

the Water Column



A Publication of the Maine Volunteer Lake Monitoring Program

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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.

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President's Message

Mary Jane Dillingham
 President, VLMP Board of Directors

Over the Tipping Point

We often don't truly appreciate the value of what we have until it's gone. For reasons that are not clear, one of Maine's highest-value lakes went over the tipping point this year, and is now in crisis.

Lake Auburn has been the drinking water supply for Lewiston and Auburn for more than 100 years. The lake has been considered to have above-average water quality, compared to other Maine lakes, based on excellent Secchi transparency, relatively low algae growth, and high levels of dissolved oxygen throughout the summer months, supporting a prized cold water fishery of trophy Salmon and Togue (Lake Trout).

But during the past several years, algae growth has increased measurably, especially *Gloeotrichia echinulata*, which has also been on the increase in other Maine lakes. In 2011, the lake became anoxic (zero dissolved oxygen) just below the thermocline for more than 10 weeks, and a severe algal bloom occurred in late summer. In 2012, the scenario worsened. Once again, an algae bloom occurred, and dissolved oxygen levels plummeted so severely that many lake trout died. The fish kill caught the attention it deserved from agencies, the public and the Press. This unprecedented event stunned everyone!

The VLMP and the DEP played important roles in the water utilities' response. Without the data gathered through the VLMP, we would be in the position of not having sufficient historical information to analyze what had occurred. VLMP staff worked with the water district to inform the surrounding communities about the highly unusual event. I have been a volunteer monitor for Lake Auburn since I began my employment with the water utility many years ago, and I am incredibly grateful that my employers fully support the monitoring efforts on our lake.

We are working with every available tool to understand what is happening, and hopefully to find a set of solutions to save Lake Auburn from further decline. We highly value our lake for supporting a healthy coldwater fishery and pristine drinking water that requires relatively little treatment.

More than ever, I appreciate the work of more than a thousand VLMP volunteers, who monitor several hundred Maine lakes. But I worry that there are still so many lakes that are not being monitored. I encourage all of you to spread the word about the work of the VLMP, and ask for your help in recruiting additional volunteer lake monitors, so that we can better understand and protect the legacy of Maine's clear, clean lakes.

Lakeside Notes

Maine's Lakes Program: *United We Stand!*

Maine's "Lakes Program" came into being a little more than four decades ago, as the public increasingly became aware of threats to our exceptionally clear, clean lakes. The growing concern for the future of Maine lakes contributed to the formation of three statewide entities that continue to play key roles in the effort to ensure that our lakes will remain among the healthiest in the nation. The Maine Department of Environmental Protection, the Congress of Lake Associations, and the Maine Volunteer Lake Monitoring Program, were then, as they are today, the backbone of the statewide effort to sustain the health of our lakes. Each organization brings something unique to the table, and together we have created a public/private partnership that is the envy of many of our counterparts across North America: one that encompasses broad technical expertise, regulatory authority, stakeholder advocacy, vibrant volunteer service, and diverse sources of funding and program support.

Over the decades since these three entities were formed, a number of additional lake-focused programs have come into being. Researchers at the

DEP and the University of Maine and other educational institutions began to tackle the complex technical, social and economic elements of long-term lake management and protection. County Soil and Water Conservation Districts developed programs to address lake watershed assessment and protection; the Cobbossee Watershed District was formed in response to declining lake water quality in a group of lakes near Augusta, and water utilities that withdraw public drinking water from lakes recognized the value of maintaining clean lakes.

During the past four decades, Maine's lakes program has been further enriched through the formation of many lake and watershed associations. Lakes Environmental Association was among the first, followed later by such groups as Rangeley Lakes Heritage Trust, Raymond Waterways Protective Association, and 30-Mile River Watershed Association.

Maine's lakes program has become living proof of the wisdom of Aristotle's claim that "*The whole is greater than the sum of its parts.*" All of the individual parts of Maine's "lakes community" have worked in concert, with a strong collaborative



By Scott Williams
VLMP Executive Director

spirit, resulting in a powerful, cohesive and sustainable force.

But the world is changing in many ways. In recent years, the tight economy has created an environment that seems to favor *competition* for dwindling resources over *collaboration and cooperation*. Despite this, and despite our collective and individual challenges, I sincerely believe that there could be no better time for us to hold our course. Indeed, if we are wise, we will actually find ways to use these challenges to our advantage, to strengthen and build upon our collaborative ties. If we do this, I am confident that we will not only find new efficiencies through the sharing of resources, knowledge, experience and technology that will get us through these challenging times, but we will also create a more resilient, more successful and more hopeful lakes community. *United we stand!*

ATTENTION LAKE MONITORS: ARE YOU WORRIED ABOUT BEING REPLACED BY A SATELLITE?

Recently, we have heard from a few volunteer monitors who have wondered if information about lakes obtained through satellite imagery might render their work unnecessary or obsolete. The unequivocal answer to this question is NO!

Satellite imagery data will enable us to gather information on lakes that are currently not being monitored because of inaccessibility and other reasons. It also enhances the information that you gather on the water.

But satellites must be calibrated, or "ground truthed", which can only be accomplished by

taking Secchi disk (and other) readings on site at your lake.

Researcher Ian McCullough, who has worked with satellite data for Maine lakes during the past few years, made this point clearly in a presentation on the topic at the VLMP Annual Conference in July. For more information on Ian's presentation, click on the following link from the VLMP website:

http://www.mainevlmp.org/wp/?page_id=150#Satellite

Littorally Speaking

VLMP's Invasive Plant Patrol (IPP) Sustainability Initiative ~ How Are We Doing?

We have said it before . . . When the VLMP achieves its ultimate goal as an organization, virtually every lake in the State of Maine will have one or more water quality monitors and an active team of trained Invasive Plant Patrollers routinely monitoring its health. This statewide cadre of dedicated volunteers, will be trained, supported and sustained by a well-organized, integrated, collaborative system involving the VLMP, local, county and State agencies, trained volunteer coordinators, local lake and watershed associations, and regional lake conservation groups.

It was with this goal in mind that two years ago the VLMP launched its *Invasive Plant Patrol (IPP) Sustainability Initiative*. With your help, many elements

of the 'new and improved' IPP structure are now in place, and the result is a system that encourages, supports and celebrates volunteer leadership at every level. Certified Invasive Plant Patrollers, IPP Lake Team Leaders, IPP Leaders at the Regional and Statewide levels are all working in concert to establish one of the largest, most comprehensive, citizen-based statewide invasive aquatic plant early detection system in the nation.

