MAINE VOLUNTEER LAKE MONITORING PROGRAM • PO BOX 445, TURNER ME 04282-0445; (207) 225-2070 •

the Water Column

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HYDRILLA DISCOVERED IN LIMERICK, MAINE

Hydrilla verticillata is considered to be one of the most invasive aquatic plants in the world. Prior to 2002, the northernmost known infestation of this plant in the eastern U.S. was in a single small pond in Massachusetts. Hydrilla is not known to exist in New Hampshire or Vermont.

Last summer a seasonal resident of Pickerel Pond in Limerick, Maine contacted the VLMP because he had observed a rapidly growing plant near his dock. After checking our website, he suspected that the plant could be Hydrilla. When the volunteer reported his observation to VLMP staff, he was asked to send a specimen to the Turner office for identification. Although it seemed unlikely that the plant in question could be Hydrilla, each report by volunteers of a possible invasive aquatic plant is taken seriously.

When the specimen arrived in the mail it was partially decomposed, and a definitive identification was not possible. A number of native and non-native aquatic plants are very similar in appearance to Hydrilla, including Elodea, a plant that is found in many lakes and ponds throughout Maine. Because of this uncertainty, and because Hydrilla is such a serious threat, VLMP staff made a site visit to Pickerel Pond in the early fall. Upon arrival at the site in question, we observed a nearly continuous coverage of the littoral area by the plant. After only a few

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WHAT'S INSIDE

A MESSAGE FROM THE PRESIDENT

PETER FISCHER

By now, most of you have probably heard that the invasive plant, *Hydrilla verticillata*, was identified this fall in Pickerel Pond in Limerick (by VLMP staff, by the way). Finding this species was a very unwelcome surprise. Hydrilla is particularly invasive.

I think we should view this discovery as a serious wake up call. It is no longer okay to sit on the sidelines. There is a need for all of us to get into the action in our own small way. I have been thinking about what can be done in my area to keep invasives out. I've resolved to go to the towns in the Pemaquid and Damariscotta Lake region and request a yearly contribution to an invasives prevention program. The combined funds can be used to hire courtesy boat inspectors and for other education, monitoring, and prevention projects.

What's your plan?

Visit us on line at:

www.mainevolunteerlakemonitors.org

Contact Us:

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vlmp@megalink.net

Becky Welsh
Development Coordinator

Dear Friends and Volunteers,

The other day, a volunteer asked why the VLMP needs fund raising, and in particular, why we need to ask our volunteers to support the VLMP financially. "I would like to think," he said, "that by doing volunteer work, the issue of financing the project would be taken care of."

That is an excellent question and deserves a thoughtful answer. Why do we need to fund raise? And why isn't the issue of financing the project taken care of?

Our core services relating to water quality monitoring are currently supported by the Maine Department of Environmental Protection and the U.S. Environmental Protection Agency Clean Water Program. That funding supports specific tasks, including training and recertification workshops for volunteers; purchasing monitoring equipment such as DO meters, Secchi disks and scopes; data management; outreach and technical assistance; a portion of our work to identify and prevent invasive aquatic species; producing the Annual Report and the Annual Meeting. A portion of those funds also helps support the basic needs of rent, utilities, insurance, the VLMP truck, and similar expenses.

It is important to note that, while these funds cover a significant portion of our budget, they do not cover the entire need of the Program. Thirty percent of our budget must come from sources other than State and Federal funding.

In this economic and political climate, one would be foolhardy to rely solely on government funding to support the program. The Clean Water Act may be in jeopardy, putting our EPA funding at risk. The State budget crisis is in the news every day, and we have no way of knowing how we will be impacted by it. We only know that we will be impacted.

Support in addition to our government funding is needed on an on-going, annual basis to ensure the basic administrative and operating needs of the Maine Volunteer Lake Monitoring Program. These needs are by no means frivolous or unnecessary, but represent activities essential to the day-to-day operation and long-term continuance of the Program.

In 2000, we began approaching private foundations, which have provided funding for general operations, outreach, and a number of specific projects. That funding helped provide the base that allowed us to grow and expand the program from 275 volunteers in 1999 to more than 525 in 2002, an increase of 48%. The number of lakes being monitored has grown by a similar percentage.

Fund raising is defined as "securing individual and institutional financial resources to advance a nonprofit's mission." General operating expenses sup-

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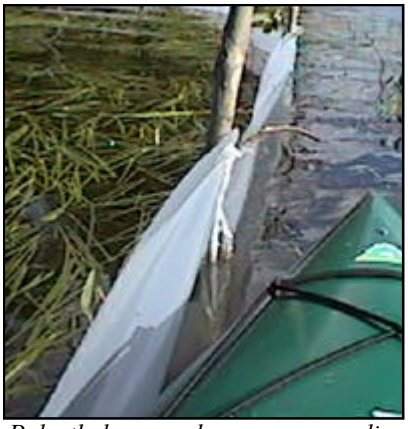
Lake Christopher Milfoil

By: Jim Chandler

Variable Milfoil was discovered in Lake Christopher on June 18, 2002, by a class of teachers doing watershed investigations as part of the American Wilderness Leadership School. The teachers used materials that were developed by the Volunteer Lake Monitoring Program to identify the invasive plant. Identification was later confirmed by the VLMP.



