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Inside this issue:

The Response of Maine Lakes to the Summer of 1999

Past articles in "the Water Column" have emphasized the importance of long-term monitoring for lakes. Several years worth of data are needed to establish a sense for what is "normal" for a particular lake, and to determine water quality trends over time. This is because there is a significant amount of natural variability in most of the indicators used to assess water quality, including clarity, phosphorus, and dissolved oxygen – both within individual seasons, and from year to year. The weather is one of the primary causes of natural fluctuations in lake water quality data.

...by Scott Williams, Executive Director

The weather during the spring and summer of 1999 was extraordinary in a number of ways, and the overall effect on Maine lakes will probably not be known for several months.

Thoughts from Your President

by Joe Flanagan

On behalf of the Board and myself, I would like to thank each volunteer lake monitor for the time and effort they have expended. Their hard work and dedication will enhance the longevity of our lakes and ponds for future generations. In no way is it possible for a few of us to do all of the lake monitoring throughout the state, but through proper growth and training, our goals will be met.

I would like to make note of the commitment Jean Demetrocopolous has put forth in the many years she has been involved in the Program. As the first President of the VLMP Board of Directors, Jean guided the program through some critical transitional years. We appreciate her very much.

One word can describe her dedication:
P: Persistence
R: Research
I: Independence
D: Decisiveness
E: Excellence

Many thanks to Phoebe Hardesty for her tireless effort! Job Well Done! We'll miss you.
Special thanks to VLMP staffers, Scott and Amy!

Summer of 1999...Continued from page 1

However, based on observations made by volunteer monitors, by DEP and VLMP staff this summer, and from the inquiries that have been made concerning lake conditions throughout the state, it would appear that the weather did indeed have an overall influence.

How unusual was the weather during the past summer? Data from the National Weather Service suggest that 1999 has been exceptionally warm, dry, and sunny throughout much of Maine. The following summary information from the NWS is from the Portland, Maine monitoring station. Although conditions in Portland may not have been representative of the entire state, it is probably fair to say that *similar* weather existed throughout much of Maine over the summer. Northern Maine was generally cooler, but drier than normal conditions existed there, as well.

1999 Weather Summary Information from Portland, Maine

Month	Precipitation	Temp	Sunshine	Comments
April	0.28 inches total! Driest April in 29 years	Above average	18 days were "mostly sunny"	28th least snowy winter in 118 years
May	4.98 inches slightly wetter than average	Above average	19 days were "mostly sunny"	Warmest winter/spring in 59 years
June	0.95 inches 8th driest in 129 years	Warmest June in 59 years	18 days were "mostly sunny"	Jan-June 3rd warmest period in 59 years
July	1.62 inches 13th driest in 129 years	3rd warmest July in 59 years	21 days "mostly sunny" Sunshine every day of June and	2nd driest *period* in 129 years. Jan-July was the warm-
August	1.53 inches 24th driest in 129 years	Warmer than average	22 days were "mostly sunny"	Driest *summer* *In 129 years in Portland*

The most obvious effect of the unusual weather on Maine lakes was that early summer water temperatures were quite warm, as anyone who spent time in a lake in May or June could attest. Water surface temperatures during that period appear to have been a few to several degrees higher than normal for most lakes in the central-southwestern region of Maine. The graph on the next page compares surface water temperatures for a few lakes throughout the summer months with long-term monthly average (LTA) water temperatures for Maine lakes. The graph shows variable temperature response time, based primarily on the size and volume of each lake. However, all of the lakes examined showed elevated surface (1 meter depth) temperatures compared to the LTA through August. A few lakes were cooler than the LTA in September as a result of the heavy rainfall and wind from Hurricane Floyd.