And though these are still "early days" for this initiative, the benefits to Maine lakes, and to all who care about them, are already obvious. More invasive aquatic plant screening surveys are being done; more IPP lake teams have become activated; workshop attendance is rising; more workshop attendees



by Roberta Hill
VLMP Invasive Species
Program Director

are opting for certification (a measure both of commitment and dedication to excellence); the system for providing technical assistance and quality assurance has been greatly enhanced; volunteer engagement and contribution at every level has increased; program efficiency across the board has improved.

So how are we doing? We invite you to check out our photo journal of 2012 IPP activity, and then decide for yourself!



2012 was another banner year for Maine's **Invasive Plant Patrol** with 313 individuals attending one or more IPP workshops, and record numbers (over one third) opting for IPP Certification.



There is no better way to ensure the sustainability of the IPP effort moving forward than

to **Engage the Next Generation** in this important (and really fun!) work. The community of North Anson has come up with an excellent way to engage youth in their local Invasive Plant Patrol. It started when Carrabec High School science teacher Sue Hellewell and Embden Pond IPP Team Leader Mike Whitmore joined forces to organize an IPP Workshop at the school. Students, teachers, and lake association members attended this lively evening training. The next step was to organize the survey. Embden Lake was divided into 12 sectors and newly trained students were paired with lake association members to conduct a comprehensive Level 3 invasive aquatic plant screening survey on the pond, followed by a community barbeque. The day was a great success! New friends were made; no invasives were found; native plants samples were taken and photographed; everyone had fun and learned a great deal. Data from the survey is being



compiled by Carrabec HS students this fall and the results will be put online and published to serve as a guide for future surveys.





IPP Leadership is growing by leaps and bounds - Since the start of the IPP Sustainability Initiative, over 100 trained IPPs have attended some form of VLMP leadership enhancement event. Events include How to Conduct a Plant Paddle, The Scope Clinic, and IPP Leaders Roundtable



Maine now has over 90 IPP Lake Teams. Hosting an IPP workshop on their lake this summer, IPP Leaders on Webb Lake helped to train many new recruits!



IPP Plant Paddles are an excellent way to engage one's community in the hunt for aquatic invaders. Here Certified IPPs Debbie Hite and Lidie Robbins provide orientation to a group of Plant Paddlers at an event sponsored by 30-Mile River Watershed Association. Participants from three area lakes attended: Androscoggin, Lovejoy, and Pocasset



Echo Lake IPP Team Leader and this year's "IPP of the Year" Lea Stabinski, sharing her knowledge of the local aquatic plants with her neighbors at this summer's Echo Lake Plant Paddle



Increasingly volunteer IPPs are taking on leadership roles at the regional level as well. Here Regional IPP Coordinator for Somerset and Piscataquis Counties, Kay Johnson, welcomes attendees to the workshop she helped to coordinate in Greenville



Lovell's Invasive Plant Prevention Committee IPP Leaders set off with a group of paddlers for one of several of their Eyes on the Water Plant Paddles in the Kezar Lake watershed



The VLMP initiated the **Moosehead Lake Invasive Plant Patrol Jump-Start** in 2008, for the purpose of 1) "jump-starting" citizen-based lake monitoring in a region where such activity was currently lacking, and 2) screening Moosehead Lake for the presence of invasive aquatic plants. Over past five years, the Moosehead Lake Invasive Plant Patrol Jump-Start team (comprised primarily of Certified IPPs, with state agency personnel and VLMP staff) has scoured the shoreline of Moosehead Lake for aquatic invaders (happily finding NONE); conducted a comprehensive inventory of Moosehead Lake's native aquatic plants (finding MANY -- 110 species!); and worked to engage the local community in efforts to prevent the spread of this aquatic invaders to this ecologically-rich and economically-vital region of the State. This year, videographer Steve Underwood joined the team and captured the story in extraordinary high-definition footage taken on, around, and under the surface of Moosehead Lake. The resulting VLMP documentary "The Hunt for Aquatic Invaders" is scheduled for release this spring.



SAVE THE DATE!
2013
Invasive Plant Patrol
Leaders Roundtable
 Friday, March 22
 10:00 AM to 3:00 PM
 Auburn Public Library

QUALITY COUNTS!

Just one more. As the boating season winds down, you may be wondering if you should take just one more Secchi Disk reading on your lake. The simple answer is “yes”- providing that you can do so safely. We have always recommended that volunteers collect transparency data for at least five months during the open water season. Until about a decade ago, ice went out in late April and was back on the lake sometime in December; we expected that the five months of data collection would occur from May through October. In recent years, ice has disappeared four to six weeks earlier in the spring and has formed four to six weeks later. The timing of these phenomena results in a longer ice-free season which can in turn, affect the timing of biological and physical processes. So if you are wondering if one extra reading early in the season or a couple extras late in the season would be useful, the answer is *absolutely!* Just please make sure you can obtain them safely as accidental immersion in cold

water is to be avoided at all costs. If you have already turned in your last data sheet, just put the reading on the first sheet you turn in next year.

The final touch... Winter preparations for a volunteer monitor have a few extra steps that will keep your equipment in good repair. First, remember to remove equipment from your boat. 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; if torn more than a quarter of the way, 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 the life of the tape. If the tape reel does not operate smoothly, you might need to pull out all of the tape and lubricate the winding mechanism with silicone (silicone spray is available at most hardware stores).

Clean your view scope and cover the open end with plastic held on with a large elastic. This will keep out dust and most of the spiders. If you use a depth meter having internal batteries, remove the batteries before storing the device. Similarly, if you use a temperature/dissolved oxygen meter, remove the batteries before storage; also follow the manufacturer's recommendations for winterizing the probe - which generally consists of removing the membrane or membrane cap, rinsing



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

the probe with distilled water, allowing to dry, then covering the probe with a piece of plastic. Any other monitoring equipment should be cleaned with distilled water, inspected then stored, preferably in a plastic bag to protect it from dust. Equipment should always be stored in a dry location, ideally in a heated space.

Thank you for another successful year of monitoring! The data you collect is invaluable and irreplaceable. Without your eyes on Maine's lakes, water quality tracking would be impossible. You know “your” lake better than we can ever possibly hope to, and, your collection of scientifically credible data allows us to make comparisons among lakes and track trends. Remember to sign up for re-certification in the spring of 2013 so that we keep our Quality Assured stamp of approval!



