

the Water Column



A Publication of Maine Volunteer Lake Monitoring Program

Vol. 9, No. 1

Provided free of charge to our monitors and affiliates

Summer 2004

2004

Maine Lakes CONFERENCE

& VLMP

Annual Meeting

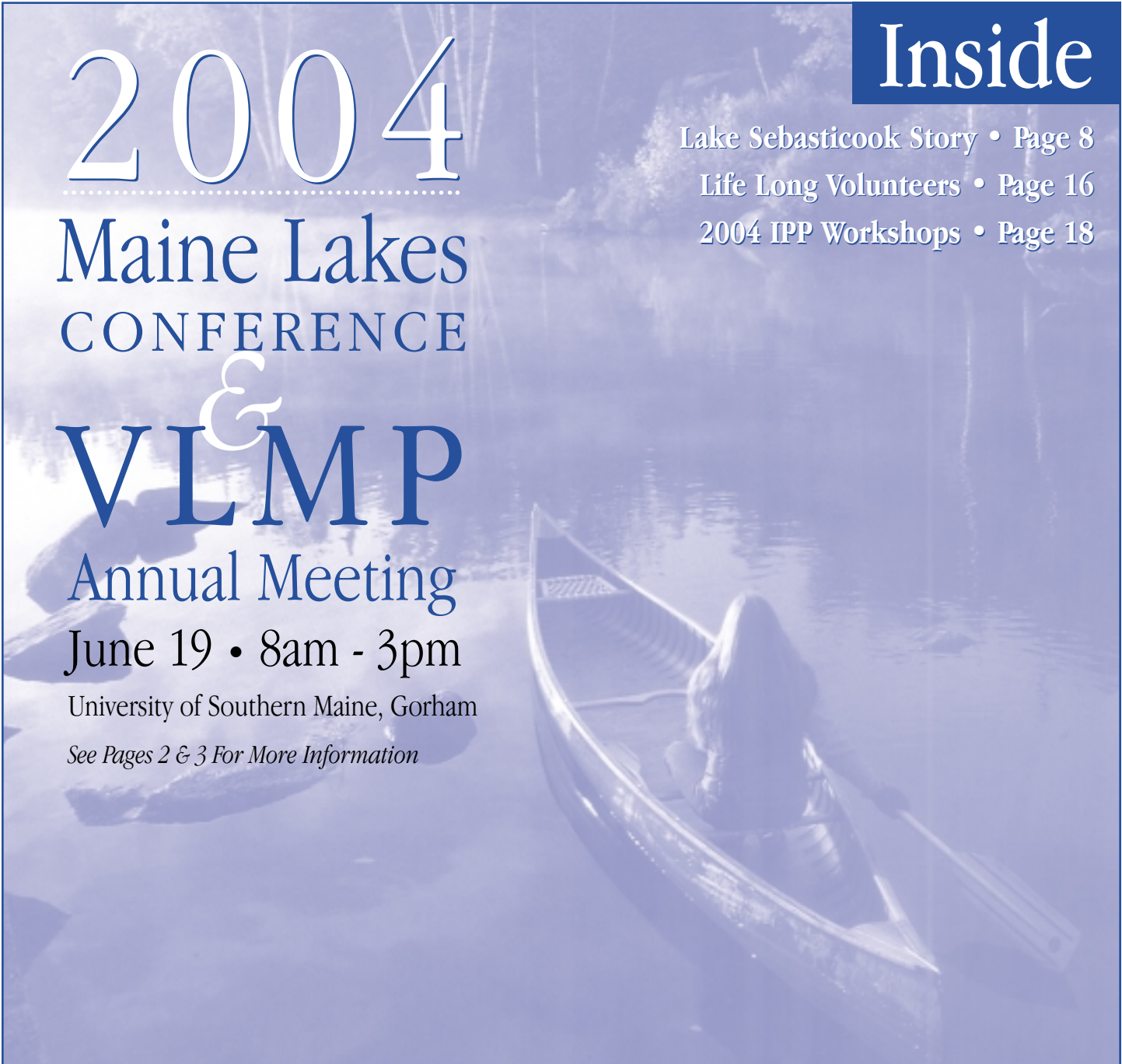
June 19 • 8am - 3pm

University of Southern Maine, Gorham

See Pages 2 & 3 For More Information

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* Volunteer Monitor Articles



VLMP Staff

Scott Williams	<i>Executive Director</i>
Jim Roby-Brantley	<i>Program Assistant</i>
Robert Hill	<i>Program Director</i>
	<i>Maine Center for</i>
	<i>Invasive and Aquatic Plants</i>
Linda Bacon	<i>QA/QC Advisor (Maine DEP)</i>

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Gerry Nelson	(Lovell)
Will Reid	(Skowhegan)

To Contact Us:

24 Maple Hill Road
Auburn, Maine 04210
207-783-7733
vlmp@mainevlmp.org
www.MaineVolunteerLakeMonitors.org

Editorial Staff

Jim Roby-Brantley, Layout
Scott Williams, Editorial Comm.
Robert Hill, Editorial Comm.

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VLMP ANNUAL MEETING

Maine Lakes Conference 2004

JUNE 19, 8:00 am - 3:15 pm
University of Southern Maine, Gorham

Tentative Program Overview

MORNING PLENARY SESSION

8:00	Registration Bailey Hall Lobby
8:25	Welcome - Dan Buckley and Scott Williams
8:40	<i>A Place on Water</i> - Wesley McNair
9:50	Plenary Session Helping Hands: Statewide Resources for Lake Protection and Management

10:00 Refreshment Break

10:15	Recognition and Award Ceremony
10:45	COLA Annual Meeting VLMP Annual Meeting Readings from <i>A Place on Water</i>

11:30 Lunch

12:30	Kayak Drawing for VLMP Water Quality Monitors
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12:45 - 3:10 Afternoon Breakout Sessions

Legislation and Maine Lakes: Past History and Present Events

- History of Legislation Affecting Maine Lakes
- Regulations that Protect Maine Lakes, Present and Future
- Milfoil Law Amended!

Lake Stewardship:

- How to Build an Effective Lake Association
- Invasive Aquatic Plant Prevention Toolkit: Programs, Strategies and Resources To Help Communities Address this Serious Threat to Lakes
- The Sebasticook Lake Restoration Story

Water Quality:

- Basic Lake Ecology, Pt. 1: An Overview of Lake and Watershed Processes
- Basic Lake Ecology, Pt. 2: An Overview of Lake and Watershed Processes
- An Overview of Maine Lake Water Quality in 2003

Lake Perspectives:

- Restoring Alewives to Inland Waters
- Alewives and Lakes: the Unity Pond Data
- Under the Ice: What Happens in Lakes in Winter?

Register for the VLMP Annual Meeting

Meet with Certified Monitors, Plant Patrollers, Lake Associations, and staff from VLMP & DEP

Table discussion of Maine's statewide lake organizations

Prizes • Food • Workshops • Fun • Technical Talks

Plus a Kayak Give Away!

Directions from the north

Take the Maine Turnpike to Exit 47 (Rand Road/Westbrook). Follow Route 25 west for 6.5 miles to Gorham. At Gorham center, the intersection of Routes 25 and 114, turn right onto Route 114. Take the first left onto College Avenue. The entrance to campus will be on your right.