The warm water temperatures were great for recreation. But what effect did this phenomenon have on water quality? Above average temperatures and abundant sunlight might seem to be the ideal conditions for increased algae growth – which could result in relatively poor Secchi transparency readings. However, an important requirement for planktonic algae (the free-floating algae that influence Secchi disk readings) growth is phosphorus. This nutrient has a greater influence on the abundance of algae in lake water than any other single factor. For most lakes, the primary means by which phosphorus becomes available to planktonic algae throughout the year is in stormwater runoff from the watershed. Much of the phosphorus comes into our lakes during the spring runoff period, which begins during the snowmelt and often continues into the month of May because soils are nearly saturated with water.

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Invasive Aquatic Plant Update

By Amy Shnur, Project Coordinator

This summer over a dozen volunteers throughout the state contacted the VLMP with concerns regarding aquatic plants that have not previously been observed in their lakes. Samples were received and analyzed by VLMP staff. None of the specimens were identified as invasive.

A recent trip with the PWD staff to the Songo River, which feeds into Sebago Lake, resulted in finding what appeared to be a species of Milfoil. Without the flowering spike, the positive identification of this plant was not possible. Additional specimens will be checked next summer.

The discovery of a thriving community of Variable Watermilfoil in Messalonskee Lake, and the continued growth of Variable Watermilfoil in Cushman Pond (Lovell), Parker Pond (Casco) and Thompson Lake (Oxford) are proof that Maine is not immune to the threat of invasive aquatic plants.

Through funding from the Maine Outdoor Heritage Program, large Invasive aquatic plant warning signs will be placed at major roadways entering Maine in the summer of 2000.

Summer of 1999...continued from page 2

The lack of precipitation in the spring of 1999 resulted in a slow melting of the snowpack. No major river flooding occurred in Maine through April. It is reasonable to assume that the reduced storm-water runoff in the spring resulted in less phosphorus loading to many Maine lakes. Without phosphorus coming in, algae growth will be limited, regardless of the abundance of sunlight and other factors conducive to plant growth.

How did all of this affect Secchi transparency readings last summer? A *preliminary review of the data for 24 lakes situated predominately in the central-southwestern region of Maine showed that all but two of these lakes were as clear as, or clearer than the long-term average for each lake. One quarter of the lakes evaluated were the clearest that they have been since data have been collected!* The table on page 4 compares the 1999 Secchi transparency average (May-September) for each lake with the long-term average.

Long-term averages were taken from VLMP/MDEP reports and from Cobbossee Watershed District records.

Although the majority of the lakes that have been reviewed thus far appear to have responded positively to the spring and summer weather, a few lakes with a history of water quality problems did not fare as well. These lakes have reached a critical state of decline, or are in the process of declining. For example, Androscoggin Lake in Wayne experienced an algal bloom throughout much of July and August. The bloom was at its peak in early August when volunteer Jack Mahoney recorded a secchi disk reading of only 1.1 meters!

...Continued on page 4

1999 Secchi Transparency Averages Compared to Historical Averages

Lake & Town	1999 Secchi	Long-Term
Androscoggin (Wayne)	3.6	4.3
Annabessacook (Monmouth)	3.7	3.2
Berry (Winthrop)	4.8	4.4
Buker (Litchfield)	5.8 (Highest ever)	4.8
Carlton (Readfield)	6.5	6.5
Dexter (Wayne)	5.3	5.0
Embden	9.5	9.4
Hobbe (Norway)	6.8 (Highest ever)	4.9
Jimmy	5.8 (Highest ever)	4.9
Kezar (Lovell)	7.6	7.4
Lower Narrows (Winthrop)	6.8	6.7
Maranacook North (Readfield)	4.9	4.7
Maranacook South (Winthrop)	7.1 (Highest ever)	6.0
Pennesseewassee (Norway)	6.4 (One of the highest)	5.7
Pleasant (Richmond)	3.3	3.2
Sand (Litchfield)	7.2	6.6
Taylor (Auburn)	5.2 (Highest ever)	4.5
Thompson (Oxford)	8.8	8.8
Torsey (Mt. Vernon)	6.3 (Tie for highest)	5.7
Sabbathday (New Gloucester)	7.6 (One of the highest)	6.6
Upper Narrows (Winthrop)	6.7	5.8
Wilson (Monmouth)	5.1	5.2
Woodbury (Litchfield)	6.9	6.2
Worthley (Peru)	6.8	6.6