Image: Stuart Miles / FreeDigitalPhotos.net

DON'T FORGET TO KEEP TRACK OF YOUR LAKE'S ICE COVER

Winter is fast approaching, and for lake-conscious folks that means one thing: ice cover is coming! Ice-in and ice-out records have been kept by generations of Mainers, and for many lakes there is a long history, in some cases stretching back to the mid-1800's. The VLMP keeps alive the tradition of documenting ice cover, and acts as a state repository for these records. 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.

2012 INTERNS



Jamey Epstein

This year I am a senior at Bates College, completing a degree in Environmental Studies with a concentration in Geology. My courses have taken me to the White Mountains of NH, all the way to the Southern Rockies, each adding to my environmental interests. This diverse lab experience has allowed me to realize my specific interest in water quality, especially Maine lakes. After working within the IPP program at the VLMP, I was able to see how communities can be mobilized for the protection of lakes. Assisting with the workshops this summer was a great

experience, especially traveling to parts of the state I haven't been to before! I also had the pleasure of joining the Moosehead Lake invasive aquatic plant survey that the VLMP conducted this August.

Working at the VLMP afforded me the opportunity to see the hurdles a small non-profit organization must overcome to make a program both efficient and effective-- two terms I would use to describe the program. The team at the VLMP works hard to promote environmental activism through training water quality and invasive species monitors, and deeply cares about protecting Maine lakes. A special thanks to the many volunteers that support the hard work the VLMP does for the lakes of Maine!

I graduated in 2009 from Monmouth Academy and will be graduating in May, 2013 from Colby College with a degree in Environmental Studies. This was my second summer working for the Volunteer Lake Monitoring Program and the Maine Department of Environmental Protection. My love of Maine and the outdoors have made my time at the VLMP even more valuable.

I began working in the lakes field in 2009 as a Courtesy Boat Inspector for the Friends of the Cobscook Bay Watershed. Since that time, I have had the pleasure to meet and work with many of the most prominent lake monitors and scientists in the state. I am also proud to have worked with such influential programs that are constantly monitoring the health of our natural environment for the people of Maine. Throughout my time with the VLMP and DEP, I have learned and refined skills that will aid in my search for employment in the environmental protection field and will serve as an excellent beginning to my professional career.



Garrison Beck



Bates College students **Deanna Lorenzo** (L) and **Cat Dioli** (R) joined the VLMP this spring for a six-week internship. Both Cat and Deanna are majoring in Environmental Studies, and were invaluable in helping prepare for the 2012 monitoring season. Many thanks, Deanna and Cat!



We have some very sad news to share: Our official mascot and greeter, Charlie, passed away in early October, due to cancer.

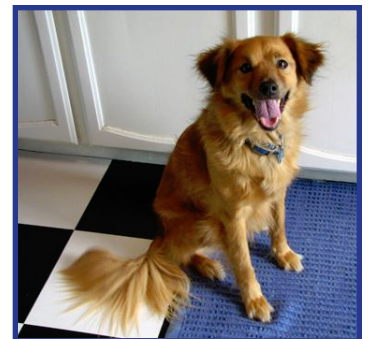
Charlie was very fortunate to have gotten a job with the VLMP, and he came to work every day full of smiles and energy, and was always eager to help clean up after lunch.

Chuck also enjoyed helping the interns, greeting delivery personnel, and assisting with workshops, fundraisers, and board meetings.



Over the years, Charlie charmed his way into the hearts of many, and he even won over a few "cat people" with his warm, friendly and sunny disposition.

Our furry friend will truly be missed~



Welcome New

NEW MONITORS CERTIFIED IN 2012



Pete Adams; Adams Pond (Rock Haven)
Carmen Adams; Adams Pond (Rock Haven)
David G. Allen; Saint George Lake
Greg Andrews; Rangeley Lake
Elyse Andrews; Rangeley Lake
Ken Astor; Rangeley Lake
Chris Astor; Rangeley Lake
Catherine Baker; Rangeley Lake
Stu Belden; Sabbathday Lake
Linda Bisson; Adams Pond (Rock Haven)
Jim Buck; Cushman Pond
Marian Budzyna; Adams Pond (Rock Haven)
Nini Christensen; Rangeley Lake
Peter Christensen; Rangeley Lake
Joan Cloutier; Sabbathday Lake
Nicholas Cody; Thomas Pond
Thomas Colavito; Pleasant River Lake
Ed "Sonny" Colburn; Youngs & Beech Hill Ponds
Britnie Coldwell; Embden Pond
Bill Cotter; Abrams Pond
Abby Cough; Panther Pond
Darren Cox; Alford Lake
Alexa Currier; Ossipee Lake (Little)
Nick Deroo; Ossipee Lake (Little)
Brian DesGrosseilliers; Ossipee Lake (Little)
Laura Diemer; Bauneag Beg & Kezar Lakes



Ross Dindio; Ossipee Lake (Little)
Randy Domina; Boyd Pond
Karin Draper; Panther Pond
Thomas Dudac; Wilson Pond (Lower)
Sarah Duff; Somes Pond
Matthew Duggan
Joan Dunlap; Rangeley Lake
Catherine Erdman; Varnum Pond
Chris Everett; Embden Pond

Doug Faille; Cushman Pond
Debbi Farrell; Cobbosseecontee Lake
John Farrell; Cobbosseecontee Lake
Hannah Faulkner; Taylor (Mill) Pond
Jon Findlay; Damariscotta Lake
Amanda Findlay; Damariscotta Lake
Barbara Fivek; Kennebago Lake (Big)
Rich Fivek; Kennebago Lake (Big)
Karen Foggin; Piper Pond
Donna Ford; Range Pond (Upper)
Rich Fortier; Sabbathday Lake
George Gilbert; Adams Pond (Rock Haven)
Frank Gilcreast; Ossipee Lake (Little)
Eliza Greenman; Damariscotta Lake



Scott Gregory; Cushman Pond
Alan Gregory; Sabbathday Lake
Lisa Hall; Crescent Lake
Kevin Harding; Kezar Lake
Nancy Hart; 5 Kezar Ponds
Steve Hesseltine; Pleasant River Lake
Kevin Hill; Whittier Pond
Paula Hughes
Tom Hughes; Kezar Lake
Steve Huss; Highland Lake
David James; Dodge Pond
Sara James; Dodge Pond

Linda Jellison; Toddy Pond
Phil Jellison; Toddy Pond
Matt Johnson; Sabbathday Lake
Charlotte Jones; Estes Lake
Barbara Jonsson; Branch Lake



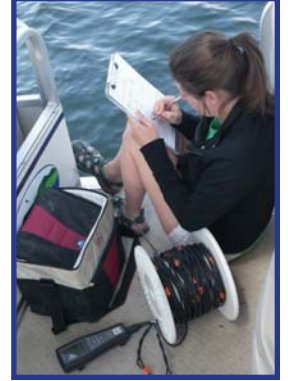
REMINDER TO ALL VOLUNTEER LAKE MONITORS:
Help ensure the *2012 Maine Lakes Report* will be complete by sending in your data!

