine's IPP Rapid Response Team: certified IPP volunteers who have agreed to be on-call should a new infestation be identified in Maine. Not only did many of these seasoned “IPPs from away” travel across the State to attend trainings and support the novice patrollers, they also signed on as volunteer region leaders, lending their considerable expertise, experience and mentorship skills to the survey effort. When members of Maine's IPP Rapid Response Team were introduced at the survey kick-off meeting, they were met with a resounding standing

ovation. A palpable sigh of relief spread across the room and someone cheered, “The cavalry has arrived!”

Over the course of the next two weeks—thankfully, with full cooperation from the weather—the level-3 survey of Annabessacook Lake was completed without a hitch. Several significant patches of milfoil were indeed encountered by surveyors. Was this invasive milfoil? None of the specimens looked glaringly suspicious; but neither did they present the features needed to confidently rule out the target invader. The patches were properly marked and mapped, and specimens were collected. Once again, we would have to rely upon DNA analysis.

A few weeks later, the DNA results arrived: two of the twelve specimens came back with a positive identification of *Myriophyllum heterophyllum*, invasive variable water-milfoil. One specimen had been taken from a growing patch in the northern inlet cove; the other was a floating fragment found near the boat landing, at the other end of the lake. Sadly, Annabessacook Lake was now to be added to the list of Maine lakes with known infestations.

The Maine DEP mobilized immediately upon receiving the DNA results, and on September 24 they deployed SCUBA divers who carefully removed the known VWM patch in the northern cove. They also investigated suspicious milfoil plants in the shallows beyond the public boat



The Maine DEP mobilized immediately upon receiving the DNA results, deploying SCUBA divers who carefully removed several large patches of VWM from the lake.



Maine's IPP Rapid Response Team played a vital role in the survey. Team Members participating in the Annabessacook survey included: Diane Clay, Bob and Sibyl French, Carol Fuller, Susie Wilding-Hartford, Marsha Letourneau, Dennis Roberge, Lea Stabinski, and Ross and Bunny Wescott. Pictured above are Diane (L) and Susie (R).

landing channel, a patch recently discovered by alert CWD staff during routine water-quality monitoring. DNA analysis later confirmed VWM in this area, as well. DEP and CWD returned to the boat-landing area on October 17, and a number of additional, well-established milfoil patches were found. The characteristics of these newly-discovered plants precisely matching those of confirmed VWM, they were also removed.

Despite this disconcerting result, it is important to note the good news here. The level-3 survey findings suggest that the rooted VWM population may very well be limited to two discrete areas in the lake. With luck, the process that began when the CBI spotted a suspicious plant floating near the boat launch in 2013, and continued with the activation of ALIA's Invasive Plant Patrol team, has resulted in a timely, early-detection of the infestation. We know from experience that early detection has been key to the successful management of variable milfoil in a number of cases in Maine. If the infestation in Annabessacook Lake proves to be as limited in scope as these early findings suggest; if actions are taken swiftly and deliberately; if the successful collaboration that began in 2013 continues, the prospects for successfully addressing the Annabessacook infestation are very good indeed. ♣

Photos for this article were provided by The Cobbossee Watershed District.

Don't Forget to Keep Track of Your Lake's Ice Cover!

The winter season is upon us, so be sure to keep track of your lake's ice cover. The VLMP acts as a state repository for ice-out records, some stretching as far back as the mid-1800's. Your ice-in (and ice-out) data, when paired with water quality readings,

may improve our understanding of the relationship between the duration of ice cover and water quality. You can report ice-in and ice-out via e-mail directly to Christine@mainevlmp.org, or you can report by phone at 207-783-7733.

QUALITY COUNTS!

Harmful Algal Blooms, Nuisance Algal Blooms and Cyanotoxins

(...lions and tigers and bears, oh my!)

Algae are primary producers—photosynthetic organisms that convert sunlight into biomass. They are ubiquitous – found in rivers, lakes, ponds, streams, oceans and even on snow, soil and in puddles. Situated at the base of both aquatic and terrestrial food webs, algae are essential to higher forms of life. In general, algal populations are controlled by light and nutrient availability, particularly the nutrients nitrogen and phosphorus. In lakes, algae can be single cells or colonial, can be pelagic (living in open water), benthic (living on the bottom, attached to rocks, woody debris, or docks) or epiphytic (attached to plants). Colonies may be free floating or may form filaments and appear stringy. Some form mats on the sediment surface. In most of Maine lakes, phosphorus concentrations control the density of algal populations, which ultimately control transparency (water clarity); when water transparency, measured with a Secchi disk, falls below 2 meters due to algal populations, the lake is said to be supporting an ‘algal bloom’.

Lakes experience a seasonal succession of major groups of algae. Early and later in the season, diatoms (*Bacillariophyta*), which do well in colder water, dominate the water column. Generally spring diatoms are followed by greens or Chlorophytes; blue-green populations become most abundant later in the summer – the timing being dependent on nutrient levels, water temperature, and other factors. This general pattern can shift in both time and magnitude (algal abundance) depending on conditions in individual lakes.

The image to the right is that of two Maine lakes: North and East Ponds in the Belgrade chain. At the time this was taken, East Pond, on the right, was experiencing an algal bloom and from the air, was almost as green as its surroundings. If we look at how algal populations may compare between North Pond and East Pond, major differences are apparent (figure following

aerial photo). Often blue-green species are controlling transparency in East Pond from late spring into mid-fall. Blue-green species are the most likely to produce cyanotoxins in Maine lakes.

Blue-greens are well adapted to be fierce and effective competitors. Blue-green growth is favored when nutrients are plentiful – especially phosphorus. They are able to ‘fix’ nitrogen in heterocysts, structures similar in function to root nodules in terrestrial legumes. Thus when nitrogen becomes the limiting factor for green algae, blue-greens have the competitive edge. By using gas vesicles – like internal life vests – they control their buoyancy and maximize exposure to sunlight. They thrive when lake water temperatures are at their highest and sunlight is plentiful. And they take advantage of calm periods. They can produce resting cells which are deposited in the sediment and can germinate when conditions are favorable. The resting stages of some species can accumulate phosphorus for use later – known as luxury consumption of phosphorus. Zooplankton, microscopic animals that eat phytoplankton (algae), also known as the ‘cows of lakes,’ don’t care to graze on blue-greens.

Those of you who have studied the major alga groups may recall that blue-greens were originally considered algae. However, genetics has revealed that they are more closely related to bacteria. So, now technically blue-greens are considered

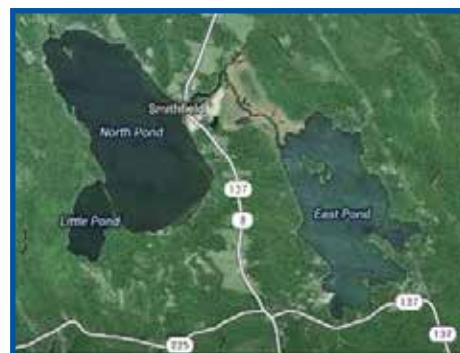


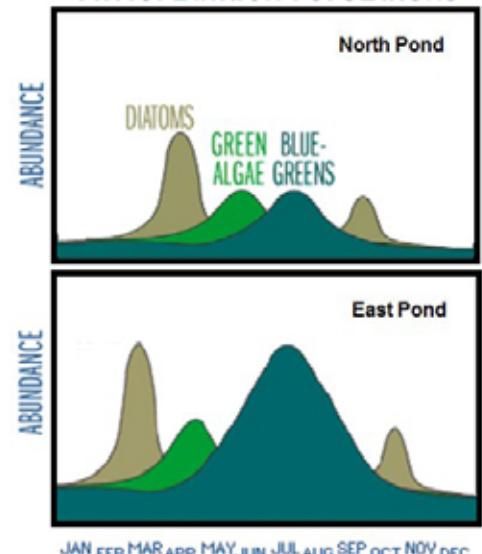
Image from Google Earth



by Linda Bacon

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

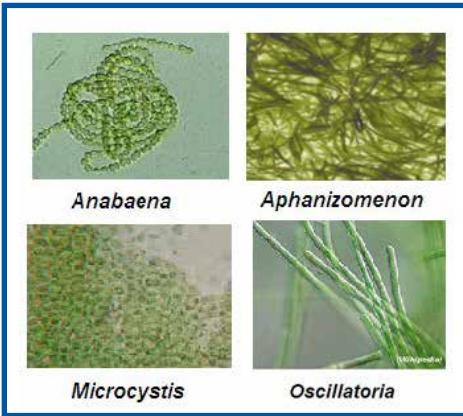
SEASONAL SUCCESSION OF PHYTOPLANKTON POPULATIONS



photosynthetic bacteria – or Cyanobacteria (cyano referring to their photosynthetic pigment). The toxins that they produce are Cyanotoxins. In most areas of the country, when blue-green populations reach high densities, it is referred to as a **Harmful Algal Bloom** or **HAB** because there is the **possibility** that the bloom will result in cyanotoxin production.