Summer of 1999

...continued from page 3

Wilson Pond in Monmouth has also been in a state of decline for the past several years, according to the Cobbossee Watershed District. Even so, it is worth noting that Wilson Lake was the clearest that it has been for several years in 1999. The process through which these problem lakes receive phosphorus that stimulates algal growth is somewhat more complex. Warm weather and water temperatures may have contributed to the rate of loss of dissolved oxygen, and ultimately to the release of phosphorus from the bottom sediments of these lakes. Warm temperatures may also have facilitated the mixing of the water near the surface with the deeper phosphorus –rich water. Lakes that experience this "internal phosphorus recycling" are at a point where a self-sustaining problem exists that is less dependent on phosphorus from stormwater runoff.

Throughout the summer, VLMP and DEP staff received calls from volunteer monitors and the public, reporting "clouds of algae" along the shoreline of lakes they were monitoring. Algae in lake water occur in many forms. One group of algae that inhabit shallow areas along the shoreline are collectively referred to as metaphyton. These tiny plants often form thread–like filaments that collect in large balls and form a floating green cloud in the water (some have described it as "green cotton candy"). The clouds can grow to be quite large, sometimes extending several meters across.

Metaphyton obtain phosphorus from the sediment and organic matter that is suspended and recycled by wind and wave action in the shallow littoral areas. They are somewhat less dependent on phosphorus that is carried into the lake in precipitation and runoff. Metaphyton growth is often more intense during summers with abundant sunlight and warm water temperatures. It is not surprising, then, that this form of algae would flourish with the weather that we have experienced during the past few months. Because metaphyton inhabit predominantly shallow areas of the lake, its growth does not directly influence Secchi disk readings.

Rooted aquatic plants (macrophytes) also appeared to be growing more

...continued on page 5

Summer of 1999

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Macrophytes obtain much of the phosphorus and other nutrients that they require directly from their root systems in the bottom sediments. Warm water temperatures, rich sunlight and somewhat lower water levels in 1999 very probably contributed to the increase in the growth of these lake plants.

Many Maine lakes appear to have had a "good" year as a result of the exceptionally dry weather. We know that does not mean that those lakes are necessarily improving. Rather, it tells us that they are healthier during years when there is less stormwater runoff from their watersheds. Little can be done to control the weather, but a great deal can be done to manage the quantity and the quality of stormwater runoff from the watershed before it reaches a lake. The control and management of runoff now can help to sustain acceptable lake water quality. It can also reduce the potential over time for conditions to reach a point where internal sources of phosphorous have as much effect on the lake as external watershed forces.

Hurricane Floyd blew through much of Maine in early September, dumping several inches of rain on the ground in less than 48 hours. Streams that had been completely dry for months were reborn as stormwater runoff rushed down through lake watersheds, carrying with it eroded soil particles, debris that had accumulated in ditches and swales since last winter, and many other types of nonpoint source pollutants. The intense storm will undoubtedly have an influence on the 1999 lake data, especially when compared to the dry, calm conditions that existed during much of the preceding summer. Our lakes respond to both natural events and human influences. Thanks to the efforts of hundreds of volunteers in this program, our understanding of these effects improves a little with each field season.

Thanks to Wendy Dennis at the Cobbossee Watershed District, and to Jack Mahoney on Androscog-

Quality Counts!