Lake Monitors!



Peggy Kaufman; Wassoogeag Lake
 Connie Keefe; Piper Pond
 Joan Kelly; Bear Pond (Big)
 Cindy Kennett; Mooselookmeguntic Lake
 Kip Kennett; Mooselookmeguntic Lake
 Katie King; Embden Pond
 Catherine King; Kennebago Lake (Big)
 Barbara Kinney; David Pond
 "BJ" Kittredge; Echo Lake (Crotched Pond)
 Lucy LaCasse; Kezar Lake
 Stu Lamont; Ossipee Lake (Little)
 Deb Landreville; Kennebago Lake (Big)
 Lucy Leaf; Toddy Pond

Andree Pride
 Jeffrey Pride
 John Quinn; Tripp Pond
 Shelley Rau; Sandy Bottom Pond
 Pat Rochkind; Pocasset Lake
 Mark Rochkind; Pocasset Lake
 Betty Ryder; Wilson Pond (Lower)
 Haley Ryder; Wilson Pond (Lower)
 Doug Sears; Embden Pond
 Ray Senecal; Kezar Lake
 Darren Sheridan; Embden Pond
 Jeff Smith; Toddy Pond
 Cleo Smith; Ossipee Lake (Little)
 Jane Smith; Kennebunk Pond
 Richard Spencer; Pocasset Lake
 Debby Spurlock; Long Pond
 Brian Steinwand; Indian Ponds (Big & Little)



Paul Leeper; Megunticook Lake & Norton Pond
 Mike Little; Lily Pond
 Rob Lovell; Megunticook Lake & Norton Pond
 Joan Lundin; Keewaydin & Kezar Lakes
 Stephen Markarian; Saturday Pond
 Carolynn Marsh; Sabbathday Lake
 Allen Marsh; Sabbathday Lake
 Anne Maurice; Sabbathday Lake
 Carol McGuckin; Mooselookmeguntic Lake
 Bill McGuckin; Mooselookmeguntic Lake
 Lana McPherson; Taylor (Mill) Pond
 Ellen Moore; Green Lake
 Harry "Bud" Moore; Green Lake
 Richard Morse; Kennebunk Pond
 Gino Nalli; Mooselookmeguntic Lake
 Robert Nyland; Adams Pond (Rock Haven)
 Pat Onion; Flying Pond
 Tom O'Rourke; Kennebago Lake (Big)
 Jody O'Rourke; Kennebago Lake (Big)
 Richard Page; Sebec Lake
 Deb Parkin; Great East Lake
 Cynthia Peedin; Bauneag Beg Lake
 Jessica Pierce; Adams Pond (Rock Haven)
 John C. Pierce; Adams Pond (Rock Haven)
 John M. Pierce; Adams Pond (Rock Haven)
 Melissa Pink; Roberts & Wadley Ponds



Tamara Stock; Pemaquid Pond
 Ed Swain; Mooselookmeguntic Lake
 Michael Taflas; Ossipee Lake (Little)
 Tony Tedeschi; Adams Pond (Rock Haven)
 Barbara Tedesco; Patten Pond (Lower)
 Pat Tedesco; Patten Pond (Lower)
 Hall Thompson; Panther Pond
 Nat Thompson; Kennebago Lake (Big)
 Ashanah Tripp; Kezar Lake
 Audie Tunney; Green Lake
 Kay Van Woert; Whittier Pond
 Ned Van Woert; Whittier Pond
 Rick West; Pickerel Pond

Maureen West; Pickerel Pond
 Norman E. White, Jr.; Wassoogeag Lake
 Greg Whitney; Sabbathday Lake
 Dick Wigton; Rangeley Lake
 Bruce Wilson; Whitney Pond
 Sylvia Wilson; Whitney Pond
 Richard Windecker; Pocasset Lake
 Pat Windecker; Pocasset Lake
 Michele Windsor; Stearns Pond
 David Zeboski; Black Lake



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Bauneg Beg Lake Association, Inc.
Bear Pond Improvement Association
Cathance Lake Association
Clearwater Lake Improvement Association
Clemons Pond Association
Craig Pond Association
Dexter Lakes Association
Echo Lake Association
Five Kezars Watershed Association
Georges Pond Property Owners Association
Great East Lake Improvement Association
Green & Mirror Ponds Association
Green Lake Association

Howard Pond Preservation Association
Keoka Lake Association
Lake Anasagunticook Association
Lake Webb Association
Lake Wesserunsett Association
Lakeville Camp Owners Association
Little Ossipee Lake Association
Long Pond Association
Loon Lake Association
Meddybemps Lake Association
Mousam Lake Region Association
Nickerson Lake Wilderness Preservation, Inc.
No Name Pond Watershed Mgmt. Assoc.
Panther Pond Association
Parker Pond Association, Inc.

Pemaquid Watershed Association
Pequawket Lake Preservation Association
Piper Pond Association
Pleasant Lake & Parker Pond Association
Pleasant Pond Protective Association
Sabbathday Lake Association
Sand-Locke Pond Association
Saturday Pond Watershed Association
Silver Lake Campowners Association
Summer Haven Lakes Association
Taylor Pond Association
Thomas Pond Terrace Association, Inc.
Thompson Lake Environmental Association
Washington Lakes Watershed Association
Wilson Lake Association

In Memory of Ron Schutt

André Aflalo
Morris Amar & Linda Stetson Amar
Frank & Janice Bauchiero
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The Maine Water Company
Patagonia
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Shaw's Supermarkets
Water Monitoring Equipment & Supply

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Elmina B. Sewall Foundation
Ram Island Conservation Fund of
the Maine Community Foundation
Roy A. Hunt Foundation
Quimby Family Foundation

Special Donations

Little Wilson Pond Improvement Association;
in Memory of Rolande LaPointe
in Memory of Norman Joseph Marquis
Winthrop & Anne Smith;
in Honor of Ross Wescott

In Kind

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

Major Funding

Major funding for the VLMSP 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.