Directions from the south

Take the Maine Turnpike to Exit 36 (Scarborough). Turn left after exiting the Turnpike onto Payne Road. At the second traffic light turn left onto Route 114 north. Follow route 114 for 6.5 miles to Gorham center, the intersection of Routes 25 and 114. Go straight through the intersection and take the first left onto College Avenue. The entrance to campus will be on your right.



Pre-Registration is Requested
so that we can ensure meals and materials for all.
Deadline for registration is June 12, 2004.

There is **no charge** for certified volunteer lake monitors, regional and data entry coordinators, VLMP Board Members, and annual meeting guest speakers.

The cost for all others is:

\$25⁰⁰ before June 12 • \$30⁰⁰ after June 12

✂ CLIP AND MAIL TO VLMP

Registration VLMP Annual Meeting

Name(s): _____

Number Attending: _____
Cost per Attendee: _____
Total Enclosed: _____

To register, please call or email:

207-783-7733

vlmp@mainevlmp.org

or mail to:

VLMP

**24 Maple Hill Road
Auburn, ME 04210**



Scott Williams *Executive Director*

Lakeside Notes

Spring has definitely arrived! The grass is green, trees and shrubs are “leafing out”, songbird trills fill the woods, nocturnal spring peeper choruses are deafening, and by now, the ice should be out of even the northernmost lakes and ponds in Maine.

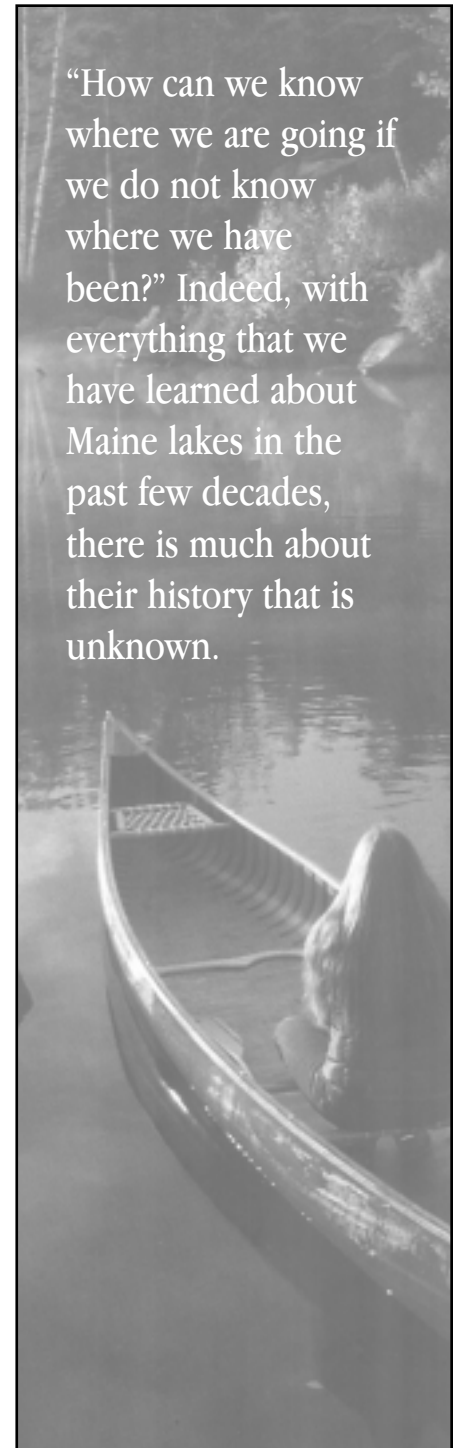
Early Spring Secchi disk readings provide important information about the seasonal conditions in our lakes and ponds. While water clarity readings for some bodies of water may vary only a few tenths of a meter during a typical five-month monitoring cycle, it is not unusual for Secchi disk readings in many lakes to change as much as one or two, and in some cases, even three meters within a single season. Such variation may be perfectly normal, but it makes a strong case for the importance of taking frequent readings throughout the spring, summer and early fall, because when only a few Secchi readings are taken, the end of the year picture may not be representative of conditions in the lake. Two Secchi readings per month, equally spaced, from May through September, will generally provide enough information to accurately characterize conditions in the lake during the most critical period of the year.

If you are not able to monitor at this frequency, consider sharing the responsibility with a trained alternate – someone who could be available to collect data when it is not convenient for you. Having another trained volunteer on the lake helps to ensure the continuity of data over time.

Speaking of data continuity, it is important! You probably knew that, but it doesn’t hurt to reemphasize the value of quality historical data. There are a number of ways to make this case. A recent quote

from Steve Kahl, Director of the Mitchell Center at the University of Maine, and a member of the VLMP Board of Directors, makes the point very clearly. In speaking about the value of historical data in guiding present day and future decisions, Steve said: “How can we know where we are going if we do not know where we have been?” Indeed, with everything that we have learned about Maine lakes in the past few decades, there is much about their history that is unknown. Most of the data for Maine lakes has been collected since the early 1970’s, when the VLMP and the DEP were first formed. Prior to that time, with the exception of limited information collected by the Maine Department of Inland Fisheries and Wildlife concerning fisheries management, very little water quality data existed for Maine lakes and ponds.

Every Secchi disk reading is an important one. Of course the same is true of phosphorus and dissolved oxygen samples. The value of an individual reading may not be fully appreciated until long after it is taken – perhaps at the end of the season, and possibly not for years. Never underestimate the value of your efforts as a volunteer lake monitor. Your work may be cited in the future for providing a key link to the understanding and protection of our lakes and ponds!



“How can we know where we are going if we do not know where we have been?” Indeed, with everything that we have learned about Maine lakes in the past few decades, there is much about their history that is unknown.

Quality Counts!

Last year, 2003, marked the beginning of a service for volunteers to collect Total Phosphorus sub-surface grab samples and mail them to a laboratory for analysis. That service is available again this year if you or your association is interested. To obtain a 'Total P Kit', contact Tiffany Wilson at the Sawyer Environmental Chemistry Research Lab (207-581-3288). The cost will remain \$24 per sample. Approximately 15 folks took advantage of this service last year; with the exception of confusion regarding the units of measure on the result sheets, the process seemed to go smoothly. This year the lab will report in the same units as the state lab so that the results will not need to be converted before entering them on the data sheet or into the data entry program.

To increase opportunities for volunteers to collect this type of sample, we have added 'Sub-surface Grab Collection' training to the recertification workshop agenda. The training takes about 5 minutes and opens up a number of opportunities for the program. One of these opportunities includes an expansion of the mail-in service with selected parameter tests on 'baseline' samples. DEP will select approximately 30 lakes that are shallow, have monitors trained to collect sub-surface grabs, and have not been visited by DEP staff recently. We will contact volunteers on these lakes and if they are willing, we will arrange for a kit to be mailed to them. The kit is likely to contain 2 bottles, a Total P bottle and a 500 ml plastic bottle that is filled in the same manner as the Total P bottle.

Thanks to all of you that have made it to your recertification workshops thus far. It is great to meet so many folks that love their lakes! Here are a few pictures from the mid-May workshop at Long Pond in Belgrade. 🛶

Linda Bacon



Linda Bacon, Maine DEP QA/QC Advisor



Fred Weston, long time Belgrade Monitor, reminding Craig Killingbeck (Long Pond, Belgrade) to jig the probe.