To put this in perspective, Maine has one statutory classification for lakes: Class GPA. The GPA classification considers lakes that have transparencies of 2 meters or less, due to algae growth, as having a pelagic (open water) **nuisance algal bloom**. Maine has about 30 lakes that support such algal blooms nearly every year and another 15-20 that bloom occasionally using this definition. It is important to note that the term ‘bloom’ is used rather loosely by some. Lake users may use the term to describe cotton-candy

shaped masses of cells observed in near-shore areas (aka metaphyton), or stringy growth attached to rocks and docks. According to the GPA classification, these other growth forms do not indicate impaired water quality, but are naturally occurring in most Maine lakes, and do not technically constitute an algal bloom.



For years, limnologists considered three genus' responsible for most pelagic nuisance algal blooms: *Anabaena*, *Aphanizomenon*, and *Microcystis*, and nicknamed these 'Annie, Fannie and Mike'. The genus *Oscillatoria*, or Ozzy, has been recently added to this list of suspects. As mentioned earlier, the acronym HAB stands for Harmful Algal Bloom. This term is used worldwide to describe blooms that produce toxins. To the best of our knowledge, cyanotoxin production in most Maine nuisance pelagic (open water) algal blooms is low; however, algal scums may produce measurable concentrations of toxins.

Cyanotoxins fall into two toxin classes: **Hepatotoxins** and **Neurotoxins**. As the name implies, hepatotoxins generally affect the liver. Microcystin-LR is the most toxic variant. Symptoms may be observed from hours to days and can be acute or chronic. The diagram to the right represents the breakdown of cytoskeleton in liver cells by Microcystin-LR, which results in the liver becoming flooded with blood. The upper portion of the adjacent diagram illustrates this effect. Microcystin-LR has been implicated in deaths of livestock, pets, birds, fish,

and humans. Human symptoms include skin/sinus irritations, vomiting, diarrhea, and gastroenteritis.

Neurotoxins affect the nervous system. Anatoxin-a is the most toxic form and is referred to as the 'Very Fast Death Factor'. It acts in a similar manner to carbon monoxide and hemoglobin where hemoglobin oxygen-receptors will permanently bind with carbon monoxide and can cause death. The lower portion of the diagram below illustrates how normal communication occurs between nerves and muscle. On the lower left side, acetylcholine transmits the message for a muscle to contract from the nerve to the muscle. It binds to sites meant for it on the muscle then dissociates from the receptor and is broken down by enzymes. Anatoxin binds to sites meant for acetylcholine as shown in the lower right. In fact, anatoxin-a's affinity for these receptors is about 20-times that of acetylcholine and it does not come off, thus causing an irreversible blockage to neuromuscular communications. Symptoms include muscle twitching, decreased movement, collapse, cyanosis, convulsions and death. Anatoxins have been responsible for pet and livestock deaths. It is thought that anatoxin was responsible for cow deaths



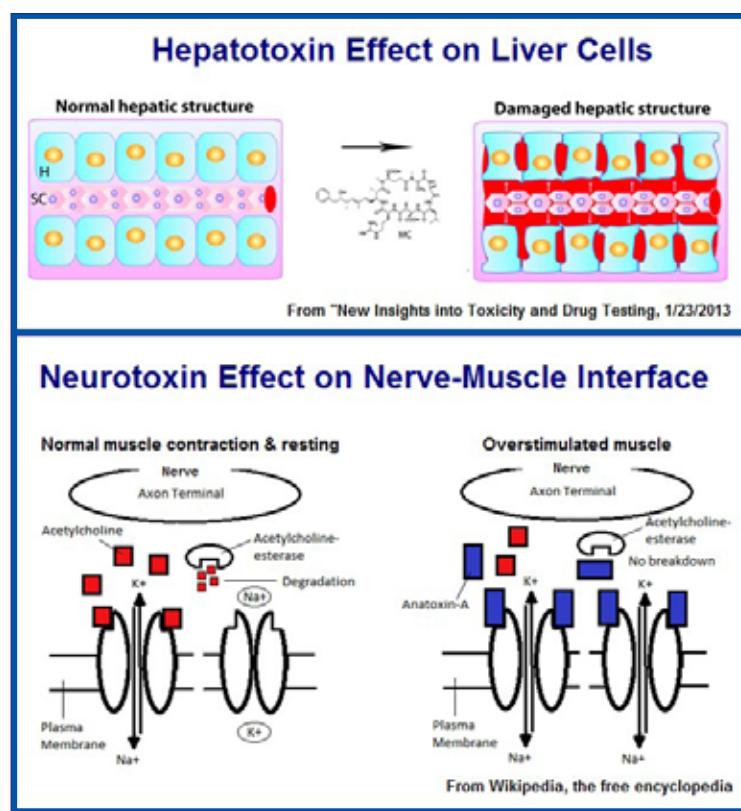
Severe algal bloom on Sabattus Pond in 2013.

along a tributary to Sebasticook Lake in the 1960s. Last year a dog became ill after drinking water from Province Lake in Parsonsfield. Most of this lake is situated in New Hampshire, but a corner of it is in Maine. The dog recovered, and its owner chose not to have it tested for anatoxin, so we will never know exactly what caused the illness. Another cyano-neurotoxin is BMAA (Beta Methyl Amino L Alanine) which has very long-term effects. It is thought to play a role in diseases such as ALS (aka Lou Gehrig's disease) and perhaps Alzheimers, MS and Parkinson's. It mimics an amino acid our bodies use to build proteins but prevents the resulting protein from functioning properly. A great deal of research is being conducted in NH, where ALS clusters are situated

near lakes that support blue-green algal blooms. The research includes the testing of aerosols from these lakes. Skin and mucous membrane irritations may also be caused by blue-greens, which are relatively minor as compared to the previous two effects.

The table on page 17 lists the toxins produced by algal genus and toxin type. Annie, Fannie, Mike and Ozzy are on the list. You'll notice that *Gloeostrichia* is also on this list as it is showing up in more and more Maine lakes. In the early 1990s, 'Gloeo' might be observed in one out of 100 lakes; now it's not unusual to find it in 15-20 of 100 lakes. Great Pond and Long Pond in Belgrade, and Lake Auburn have well

...continued on page 17

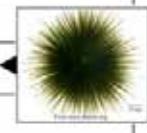


established populations of *Gloeotrichia*. It is also a skin irritant particularly around elasticized areas of bathing suits. The VLMP trains lake monitors to identify and quantify 'Gloeo' in their lakes. Also on this list is *Cylindrospermopsis* which is more common in southern areas of the country.

There are challenges that go along with figuring out how to deal with HABs and cyanotoxin production. Unlike poison ivy – where if you are allergic to it, you will develop a rash when you come in contact with it – cyanotoxins are a bit enigmatic. One would expect that if you scooped up a container with 10 million cells in it today, the amount of toxin in the container would be the same if you scooped up the same amount tomorrow or next week. But that is not how it works. In fact, researchers are still trying to understand spatial, temporal and environmental factors that trigger cyanotoxin production. Cell concentration, age of cells, bloom stage, climate and weather conditions are all thought to play a role.