2012 Lake Monitoring Conference:



VLMP Staff & Interns (L-R) Jonnie Maloney, Jamey Epstein, Christine Guerette, and Garrison Beck



Invasive Plant Patrol Team of the Year, members (R-L) Ken Stabinski, Dan Konieczko, & Lea Stabinski



Thank you to our generous sponsors for the wonderful door prizes!



Speaker Linda Bacon presented *Climate Change & Maine Lakes: Observations and Expectations*



10 Year Service Award recipients (L-R) Willis White, Ryan Burton, & Sue Motley



5 Year Service Award recipients (L-R) Dennis Roberge, Bob French, Sibyl French, Sandy Graham, Ed Graham, Denis Coffey, and Rob True



Panther Pond monitor and VLMP Coordinator, Charlie Turner, with his wife, Dottie



Speaker Ian McCullough shared *Integrating Citizen Science and Satellite-Based Remote Sensing for Monitoring of Maine's Lakes*



20 Year Service Award recipient Bert Breton (center)



Estes Lake monitors Rick & Becky Southwick



Many thanks to VLMP Board members Sibyl French (L) and Phoebe Hardesty (R) for putting together quite a spread!



Rebecca Kurtz (center) from Rangeley Lakes Heritage Trust received the Outstanding Regional Invasive Plant Patrol Leadership Award along with other RLHT members (R-L) Sue Motley, Willis White, John Scholz, Claudia Scholz, and Ellie White (second from left)

For detailed information on the annual conference and links to the full presentations, please visit http://www.mainevlmp.org/wp/?page_id=150

New Horizons for Volunteer Lake Monitoring



George Cross, VLMP Board member and former Center Pond monitor, receives Lifetime Achievement Award



Jim Paruk shared his research on *Feathered Fish!* Loon Research & Conservation



Charles Chapman (R) receives 15 Year Service Award from Scott Williams



30 Year Service Award recipient Bill Mann (R), pictured with monitor Elizabeth Payne (L), accepting same award on behalf of her father, Will Reid



(L-R) VLMP Board Vice President Bill Monagle, with Highland Lake monitors Ralph Johnston and John Wilcox



35 Year Service Award recipients Charles McClead (L) and Rick Offinger (R)



Marsha Letourneau, Invasive Plant Patroller of the Year (center), with Roberta Hill & Scott Williams



Guest speakers brought in a full house!



15 Year Service Award recipients (L-R) VLMP Coordinator George Bouchard, Emile Nicol, Mike Whitmore, Thomas Hamilton, and Gerry Nelson



VLMP "Kids" in the big chair (L-R): Invasive Species Program Director Roberta Hill, Executive Director Scott Williams, & Board President Mary Jane Dillingham

SAVE THE DATE!

VLMP ANNUAL CONFERENCE TO BE HELD SATURDAY, JULY 27, 2013

Be sure to save the date for next year's Annual Lake Monitoring Conference. It will once again be held at the popular venue *The Great Outdoors*, located in Turner, Maine.

As we get closer to the conference, details will be posted on our website, and we'll send out an email reminder to everyone on our mailing list. We hope to see you there!

The 2012 Monitoring Season: Lakes at the Tipping Point?

By Scott Williams
VLMP Executive Director

The 2012 lake monitoring will not soon be forgotten. Throughout the summer, VLMP and DEP staff responded to volunteer monitor reports of unusual conditions and unprecedented phenomena on lakes throughout the state of Maine. A number of lake monitors reported accumulations of various forms of algae along lake shorelines where they had not been observed before. Late summer dissolved oxygen levels were lower than historical averages in some lakes, and severe algae blooms were documented in lakes that had not been known to bloom previously. These preliminary findings are based on early reports from a small number of lakes. A review of the all of the data gathered statewide over the course of the open water season by VLMP volunteers on several hundred additional lakes—just now being collated and entered into the system—may reveal that such phenomena were, indeed, more widespread.

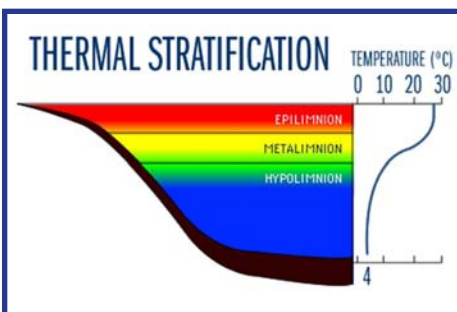


Severe algae blooms like this one on Sabattus Pond, typically occur when phosphorus levels are high, and water temperatures are warmest during late summer

season, extending the period of time when the deepest, coldest layer of water would be isolated from the atmosphere by several weeks. This was followed by an extreme rain event in early June, during which some areas of the state received upwards of 8 inches of precipitation over a 2 day period. Weather events such as this typically result in high velocity stormwater runoff, and lots of phosphorus-rich soil erosion into lakes from their watersheds. Based on many accounts from volunteer lake monitors, severe soil erosion did, indeed, occur in many lakes. That storm was followed by many days of high temperatures and bright sun. The combined effect of these unusual circumstances created ideal conditions for algae growth in lakes.

of algae along the shoreline of shallow coves. Kathleen Cotter on Abrams Pond in Eastbrook reported a severe algae bloom (Secchi reading of 2.0 meters, or less) that persisted through most of the summer. Brian Friedmann on George's Pond in Franklin reported a similar intense bloom of lengthy duration. It is interesting, and telling, that reports were received of better than average Secchi readings for lakes in an area of Washington County that didn't receive the heavy June rain.

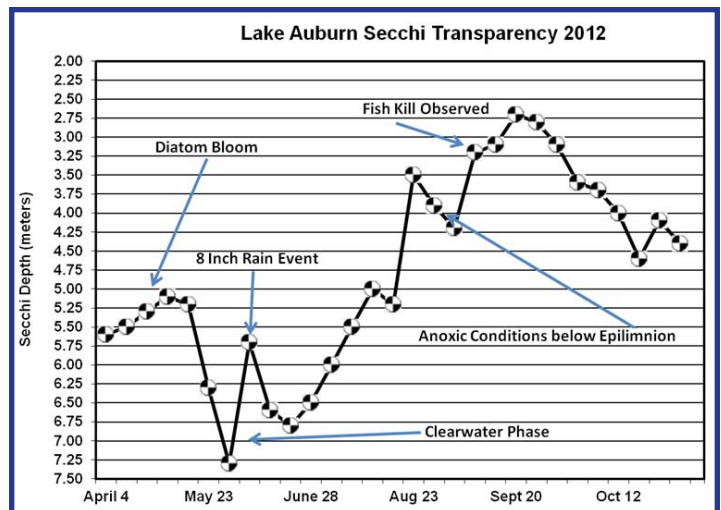
Lake Auburn may have exhibited the most dramatic conditions of the summer. Historically, this lake, which is the public water supply for the cities of Lewiston and Auburn, has been considered to have above average water quality, compared to other Maine lakes. The long-term Secchi disk average for Lake Auburn, from 1977 through 2011 is 7.4 meters (very clear), and the best readings for some years have reached 11.0 meters. As would be expected with such excellent Secchi readings, planktonic algae growth has been relatively low, and phosphorus levels have varied from low to moderate. Lake Auburn is widely known and highly-valued for its healthy coldwater fishery, which consists of Lake Trout (togue) and Salmon. These species can only thrive in lakes that retain healthy levels of dissolved oxygen in the