By Linda Bacon MDEP Advisor

Last year, 4,786 visits were made to 400 lake basins in Maine. This averages to approximately 12 visits to each lake. VLMP monitors made 4,450 of these visits! That's a lot of data. With the program increasing in size, the timing of data submissions is becoming more critical for timely analysis and assembly of reports. ***You can help*** by getting your data sheets to your Regional Coordinators as soon as possible. If you are in a position that allows you to obtain readings through the months of October and/or into November, please consider including your last reading of 1999 as the first reading on next year's data sheet. Also, if you noticed anything unusual about your lake in 1999, we'd like to hear about it. If you would be willing to attach a note that includes anecdotal observations, the year, lake name, MIDAS number and station number we would greatly appreciate it.

> *"Last year, 4,786 visits were made to 400 lake basins. VLMP monitors made 4,450 of these visits!"*

Maintaining quality during the data update step is a constant challenge. You volunteers are on the 'front line' in this step. Please review each sheet for accuracy, paying particular attention to the lake identification or MIDAS number, and completeness. Your signature at the bottom indicates that you've taken this first quality control step. You will notice that the lower left corner of the form is used to track many of the other quality checks that are done on the data through the data update process. It takes about two months from the time you submit your data until the VLMP report is finalized. So as you might imagine, the sooner the process begins, the sooner it gets done...

Lakeside Notes

By Scott Williams

Another summer has passed - the summer monitoring season is complete for most of us. Secchi disks and scopes, dissolved oxygen kits and sampling devices, clipboards and notepads are stored for the winter. Boats can be hauled out of the lake and stored until next spring.

The 1999 field season was active and productive for the VLMP. Forty four new volunteers joined the program and were certified at training workshops throughout Maine! Many of these volunteers will be gathering data for new lakes. Others will be replacing monitors who have retired from the program. Both serve important and valuable purposes. New lakes help us to understand the similarities and differences that exist in the thousands of diverse lakes and ponds of Maine. However, in order to assess trends in water quality, it is equally important to maintain continuity of data collection for lakes that have been monitored historically. In both cases, the contributions that volunteer lake monitors make to an improved understanding, and ultimately to the protection of Maine lakes, cannot be overemphasized. The future of our lakes will, in part be determined by what we learn from today's volunteers.

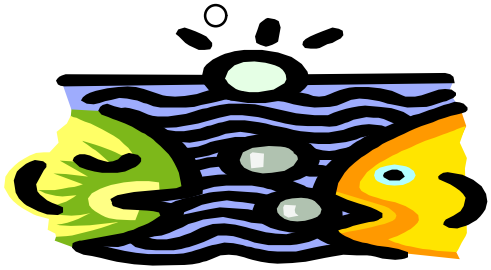
The VLMP continued to provide technical and educational outreach assistance to the public throughout the summer. Staff members met with and spoke at lake association meetings, assisted volunteer monitors and their communities with decisions concerning lake management issues, provided newspapers and other media with educational materials about invasive aquatic plants, and worked with volunteer monitors who were interested in expanding monitoring efforts on their lakes. Lake education presentations were made at the Children's Water Festival, several public schools, and at the University of Maine in Lewiston and Orono. The VLMP office receives dozens of phone calls and email messages weekly requesting information about Maine's lakes and ponds. Our affiliation with the Maine DEP, the Water Research Institute at the University of Maine, and other organizations and agencies throughout Maine makes it possible for us to provide the public with comprehensive information concerning lake issues.

The gathering of quality lake data is the primary purpose of the VLMP. It is essential, however, that the information collected by our volunteers be put to the best use possible. Helping to raise public understanding and awareness about the delicate balance that exists between people and lakes helps insurethat future generations of volunteer lake monitors will continue to experience the thrill of deep Secchi disk readings.

Volunteer Monitors

If you have not sent in your 1999 data to your Regional Coordinator

Please do so immediately



Welcome New Volunteer Lake Monitors

We would like to welcome all of the new volunteer monitors that were trained and certified in 1999. Some of the monitors were replacing volunteers that have retired, others will be monitoring lakes that have not been monitored for some time, and still others will be monitoring new lakes for the Program.

Thank you for your enthusiasm and dedication.

We look forward to working with each of you in the future!