Polyethylene enclosure surrounding a large patch of milfoil on Lake Christopher.

About 19 clusters of milfoil were found and were later documented using a GPS unit. The clusters ranged from one single plant, up to clumps as large as 30'x50'. More seemed to pop up every time they were surveyed. The DEP was contacted, and John McPhedron and Karen Hahnel visited the site. A permit for the delicate hand removal of the plants was issued one week later.

Jim Chandler (former volunteer lake monitor for Lake Christopher), along with Mr. and Mrs. Jim White, Nancy Willard (certified volunteer monitor, Lake Christopher), and other members of the Community Lake Association (covering the lakes of Woodstock, Greenwood, and Songo Pond) constructed enclosures around the larger clumps of milfoil, in order to prevent milfoil fragments from spreading to other areas of the lake. To create the enclosures, we stapled polyethylene plastic sheets to sapling poles and encircled the infested area.

In early July, two days were spent hand-pulling milfoil and disposing of it in piles on land. Approximately 940 stems were removed. Adjacent areas were also surveyed, though it appeared that the milfoil was limited to the cove next to Lakeside Cemetery and the area just outside the mouth of the cove.

Paula Wheeler, of Hot Colors Screen Printing and Design, volunteered to scuba dive the deeper waters and survey for variable milfoil. She found and removed about 40 plants.

After the initial hand removal, the site was visited nearly every two weeks, and on each visit, approximately 60 plants were found and removed. The enclosures were kept up until the end of the summer. At the end of the season, Jim White drove PVC pipes into the ground to mark the sites of the enclosures and other small clumps of milfoil. Monitoring of the pond will continue as necessary next spring and summer... as long as it takes to control the milfoil.

So You Think You Know Maine Lakes?

Starting with this edition of The Water Column, test your knowledge of Maine lakes. For those of you who have witnessed our presentations at Annual Meetings, be assured that the questions herein will be of a similar caliber.

If you know the answer to the following question, please contact the VLMP office via email. If you are the **7th** person to contact us , we will send you a special prize!

Question: What is the term that is commonly used to describe the phenomenon that occurs in many Maine lakes in the spring and fall, when the entire water column is approximately the same temperature, and the water mixes from the surface to the bottom?

Answer (Choose One):
Stratification
Turnover
Thermocline
Limnover

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LAKESIDE NOTES

SCOTT WILLIAMS, EXECUTIVE DIRECTOR

Little does he know that he is playing a key role in a common lakeside love scene. (Note the mating dragonflies.)

Felicitations!

It is January 2003. All of us here would like to wish all of the dedicated volunteers who are the foundation of the VLMP, all of our collaborators, whose vision allows us to continue to grow and become more diverse (and anyone else who is reading this) a very Happy New Year. Despite the dark and cold, January is a time for renewal and for looking ahead. One of our resolutions for this year is to attend to concepts that have been sitting on the drawing board for a while. We're always very open to your ideas about ways in which to improve program operation. Let us know what you think about the following:

New Stuff!

At long last, and after much discussion, we will initiate the "Certified Volunteer Trainer" (CVT) program next summer. Through this, volunteers will be trained to assist the VLMP and MDEP staff in conducting volunteer monitor re-certification workshops. A number of individuals have expressed interest in becoming involved as a CVT. From the staff perspective, the assistance of qualified trainers during the very hectic summer season is most welcome! The first season will focus on getting the program up and running. Candidates will be required to attend a special training workshop, after which they will "shadow" and assist VLMP and DEP workshop conductors. Eventually some CVT's may conduct workshops independently, depending on specific staff needs.

In recent years, many volunteers have expressed interest in broadening their lake sampling regime, without adding major cost and time to the process. Working with our MDEP Quality Liaison, Linda Bacon, a new procedure for gathering total phosphorus samples has been approved for volunteer monitors. This simple process involves the careful collection of a water sample from just under the lake surface at the sampling station where Secchi readings are taken. No special equipment is required, other than the sampling bottles that are provided by the laboratory. Volunteers, or their lake associations, will be responsible for paying for the laboratory analysis. Sampling containers will be shipped to participating volunteers in a special box that is used to send the sample back to the lab for analysis. Those who choose to sample their lakes for total phosphorus will be required to attend training workshops for certification.

Thin Ice!