Most lakes experience thermal stratification during the summer months, during which a layer of warm, less dense water forms on top of colder, denser water beneath

The open water season for Maine lakes came extremely early, with "ice-out" occurring in the middle of March for most lakes, which meant opening up a solid month before their historical average. This was due to unusually warm air temperatures in March – reaching 80 degrees F. in southern Maine. Lake surface waters warmed up rapidly, and the penetration of sunlight into the water very early in the spring, gave aquatic plant growth a head start on the season. Not surprisingly, lakes stratified (developed temperature layers) early in the

By the end of June, volunteer monitors in Southern Maine were reporting *above average surface water temperatures* – as high as 80 degrees F., and *below average water clarity* for their lakes. Cheryl Welch on Crystal Lake in Gray, and Bruce Micucci on Little Sebago Lake both reported accumulations



This graph documents the unusual course of the 2012 Secchi transparency readings in Lake Auburn

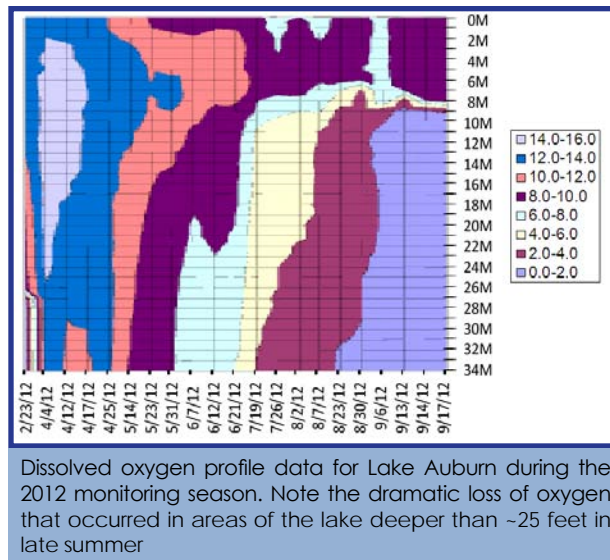
deep, cold water during summer months. Historical late summer dissolved oxygen levels in Lake Auburn extending back to the 1940's have been relatively high, even in the deepest areas of the lake.

But in 2011, Lake Auburn experienced a sudden and dramatic change. Secchi transparency peaked in July at 8.8 meters, followed by a free-fall to 1.9 meters in September, caused by a severe algae bloom. As algal cells decomposed in the water, dissolved oxygen levels declined, reaching critically low levels in late September. Fortunately, coldwater fish were able to survive in a narrow layer of cool water where oxygen levels were slightly higher – but it was a close call. A similar scenario unfolded in 2012, but the early loss of ice and abnormally high water temperatures in March increased the duration of the stratification period for Lake Auburn.

Why did this happen to Lake Auburn, as opposed to any one of a number of lakes in Maine that were already considered to be near the “tipping point?”

Once again, water clarity dropped to a near historic low for the lake in September, and once again, dissolved oxygen levels plummeted. But the combination of early ice-out, unusually high warm air and water temperatures, and phosphorus loading from heavy rain caused the oxygen loss to be even more severe than in 2011, occurring more than a month earlier than in 2011. The algae bloom may have been enhanced by phosphorus released from the bottom sediments – a phenomenon that can be triggered by very low dissolved oxygen levels in the water overlying the sediments. In early September, lake monitors reported dead or dying Lake Trout floating on the water surface over a period of a few weeks. Maine Department of Inland Fisheries and Wildlife (IF&W) Biologists visited the lake soon after, and concluded that a high percentage of the lake trout population may have died during the period.

Another factor that may have played a significant role in the rapid change that has taken place in Lake Auburn is the increase



in growth of the cyanobacterium (aka bluegreen algae) *Gloeotrichia echinulata* in the lake. While “Gloeo” is not new to Maine lakes, it appears to be on the increase in some, and it has been particularly dense in Lake Auburn during the past few summers, according to information gathered by Auburn Water District lake monitors and researchers from Bates College. During the winter months, Gloeo colonies reside on the lake bottom, where they sequester phosphorus from the rich bottom sediments. In the spring, Gloeo rises to the lake surface where it completes its life cycle. Some of the phosphorus carried from the lake bottom may be released in this process, becoming available to other algae. Thus, the presence of Gloeo on a large scale may have been a significant factor in the algae bloom and oxygen loss in Lake Auburn.

VLMP lake monitors who have attended workshops conducted on Lake Auburn during the past several years have had an opportunity to observe Gloeo at close hand. Through a collaborative project with Bates College researcher, Holly Ewing, and DEP lake biologists, the VLMP developed



A high concentration of *Gloeotrichia echinulata*

Gloeo monitoring protocol for volunteer lake monitors in 2012. New and existing water quality monitors are now being trained to identify, and estimate the density of this potentially troublesome algae in their lakes.

Why did this happen to Lake Auburn, as opposed to any one of a number of lakes in Maine that were already considered to be near the “tipping point?” Shoreline development is virtually nonexistent, except for areas of Route 4 and a town road

that run along the waters’ edge. Large areas of the watershed are held in conservation easement, and the Auburn Water District has, and continues to identify, and whenever possible, address sources of stormwater runoff and phosphorus from land uses in the watershed.

Climatic changes and dramatic weather events can certainly influence lake health, and contribute to the short and long term variability that we see in lake data. In 2012, the unusually early ice out and warm spring temperatures, followed by very heavy rain, runoff and soil erosion, and hot, bright summer days very likely had a significant effect on the conditions documented in Lake Auburn, as well as those in Abrams and George’s Ponds. Thanks to the hundreds of volunteer monitors throughout Maine who gathered and documented information about their lakes, we will soon know the extent to which similar conditions occurred in other lakes throughout Maine. It is possible that we will learn that some lakes were clearer than average.