New Volunteer Monitors

Robert Anderson	Pleasant P
Roger Barber	Schoodic L
Churchill Barton	Brettuns P
Dan Birmingham	Lake George
Doug Blackwell	Little Ossipee Flowage
Malcolm Brown	Arnold Brook L
Warren Bryant	Pennessewassee L
Don Burgoin	Messalonskee L
Dana Castensen	Crescent L
Linwood Carville	Toddy P
Don & Marie Chabot	Granny Kent P
Heidi Chadbourne	Figure Eight P
Ed Charles	Long P
Albert Childs	Schoodic L
Ethan Chittin	No Name P
Carmen & Jacob Coulombe	No Name P
John & Poppy Crouch	Range P (Lower)
Jim Demchak	North & Little Ponds
Buck & Mitsy Dube	Wilson L
Ray Hayes	Damariscotta L
Jim Hazen	Horseshoe P
Rod Kesting	West Harbor P

Volunteers attend a workshop in Norway at Pennessewassee Lake

June Training session on Arnold Brook Lake in Aroostook County.(Left to right) **Emmett Porter, Malcolm Brown and Sarah Beasley.**

Bill Latham	Whittier P
Bill Mansfield	Coffee P
Matthew McConnell	Loon L
Kim Michaelis	Little Echo L
George Newall	Hopkins & Davis P
Olga Noll	Pennesseewassee L
Emmett Porter	Number Nine L
David Records	Center P
Cathy Rees	Walker Pond
Lisa Ricker	No Name P
Maggie & Roger Shannon	Great P
Melody Sweet	Upper Cold Stream
Dick & Amy Thibodeau	Little Wilson
Rich Thornton	Moosehead L
Maurice Vachon	Lake Auburn
Dana Valleau	Saint George L
James Vantassell	Bunganut P
Robert & Thomas Warren	Center P
Doug Webster	Dumpling P
Jay Woolsey	South & Round P

Annual Meeting Highlights

The 1999 VLMP Annual Meeting was a joint venture with the New England Chapter of the North American Lake Management Society (NEC-NALMS) and Maine COLA. The conference was held on June 19-20 at CMTC on the shoreline of Lake Auburn. Many volunteer lake monitors attended the Saturday workshops, which included QA/QC certification sessions conducted by Amy Shnur and Judy Potvin on Lake Auburn. Volunteer lake monitor Bob Dunlap from Green Lake presented water quality summary information based on his monitoring efforts. Scott Williams presented an overview of the VLMP and a slide presentation on the threat of invasive aquatic plants to Maine lakes. Many other interesting and informative presentations were made.

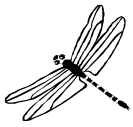
One highlight of the meeting was the presentation of letters and pins to volunteers who reached fifteen years of volunteer service in 1999! The following lake monitors were recognized for their exceptional efforts to protect Maine lakes:

Elizabeth Hutchinson
Stan Wood
David Woundy
Scott & Jean Ferrari
Kenneth Forde
Robert Foye
Charles Hodsdon
Mark Hyland
Bill & Michelle Mann
David Purdy
William Reid
Bill Riley
Mary Harmon
John Laskey

Volunteer Lake Monitor, Bob Dunlap presents historical data from Green Lake

15 Year Volunteer Monitors enthusiastically receive their awards at the Annual Meeting

Margaret Morrill
John Wilson
Ken Bailey
Donald Robertson
Alan Sprague
Robert Casavant
Eleanor Cyr
Peter Devine
Roger Ek
Walter Fournier
John Wasileski
William Gould



Farewell to a Good Friend

At the Board of Directors Meeting in June, Phoebe Hardesty announced her retirement from the VLMP. Phoebe has played an important role in this organization for several years, not the least of which was Editor of The Water Column. She was also instrumental in fundraising efforts and the development of new initiatives. Her insight, assistance, and wisdom were invaluable when the VLMP faced critical organizational decisions several years ago.