Microcystin-LR is the most toxic and most prevalent cyanotoxin in the northeast. New England states respond to HABs in a variety of ways, issuing advisories based on surrogates for toxins, such as cell-counts, Secchi transparency, and/or chlorophyll concentrations. Maine has no specific response at this time. New Hampshire posts lakes with advisories and has a well-established HAB program and website. At this time, the United States does not have a microcystin standard for drinking water or recreation in/on the water, but expects to issue guidelines in 2015. EPA does recognize the World Health Organization (WHO) standard for drinking water of less than 1 ug/L for microcystin-R. Maine has no direct standards or criteria yet, partly because the ecological factors that cause toxin production in a blue-green bloom have not been well identified, and links to chronic issues are unclear - thus difficult for our toxicologists to nail down.

<u>Genus of Algae</u>	<u>Toxin Produced</u>	<u>Type of Toxin</u>
<i>Anabaena</i>	Anatoxin, Saxotoxin	Neurotoxin
	Microcystin, Cylindrospermopsin	Hepatotoxin
<i>Aphanizomen</i>	Anatoxin, Saxotoxin	Neurotoxin
	Cylindrospermopsin	Hepatotoxin
<i>Planktothrix</i> <i>(Oscillatoria)</i>	Anatoxin	Neurotoxin
	Cylindrospermopsin, Microcystin	Hepatotoxin
<i>Cylindrospermopsis</i>	Cylindrospermopsin	Hepatotoxin
<i>Gloeotrichia</i>	Microcystin	Hepatotoxin
<i>Microcystis</i>	Microcystin	Hepatotoxin



From Oregon Health Authority

The Maine DEP has been gathering microcystin data since 2008. This information has been shared with the Maine CDC and drinking water program. In 2008 and 2009, we obtained approximately 45 samples from lakes experiencing algal blooms. Open water samples included 4 hits above the WHO standard of 1 ug/L. Samples from surface scums ranged from 11 to nearly 12,000 ug/L, levels well above the WHO standard. Most of the scums occur near or at the shore. These scums pose the greatest risk to pets and livestock, because most humans would likely avoid swimming under such conditions.

As a result, a list of precautions was posted on the DEP website:

- Avoid contact with water where algae are visible (e.g., pea soup, floating mats, scum, etc.).
- Do not let pets or livestock swim or drink where you see foam, scum, or mats of algae on the water.
- If you or a pet swims or wades in water that has dense algae present - rinse off with fresh water and soap, if available, ASAP.
- Do not drink lake water during a bloom. Take short showers to avoid breathing aerosols in lake water (note that domestic water treatment systems are not guaranteed to remove algal toxins).

During the summer of 2014, the DEP Lake Assessment Section gathered additional

data to better characterize Central Maine lakes as part of a regional effort led by EPA; when results are available, we will again share them with the appropriate agencies and the VLMP. DEP collected more than 400 samples from approximately 30 lakes as part of the 2014 EPA/Region I collaboration. The goals include gathering additional data on levels of microcystin in local blooms, to establish a regional dataset, and to guide monitoring in 2015. Because most regional monitoring, at least at the screening level, uses indicators other than expensive toxin testing, EPA decided to purchase Fluorometers that measure phycocyanin – one of the pigments characteristic of blue-greens – and chlorophyll. These units were loaned to the states. The sampling protocol included collection of water from three open-water sites, three near-shore sites and three from algal scums if present. Samples containing the highest phycocyanin levels were frozen for actual toxin analysis under the Surface Water Ambient Toxics (SWAT) monitoring program. Maine also performed routine analyses for transparency, dissolved oxygen/temperature, chlorophyll, total phosphorus and general chemistry from each of these lakes. Ultimately, we would like to expand the monitoring effort to VLMP lake monitors, using a smart phone app currently being developed that would rely on photo documentation. Stay tuned! ☺

Save the Date!

The 2015 VLMP Annual Conference is Scheduled for Saturday, July 25



Just as there are a wide range of programs, services, technologies, and methods for monitoring human health (both at the individual level and the community level), the VLMP supports a wide array of lake monitoring options for volunteers. Most types of monitoring require only minimal training and equipment. In addition to free training, the VLMP provides access to standardized protocols, data forms, ongoing technical support, and other resources—everything needed to fully engage in this important work.

If you have a keen interest in your lake, have a talent (or simply an inclination) for careful observation, and are willing to record and share your findings, you have all the prerequisites needed to become an effective, fully-qualified, and highly-valued citizen lake scientist. The VLMP is currently seeking volunteers to assist in the monitoring of the following indicators of lake health throughout the State of Maine:

Water Quality – Many options are open to those interested in monitoring water quality. Emerging technology is providing new opportunities every year for ways in which information about lake water quality can be gathered. The VLMP is embracing the

new, while continuing to make use of simple, low tech tools that provide valuable information and insight into the health of our lakes. Many options exist for those who are interested in monitoring some aspect of lake water quality, from the simple, quick, low-cost, low-tech Secchi disk, to the use of sophisticated sampling equipment and



New volunteers are introduced to one of the simplest and most effective tools for monitoring water quality—the Secchi disk.

cell phone apps that allow us to look at lakes in totally different ways than has been done historically. The VLMP provides training, guidance and support for all options pertaining to monitoring lake water quality.

Looking for Additional Ways to Monitor and Protect Your Lake?

Invasive Aquatic Species – Invasive plants and animals are moved about in complex and often unseen ways, and new introductions can quickly explode into an ecologically and economically disastrous infestation. Once an invader is well-established, eradication is extremely difficult and costly, if not impossible. Prevention is the first step to fighting such invasions, but no matter how comprehensive and aggressive our statewide prevention effort, chances are some invasive organisms will slip through the cracks. In such cases, it is crucial that the invaders

are detected as early as possible, before they have had an opportunity to cause significant damage or to spread to other waterbodies.



Learn how to identify Maine's 11 most unwanted invasive aquatic plants. Here is Maine's most abundant aquatic invader—Variable water-milfoil (*Myriophyllum heterophyllum*). Photo courtesy of Dennis Roberge.

Invasive Plant Patrol (IPP) Introductory Workshops teach participants how to recognize the invasive aquatic plants (IAPs) on Maine's "eleven most unwanted" list, how to distinguish these invaders from their native Maine look-alikes, and how to efficiently and effectively conduct an IAP screening survey. A variety of advanced IPP training opportunities are also offered.

Lake Watersheds – Lakes are inseparable from their watersheds! Nearly all of the characteristics that make each lake unique are the result of natural watershed influences. But the cumulative effect over time of human influence in lake watersheds can have a negative effect on lake health. The use of simple conservation practices can help to offset these negative effects. The VLMP conducts an annual workshop for lake monitors, lake associations and others interested in learning how to monitor and improve the health of their lake watersheds by conducting a watershed survey.



Learn how to identify, record, and mitigate land use problems in your watershed that affect lake water quality. Photo courtesy of Ellis/Roxbury Pond Watershed Survey.

Monitoring the Effect of Climate Change on Lakes –

Climate change has the potential to overshadow, and in many cases, amplify, the known threats to our lakes. It also has the potential to obfuscate our ability to detect trends in lake health. Many of the traditional methods used to monitor lakes are well-suited to monitor the effects of climate change on lake systems, including lake transparency, temperature and dissolved oxygen profiles, phosphorus concentrations, water color, and others. Monitoring the length of the open water season is a simple process that provides very helpful information about climate change influences. Conducting invasive aquatic species surveys is becoming increasingly important, as changing water temperatures and longer growing season increase the potential for invaders to thrive in our lakes.



Recording “ice-in” and “ice-out” dates for your lake and submitting this data to the VLMP is a simple way to make a valuable contribution to climate change research in Maine.