Scott Williams reviews Dissolved Oxygen monitoring procedures with Chuck Lakin (Salmon Lake, Belgrade) and Gilliam Johnston (Messalonskee Lake, Belgrade).

QA/QC Recertification Workshop Schedule

Contact your regional coordinator or the VLMP office to register.

Date	Time	County	Location
May 29	9:00am	Androscoggin	Bear Pond, Turner
May 29	9:00am	Cumberland	Panther Pond, Raymond
June 5	10:00am	Piscataquis	Sebec Lake, Greeley
June 5	1:00pm	Aroostook	Madawaska Lake, T16 R4
June 6	2:00pm	Aroostook	Nickerson Lake, New Limerick
June 6	2:30pm	Knox	Alford Lake
June 12	9:00am	Waldo	Sheepscot Pond, Palermo
June 13	9:00am	Penobscot	Pushaw Lake, Old Town

**Additional Recertification Workshops
By appointment only. Call 783-7733 to register.**

June 12	Brackett Environmental Center, Auburn
July 7	Brackett Environmental Center, Auburn

Littorally Speaking

Roberta Hill, *Program Director, Maine Center for Invasive Aquatic Plants*

Summer is an extremely busy and challenging time of year for those involved in protecting Maine waters (and their littoral areas) from the threat of Invasive Aquatic Plants. Here are just some of the programs and resources that will be available in the summer of 2004 for volunteers, students, professionals and the general public through the **Maine Center For Invasive Aquatic Plants**.



Volunteers at hand removal workshop on Lake Messalonskee.

IPP Certification Program

Early detection of invasive aquatic plants provides the best hope of eradication. We heartily commend all of the volunteers who have become active in Maine's Invasive Plant Patrol and joined Maine's early detection team. In addition to the hundreds of individuals who have attended workshops and have begun to investigate their own favorite water body, 35 IPP volunteer and/or volunteer groups (representing 48 waterbodies) have begun to gather important data and report their findings. State agencies, students, researchers and trained professionals doing screening surveys in Maine have also begun to share their findings with the program, a exciting collaboration that will allow us to build and maintain a comprehensive Statewide Invasive Aquatic Plant (IAP) Screening Survey database. To date, we have received information about screening surveys on 146 Maine waterbodies. Considering that only three years ago, the number of Maine Lakes being routinely screened for IAP was one, this is quite an achievement! (For a table summarizing reported screening survey activity in Maine from 2002 to 2003 please visit our website.)

Invasive Plant Patrol Workshops

The Maine Center for Invasive Aquatic Plants will continue to partner with local groups to offer Invasive Plant Patrol workshops. Once again our aim is to extend the geographic scope of the workshops in order to train as many

"eyes" across the state as possible. In addition to the basic IPP training, the Center will offer four types of advanced training workshops. **(Please see 2004 workshop announcement on page 18 for more information regarding specific workshop offerings.)** The workshops are free. All are welcome to attend.

Though this increase in monitoring activity is certainly positive and promising, it has also brought the effort to a new level of complexity and a new set of challenges. The IPP Certification Program will be launched in 2004 to help address these challenges. The goals of the certification program are straightforward:

- To encourage and support individual and group commitment to the annual collection and submission of IPP survey data
- To streamline and standardize the data collection, reporting, and capture process

Toward these ends, beginning in 2004, MCIAP will provide new standardized field sheets, and an on-line reporting option. All IPP monitors who wish to be certified will be asked to attend at least one basic IPP workshop and to make a formal commitment to reporting in survey findings on an annual basis, using the standardized procedures. All certified patrollers will be provided with an ID card, a free bucket view scope and will qualify for free admission to the VLMP Annual Meeting. Patrollers who have attended a basic IPP workshop in the past 3 years are encouraged to apply for certification.

Technical Support

Technical support will continue to be provided through a variety of services, resources and partnerships. For example:

- MCIAP staff provides plant identification services for those who have found suspicious plants. (Please contact us in advance of sending in a plant specimen!)

- An expanded summer staff will allow the Center provide increased support for groups engaging in milfoil hand removal efforts. Staff will be on hand to carefully document these activities in order to share lessons learned with others across Maine and New England.

- The move to the Woodbury Brackett Environmental Center has allowed MCIAP to broaden and deepen collaborative ties with agencies, municipalities and lake groups, and to help develop and support increased regional capacity for early detection though volunteer-based monitoring. MCIAP provides training, technical assistance and program coordination for these groups in response to opportunity and need.

Publications


The first printing of the *Field Guide to Invasive Aquatic Plants* is nearly depleted! A revised, second edition of the field guide will be available for the 2004 training season. Other publications to be made available in 2004 include the *Quick Key to Ruling Out Maine's Eleven Most Unwanted Invasive Aquatic Plants* (a handy waterproof key that will fit in your pocket) and the *Milfoil Hand-Removal Manual*.

Web-Based Resources

Web-based resources will be expanded in 2004 to include:

- A Virtual Herbarium offering multiple images of the eleven IAP on Maine's watch list, common native plants that may be confused with the invaders, and a host of other commonly encountered native aquatic plants.

- The Invasive Aquatic Species Information Exchange will provide easy on-line access to IAP information from all over the State and beyond. Topic categories will include Control Methods, Courtesy Boat Inspections, Global and National Perspectives, Economic Issues, Education and Outreach, Invasive Aquatic Plant Screening Surveys, Prevention and Management Plans, Research, Screening Survey Gear, etc.

- Additional web resources to support the IPP program, to be developed as time, budget and staffing allows, including an on-line PowerPoint introduction to the IPP program and a web-based interactive "Invasive Aquatic Plant Workshop" targeted primarily at middle school students. 

For more information about MCIAP activities please contact Roberta Hill at:

Phone: 207-783-7733

email: mciap@mainevlmp.org

or visit our website at

www.MaineVolunteerLakeMonitors.org/mciap/

The summary of IAP screening survey activity is at:

www.MaineVolunteerLakeMonitors.org/mciap/resources/

The Lake Sebasticook Story

Tom Hannula, Lake Sebasticook Monitor

Foreword: The following article by Tom Hannula underscores several important aspects of lake monitoring. It makes a strong case for the value of long-term water quality data collection. Without the extensive historical data for Sebasticook Lake, it would be difficult to measure the effects of efforts to restore the lake. Another point that comes through clearly in the article is the value of prevention. Lake restoration is slow (30 years plus, and counting, in this case), it is costly (decline of shoreline property values, lost recreational use, fishery destruction) and the results may be uncertain. Prevention, on the other hand, is relatively inexpensive, but it does require commitment.