Finally, a note of caution: For those of us who are fortunate enough to spend four seasons in Maine, our lakes and ponds offer wonderful opportunities for winter recreation. Many small ponds were covered with ice as early as last November. But as of mid-January, some large, deep lakes still have open water or very thin ice cover, especially in areas where the water is deep or flowing. If you plan to spend time on your lake this winter, please be sure that the ice is thick enough to support you and whatever equipment or machinery you are using. Remember that ice thickness may vary, especially when it covers running water. So, even though the ice may be a foot thick in one location, it may be only an inch thick several yards away!

The ability of ice to support weight cannot be judged solely by appearance, thickness, air temperature, or snow depth. Other factors, including water depth and flow, and the amount of weight that the ice must support should be taken into consideration when planning an outing on winter ice. (See Winter Safety Guidelines on next page.)

"...volunteers will be trained to assist the VLMP and MDEP staff in conducting re-certification workshops."

Winter Safety Guidelines on Lakes

Never go out on the ice alone. Always have a rescue plan with your ice companion(s).

Carry a PFD and some rope with your gear. Both could be thrown to someone who has broken through the ice.

Be extra cautious on the ice at night. Vehicles might not be able to see you, and you might not be able to see a hole in the ice!

Although guidelines vary, most sources suggest a *minimum* of 4 inches of clear ice to support one person. Obviously, the depth should be greater if several people are together in one area, or if vehicles or heavy gear are involved.

Be familiar with the body of water. If your lake or pond has springs, be aware that groundwater from those springs is much warmer than ice, and may therefore limit its thickness.

Never make assumptions that the ice is safe! Information about ice thickness is often available from state public safety agencies. Always check this information before heading out, and make sure you are prepared.

Have fun and please be careful!

Passings

We were saddened to learn of the recent passing of Guy Litalien. Guy was the volunteer monitor on Little Ossipee Lake for many years. Beyond his invaluable assistance in gathering lake data, Guy was also a key player in efforts to protect Little Ossipee through his participation in watershed surveys, and technical outreach and assistance to his lake association, and watershed community. Those of us who had the privilege of working with him over the years will miss his enthusiasm, curiosity, and warm smile.

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ported by fund raising represent resources essential to advancing the VLMP's mission, but which are not paid for by restricted, or specifically targeted, funding. It is critical that the VLMP have the financial flexibility to be able to respond to situations as they arise, whether it is a meeting of lakes-related stakeholders, a special meeting or training workshop, a survey of a suspected infestation of invasive aquatic plants, or other similar circumstance. We have worked long and hard to position the VLMP as the leading organization in Maine that provides accurate and unbiased lake water quality information to the public, and we must have the funding base required to fill that role.

The work of our volunteers is extraordinary, and the monetary value of that work is significant, indeed. It is easy to be lulled into complacency, however, thinking that because so much is volunteered, little else is needed. In addition to the enormous amount of time and effort contributed by our volunteers, we must maintain a small professional staff to coordinate our network of volunteers and to support the administrative needs of the Program, as well as staying abreast of issues affecting Maine's lakes. We have two full-time staff members, and two part-time, equal to 2.65 full time employees.

We have asked concerned individuals, businesses and lake associations to support the Program financially over the past few years, and they have responded well. We began a special event fundraiser, the auction, two years ago, and that has potential to grow. But your support is crucial to our continued success. You, our volunteers, are our primary stakeholders. Without your hard work and dedication, the VLMP would not be able to fulfill its mission. But without the VLMP, your work and the data you collect would be for naught. We are here for you, and we hope you will be there for us and for the continued health of Maine lakes.

Hydrilla... Continued from Page 1

minutes, there was little doubt that the plant was indeed Hydrilla. Back at the VLMP laboratory, a number of the specimans from Pickerel Pond were checked microscopically, and electronic images of the specimens were sent to national experts to confirm the identification. (For information about how to identify Hydrilla, see "Littorally Speaking" inside this issue.)

Roberta Hill, the VLMP Invasives Species Coordinator, collecting a sample of Hydrilla at Pickeral Pond in Limerick, Maine.

A subsequent survey of the Pickerel Pond problem by VLMP and Maine DEP staff revealed that much of the shallow water habitat of the pond was heavily infested with the invader. Plants were observed growing in water as deep as 8 feet, although the average depth limit was approximately 6 feet. The plant presented a continuous mat along much of the shoreline. Hydrilla has been reported to grow in water depths of up to 30 feet.

The State of Maine has passed Legislation that outlaws the introduction, transportation, sale, and cultivation of 11 invasive aquatic plants. Of the 11 species, Hydrilla may be the most aggressive and problematic. Once this species becomes established in a lake or pond, the chances of eradication are poor, and unless strong preventive measures are taken, it is likely that the plant will spread to other waterbodies.

The discovery of Hydrilla in Maine took everyone by surprise. The presence of this invader in the northern states is thought to be very limited. Prior to the discovery, the number of species of invasive aquatic plants known to be in Maine lakes and ponds was limited to Variable milfoil in about 15 water bodies. The majority of lakes that are infested with this invasive species of milfoil are situated in southwestern Maine.