Other Aquatic Phenomena – Lakes are complex systems, and though much is known about how they function in general, there is far more that we do not know, especially when it comes to what makes each lake a unique individual! How many distinct native plant species occur in your lake? Which species are most dominant; which most rare? Are the plant communities in your lake changing in response to global climate change? Do any invasive aquatic animals such as Chinese mystery snails or rusty crayfish occur here? Why do some types of algae seem to be increasing (the green “clouds” of metaphyton, or the tapioca-like spots of *Gloeotrichia*, for example)? The period of ice cover on Maine lakes is growing shorter. At what rate is this phenomena occurring? How is this change affecting water quality, and overall lake health? VLMP citizen scientists monitor an increasingly-wide range of aquatic phenomena, ranging from ice-out dates to crayfish; from native plant communities to aquatic snails. With your help we can begin to answer these questions and much more!

To learn more about monitoring initiatives and how to get involved, please visit www.mainevlmp.org, or call 207-783-7733. ☺

Below are some examples of “Other Aquatic Phenomena” being monitored by VLMP volunteers.



While the tapioca-like bluegreen algae, *Gloeotrichia echinulata*, is not new to Maine lakes, it appears to be increasing significantly in some. Monitoring “gloeo” (pronounced glee-o) in your lake is quite simple, and can provide researchers with the data needed to better understand this changing phenomenon, and the implications for Maine lakes.



Many VLMP citizen lake scientists also participate in Maine Audubon’s annual loon count. For more information on The Maine Loon Project, please visit maineaudubon.org. Photo courtesy of Rob Crosby.



Metaphyton is a group of filamentous algae that form blooms in shallow (littoral) areas of lakes. The blooms are often described as having the appearance of green or yellow/green cotton candy. The VLMP has developed a process to allow volunteers to identify, document and track the growth of metaphyton in Maine lakes and ponds. Photo courtesy of Dennis Roberge.



The VLMP is working to track the spread of this large invasive aquatic snail in Maine. You can assist in this important effort by reporting Chinese mystery snail sightings and submitting voucher photos, such as this one, to the VLMP. Photo courtesy of Karen Coluzzi.



Rusty crayfish is one of several invasive fauna species that threaten Maine lakes. In partnership with USM researcher, Dr. Karen Wilson, VLMP monitors have started collecting valuable data concerning the distribution of native and non-native crayfish species in Maine.



One of the fringe-benefits of becoming an experienced Invasive Plant Patroller is learning more about the native plants that grow in your lake. Native plant inventories collected by IPP volunteers are being used by researchers to greatly enhance our knowledge of Maine’s native plant communities. Photo courtesy of Dennis Roberge.

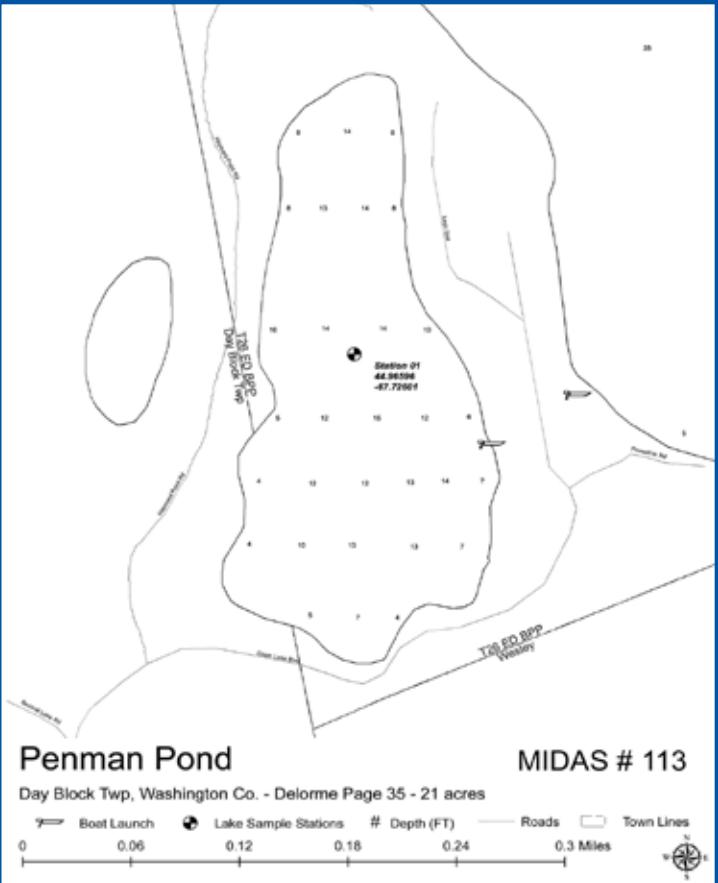
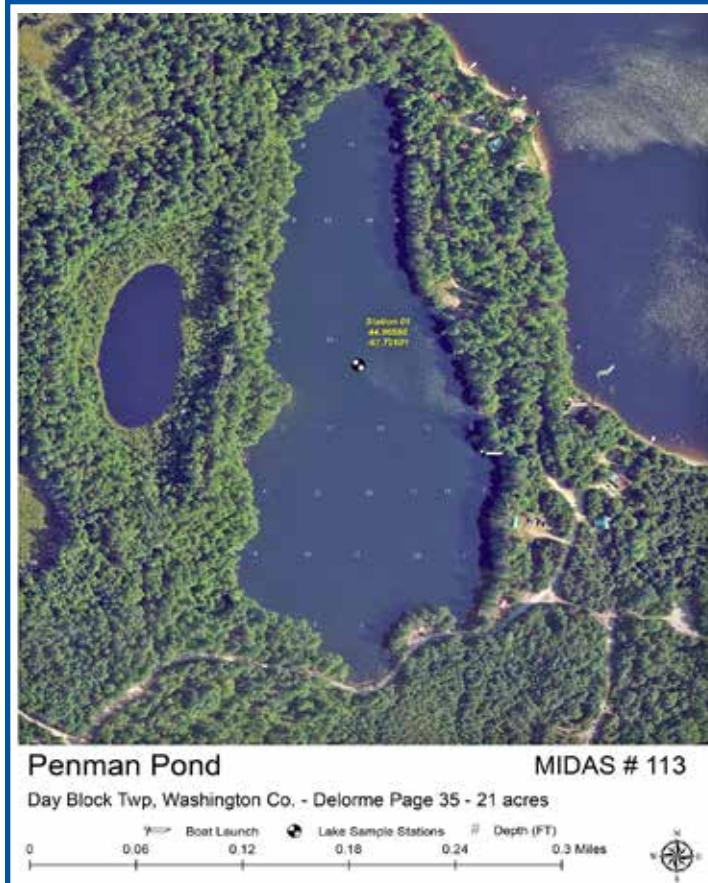
NEW LAKE MAPS !!

Whether you are a water quality monitor, invasive plant patroller, or simply someone who loves to spend time on Maine lakes, you will be very pleased with our new and improved lake maps! Developed by DEP Geographic Information System (GIS) wizard, Doug Sutor, the new maps provide lots of useful information, including the following:

- Improved shoreline accuracy (based on aerial photography)
- Location of deep stations marked, with coordinates shown in decimal degrees
- Department of Inland Fisheries & Wildlife lakewide depth data

- Surrounding roads and road names
- Total lake surface acreage
- Page number where the lake can be found in the DeLorme *Maine Atlas & Gazetteer*
- MIDAS number (unique identification number for the lake; used on all VLMP field forms)

Expected date of availability is January 1, 2015. The new lake maps will be available on both the VLMP and Lakes of Maine websites. Click on the 'Search for Your Lake' button to access the maps. ☀



Lake maps will be available in two versions: one shows aerial photo imagery detail, the other is a simplified line-map, leaving space for field notes.

VLMP Executive Director, Scott Williams, Recognized by US EPA

Earth Day, 2014 (April 22) – Executive Director Scott Williams was recognized by the US EPA for his longstanding efforts to protect Maine's lakes through the work of the Maine VLMP. The award was presented at historic Faneuil Hall in Boston by EPA Region 1 officials, and by Maine DEP Commissioner, Patricia Aho, who spoke of Scott's extraordinary commitment to Maine's lakes through the training of hundreds of citizen scientist lake monitors in Maine over a period of nearly two decades. ☀



(L-R) VLMP Board Member Mary Jane Dillingham, Maine DEP Commissioner Patricia Aho, EPA Region 1 Deputy Director Deb Szaro, VLMP Invasive Species Program Director Roberta Hill, VLMP Executive Director Scott Williams.