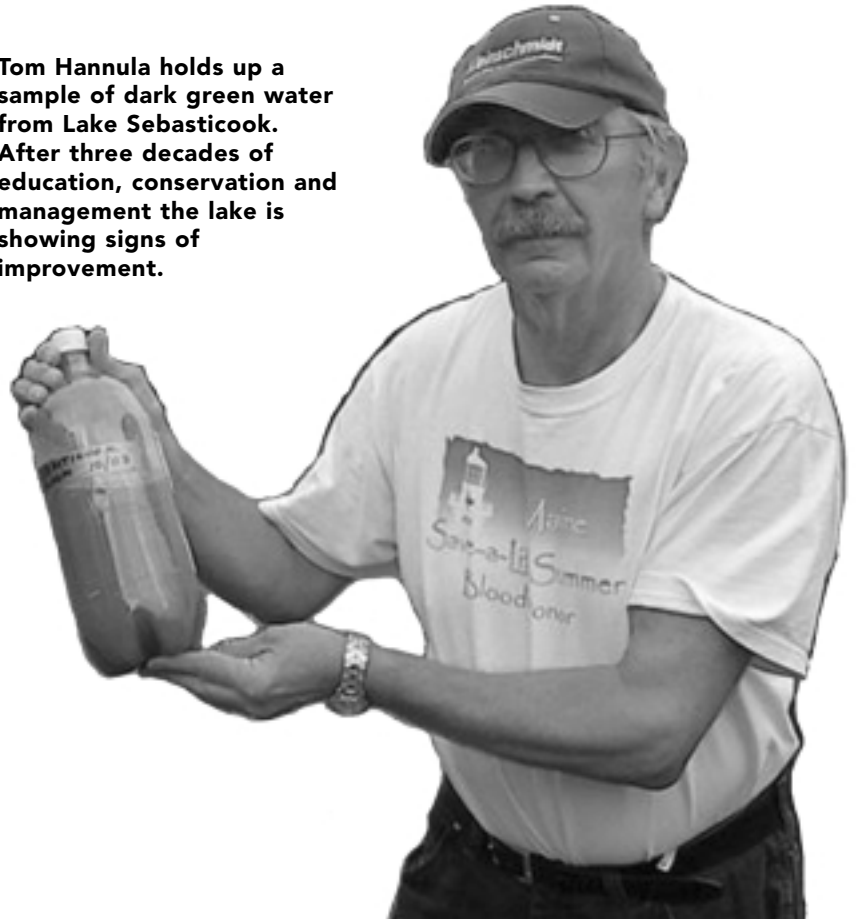
Tom Hannula is an extraordinary volunteer lake monitor. This article documents his active involvement in the program since the first meeting was organized by Matt Scott in the early 1970's to explore the formation of the VLMP. Tom has been a persistent steward for Sebasticook Lake during a period when many felt that the future of the lake was grim. But his story is indeed one of vigilance and hope.

~ Scott Williams

Lake Sebasticook is one of Maine's more infamous lakes. In the mid 60's local protests about the sorry condition of the lake brought in a Federal Water Pollution and Control Agency team to study the lake. The team's report documented the degraded condition of the lake and the grossly polluted condition of the East Branch of the Sebasticook River. Major causes of lake degradation were determined to be the dismal house-cleaning practices of the Snowflake Canning Company (flushing potato peels, cull potatoes, and process water) and discharges to the river just above the lake by the Eastland Woolen Mill (wash water, dye waste, and other process waters).

At this time, eutrophication and its causes were dominant topics in the water pollution and limnology research journals as Maine

Tom Hannula holds up a sample of dark green water from Lake Sebasticook. After three decades of education, conservation and management the lake is showing signs of improvement.



began to worry about the water quality of its lakes. In the early 70's, Sebasticook was one of 10 degraded Maine lakes discussed at a University of Maine conference organized by Matt Scott. The aim of the conference was to educate and recruit lake monitors. It was my introduction to lake monitoring and limnology. It was also the beginning of VLMP!

Morphometry

Lake Sebasticook is a large (4,278 surface acres) moderately eutrophic lake located in Newport just off I-95 midway between Bangor and Waterville. Sebasticook is relatively shallow (average depth 6.2 Meters, max depth 18 M) with a large rural watershed (54,350 Acres, population 5,400) and a flushing rate of 1.5 times/yr. Farms comprise about 19% (10,250 Acres) of the

watershed. As mentioned in Steve Kahl's presentation at the 2003 VLMP annual meeting, Sebasticook might be expected to have a naturally higher phosphorus (P) content than most Maine lakes because it sits on marine clay, it is shallow and it is surrounded by numerous wetlands.

How Bad Was It?

In the early 70's, algal blooms became so intense that the entire lake, not just the windward shore, would be covered by a thick pea-soup green scum. Using Sebasticook data, a pair of scientists funded by the detergent industry argued that carbon dioxide, not phosphorus, limited algal blooms. Secchi disc readings under 1 foot (0.3 meters) were frequent after the 4th of July. During one bloom, the Secchi disc reading at the deep hole was 0 meters

Continued on page 9

until the surface algal scum was disturbed. A surface sample from an intense algal bloom contained over 10,000 ppb total phosphorus! Late summer samples frequently contained over 120 ppb TP, and samples from a depth of 17-18 m contained over 2000 ppb TP. Maine DEP Biologist Dave Courtemanch reported lime green water with large clumps of algae during a 1972 winter sampling. The water below 6 meters depth was anoxic except for brief periods during the spring and fall turnover. Anoxic conditions frequently extended into the epilimnion during calm summer weather. As a result of the severe oxygen loss, all coldwater fisheries (salmon, trout, smelt, cusk), as well as the smallmouth bass fishery, were lost. On hot, calm, sunny weekends the total number of boats using the lake could be counted on one hand. Many lake cottages were abandoned, and others used only for a two-week period around the 4th of July.

The long road back

I came on the scene in 1971. I was a young mathematician at the University of Maine with a wife and two young daughters when we bought a home in Newport on Sebasticook Lake. I was warned about the lake's water quality problems. Wayne Hall, Director of the UM Water Resource Center, told me that Snow Flake Canning, the largest polluter of the lake, had burned down in 1968, and Corinna had built a wastewater treatment plant. His graduate students had just finished a study of Lake Sebasticook, so he was familiar with the lake and its condition. He thought that Sebasticook had started to recover.

Just after we settled into our new house, Matt Scott held his Conference on Maine's Problem Lakes at the University. At that time, I was surprised to find little active concern about Sebasticook's water quality among Newport residents. I was unaware of their frustration and exhaustion that resulted from their efforts to draw attention to the lake in the 60's. Although their efforts resulted in several extensive studies of the lake, they resulted in little improvement in the lake or action to remove its pollution sources. In the late 60's, there was no EPA, DEP or Clean Water Act and few resources were available for lake protection. To draw attention to the Sebasticook's problems, I organized a program about lakes and lake pollution with the help of Newport's Methodist Church. One result of the program was the birth of the Sebasticook Lake Association in the fall of 1974. Its main purpose became the restoration of Sebasticook Lake.

During the 70's, Scott's small group of biologists in the newly formed DEP started collecting data on Sebasticook. During one discussion with Scott and Steve Norton, a geology professor at UM, I pointed out the large increase in the lake's late summer TP content. This increase could not be explained by inputs to the lake from the watershed. The discussion led to our studies of phosphorus release from the bottom sediments and internal phosphorus cycling. Two of Norton's graduate students, Russ Dubriel and Rick Liotta, collected data on sediment chemistry and sediment P release. I developed a computer model to simulate the phosphorus cycle and the impact of sediment release of phosphorus.

At the same time, DEP's Dave Courtemanch with the help of Nokomis High School students collected phosphorus-loading data from the watershed.