The accelerated decline of this lake is truly a mystery, and it raises some difficult questions. Are other similarly healthy, clean, clear lakes also at risk of reaching their tipping points? And if so, what can be done about it? Data gathered by VLMP lake monitors, and their ability to sense firsthand what is, and is not “normal” for their lakes, will be essential to helping us find the answers to these critically important questions.

VLMP Advisory

The VLMP has formed an Advisory Board (AB) to provide input and guidance to the Board of Directors, staff and volunteer lake monitors on a wide range of technical, organizational and developmental matters. The group consists of individuals with unique expertise that is relevant to the operation and development of the program. We are pleased to

welcome this group of respected and well-known professionals to the organization, and we look forward to working with them as volunteer lake monitoring in Maine continues to evolve.



Holly Ewing is an Associate Professor at Bates College where she is appointed as a scientist within the Environmental Studies Program. She teaches field classes in soils, water, ecosystem ecology, and general environmental science. Her research crosses fields of modern ecosystem ecology, paleoecology, geology, and biogeochemistry as she investigates ecosystem development and linkages among atmospheric, terrestrial, and aquatic ecosystems. She is particularly interested in combining approaches from modern ecology and paleoecology in the investigation of history and the drivers of

changes in terrestrial and aquatic ecosystems. In the aquatic realm, her current research projects include an investigation of cyanobacteria as potential drivers of changes in lakes, a study of mercury in stream food webs, and development of a smart phone app to enable citizen scientists to contribute data about lakes to a central database. She holds a BA in Geology from Carleton College and a PhD in Ecology from the University of Minnesota.



Peter Vaux got his start in the world of freshwaters while living for 3 years in West Africa where he worked in fisheries research and extension. Many years later, he returned to that part of the world as part of a World Bank-financed team conducting an environmental assessment for a major oil pipeline project in Chad and Cameroon. He received his Ph.D. from the University of California, Davis. While in grad school, he lived in Central America for 2 years doing dissertation research and managing

an environmental assessment for a large hydro project. After that, he spent 8 years at the University of Nevada, involved in an array of research programs (fisheries, water quality, plankton) on Colorado River reservoirs. Moving to Maine in the mid-1990's, he initially worked with The Nature Conservancy, heading up a data-mining and integration project focusing on Maine's freshwater biodiversity. He continued his new-found interest on data integration and web-based data serving while at the University of Maine, directing natural resources assessments for several national parks (including Acadia NP and Cape Cod National Seashore) and developing several data-access websites. Recently, he migrated, part-time, to a different environment, one in which he and his wife are involved in restoring 2 old houses in central France. Peter has been involved with VLMP for over a decade, with several years spent on the board. Peter is very much looking forward to continuing his participation in VLMP, not only via the Advisory Board, but also as part of the continuing attempts to improve access to and understanding of the wealth of data about our state's lakes.



David Littell serves as one of three Public Utilities Commissioners, appointed by Governor Baldacci and confirmed by the Maine Senate in 2010. At the PUC, he has been able to remain in the leadership of the Regional Greenhouse Gas Initiative which was formed when he was at DEP, continuing Maine's participation in the nine state greenhouse gas cap and trade program. Prior to that, he served as Maine's Commissioner of Environmental Protection from 2005 to 2010 following two years as DEP's deputy commissioner. During those seven years of DEP service, David was heavily involved in a number of

initiatives to protect significant wildlife habitats including wading, waterfowl, shorebird and vernal pool habitats, to improve Maine's water (and air) quality, and remove toxics from consumer products and carry out Maine's Climate Action Plan. David has been a volunteer monitor for eight years on a pond where he and his daughters enjoy swimming, canoeing, kayaking, and watching fish and wildlife. He is also a trained invasive plant patroller. He lives in Portland with his two daughters Brickley (13) and Georgia (9).

Pixie Williams received her B.S. degree from Cape Breton University, Sydney, Nova Scotia, and later, her Masters in Plant Systematics from the University of New Hampshire. Pixie's early professional career was in education, as a school teacher in private grade schools. In the late 1970s through early 1980s Pixie worked as a volunteer at the Cary Arboretum, New York Botanical Garden. It was here, under the direct tutelage of Dr. Thomas Elias, director of the US-USSR Botanical Exchange, that Pixie developed her keen interest and enthusiasm for plants, and in particular, plant systematics. (Systematics is the study of the how life forms diversify through evolution over time.) Pixie credits her invaluable "on the job education" at Cary Arboretum with her decision to make plants her second career.



Upon receiving her M.S. Degree at UNH—where she studied under Dr. Garret Crow, co-author of *Aquatic and Wetland Plants of Northeastern North America*—Pixie worked as a Research Associate in Botany, at the Bra d'Or Institute, Cape Breton University; and later as an Adjunct Professor of Plant Biodiversity. She was also a Research Associate in Botany at the Nova Scotia Museum of Natural History in Halifax.

In 2012, Pixie celebrated nine years of service to the VLMP as a Certified Invasive Plant Patroller, and at 87 years old, still spends many hours in her kayak every summer, keeping a watchful eye on aquatic plants of Casco and Otisfield and beyond. As energetic as she is generous, Pixie shares her passion for botanizing with local school children and community members, and plays an integral role in Pleasant Lake and Parker Pond Association's ongoing efforts to eradicate variable-leaf milfoil from Lily Brook and Pleasant Lake. Pixie is a major contributor to the VLMP's aquatic plant herbarium collection, and has been formally honored by the VLMP for her many contributions to the Program and to Maine lakes.

Board

The Rev. Martha Kirkpatrick is the Rector of St. Margaret's Episcopal Church in Belfast, Maine. From 1999 to 2003 she was the Commissioner of the Department of Environmental Protection under Governor Angus King from 1999 - 2003, and was previously the Bureau Director for the DEP's Bureau of Land and Water Quality. From 1984 to 1991 she was a staff attorney with U.S. EPA in Washington DC. She attended Harvard Divinity School to pursue her questions about Christian faith and the environment, and received her Master of Divinity in 2007. She received her Juris Doctor from George Washington University, National Law Center, in 1981, and her Bachelor of Arts from Skidmore College in 1978. Rev. Kirkpatrick is a member of the Board of Trustees for Maine Audubon, and a Greenfaith Fellow from the class of 2009.



photo courtesy of Marti Stone



Photo courtesy of Massachusetts College of Liberal Arts

C. Barre Hellquist is a Professor of Biology, Emeritus at Massachusetts College of Liberal Arts. He received his Ph.D. in Botany from UNH where he worked on the correlation of the Potamogeton (pondweed family) to water chemistry and their distribution in New England.