Friend or Foe? What to do when you find a suspicious aquatic plant

By Christine Guerette

With wider awareness of the threat of invasive aquatic plants, more people are looking into their lakes and wondering what's lurking beneath the surface. The VLMP is here to help anyone, from highly trained volunteers to first-time visitors to Maine, identify any suspicious aquatic plants you may encounter and provide guidance on next steps, if necessary. This service is free, easy, and open to all.

Following the procedures outlined below will help ensure the timely, accurate identification of your specimen. You may email us a digital photo or send us live plant material. First, however, you'll need to collect a specimen.

When collecting samples from a live lake plant, please be sure not to remove the whole plant. Snip off one or two pieces of stem from the plant (roughly 8 to 12 inches long) including as many different features as you can (flowers, fruits, leaves, etc.). Mark the plant with a buoy and on a map. In the event that your plant is invasive, this will help the DEP quickly locate the infestation and take proper action.

Keep your plant specimen in water, in a cool place (e.g., refrigerator). This will help keep it fresh until you are ready to photograph or ship.

IMPORTANT: Depending upon the plant, a photograph may not be adequate. We may need to see the physical specimen, so please do not discard it until you hear from us. (Be sure to keep it fresh, as described above.)



Example of a marker buoy you can make at home.

Send us Digital Photos

Taking your photos –

- ❖ Gently clean off any attached debris from your specimen.
- ❖ Float the plant in a tray of water long enough to stretch the sample out fully, with enough water for the plant to float freely. The tray bottom should be white (or clear and placed on a white surface).
- ❖ Put something in photos to show scale e.g., a ruler or coin.
- ❖ Take a high-resolution digital picture.
- ❖ The image must be in focus and show the greatest amount of detail possible. Adjust lighting to minimize glare.
- ❖ If possible, take close-ups of specific features, such as individual leaves, a single whorl of leaves, flowers, fruits or other structures.



Submitting your photos – Send the image/s by email to vlmp@mainevlmp.org. Write “Plant ID” in the subject line. Include the following information in the body of the message: your name and contact info; waterbody name and town; date the plant was collected.

Documenting your submission – Visit the VLMP website and complete an online *Suspicious Plant Form*. This will alert VLMP staff to the fact that you have submitted photos via email, and provide us with the information needed to record your find in the statewide aquatic plant database.

Send us a Live Plant Specimen

Contact the VLMP – The staff is often out in the field during the summer, and it is important that someone be here to receive and process your plant properly.



Package your plant – Put your sample in a resealable plastic bag. Include some water to cushion it during shipping. Be sure to seal the bag tightly. Place the bag in a small box with enough packing material to prevent movement.

Include a Suspicious Plant Form – The form can be downloaded from our website at www.mainevlmp.org. If you need help finding or filling out the form, call us at 207-783-7733.

Ship your plant specimen – Plants should be shipped early in the week. Plants mailed later in the week may arrive on Saturday, when no one is here to process them.



If you ever have any questions regarding submitting a suspicious plant, always feel free to contact the VLMP at vlmp@mainevlmp.org or 207-783-7733. ☺

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Major funding for the VLMP is made possible by grants from the US Environmental Protection Agency and the Maine Department of Environmental Protection, through Section 319 of the Clean Water Act.

In Memory Of

Rich & Lonny Schneider;
In Memory of J. Philip Davis
Little Wilson Pond Improvement Assoc.;
In Memory of Sydney A. Rowe

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!

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Volunteer Watershed Survey of Ellis/Roxbury Pond Successfully Completed

~ Article contributed by Laura Crossley, AmeriCorps/Maine Conservation Corps Member serving with the Maine DEP

Citizens of Roxbury, Byron, and Andover, who were concerned with changes to Ellis Pond's water quality, got in contact last year with VLMP and the Maine Department of Environmental Protection (DEP) to discuss ways to protect their lake's water quality. In the fall of 2013, a localized algae bloom occurred, which further inspired residents to take action. In January, 2014, I started an AmeriCorps/Maine Conservation Corps term with DEP as the survey project coordinator for the Ellis (Roxbury) Pond Watershed Survey. This group of about 20 concerned citizens became the Steering Committee for the survey.

Funding for the survey project came from a variety of sources. Members of the Steering Committee, several of whom are also members of the Silver Lake Camp Owner's Association (SLCOA), sent solicitations to their members. People used their social capital to get their friends and neighbors to

support the survey. Flyers were posted at key locations to let residents know about the survey and to request donations. Press releases that included a request for donations were sent out to local papers.



Severe erosion problems were identified and documented by volunteer surveyors.



Volunteer surveyors for the Ellis/Roxbury Pond survey pose for a photo before heading out into the watershed.

In the end we received donations from individuals, all three towns, SLCOA, and a local contractor who had worked on fixing the main road in Roxbury. Some of these donations were used to hire private consultants as technical leaders for the survey, or to pay for postage for mailings to landowners. Maine DEP donated my time and technical assistance to the group. This included making maps, organizing the survey training, coordinating volunteer survey outings, facilitating meetings, writing press releases, landowner outreach letters, and creating a flyer. Volunteers logged more than 400 combined hours and identified 191 sites that are impacting the water quality of Ellis Pond. And we had a good time doing it! All of this was completed without grant funding. Now the Steering Committee is on the way to apply for 319 grant funding, which is provided under the Clean Water Act and managed by DEP, in order to restore and repair impacted waters. ☺

Photos provided by the Ellis/Roxbury Pond Watershed Survey.

A Huge Thank-You to Maine's Volunteer Lake Monitors!

Thank you doesn't begin to convey the gratitude, the appreciation, the recognition of value that is due to all of you, who do now, and have done for so many years, so much on behalf of Maine's lakes. Whether you are taking Secchi disk readings, conducting an invasive aquatic species screening survey, documenting *Gloeostrichia* density, reporting the "ice-out" date for your lake, serving your lake community as a local lake expert, or helping to identify and resolve sources of pollution in your lake watershed, you are making very valuable

contributions to everyone's understanding of not only the lake that you monitor, but of all Maine lakes! And the better we understand our lakes, the more likely it is that we will be able to effectively protect them.

The Maine VLMP, which includes every one of you, is the longest-standing, statewide citizen-scientist lake monitoring program in the nation. Is it coincidental that our lakes are also among the clearest and cleanest in the world? We don't think so! ☺



HIGHLIGHTS OF THE 2014 LAKE MONITORING CONFERENCE

The 2014 Annual Lake Monitoring Conference, held at *The Great Outdoors* on Pleasant Pond in Turner, was attended by nearly 110 individuals. Speakers and presenters covered a wide range of topics of interest to lake monitors throughout Maine. In addition, many volunteer lake monitors were recognized for their long-term commitment, and for unique contributions that they have made toward monitoring and protecting the health of their lakes!



Friends of the VLMP awards were presented to outstanding volunteers Mike Cloutier, Steve Underwood, Randy Richardson, Dennis Roberge, and Steve Lambert.



Mike Cloutier accepts the IPP Team of the Year award on behalf of his exceptional team.



Hats off to Bob Susbury, for 40 years of lake monitoring!



"Super-uber-IPPer" Bunny & Ross Wescott and Bob & Sibyl French share the 2014 IPP of the Year award.



Monitor Rob Crosby won the kayak!



10-Year Lake Monitors (L-R) Mike Cloutier, Claudia Scholz, Jackey Bailey, Lew Wetzel, and Fred Cummings.



DEP Commissioner Patricia Aho discusses the value of volunteer lake data to the State of Maine.



Dr. Emmanuel Boss demonstrates the optical properties of water and discusses how they pertain to lake water quality monitoring.



Judy Potvin (formerly of Maine DEP) receives Special Recognition for Outstanding Support to Maine's Volunteer Lake Monitors.