These studies provided the basis for a lake restoration plan for Sebasticook. My computer studies indicated the internal cycling of P would keep the lake hyper-eutrophic even if the external phosphorus sources were controlled. The modeling also suggested that increasing the fall drawdown from 1 to 3 meters, together with control of external sources, would eventually break the internal cycling of phosphorus and allow the lake to recover.

At a meeting in Corinna in the fall of 1977, the DEP presented its program to restore Sebasticook Lake. The plan had three major components. The first was to build a land disposal system for Dexter's wastewater, and to improve the wastewater treatment at Corinna. The second was to reduce non-point phosphorus sources by constructing manure storage facilities and installing conservation measures on farms in the watershed. The third was to reconstruct the Sebasticook outlet dam to allow a drawdown of about 3 meters (10 feet) to flush the algal rich, high P content water from the lake before the phosphorus could return to the sediments.

In the late 70's and early 80's, conservation practices and manure pits were installed on 25 of the largest farms in the watershed. The outlet dam was reconstructed and the first extended drawdown occurred in the fall of 1982. Dexter's land treatment system was constructed in the mid-80's. Finally,

Continued on page 10

Fig 1. Average August Secchi Depth Values

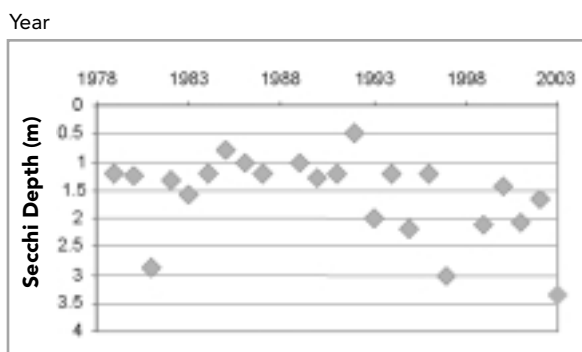


Fig 2. Average P Concentration

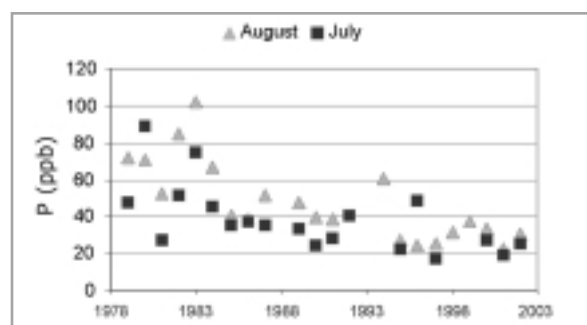
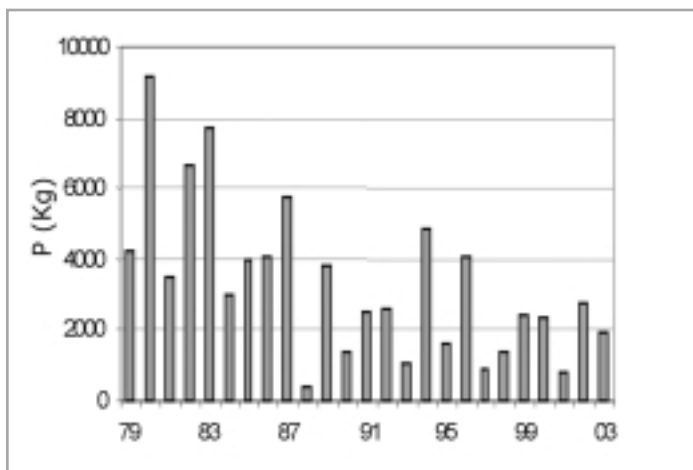


Fig 3. Maximum Summer P Content Change



although not part of the restoration plan, Eastland Woolen Mill in Corinna closed in 1996, reducing Corinna's wastewater volume and making land treatment feasible. A new land treatment facility for Corinna has been designed, and construction should begin in 2004.

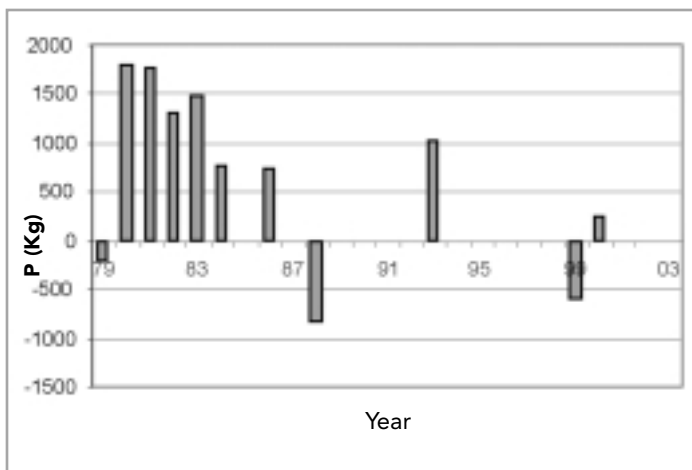
Recovery Signs

More than twenty years have passed since the start of extended Fall drawdowns, and reduction of the external phosphorus loading. The indications are that Sebasticook is slowly recovering. The lake community clearly thinks Sebasticook's water quality is improving. Since the mid-80's, there has been a steady increase in remodeling of existing cottages and new construction. Recreational use of the lake has steadily increased with the boat launch now full on nice summer weekends. Long time lake residents have remarked that the water quality in the summer of 2003 was the best they had seen in over 50 years. Fishing interest in the lake has returned, especially for bass. IF&W reports a strong smelt run in Mulligan stream. In 1997 and 2003, my minimum summer Secchi disc readings were greater than 2 meters.

DEP data shows that the lake is recovering, with the release of P from the sediments significantly reduced. The average Secchi disc reading for August started increasing in the mid 90's and is at times above 2 meters (**Figure 1**). Spring TP concentrations have decreased from 40 ppb in the early 80's to the mid-teen's recently. Late summer TP concentrations show an encouraging trend, with levels dropping from over 80 ppb in the early 80's to below 30 ppb recently (**Figure 2**). The P release from sediments during the summer is still significant, but greatly reduced from the early 80's. The change in summer TP content has dropped from as much as 9000 kilograms (Kg) in the early 80's to under 2000 kg recently (**Figure 3**). This suggests that phosphorus release from the bottom sediments has been significantly reduced. The late August total P content has dropped from more than 10,000 Kg in the early 80's to under 4000 Kg lately, where it appears to be stabilizing. It would be desirable to reduce the late summer P content to under 2000 Kg.


The recent changes in TP content in the lake from March to May (**Figure 4**) are interesting. The March values are obtained through

Fig 4. P Content Change March to May



the ice at the end of winter. The May values are usually from well-mixed spring conditions at the end of the spring runoff, but before the onset of summer stratification. The negative values show a decrease in the amount of TP in the lake. This decrease could be due to flushing the high phosphorus content water during spring runoff, or from the collapse of a spring diatom bloom. The former would indicate that non-point phosphorus sources have been sufficiently reduced to allow additional flushing of the nutrient from the lake during the spring runoff. Phosphorus input during the spring run-off has been reduced, indicating that the conservation practices installed on the watershed's farms and wastewater treatment at Dexter have been effective.