Like many other invasive aquatic plants, Hydrilla has excellent survival characteristics, including one that is known as "clonal expansion". This simply means that fragments of the plant are capable of producing new plants. Therefore, the rate at which Hydrilla spreads is actually increased when boats, swimmers, and even natural wave action disturbs the plant, causing fragments to break-off and float away. In late October, VLMP and DEP staff found viable fragments of Hydrilla attached to a boat trailer that was parked at the public access area at Pickerel Pond. Informing boaters about the importance of equipment inspections before launching can substantially reduce the risk of spreading any invasive aquatic plant.

The discovery of Hydrilla in Maine underscores the fact that relatively little is known about the presence of invasive aquatic species in the state. With more than 6,000 lakes and ponds in Maine, the task of screening even a small percentage of them for aquatic invaders is a monumental task. Nonetheless, this essential process of assessment has been started. The VLMP is working with the Maine Department of Environmental Protection and the Maine Natural Areas Program to develop a "rapid assessment protocol" that will be used to screen lakes throughout the state. This tool is being designed to provide critical information in the most rapid, efficient, and inexpensive manner possible. It will be valuable to both professionals and trained volunteers. The VLMP will incorporate new methods and procedures for invasive plant screening (as they become available) in the Invasive Plant Patrol workshops next summer. (For more information about Plant Patrol workshops, please see "IPP Workshops 2003" inside this issue)

A paddle submersed into a thick mass of Hydrilla in Pickerel Pond.

Shortly after the Pickerel Pond discovery, a number of actions were immediately taken by state officials to contain this aggressive invader. Town officials were alerted, a screen was installed across the outlet stream, a warning sign was placed at the public boat landing, and strategic planning was initiated at the state

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Roberta Hill guiding IPP workshop participants in plant identification.

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and local level to evaluate options for managing the plant within the pond and preventing the plant from spreading to other waterbodies.

The bright point of this otherwise gloomy story is that once again a volunteer has played a critical role in the discovery and identification of an aquatic invader. Volunteers have raised the warning flag for many of the Variable milfoil discoveries that have been made in Maine. Clearly, raising public awareness through education is vital in our efforts to protect Maine lakes from this threat. Without the vigilance and assistance of the Pickerel Pond volunteer, we would probably not know that Hydrilla had invaded Maine, and precautions would not be underway to ensure that this menace does not infest other water bodies.

Inside this issue you will find more detailed information about Hydrilla, including how to distinguish it from other aquatic plants, its growth characteristics, and actions that you can take to help ensure that this invader (and others) do not find their way into your lake.

Invasive Plant Patrol Workshops 2003

This summer the VLMP will once again be offering Invasive Plant Patrol workshops to train volunteers all over the state of Maine to recognize the plants on Maine's "eleven most unwanted" list, and to distinguish these invaders from some of their native Maine look alikes.

The IPP training has been revised and expanded for 2003 in response to your comments and suggestions. The basic 4 ½ hour workshop will be presented in three parts: an overview and update of the invasive plant issue in Maine and beyond, a expanded hands-on plant identification segment with special attention on hydrilla, and the fundamentals of conducting an invasive plant screening survey. In addition to the basic workshop we will be offering two advanced courses this year, one on advanced plant identification and the organization of lake wide screening surveys, and the other providing screening survey field experience. We will also be offering, for the second time, a special IPP course extension for SCUBA divers and others involved in hand-pulling efforts.

We are currently in the process of lining up sites and organizing the schedule for the 2003 workshops. Our goal is to provide at least one basic workshop in every Maine County this year. We are still looking for host groups and sites in the following Counties: Knox, Penobscot, Piscataquis, Sagadahoc, Somerset and Washington. All that is needed to host a basic workshop is a suitable meeting space and at least 15 participants. As existing funding for these workshops is limited and not actually adequate to achieve full statewide coverage, we encourage all host groups to consider helping us stretch our dollars by making a financial contribution toward their workshop. Your support for this program will help the VLMP to spread the word throughout the State and put more trained eyes out there on Maine's lakes.

Please contact Roberta Hill 207-225-2070 or **vlmp@megalink.net** if you are interested in hosting or attending a basic or advanced training workshop in the coming season or would like to learn more about the IPP program.

Moving On

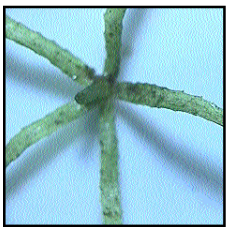
After three years as Development Coordinator with the VLMP, I'm changing direction. I've decided to shift away from Development to focus my energy on writing, and I am pursuing an MFA in Creative Writing through USM's Stonecoast program. I've enjoyed my time with the VLMP and meeting all our wonderful volunteers. I'll miss you all.