Fred Cummings (R) discusses how his lake association won the fight against milfoil in Pleasant Lake/Parker Pond with lake monitor Richard Offinger.



DEP's Wendy Garland reviews the importance of volunteers in watershed surveys.



Clyde Walton receives a Lifetime Achievement Award.



5-Year Monitors (L-R) John Cummings, Dan Hutchins, Steve Mendarzchowski; (back row) Marsha Letourneau, Jeanne Achillie, John Welch, and Michele Windsor.



Exhibitor Keith Williams goes over the finer points of making herbarium sheets.



15-Year Monitor Heidi Chadbourne.



Jacolyn Bailey was recognized for her extensive work related to the understanding and control of aquatic invaders.



20-Year Monitors (L-R) Dave Drouin & Ross Swain.



Exhibitor Ken Hotopp discusses freshwater mollusks.

THE VOLUNTEER PERSPECTIVE ~

Vision is perhaps the most fundamental way through which we connect with each other and the physical world. In 2011 I became legally blind as the result of a degenerative eye disease, 'Retinitis Pigmentosa' (decreasing peripheral and loss of night vision), which ended my 32 years of work for a local manufacturing facility. I had been adjusting with diminishing vision for several years, but "retiring" left me feeling essentially disconnected, lost. Realizing my growing sense of isolation, reconnecting with people became really important to me.

In late August of 2013, my wife, Lo, and I visited St. Agatha, Maine to check out some northern lakes on which we thought we might someday like to live. While kayaking on Long Lake, Lo noticed some "stuff" floating in the lake and wondered why the water was not clearer. When we returned home I began researching Long Lake and inadvertently connected with Christine Guerette, a staff member at the VLMP, who explained to me what the VLMP is all about, and gave me some information on Long Lake.

By the time I spoke with Christine, I had been struggling for about a year to find a meaningful path. Nothing seemed to fit. Suddenly, with no hesitation at all, I felt that volunteering with

the VLMP would connect me with some great people and enable me to contribute to something that I believe in. Lo and I visited the VLMP that December. Jonnie Maloney, another member of the VLMP staff, and her beautiful dog, Luna, gave us a tour, and since then I have been volunteering in an ever-expanding capacity. I am learning what Jonnie, Christine, Roberta and Scott need, as they find what I am capable of doing to assist them. This process is challenging, humbling, gratifying, exciting and fun.

I love what the VLMP does, preserving or improving the quality of our lakes and watersheds using sound science, through the generous contribution of many, many talented and dedicated volunteers (whose qualifications are very impressive to me), that are trained, certified and supported by the organization's staff and in partnership with the ecologically-minded communities with which they are associated.

Volunteering with the VLMP makes my life so much richer. I cannot think of a better way to spend my time than in partnering with these wonderful people, supporting them in any way that I can. Members of the staff are

always thanking me. I do not think they realize how much the VLMP gives to me, and how grateful I am to have discovered them. ☺

~ Steve Lambert



Friend of the VLMP and "Handyman Extraordinaire" Steve Lambert has been busy making repairs and improvements at the VLMP Lakes Center, in addition to serving on board sub-committees. Thank you so much for your care and dedication, Steve!



2014 Workshop Season in Review

The 2014 Water Quality program workshop season got off to a delayed start, due to a very rainy May, but we persevered and went on to have a great season. Four New Water Quality training workshops were held, where 45 new water quality monitors were trained, and 19 new lakes were added to the program. Strong interest in Advanced Dissolved Oxygen monitoring resulted in two workshops being held this year, resulting in 19 new certified DO monitors.

Approximately 200 individuals attended six Introductory Invasive Plant Patrol (IPP) workshops and three on-the-water IPP Survey Field Methods workshops, conducted across the state. The Advanced Plant ID workshop, this year held in Rangeley, was packed to capacity with 25 participants. Forty-four individuals completed training in invasive aquatic plant removal during VLMP's two-day Invasive Aquatic Plant Manual Control Methods training.

The Watershed Survey Training Workshop was a big hit again this year, with a packed house at the VLMP of 25 attendees. Volunteer leadership trainings conducted in 2014 were also well-attended. For all available VLMP workshops, please visit www.mainevlmp.org. ☺



THE HUNT FOR AQUATIC INVADERS



Set upon the backdrop of one of Maine's most extraordinary lakes, *The Hunt for Aquatic Invaders* takes the viewer on a very different kind of outdoor adventure, one that not only speaks to the urgency of the task at hand—preventing the spread of aquatic invaders in Maine—but also provides guidance and inspiration as it explores the vital role that volunteers can play in local and statewide early detection efforts.

The Hunt may be viewed (and linked to) on both the VLMP website and VLMP YouTube channel. DVDs are also available for \$10 plus shipping and handling. Please help us share this powerful, uniquely-Maine story with audiences across the state and beyond! Contact us at 207-783-7733 or vlmp@mainevlmp.org to order your DVD. ☀

Seeking Candidates for the VLMP Board of Directors

The VLMP is seeking to fill two 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,



Image from www.gias.org

Maine. Meetings typically take place on a weekday morning, and may last until early afternoon. Committee meetings often are scheduled for the same day. Members of the Board of Directors agree to be active in at least one subcommittee.

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. ☀

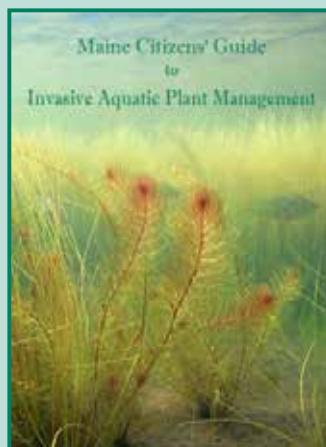
2014 VLMP INTERNS

Daniel Goettel and Emma Blakely constructed bucket viewing scopes for future Invasive Plant Patrol monitors earlier this year, as part of their internship with the VLMP. Daniel is attending the University of Maine, pursuing a Masters Degree in Environmental Engineering. Emma is in the Environmental Studies program at Bates College. Thanks for your hard work, Emma & Daniel! ☀



Maine Citizens' Guide to Invasive Aquatic Plant Management

Once an infestation has been confirmed, rapid response is crucial. The prospects for effective management or even eradication, is greatly increased by swift, well-planned, and properly executed controls. The purpose of the *Maine Citizens' Guide to Invasive Aquatic Plant Management* is to provide the information necessary to effectively manage invasive aquatic plant (IAP) populations; to prepare for such an eventuality; and to address all associated activities. Methods described in this Guide are based upon tested best-management practices for controlling aquatic plants effectively and in a manner that protects wildlife and habitat. To view and/or download this new publication, please visit the VLMP website at www.mainevlmp.org/citizensguide. ☀



Welcome, New Lake Monitors!