Barre is co-author of *Aquatic and Wetland Plants of Northeastern North America*. His enthusiasm for the study of aquatic plants has taken Barre across the United States and Europe, to China, Siberia, and Australia in search of new and interesting species. Working with

his son, C. Eric Hellquist, an assistant professor of biological sciences at SUNY-Oswego, Barre is currently involved in a multi-year project documenting the flora of Yellowstone National Park.

In his "retirement," Barre continues to teach classes intermittently at MCLA, leads field-based seminars (such as those at the Eagle Hill Institute on the coast of Maine) and continues his research around the globe. He also teaches the aquatic plant mini-course, often with his son Eric, at the University of Michigan Biological Station. He spends his free time dabbling in the private pond on his property in Massachusetts, enjoying his beautiful collection of species water lilies and also collects 3 x 5 flags, especially U.S. historical, Australian, Canadian and south Pacific flags.

Ken Wagner holds degrees from Dartmouth College and Cornell University, with his Ph.D. earned in Natural Resource Management in 1985. He has over 34 years of experience working on a variety of water resources assessment and management projects, including lake, river and watershed assessment and management, TMDL development, regulatory processes, and educational programs. In 2010 he started Water Resource Services, a small company with a focus on water supply protection and lake management consulting. He is a former President of the North American Lake Management Society and the current Editor in Chief of *Lake and Reservoir Management*, a peer-reviewed journal.



Wanted:

Volunteer Water Quality Regional & Data Coordinators

Help with activities such as re-certification workshops, communicating with volunteers, and lake data entry. For more information, please contact the VLMP 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!

Sponsorship Through Advertising 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 sponsoring an ad in the water column please contact us. Advertisements 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!



Ken Bailey ~

It is with great sadness that we say goodbye to our good friend and fellow lake monitor Kenneth 'Ken' Bailey. Ken died this past July after an extended battle with cancer. Born in 1949, in Moncton, New Brunswick, Ken grew up in Camden. After his discharge from military duty, which

included a tour of duty in Vietnam, Ken returned to Camden where he married his best friend and wife Sandra 'Sandy,' established himself in business as owner/manager of Hodgman's Footwear, and, together with Sandy, raised his family.

Ken was an avid outdoorsman with a special passion for hunting and fishing, never hesitating to share his interest and vast knowledge with family and friends. Ken was a Maine guide, operated Wilderness Ways Guide Service, was director of Camden Parks & Recreation Department, and originator of the U.S. National Toboggan Championships at Camden Snow Bowl. Ken brought his love of the outdoors to his second career in journalism where he imparted his

knowledge, wit and humor to countless readers through his "In the Field" columns.

A VLMP certified water quality monitor devoting 27 years of service to the Program, and a regional IPP Coordinator for the Lincolnville Lakes and Ponds Committee, Ken also worked 28 years for Megunticook Watershed Association, first as Lake Warden and then as Executive Director/Lake Warden, a position he served until his death. Ken's dedication to the task of keeping a watchful eye on the health of beloved Megunticook and surrounding lakes is an inspiration to us all.

In addition to his wife Sandy, Ken is survived by his mother, son and daughter, five grandchildren and extended family.

Many of you may have seen videographer Stephen Underwood's documentary "The Lake Warden," featuring Ken's work on Megunticook Lake, at the VLMP's 2011 Annual Lake Monitors' Conference. If you missed it, or would like to see it again, please scroll to the bottom of the events/conferences page on the VLMP website www.mainevlmp.org, or link to it directly at

<http://vimeo.com/26818946>

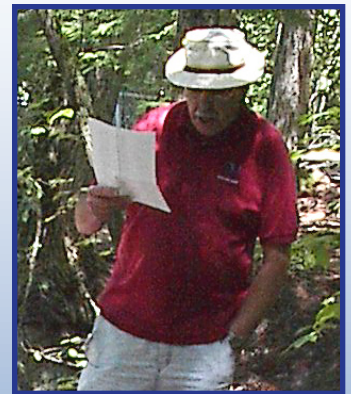
Passings

Ron Schutt ~

Our dear, ever-congenial friend and fellow lake monitor, Ronald 'Ron' Schutt died this past April, at his home in Pelham, New Hampshire, in the company of his beloved wife Elisabeth 'Betsy' Tyrol. Ron was born in Lewiston in 1930, graduated from Lisbon High School, and earned his Bachelor of Science Degree in Engineering/Physics from the University of Maine in Orono. After his discharge from service as 1st Lieutenant in the U.S. Army Korean Conflict, Ron earned a Master of Science Degree (in Education) and a second MS (in Science and Mathematics) from Brown University in Providence, Rhode Island. Ron taught science at South Paris High School, and then later at Lexington High School in Lexington, MA where he was appointed head of the Mathematics Department, a post he served until his retirement in 1992. He also served on the Board of Directors of the Massachusetts Teacher's Association and the National Education Association.

Always the Mainer at heart, Ron loved his second home on Back Pond, one of the Five Kezar Ponds in Stoneham, Maine. Ron was an active member of in the Five Kezar Ponds Association and served as President of Five Kezar

Ponds Association from 1988 to 1995. In 1995 he became Chair of the Water Quality Committee and served in that capacity until his death. Ron dipped a Secchi disk into the waters of Back Pond for many years as a volunteer water quality monitor, and led the State's first Regional Invasive Plant Patrol on the Five Kezar Ponds as one of VLMP's original Certified Invasive Plant Patrollers. Those that knew Ron will miss his booming laugh, his generous, winsome spirit, and his infectious zest for life.



Ron composed humorous songs and loved to share them. Here Ron entertains his fellow plant patrollers at a post-workshop picnic!

In addition to his wife Betsy, Ron is survived by four sons, eleven grandchildren and two great-grandchildren.



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BRACKETT CENTER NEWS



Thanks to the efforts of volunteer monitor, Don Richardson, and a grant from the Elmina B. Sewall Foundation, VLMP headquarters in Auburn recently underwent some much-needed renovations and upgrades. The repairs included weather proofing, insulation, new windows, and a few odds and ends, including squirrel-proofing!

The result is a warmer, more energy-efficient building that serves not only as the program administrative headquarters, but also as a workshop



facility and resource center for volunteer lake monitors. We are deeply appreciative of the grant from the Sewall Foundation and the volunteer members of the Brackett Center Building and Maintenance Committee.