The trends in water quality are both encouraging and discouraging. The lake has definitely improved, but the improvement has been slow and appears to be stabilizing. The fall drawdown is becoming less effective as fall concentrations approach 30 ppb TP. Most of the external phosphorus loading occurs during the high-flow spring runoff. Recent spring TP concentrations in two smaller tributaries, Mulligan and Stetson streams, have been in the high teens. However, TP concentrations in the largest tributary, the East Branch of the Sebasticook River, are still near 30 ppb. When Corinna's new wastewater treatment facility goes on line, the phosphorus content of the East Branch should decrease. This might be just enough to yield Secchi disc readings consistently over 2 meters, indicating the lake's algal blooms are under control.

As the experience with Lake Sebasticook shows, lake restoration is a difficult, expensive, and slow process. Those concerned with lake quality must be vigilant in their efforts to protect lakes and reduce the input of phosphorus from all sources. It doesn't take much phosphorus to cause algal blooms in lakes. Currently, the most significant inputs to Sebasticook, and most Maine lakes, are the difficult-to-control, non-point sources. Most of this phosphorus comes from everyday activities in the watershed: farming, road construction, land clearing, logging, lawn and garden fertilization, run-off from impervious surfaces (roofs, roads, parking lots) and septic tanks. 

Lake Lingo

The following terms and concepts occur in the article about Sebasticook Lake on page 8.

Internal Phosphorus Cycling (or Recycling):

Phosphorus is the nutrient that limits, or controls the growth of algae in lakes. In most lakes and ponds, the majority of the annual phosphorus load comes from the watershed, via runoff. This process is referred to as “external phosphorus loading”. It can be estimated for individual lakes through the use of mathematical models that are based on studies of the amount of phosphorus that is exported from different land uses in the watershed.

Lakes and ponds accumulate phosphorus over time in their bottom sediments. However, the phosphorus in the sediments is generally not biologically available to the algae because of a natural chemical “barrier,” situated on the surface of the lake sediments, which causes the phosphorus to be rendered “inactive.” But excessive algae growth that occurs as a result of external phosphorus loading can lead to the loss of dissolved oxygen, which in turn may result in the loss of the protective chemical barrier. When that occurs, rich, biologically available phosphorus from the sediments may be swept to the surface where it can greatly exacerbate algal growth. This process is referred to as “internal phosphorus cycling.” Once this cycle begins, it can cause a dramatic negative change in water quality.

Internal phosphorus cycling is a complex phenomenon that involves the interaction of a number of physical, chemical and biological factors. This phenomenon has been studied extensively. The description above is a simplification of a complex process.

Drawdown (or Enhanced Flushing):

Enhanced flushing, or drawdown is a method of lake restoration that is sometimes used to “purge” lakes and ponds of algae and phosphorus. The process involves opening the lake outlet (dam) and drawing down the water level during the time of year when algae growth is heaviest, usually in the late summer or early fall. Typically, the effects of drawdown are relatively slow in coming. However, it is a relatively low-tech and low cost method of lake restoration.

As is the case with all forms of whole-lake manipulation, drawdown should only be undertaken when a true need exists, and following a thorough evaluation of the benefits and drawbacks of the process. An undertaking of such magnitude may require permits from a number of sources.



Are you interested in learning more about the History of Lake Sebasticook and methods to reduce algae blooms?

Tom Hannula will be presenting his work at the VLMP Annual Meeting

An extended version of the Sebasticook article is available on the VLMP website :

www.MaineVolunteerLakeMonitors.org/pub

A Fabled Culvert Thawing Method

(with apologies to Aesop)

Ross Swain, *Ellis Pond Monitor*

The following culvert thawing method is a low-tech, proactive approach to pesky culvert freeze-ups. It is designed to give the natural thawing process a slight nudge. It is not meant to be a powerful answer to an emergency situation such as a flood. It is the tortoise, not the hare.

Installation

1. Basically, this is a plumbing job. If you don't have plumbing experience, find someone who does because all joints must be 100% watertight. The same care used in plumbing a house must be shown here.

2. The most convenient time for installation is during a dry spell in the summer or fall when the area around the culvert is the driest.

3. Assembly begins with inserting section E into the culvert. Section E may be several shorter sections that are

joined together with pipe couplings. Protect both ends of E so that the threads aren't damaged during this step.

4. With the exception of the pipe caps A and plug G, assemble all remaining pipes and fittings as illustrated. Save the caps and plug until later.

5. Drive stakes H into the ground and secure risers B1 & B2 to the stakes using stainless steel hose clamps C.

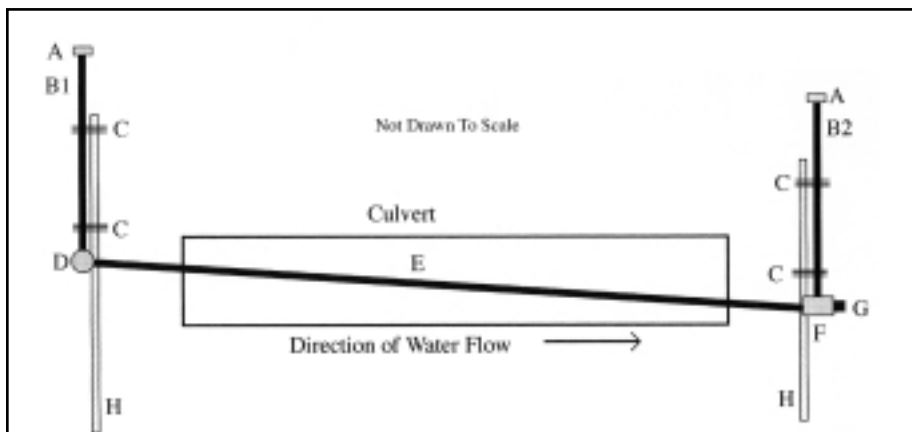
6. When securing the risers, make sure section E has a slope of at least one-half inch per foot and also confirm that the

top of riser B1 is approximately 6 inches higher than the top of riser B2. If you don't understand these details, see Step #1.

7. Install pipe caps and plug after any water that may have entered the system drains off.

8. The culvert is now ready for winter. If possible, inspect just before the first snowfall.

9. Enjoy your favorite beverage.



MATERIAL LIST

(1" threaded galvanized pipe and fittings where applicable)

- A - two pipe caps
- B1 & B2 - two riser pipes of equal length (approximately four feet)
- C - four stainless steel hose clamps
- D - one 90 degree elbow
- E - sufficient pipe to extend four feet past each end of culvert
- F - one pipe tee
- G - one pipe plug
- H - two anchor stakes (pipes or rebar)



Photo by Duane Phelps

Share your lake stories, photos or discoveries with other monitors.

Send articles to
24 Maple Hill Rd
Auburn, ME 04210 or
vtmp@mainevtmp.org.

CULVERT THAWING:



Photo by Duane Phelps

1. Temperatures do not have to be above freezing, but it sure helps.
2. Remove pipe caps from both risers.
3. At B1 pour or siphon up to 10 gallons of hot water into the riser. (I have had success with as little as 2 gallons.) The system will fill and overflow at B2.
4. Check your progress by shaking one of the risers. Success is yours when this shaking causes the other riser to wiggle. The wiggle confirms that the ice that had encased the pipe has melted enough to allow water to flow through the culvert. Granted, that flow will be a small trickle, but the power of the backed up water in the ditch will gradually "eat" a larger passage. You're not done yet though. Move to Step #6.
5. If you use all your water without success, cut your losses and wait for a warmer day. Even if this is the case, you still need to complete the rest of the steps.
6. Remove plug G and allow all water to drain from the system. It is important not to replace the pipe caps until the system has been drained, otherwise the system won't vent and drain completely.
7. Replace plug and pipe caps ... watertight!
8. Enjoy your favorite beverage.