NEW VOLUNTEER LAKE MONITORS CERTIFIED IN 2014

Kent Ackley; Annabessacook Lake

Sarah Adams; Pettingill Pond

Mary Adley; Embden Pond

Arne Aho; Pemaquid Pond

Gary Allison; East Pond

Ron Armontrout; Thompson Lake

Donald Atkinson; Annabessacook Lake

Hannah Atwood; Embden Pond

Jim Bailey; Crawford Pond

Taylor Bartlett; Embden Pond

Misty Beck; David Pond

Janet Bissell; Mooselookmeguntic Lake

Abby Blakeley; Megunticook Lake

John Bonsall; Wesserunsett Lake

Andrew Bowman; Embden Pond

Samantha Burgie

Ryan Caster; Highland Lake

Robert & Susan Chapin; Thomas Pond

Betty & Paul C. Chesley; Annabessacook Lake

Corinna Cole; Spaulding Pond

Nancy & Peter Cornwell; West Grand Lake &

Upper Oxbrook Lake



George Fergusson; Clary Lake

Trish Fournier; Crescent Lake

Catherine Fox; Branch Lake

Chelsey Frank; Clearwater Pond

Stephen Geranian; Great East Lake

Shelly Gerstein & Gale Mettey; Maranacook Lake

David Goodwin; Pequawket Lake/Horne Pond

Evan Gorr; Embden Pond

Tayelor Gosselin; Lake Auburn

John & Katie Greenman; Alamoosook Lake

Greg Guerette & Jo Harmon; Pequawket Lake

Jill Halligan; Annabessacook Lake

Dorothy Hamory; Alamoosook Lake

Martha & Peter Haskell; Portage Lake

Keith Heavrin, Jr.; Toddy Pond

April Hopkins; Leonard Lake

Gary & Penny Jaskalen; Pleasant Pond

Bambi Jones; Little Dyer Pond

Donna Kincer; Portage Lake

Patricia Koscinski; Androscoggin Lake

Jennifer Lacombe; Webber Pond

Steve Lambert

Mariah Langton; Embden Pond

Spencer Lawler-Sidell; Embden Pond

Paul Leeper; Megunticook Lake

Zach Lemelin; Mousam Lake & Square Pond

Mike Levey; Annabessacook Lake

Stephen Lewis; Horseshoe Pond

Vince Lobosco; Big Lake

Bruce MacEwan; Labrador Pond

Shawn McLane; Jordan Pond, Upper & Lower Hadlock Ponds

Bob McLaughlin; Wesserunsett Lake

Laurie Medeiros; Annabessacook Lake

Sue Mello; Knickerbocker Pond

Jeni Menendez

Robert and Judy Miller; West Grand Lake

Ian Miller; Embden Pond

Steve Moland; Figure 8 Pond/Silver Lake

Bill Moore; Pequawket Lake/Horne Pond

Scott Mrazik; Mousam Lake & Square Pond

Douglas Munsey; Annabessacook Lake

Patrick Nichols; Embden Pond

Jeff Orchard; Meddybemps Lake

Dayle Owen; Farrow Lake

Betty & Dave Parsons; Toddy Pond

Bobbie Peacock; Embden Pond

Amy Peterson; Embden Pond

Shannon Power; Cobbsseecontee Lake & China Lake

David & Ellen Randall; Pocasset Lake

Peter Rees; Webb Pond

Sharon & Wayne Reetz; Wilson Lake

Ed & Sue Reinke; Annabessacook Lake

Mike Remillard; West Grand Lake, First - Fifth Machias Lakes,

Wabassus Lake

Willard Richards; Crescent Lake

John Richey; Portage Lake

Deanne Sainati; Farrow Lake

Paul Sallie; Abrams Pond

Matt D. Scaccia; Pinkham Pond (Hidden Lake)

Billy Schenk; Mattawamkeag Lake

Linda Schier; Great East Lake

Doug Sears; Embden Pond

Lee Schneller Slight; Hosmer Pond

Sandra Small-Hughes; Annabessacook Lake

Cassandra Smith; Embden Pond

Debra Smith; Crystal Lake

Ron Snyder; Wassookeag Lake

Sarah-Jane Snyder; Wassookeag Lake

David & Diana Spahn; Wilson Lake

Nan Sprague; West Grand Lake

Deanna St. Pierre; Great East Lake

Kate Stevens; Embden Pond

Morgan Steward; Embden Pond

David Stonebraker; Big Kennebago Lake

John Strassenreiter; Quantabacook Lake

Rick Sullivan; Little Sebago Lake

Mark Tappan & Lyn Mikel Brown; Pleasant Lake

Yvette Tenney; Toddy Pond

Barbara Tewksbury; Mousam Lake

Olivia Tewksbury; Embden Pond

Charles Towle

Adrienne Tracy; Maranacook Lake

Liz Trouant; Meddybemps Lake

Ted Van Leer; Alamoosook Lake

Kristen Wedin; Phillips/Lucerne Lake

Lindsay Wheaton; West Grand Lake

Doreen Whitmore; Embden Pond

Janice Whynot; Annabessacook Lake

Christine Williams; Sebago Lake

Melvin (Ike) Winchester; Meddybemps Lake



Maine's Volunteer Lake Monitors to be Highlighted in North American Lake Management Society Annual Symposium in Tampa, Florida

Maine's outstanding citizen lake scientists will be highlighted in November at the Annual Symposium of the North American Lake Management Society (NALMS) in Tampa, Florida. The Maine VLMP is the longest-standing statewide citizen lake monitoring program in the nation, as well as one of the largest, with more than 1,000 active citizen lake scientists who monitor the health of over 550 lakes throughout the state.



Matt Scott, who is widely considered to be the founding father of Maine's VLMP, former director of the DEP lakes program, former President of NALMS, and a member of the VLMP Advisory Board, will present information on the history and successes of

the VLMP at the gathering of lake scientists, citizen monitors, lake associations and others in Tampa. An article based on the presentation will be featured in an upcoming edition of the NALMS journal, *LAKELINE*.

Maine's dedicated volunteer monitors, many of whom have been continuously active for several decades, and who have inspired lake stewardship not only in Maine, but across the nation, will be recognized in the November presentation. ☺



The VLMP Takes a Giant LEAP FORWARD ...

Volunteers Are Posting Data Online in NEAR REAL-TIME!

Providing a direct portal to current water quality conditions in Maine

If you've been wondering how your 2014 Secchi disk readings compare to other lakes throughout Maine, the VLMP "Near Real-Time Lake Data" (NRTLD) website offers viewers an opportunity to observe Secchi (water clarity, or transparency) readings taken on 11 lakes during the spring, summer and fall lake monitoring season. Participating lake monitors posted Secchi readings for their lakes during the period, usually within 24 hours of taking the reading.

The NRTLD website provides an overview of water quality conditions on a select group of Maine lakes throughout the monitoring season. Secchi readings, which vary notably across this geographically-varied group, are automatically graphed as they are posted to the site. Lake monitors also have the opportunity to elaborate upon their findings with relevant comments.

Detailed information about each of the participating lakes is also easily accessed from the NRTLD website.

Additional lakes will be highlighted on the website in 2015. Volunteer lake monitors who are interested in participating must meet the following requirements:

- Certification requirements must be up to date
- Secchi readings must be taken from May through September at two-week intervals

The NRTLD website can be accessed through the VLMP website at www.mainevlmp.org, and click on the "View Current Water Quality Conditions on Maine Lakes" button.

The direct link to the NRTLD website is:
www.mainevlmp.org/near-real-time-lake-data/ ☺

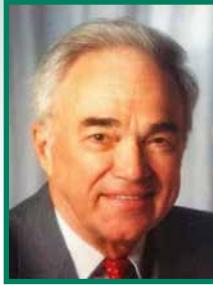
Name	Town	Date
Auburn Lake	Auburn	3/7/13
Cary Lake	Jefferson	5/30/12
Domino-scott Lake	Jefferson	5/4/09
Highland Lake	Falmouth	3/7/14
Long Lake	St. Agatha	4/6/12
Long Pond	Bethel	5/27/12
Mousam Lake	Acadia	3/6/08
Rangley Lake	Rangley	3/30/09
Sebago Lake	Standish	5/7/09
Upper Wilson Lake	Greenville	04/10
West Grand Lake	TRELL GLB	11/10

• 2014 Secchi data graphic for these 11 lakes
• View the log of all recent data
• Participating volunteers [Join]

SAVE THE DATE!

**2015 VLMP ANNUAL CONFERENCE IS SCHEDULED
FOR SATURDAY, JULY 25**

Passings



John B. Banton

John B. Banton, of Weld, Maine and Canyon Lake, Texas, died in July, 2013, peacefully at the age of 88, at home in Weld with his beloved daughter by his side. He was a WWII Vet, born in Bangor, the son of Nellie Banton. He graduated from Bangor High and University

of Maine, Orono. John is survived by his wife Annabelle Hall Banton, sons Donald, Michael, Steven and Russell and daughter Susan. John monitored both Secchi and Dissolved Oxygen on Webb Lake in Weld. *Courtesy of Meader & Son Funeral Home, Rumford, Maine.*

Edward P. Ketchen passed away in March of this year, at age 94, with family at his side. Ed was the Meddybemps lake monitor for over 25 years, loon counter, bird counter, general wildlife observer/expert, float plane pilot, and story teller. He will be sorely missed! He directed the Lake Meddybemps Association for many years, and became *Director Emeritus* about 10 years ago. He also taught the younger generations of his family the importance of lake monitoring.