Phoebe will continue her role of Education Coordinator with the Androscoggin Valley Soil and Water Conservation District in Lewiston. During her time with the District she has successfully organized and conducted lake watershed surveys, lake protection demonstration projects, and camp road maintenance workshops. Phoebe co-authored The Buffer Handbook, which was recently published by the Maine DEP. She is a member of the Planning Board in her community, and a wonderful resource to anyone with an interest in protecting water resources.

We will miss Phoebe for her creative ideas, her advocacy for developing ways to better understand and protect Maine lakes, her warmth and sense of humor, and her belief in the value and effectiveness of volunteers.

Amy Shnur and Phoebe Hardesty take a break at the 1999 Annual Meeting

More scenes from the Annual Meeting...

VLMP Staff Position Available

The Maine Volunteer Lake Monitoring Program has a position immediately available for an individual to assist with program development, fundraising and general program administration. Strong communication and writing skills and experience with fundraising, grant research and preparation, and public speaking are desirable.

This position will initially entail 15-20 hours per week, with the potential for full time work. Applicants must be willing to travel, and be available to work part of each week at the VLMP office in Turner. Please contact the VLMP at 207-225-2070 for additional information.

QA/QC Sessions on Lake Auburn

1999 Board of Directors

The following Officers and Directors were elected at the VLMP Annual Meeting in June.

President Joe Flanagan: *Regional Coordinator for Hancock County, Branch Lake volunteer monitor*

Vice President Peter Lowell: *Executive Director of Lakes Environmental Association*

Treasurer Jim Burke: *Attorney*

Secretary Eileen Burnell: *Watchic Lake volunteer monitor*

Front row from left to right: Peter Fischer, Peter Lowell & Phoebe Hardesty

Back row from left to right: Steve Kahl, Jim Burke, Scott Williams, Jean Demetracopoulus Amy Shnur, David Burnell, Eileen Burnell, Joe Flanagan

Volunteer Opportuni-

The VLMP is looking for Regional Coordinators for Kennebec and Washington Counties, and a Data Entry Coordinator for Kennebec County. Serving as a Regional or Data Entry Coordinator is a great way for volunteers to assist with the administration of the VLMP. The time commitment for Coordinators varies. Most of the work takes place in the spring, summer and early fall. Coordinators receive personal training and support from the VLMP staff throughout the year.

Regional Coordinators assist the VLMP staff with certification workshop coordination, equipment needs and replacement, and making sure that all volunteer contact information is accurate. Regional Coordinators are also responsible for tracking all of the data gathered by volunteers, communicating with the Data Entry Coordinators, and insuring that all data reach the VLMP office in the fall. The time commitment for RC's, depends primarily on the number of volunteers in the county. Approximately 25 hours per year is average.

Data Entry Coordinators receive a special database disk that is used to enter the data collected by volunteer monitors. Entering the data is one of the first steps in a chain of standards that have been designed to assure everyone who uses the lake water quality data gathered by the VLMP that the information is valid and credible. Depending on the number of volunteers in a county, and the extent to which the volunteers are collecting data, Data Entry Coordinators may need to commit up to two days per year to the position.

Please contact the VLMP office if you have an interest in assisting us with the available Coordinator positions. We will be happy to provide you with additional information.

Have You Moved?

If so, please notify the VLMP office as soon as Possible

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Special Thanks to Financial Contributors

The following individuals and organizations have made generous donations to the VLMP in 1999. Their support and belief in the value of volunteer monitoring and Maine lakes is greatly appreciated.

Matt Scott

Susan Breau

Cold Stream Pond Association

Range Pond Environmental Association

Portage Lake Association

Wilson Lake Association

The Water Column is the newsletter of the Maine Volunteer Lake Monitoring Program, and is published quarterly. Please address questions or comments to: Scott Williams,editor, P. O. Box 445, Turner, ME 04282. We also welcome phone calls: (207) 225-2070.

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Newly elected VLMP Board President Joe Flanagan

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