A good rule of thumb is to start thawing culverts at the beginning of maple sugar season (warm days and cold nights). During this period, culverts probably will not refreeze overnight and there is time for the trickle to grow to a gush before a major thaw. Good Luck!


July, 2004 is Lakes Awareness Month

Governor John Baldacci has proclaimed July, 2004, Lakes Awareness Month. Maine COLA applauds Governor Baldacci's effort to draw the attention of Maine citizens to the importance, value and fragility of Maine's more than 6,000 lakes.

Maine lakes benefit the public as drinking water supplies, resources for industry and agriculture, as a magnet for the tourism industry and the source of boating, fishing, swimming, and aesthetic pleasure. Because they are often considered "free" resources by both lakefront property owners and recreational users, Maine lakes can and do suffer neglect. Under pressure today, the vulnerability of these sparkling assets is not well understood. July is a month when many of us visit lakes, so it provides a great opportunity for all of us to celebrate the vital importance of Maine's delicate freshwater treasures.

Here are a few suggestions for raising awareness and increasing the visibility of Maine lakes:

- Make a rain gauge with a youngster and monitor rainfall in July
- Volunteer to become a water quality monitor (VLMP: 783-7733)
- Organize a lakeshore clean-up
- Plan a picnic, regatta, treasure hunt, or festival to stimulate interest in lake awareness
- Teach a youngster how to fish
- Start a Courtesy Boat Inspection Program for a public boat launch in your region (COLA: 877-254-2511)
- Sign up for the Annual Audubon Loon Count (Maine Audubon: 781-2330)
- Become trained as an Invasive Plant Patroller (VLMP: 783-7733) and organize a Plant Patrol Survey of a public boat launch site
- Create a social history of your lake of choice
- Invite a senior citizen for a boat ride on your favorite lake
- Write a newspaper article celebrating the value of Maine lakes
- Begin a storm drain stenciling program
- Relax and enjoy a day on your lake of choice.
- Create a Lake Float for your town's 4th of July Parade
- Snorkel the shoreline and get to know the plants growing underwater so you'll be able to spot new arrivals (possibly invasive) when they move in.

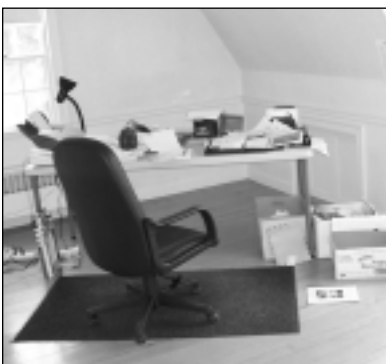
Do you have additional or better ideas? Send them to Maine COLA at info@mainecola.org and we'll share them for others to use. 

Maggie Shannon, *Maine COLA*

Be a part...

Brackett Environmental Center's Lake Campus

You are probably aware of the new home of the VLMP on the shores of Lake Auburn.



At our latest Board of Directors meeting it became apparent that the facility is in need of some general furnishings and equipment. It is important to retain the charm of the Brackett Center while beginning the "furnishing campaign."

Here are some of the needs of the Brackett Center:

FURNISHINGS

Book cases
Area carpets
Floor Lamps
Computer work stations
Conference Table
Airconditioner
Paper Shredder
Laminator

HOUSEHOLD TOOLS

Mops
Buckets
Broom
Cleaning Supplies

REFERENCE

LIBRARY ITEMS

Books and publications
(see Maine VLMP wish list on Amazon.com)

OUTDOOR EQUIPMENT

Garden tools such as
shovels, rakes, etc.
Garden hand tools
Wheel barrow
Weed wacker
Trimmer
Field and brush mower

Here's How You Can Help

Please contact the staff to discuss your donation in order to determine if it meets the needs of the Center as well as maintaining the quality and style of the center.

You can make a monetary donation to purchase or contribute towards the purchase of an item. Gift cards or certificates are a convenient way to do this. Use the form on the back cover of this newsletter to make a general donation.

If interested in making a donation to the Reference Library, please see the Amazon.com wishlist for Maine VLMP or contact the VLMP staff for a list of needed publications.

Your contributions will ultimately enhance the current beauty of the Brackett Center and help the staff to continue their important work.

Your gifts will be recognized on a gift roster located at the Brackett Center. Also your gifts are tax deductible. In future newsletters we will be listing donors and their contributions. Thank you in Advance!

VLMP Building Committee

Brackett Center Stewardship Initiative



With seven-acres of lakeside property the VLMP can now practice what we preach. On May 11 a group of volunteers met at the Brackett Center to initiate a new project of Land Resource Planning. The group toured the property and brainstormed landscaping ideas.

If you are interested in joining the Stewardship Initiative to develop the Land Resource Plan or to volunteer for future landscape workdays contact the VLMP office.

The overall goals of the project are:

- (1) To establish good stewardship of the property**
- (2) To develop the property as a demonstration site and educational resource**
- (3) To develop a Landscape Master Plan**
- (4) To engage the public and interested volunteers in the planning and execution of the Master Plan, to the greatest extent possible**

Special Thanks!



Thanks to **Christina Steinbrecher** (*photo on left*) from Sterling College for donating seven microscopes and to **Warren Kindig M.D.** from Maine General Medical Center for donating a microscope.

Thanks to the **Auburn Water District** for donating a copier. It would have cost the VLMP over \$10,000 to buy a new machine of this quality!

Thank to **Mark Whiting** for donating a TV and VCR. We are now able to show the recent Quest 'Bioinvasion' video and the May broadcast of the VLMP on Channel 6.

The VLMP has
new email addresses

VLMP and Volunteer Monitors:
vlmp@mainevlmp.org

MCIAP and Invasive Plant Patrollers:
mciap@mainevlmp.org

Life Long Lake Monitors

Join us at the Annual Meeting as we recognize the outstanding efforts and dedication of our volunteers.

The following pages highlight some of our Life Long Volunteers.

32 Years

Tom Hannula
Sebasticook Lake, Newport

31 Years

Joe Emmerson
Upper Narrows Pond, Winthrop

30 Years

Ed Mayer
Long Pond, Belgrade

Robert Susbury
Howard Pond, Hanover

29 Years

David Hodsdon
Clary Lake (Pleasant Pond),
Jefferson

28 Years

Ralph Johnston
Highland (Duck) Lake, Falmouth

Charles Turner
Panther Pond, Raymond

27 Years

John Dudley
Pocamoonshine Lake, Alexander

Charles McClead
Phillips (Lucerne) Lake, Dedham

Richard Offinger
Cathance Lake, NO 14 Plt.