Ed served in the US Navy aboard the aircraft carrier *Wasp* in the Pacific theater during WWII, before being honorably discharged as

Chief Petty Officer in 1945. Ed never forgot those who gave their all for their country, and he never stopped honoring all those who served.

Prior to leaving the military, Ed married his sweetheart Joan Dripps, and after the war ended, they moved to Meddybemps where they would build their life together and raise their family. Ed and Joan Ketchen were truly members of Tom Brokaw's "Greatest Generation."

Ed was a member of the Meddybemps Christian Church, and helped with church activities when he was able. His favorite hymn was, "This is My Father's World."



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

Lake Monitoring Gear Available

In recent years, a number of used dissolved oxygen (DO) meters have been donated to the VLMP. The condition of individual meters ranges from "unknown" to "working/serviceable". Some of the equipment is of the older analog type (still perfectly accurate), other units are of the newer digital type. Parts may still be available –new or used—for the older equipment. The meters are available at no cost (at our discretion) to certified water quality monitors. We are in the process of reconditioning some of the equipment, after which it will be available at whatever cost was incurred in restoring the individual units. Some of the equipment is being dismantled to be used for parts that are no longer available through manufacturers.

If you are interested, be aware that the process of selecting a temperature/dissolved oxygen meter for monitoring your lake typically involves consideration of a number of factors, not the least of which is ensuring that the cable/probe assembly is long



Just some of the used DO monitoring equipment now available through the VLMP.

enough to go from the surface to the bottom of the lake at the deep monitoring station. If you're monitoring a lake with a maximum depth of 60 feet, a DO meter with a 50 foot cable isn't long enough! Most DO meters consist of three components: Meter, Cable and Probe. It is possible to "mix and match" the components of some units (within the same manufacturer), but only for certain models.

In order to submit temperature and dissolved oxygen data for your lake, you must first be certified to monitor Secchi transparency, following which, you should plan to attend a DO training workshop, offered annually at the VLMP Lakes Center in Auburn. Volunteer DO monitors must be certified with the meter that they use to gather and submit data. DO re-certification is required annually.

If you are interested in a potentially low-cost (relative to a new unit) piece of equipment for monitoring temperature and dissolved oxygen in your lake, contact Scott Williams. ☺



MWUA
Maine Water Utilities Association
Organized 1925

Advocates for the Water Profession
Protecting Public Drinking Water Sources

Education Legislation Policy Networking

(207) 623-9511 150 Capitol Street, Suite 5, Augusta ME 07330 www.mwua.org

WANTED

Volunteer Water Quality Regional & Data Coordinators

Help with activities such as scheduling re-certification workshops, communicating with volunteers, and lake data entry. For more information, please contact us at vlmp@mainevlmp.org or 207-783-7733.

Become a Friend of the VLMP!

The VLMP is a uniquely volunteer-powered organization. Most VLMP volunteers are committed to the critically important task of monitoring the health of Maine lakes. But there are many other off-the-water tasks that need to be done in order to keep the entire statewide lake monitoring enterprise moving forward smoothly. As the VLMP grows, these essential behind-the-scenes tasks are also increasingly being shared by our volunteers.

Friends of the VLMP are lending their time, talents and creativity to help us build and maintain one of the largest and most active citizen-based lake monitoring programs in the nation. With their much-needed and greatly valued help, the VLMP is better able to meet the demands of Maine's ever-growing statewide network of volunteer lake monitors.

Interested? We are eager to help YOU find and/or expand your special niche in the VLMP. We can use help with a wide range of seasonally variable tasks, from data entry and assembling bulk mailings, to helping with yard work and making repairs to the property. Please contact us today to learn more!

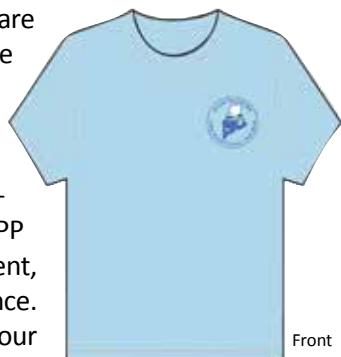
**REMINDER TO ALL
VOLUNTEER LAKE MONITORS:**
Help ensure the *2014 Maine Lakes Report* will
be complete by sending in your data now!

FREE T-SHIRTS FOR CERTIFIED LAKE MONITORS!

Certified lake monitors are eligible for one of these beautiful t-shirts, free-of-charge! T-shirts are currently available, and may be picked up at any water quality re-certification workshop, IPP workshop, or other VLMP event, including our annual conference. If you are unable to pick up your t-shirt, we can arrange to have one sent to you for the cost of shipping and handling.

Don't miss out! Please contact the VLMP with your shirt size, either by email or phone, at vlmp@mainevlmp.org, or 207-783-7733.

Thank you to our corporate sponsor, **YSI Incorporated**, whose generous support made these t-shirts possible!



Front



Back

SHOW OFF YOUR PRIDE AS A VLMP CERTIFIED LAKE MONITOR!

Sponsorship and Underwriting Opportunities in the Water Column

The value of Maine's lakes to the state's economy is substantial; studies have shown that our lakes conservatively generate 3.5 billion dollars in economic activity annually. An increasing number of Maine businesses—companies who not only see the connection between clean lakes and economic prosperity, but who also understand the value of volunteer "match"¹—now support the work of the VLMP. It is in this spirit of mutually beneficial collaboration that we welcome this issue's corporate sponsors.

If you, or your company, are interested in supporting the work of the VLMP through sponsorship or underwriting, please contact us. Sponsorship notices will be accepted at the discretion of the staff and Board of Directors.

1. Every dollar donated to the VLMP is matched at least 10 times over by volunteer support!

The best Retirement & Active Lifestyle Living

A family of locally developed and managed communities incorporating natural and historic elements



OceanView - Celebrating 28 Years
Just minutes from downtown Portland, overlooking Casco Bay, OceanView's wooded 80-acre campus offers spacious cottages & apartments and an active, stress free retirement lifestyle...with peace of mind for the future with a care continuum.



The Highlands - Celebrating 24 Years
The Highlands offers a variety of rental and purchase options designed to complement your unique retirement lifestyle. Social, educational and recreational opportunities provide endless possibilities to maintain wellness, social connections and independence.



Highland Green - Celebrating 13 Years
Maine's premier Active Lifestyle Community features a vast 635-acre campus with the unprecedented incorporation of a working nature preserve, custom built homes, a low maintenance lifestyle, golf and new friends sharing interests from 28 states and counting.

OceanView
AT • FALMOUTH
A 21st century retirement community™

Come Visit Us!
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207-781-4460 | www.oceanviewrc.com



THE HIGHLANDS
A Lifestyle of Choice

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207-725-2650 | www.highlandsrc.com/lakes

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207-725-4549 | highlandgreenlifestyle.com



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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.

Looking for Other Ways to Support the VLMP?

When you clean out your attic, purchase a newer version of an item, or inherit something useful you don't have room for, please consider donating to the VLMP!

Here is a list of some items we could use. If you would like to donate an item to the VLMP, please contact us before doing so, to make sure it is a good fit for the organization. The VLMP is a 501(c)(3) charitable organization, so all donations to us are tax-deductible.



Tools	Ladder
Large Coffee Urn	Filing Cabinets
Floor & Desk Lamps	Shelving Units
Small Computer Desk	Picnic Table
Brooms	Silverware
Gift Cards to Lowe's or Home Depot	



We are also seeking lake-oriented artwork or photos, suitable for framing (or already framed).

If you shop at [Amazon.com](https://smile.amazon.com), please consider making your purchases through [Smile.Amazon.com](https://smile.amazon.com), and selecting the Maine VLMP as your recipient charity. The AmazonSmile Foundation will then donate 0.5% of your purchase price to the VLMP.

Thank You for your support!