~Becky Welsh

LITTORALLY SPEAKING

ROBERTA HILL, SPECIAL PROJECTS COORDINATOR

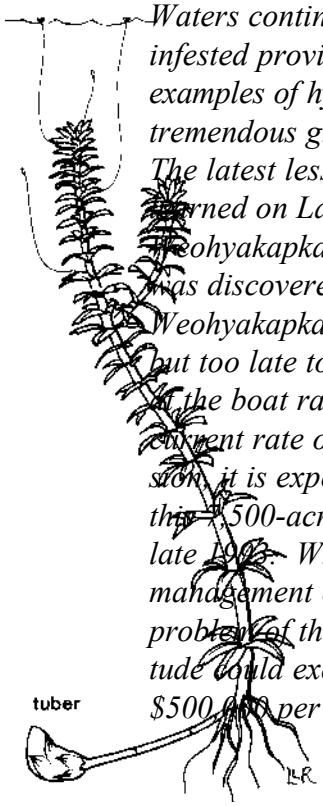
The littoral zone refers to the shallow waters near the shore of a waterbody, where sunlight penetrates to the bottom. Poetically dubbed the "fertile fringe," this warm, nutrient rich zone plays a vital role in perpetuating and sustaining lake and pond biota. Home to rooted and free-floating aquatic plants and essential habitat for myriad creatures from dragonfly larvae to raccoon, it is a place of complex interactions, dynamic change, and exquisite beauty. In this column we will explore this extraordinary and often under appreciated part of the lake ecosystem, the plants and creatures that live there, the complex web of life that connects them, and ways we can all help to ensure that this delicate web is preserved. Unfortunately, in light of recent events, we must begin this new series with a discussion of one of the greatest threats ever to have confronted the littoral zones of Maine's lakes and ponds.



Hydrilla verticillata, commonly referred to simply as hydrilla, has been called the "perfect weed." Native to Africa, Australia and parts of Asia, hydrilla was introduced to Florida in 1960 via the aquarium trade. The story goes that a tropical fish and plant farmer from Missouri was the first to import the "Indian star-vine" plants from Ceylon (now Sri Lanka). He, in turn, sold the six small bundles of hydrilla to a farmer in the Tampa Bay area. The Tampa farmer, unimpressed with the looks of the plants, dumped the bundles into a canal that ran in back of his operation. A few months later the farmer noticed that the discarded plants had spread prolifically and had become attractively vigorous, at which point he decided to culture and market the plants. The intentional and unintentional spread of this plant into Florida's lakes and streams ensued and the rest is, as we say, history. Hydrilla, now in more than 40% of Florida's public waters, is reported to be the most abundant submersed aquatic plant in the state.

Despite one of the most aggressive (and expensive) invasive plant management programs in the country, this "perfect" invader appears in more Florida waterbodies every year. To give some sense of the situation down south . . . Florida spent $56 million for hydrilla control during a recent ten-year period and, during that time, the number of acres infested with hydrilla doubled. The following excerpt is taken from the Florida Aquatic Plant Survey Report 1992.

Waters continue to be infested providing new examples of hydrilla's tremendous growth rate. The latest lesson is being learned on Lake Weohyakapka. Hydrilla was discovered in Lake Weohyakapka in 1991, but too late to contain it at the boat ramp. At its current rate of expansion, it is expected to fill this 7,500-acre lake by late 1993. Whole-lake management costs for a problem of this magnitude could exceed $500,000 per treatment.



Hydrilla infestation at Wakulla Springs, Florida.

Hydrilla in not being sold in the US today, nonetheless it was recently introduced to California as a contaminant of water lily rhizomes. The hydrilla infestations in Washington State occur in two lakes where introduced water lilies are common and it is suspected that these infestations are also due to the release of contaminated lilies. Surely there is a lesson to be learned here . . . It is NEVER safe to introduce ANY new plant, no matter how beautiful or "legal," into Maine's public waters.

So it is time for us to get to know Maine's newest and most formidable aquatic invader. First, it is important to know that there are two varieties of hydrilla

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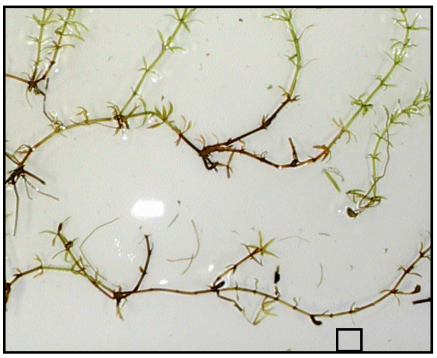
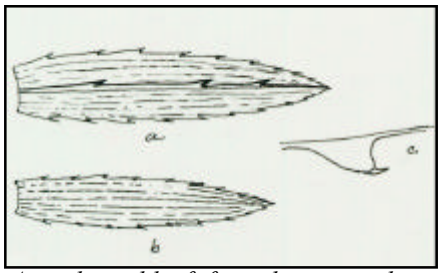
in the United States. Most of the plants in the southern states are dioecious, meaning that the male and female flowers occur on separate plants. The dioecious plants in the US are all one sex, female. (In New Zealand, where hydrilla has also been introduced, the plants are all male.) The plants in northern states are primarily monoecious, having both male and female flowers on the same plant. The monoecious plants can set viable seed, though this is not seen as a primary means of propagation.