Frank Perkins
Square Pond, Acton & Wiley Pond,
Boothbay

26 Years

Thomas Dionis
Balch & Stump Ponds, Newfield
Big Bear Pond, Hartford

Dr. Larry Mobraaten
Spruce Mount Lake, Beddington

20 Years

Ken Bailey
Megunticook Lake, Camden
Norton Pond, Lincolnville

Ruth Eleanor Cyr
Silver Lake, Katahdin Iron Works

Peter Devine
Garland Pond, Garland

Walter Fournier
Long Lake, T17 R4 WELS

Ed Roche
Scituate Pond, York

Chuck Strandberg
Barker Pond, Hiram

15 Years

Jon Andrews
Lower Togus Pond, Chelsea

Peter Fischer
Boyd Pond, Bristol

Bill Gawley
Acadia National Park, Mount
Desert Island

Joseph Potts
Sebago Lake, Sebago

Fred Weston
Long Pond & Great Pond,
Belgrade

VOLUNTEER RECOGNITION

10 years

Anna & Charles Barnes

Pleasant Pond, Caratunk

John Bradstreet

Sheepscot Pond, Palermo

Barbara Clements

Little Purgatory Pond, Litchfield

William Day

Trafton Pond, Porter

Kenneth Forman

Sand (Walden) Pond, Denmark

Dan Guerette

Sabattus Pond, Greene

John Kincade

Coleman Pond, Lincolnville

Bruce Mailloux

Swan Lake, Swanville

Charles Miller

Bickford Pond, Porter

Todd Sekera

Lower Springy Pond, Otis

Ross Swain

Ellis (Roxbury) Pond, Byron

5 years

Robert Anderson

Pleasant Pond, Turner

Churchill Barton

Brettun's Pond, Livermore

Doug Blackwell

Ossippee Flowage (Arrowhead),
Waterboro

Warren Bryant

Pennesseewassee Lake, Norway

Linwood Carville

Toddy Pond, Surry

Heidi Chadbourne

Figure Eight Pond, Sidney

Ed Charles

Lond Pond, Belgrade

Albert Childs

Schoodic Lake, Lake View Plt.

Poppy Connor-Crouch

Lower Range Pond, Poland

John Crouch

Lower Range Pond, Poland

Ralph Gould

Taylor Pond, Auburn

Roland Johnson

Sandy Bottom Pond, Turner

Rod Kesting

West Harbor Pond, Boothbay

Bill Latham

Echo Lake (Crotched Pond),
Fayette

Bill Mansfield

Coffee Pond, Casco

Emmett Porter

Number Nine Lake, T9 R3 WELS

Ron Rutan

McCurdy Pond, Bremen

Maggie & Roger Shannon

Great Pond, Belgrade

Dick & Amy Thibodeau

Little Wilson Pond, Turner

Rich Thornton

Moosehead Lake, Greenville

Maurice Vachon

Auburn Lake, Auburn

Dana Valleau

Lake Saint George, Liberty

James Vantassell

Bunganut Pond, Lyman

Robert Warren

Center Pond, Sangerville

Thomas Warren

Center Pond, Sangerville

Doug Webster

Dumpling Pond, Casco

Jay Woolsey






South & Round Ponds,
Greenwood

2004 Invasive Plant Patrol Workshop Schedule

BASIC INVASIVE PLANT PATROL WORKSHOPS

<u>DATE</u>	<u>TIME</u>	<u>LOCATION</u>	<u>TOWN</u>
June 22	4:00 - 8:30pm	Raymond Public Safety Bldg.	Raymond
June 29	4:00 - 8:30pm	City Hall	Ellsworth
July 6	4:00 - 8:30pm	Vienna Com. Bldg.	Vienna
July 8	4:00 - 8:30pm	Brackett Env. Ctr.	Auburn
July 10	1:00 - 3:00pm	VFW Bldg.	N. Windham (abbreviated)
July 15	9:00am - 1:30pm	Rangeley LHT Hdq.	Oquosoc
July 20	4:00 - 8:30 pm	TBA	Lovell
July 22	5:00 - 9:30 pm	China RLA Office	China
July 28	4:30 - 9:00pm	Princeton Rod/Gun	Princeton
Aug 3	4:00 - 8:30pm	Dmriscotta RA Hdq.	Damariscotta
Aug 5	9:00am - 1:30pm	Rangeley LHT Hdq.	Oquosoc
Aug 10	1:00 - 5:30pm	Baxter SP Hdq.	Millinocket
Aug 11	9:30am - 2:00pm	USDA Serv. Str.	Dover-Foxcroft
Aug 25	10:30am - 3:00pm	Newport Armory	Newport

ADVANCED INVASIVE PLANT PATROL WORKSHOPS

<u>TITLE</u>	<u>DATE</u>	<u>TIME</u>	<u>LOCATION</u>
 IPP Plus Milfoil Hand Removal Training	June 14	8:00am - 4:00pm	Sebago Lake State Park
 Screening Survey Field Methods	July 18	7:30 - 11:30am	TBA, Hancock County
 Screening Survey Field Methods	July 24	7:30 - 11:30am	TBA, Waterboro
 Screening Survey Field Methods	Aug 14	7:30 - 1:30am	Middle Pond, Waterford
 Advanced Plant ID	Aug 23	1:00 - 4:00pm	Brackett Environmental Center, Auburn

BASIC PLANT PATROL WORKSHOPS

The basic Invasive Plant Patrol (IPP) workshops are open to anyone interested in learning more about the threat of invasive aquatic plants in Maine. The primary purpose of the training, however, is to supply those who wish to join Maine's "early detection" effort with the information and guidance needed to get started. The workshop is presented in four parts:

- Overview of invasive species issue in Maine and beyond
- Plant identification fundamentals
- Plant identification hands-on exercise with live plants
- Conducting a screening survey, tools and techniques

All workshop participants receive a packet of informational material including a FREE COPY OF [A Field Guide To Invasive Aquatic Plants](#)

ADVANCED PLANT IDENTIFICATION

The primary focus of this workshop is Maine's native plant communities, the plants you are most likely and most frequently to encounter while you are conducting an invasive plant screening survey.

HAND REMOVAL TRAINING FOR DIVERS AND NON-DIVERS

This daylong workshop is presented in conjunction with basic IPP training. The basic IPP training is conducted in the morning session; the afternoon session provides field instruction and practice.

CONDUCTING AN INVASIVE AQUATIC PLANT SCREENING SURVEY

This workshop is for those of you who have already attended the basic IPP training and feel you would like some guided field experience before you set off on your own to conduct an invasive plant screening survey. We meet at a designated launch site and spend the morning on the water.

ORGANIZING A LAKEWIDE (OR REGIONWIDE) INVASIVE PLANT SCREENING SURVEY

This session will provide practical tools and inspiring examples for anyone interested in organizing, developing, implementing and perpetuating a lake-wide or region-wide volunteer-based Early Detection Team.

To register contact the VLMP at mciap@mainevlmp.org or 783-7733

Did you know the data
collected by VLMP Volunteers
saves Maine over
\$250,000 per year?

Please support the VLMP by donating to our wish list on page 14
or with a monetary gift by filling out the form below.

All gifts and support are greatly appreciated.

 CLIP AND MAIL TO VLMP

I pledge to support Maine's Lakes and Ponds
with a donation to the VLMP!

Enclosed is a check for:

\$25 \$35 \$50 \$75 \$100 Other Amount: _____

Send to: VLMP, 24 Maple Hill Road, Auburn, ME 04210



Maine Volunteer
Lake Monitoring Program
24 Maple Hill Road
Auburn, Maine 04210

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