There is variation in growth habit between northern and southern plants as well. The northern plants tend to branch at the sediment (as opposed to branching at the water surface as their southern counterparts do) sprawling along the lake bottom producing vast networks of underground rhizomes and aboveground stolens, from which a thick forest of vine-like stems sprout and grow to the surface. The northern plants also tend to be more delicate in appearance, their spiny leaves typically smaller, and the star-shaped whorls of leaves more loosely arranged along the stem.



Hydrilla growth habit showing stolons and rhizomes. Note the tuber in the lower right corner.

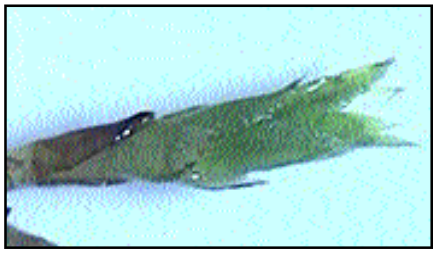
Knowing which variety we are likely to find in Maine waters can help us refine our abilities to identify this plant. One of the problems in making an immediate positive identification of the hydrilla found in Pickerel Pond was that the plants lacked the barbs on the underside of the midrib that are often cited as a key characteristic for identification. It was only when we sent the plants to our national expert, that we learned that the lack of midrib barbs is not uncommon for the more delicate looking northern plants. (Plant patrollers, please make note of this in your field guides!)



A - enlarged leaf from dioecious plant (mid rib barbs often present)
B - enlarged leaf from monoecious plant (mid rib barbs often lacking)
C- enlarged claw-like tooth along leaf margin

Hydrilla has earned its dubious distinction as the "perfect weed" for having numerous evolutionary advantages over other plants in the littoral zone. It can grow in very low light, allowing it to proliferate in a wider range of water quality conditions and to a greater depth than most other plants. Hydrilla has been found growing to depths greater than 50 feet (though a depth range to 30 feet is more common), far surpassing even the dreaded Eurasian milfoil, thought to have an outside depth tolerance of about 20 feet. Hydrilla is also more efficient at taking up and storing essential nutrients than other plant species and can grow astonishingly fast—up to one inch per day. It will thrive in flowing as well as still waters and will tolerate salinity of up to 10 parts per thousand, posing a threat to rivers and estuaries as well as lakes. Like many invasive plants, hydrilla can sprout new roots from a tiny stem fragment and begin a new colony upon settling to the bottom, a process of propagation known as clonal expansion. With hydrilla, a fragment needs only two whorls of leaves to be viable, a bit often measuring no more than ¼ of an inch!

The clincher to this plant's success and notoriety, however, is hydrilla's ability to produce ingenious little structures called turions and tubers. Turions are compact buds produced at the stem tips, that easily break free of the plant, drift, then settle to the bottom to start new plants. They are about ¼ inch long, green and spiny like a pinecone.



Magnified image of a turion: a compact bud that can break free and start a new plant.

Tubers are underground turions, attached intermittently along the rhizomes. They are white or yellowish in color and resemble tiny plump, slightly lopsided crescent rolls. Upon close examination with a hand lens, the tubers also reveal a

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ODONATES

BY: STASIA SAVASUK

How many of you can tell the difference between a dragonfly and a damselfly? Perhaps you didn't know that there was a difference between the two?

Both the dragonfly and the damselfly are members of the Order, Odonata, and are among the most ancient creatures on the planet. Fossil records suggest that their forefathers were present during Carboniferous times (300 million years ago), which means Odonates were around 100 million years before the earliest dinosaurs!

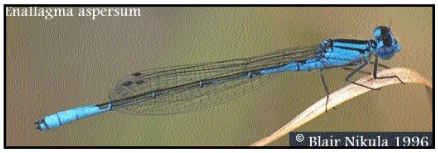
Until recently, I never paid much attention to these delicately beautiful, yet voracious insects. Nor, did I ever consider that they were not all the same; that dragonflies are indeed very different from damselflies. With only a little bit of practice, you too, can distinguish between the two quite easily.

One of the most obvious characteristics is the way in which they hold their wings while at rest. Dragonflies will hold their wings out horizontally, away from their bodies, while damselflies will perch with their wings held close to their body.

There eyes are also quit telling. Dragonfly eyes are large and meet at the top of their head, whereas the eyes of a damselfly are more bulbous and protrude from the sides of their head.

If you are trying to differentiate the two from afar, you'll notice that the dragonfly body is bulkier, and when flying, is often seen dashing and zipping about, whereas the damselfly has a sinewy body that wafts and fluteers through the air.

Celithemis elisa is a common dragonfly in Maine, and is one of my favorites.



Enallagma apersum is one of many damselfly bluets found in Maine.

(Photos courtesy of Blair Nicula)

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spiny pinecone-like surface, but in this case the scales are transparent and more tightly held to the surface. One square meter of hydrilla can produce 5,000 tubers!

Magnified image of Hydrilla tubers. They can persist several years in the sediment before sprouting a new plant.

Both varieties of hydrilla produce an abundance of tubers and turions in the fall, and the monoecious northern variety has been known to compensate for its shorter growing season by making tubers in the spring as well as in the fall, and producing nondormant turions throughout the growing season. Tubers and turions can withstand ice cover, drying, herbicides, and ingestion and regurgitation by waterfowl. Tubers may remain dormant for several years in the sediment, confounding efforts to eradicate this weed. The presence of tubers and turions distinguishes hydrilla from similar looking native plants such as American waterweed (*Elodea canadensis*).

The hydrilla found in Pickerel Pond is a wake up call indeed for all of us who treasure Maine lakes. All of us must do our part to prevent the spread of this and other invasive aquatic organisms to our lakes ponds and streams and the time to act is NOW. Inspect your boat with great care EVERY time you use it. Spread the word about lake invaders and how to prevent their spread to family, friends and neighbors. Keep your eyes on your own favorite piece of the littoral zone and make note of any suspicious characters. Send live samples of suspected invaders (packed in a ½ full zip lock bag and cardboard box with packing material) to the VLMP for identification. Attend an Invasive Plant Patrol workshop and become part of Maine's trained frontline force! (Please see IPP Workshops 2003 on page 7 for more information.)

Lake Lingo

Phosphorus

Phosphorus is at the heart of most discussions about lake water quality, lake protection, and watershed management. Most people have had some experience with phosphorus as a fertilizer for their lawns and gardens. A bag of commercial fertilizer lists phosphorus as one of three primary ingredients: N-P-K (nitrogen, phosphorus, and potassium). But phosphorus is a ubiquitous substance that occurs throughout nature. It is a building block in cell metabolism. Therefore, it is in our bones, in the soil, in trees, grass, human and animal waste, and just about everywhere else.

In spite of the fact that phosphorus is very common in our world, it is in relatively short supply in lake water. For most lakes and ponds in Maine, phosphorus is the nutrient that is least available for the growth of algae. It is therefore generally referred to as the "limiting factor" in lake ecosystem productivity. Algae are the "primary producers" at the bottom of the lake food chain. The abundance of these tiny plants influences the biological productivity of the entire lake system. As volunteer lake monitors know, excess algal growth in lakes results in lower Secchi disk readings. Over time, increasing phosphorus and algae concentrations in lakes and ponds can cause dissolved oxygen levels to drop, resulting in the loss of coldwater fishery habitat. Overall water quality generally declines as phosphorus levels rise in lakes.

Because phosphorus is the major limiting factor in productivity, the addition of very small amounts of this nutrient to lake water can have dramatic consequences. Some of Maine's clearest, least productive lakes have total phosphorus concentrations in the 3-5 parts per billion range. Lakes that have an average total phosphorus (TP) concentration only a few parts per billion higher, typically have measurably lower transparency. When TP levels are consistently measured at 15 ppb, or more, a lake may be at risk of experiencing sustained algal blooms (less than 2.0 meters Secchi transparency).

Protecting lakes from the negative effects of excess algal growth is largely a matter of limiting or reducing the amount of phosphorus that is exported from the watershed to the lake. Phosphorus in the watershed is carried to lakes primarily via stormwater runoff. Runoff from even moderately developed watersheds typically contains much higher concentrations of phosphorus than runoff from watersheds that are relatively undisturbed. Landowners in lake watersheds can limit the amount of phosphorus that is washed from their properties to the lake by reducing or eliminating the use of fertilizers, by reducing lawn areas, and by directing stormwater runoff from buildings, driveways and lawns to densely vegetated areas (buffers).

WELCOME!

Tom Hanson, and his son, Jared, the volunteer monitors on Beddington Lake, are taking on additional responsiblity by becoming the Regional Coordinators for Washington County. We are extremely grateful to Tom and Jared, and look forward to working with them this summer.

TRIED & TRUE

Joe Potts is approaching his 15th year with the VLMP! He is a volunteer monitor on Sebago Lake, and is the Data Entry Coordinator for Oxford County (which is no small task!) Joe is currently enjoying the Florida sun, as can be evidenced by this photograph.

VLMP joins Maine Voices Project

The VLMP is pleased to be participating in The Maine Voices Project, a collaboration of Maine's literary, cultural, educational and conservation communities to celebrate the special places of Maine. The Maine Writers and Publishers Alliance, along with The Wilderness Society and Milkweed Editions, is sponsoring the Project and invites you to tell about places in Maine that you cherish or about people who taught you to value the natural world that surrounds us. Perhaps your favorite place is the lake where you summer. Or, maybe it's Baxter State Park or the Allagash. Maybe it's the park or the woods you played in behind your house as a kid. Seniors can tell us about how the land and water has changed in their lifetime and the natural legacy you'd like to leave for future generations. This is a chance to share with others how Maine's special places have shaped you, what they have taught you, how they've nurtured you, and how they have given you joy or solitude.

The project consists of essays and events. From January 20 to April 21, 2003, the Maine Voices Project will solicit stories from children and adults that illustrate their love for their special outdoor place or outdoor experience. "We hope the writing of these essays will help give voice to the writer's natural, cultural, and historical relationship with the places they love," said the Maine Writers and Publishers Alliance. The call for essays is open to youth and adults of all writing levels. Essays should be 500 words or fewer, and the deadline for submission is April 22, 2003. Selected essays from eight different regions of the state will be published by Milkweed Editions, a national nonprofit literary press, as part of their Literature for a Land Ethic publishing program (www.milkweed.org). All essay submissions will be posted on the Maine Voices Project web page.

This project was announced in October, and to date, more than 75 organizations have joined the call for essays, along with students and teachers from 140 schools. The VLMP has joined in this effort and agreed to inform our volunteers about this exciting endeavor.

Essays may be emailed to mainevoices@tws.org or faxed to (617)426-3213. If you prefer, you may mail your typed, double-spaced essays to the Maine Writers and Publishers Alliance, 14 Maine Street, Suite 416, Brunswick, ME 04011. Include your name, address, county, telephone number, school (if applicable) and age. All submissions or portions of submissions will be considered for publication. The Maine Voices Project retains the rights to all non-commercial uses, including other media and promotions. Entries will not be returned.

Please share your submissions with the VLMP. E-mail or send a copy to us, and we will publish them from time to time in *The Water Column*. We would also like to designate time at the 2003 Annual Meeting for people to read their essays. We look forward to learning about your special Maine places.

We Want Your Photographs!

You've just put up your new 2003 calendar, and we're already thinking about 2004! We would like to produce a calendar of lake photographs taken by you, our volunteer lake monitors, for 2004 that we could use as a fundraiser for the VLMP. We need your help—and your photographs—to do it.

We would like lake photos from the four seasons: winter, spring, summer and autumn. Send your original images to VLMP, PO Box 445, Turner, ME 04282. (No digital photos, please)

QUALITY COUNTS

D.O. KIT REAGENTS: TOXICS WITH A LIFE OF THEIR OWN.

Picture the scene. You have launched your watercraft for the first time in 2003. The motor starts first try! *...Always a good omen.* You decide it is a perfect day to sample your lake. *NO one else is on the water!* One of those rare occasions to be savored. You go back to your house and look around the garage/cellar. *There it is!* Stored away from the reach of little ones…all the monitoring equipment…carefully and neatly put away so that it is ready for a day such as this!

You untie the plastic bag and pull out the scope. *Good. No spiders. Not a web…or even dust!* Putting it away clean has its rewards. And the disk, being a bit heavier, is at the bottom of the bag. The note on it says: cleaned and checked October 02. *Good.* Next is the grab sampler. Again you've done well. The item is clean and the rubber bungie still works because you made sure it was kept out of sunlight last year. *No worries…yet.* The six glass sample bottles are intact. And there is a milk jug with a cap for collecting spent samples.

Then last but not least, the little black box. You have to wonder if it is black for a reason. You wince and your brow wrinkles as you try to remember…*did I buy new chemicals for this kit last year?* …the year before? The bottles don't seem to be of any help. They are labeled with barely pronounceable chemical names, a bunch of tiny, barely readable words, a lot number, and for the first time you notice one is labeled poison, then another, and still another! *Yes.* You vaguely remember that the spent samples are collected in the milk jug and diluted before they are discarded…sprinkled on the ground away from your well. This must be why. Back to the immediate question: *are these chemicals any good? Can I use them today?*

Good news. Not all of the chemicals need to be replaced every year! Shelf life is based on optimum storage conditions: 65-75 F, away from heat/freezing, high humidity, etc. Exposure to these conditions will decrease the shelf life. This table lists recommended shelf lives for the chemicals in the LaMotte D.O. Test Kit.

Shelf lives of chemicals in LaMotte D.O. Test Kit

Chemical	Shelf Life
Sodium Thiosulfate (# 4169)	1 year
Starch Indicator (# 4170)	1.5 years
*Mang. Sulf. (# 4167)	3 years
*Alk. Pot. Iodide Azide (# 7166)	3 years
*Sulfuric Acid (# 6141)	3 years

And, there is a way to tell how old those nasties are using the Lot number of the LaMotte chemicals! The first 3 digits of the lot number on the lower left side of the label represent the date of manufacture. The first 2 digits represent the week of the year, ranging from 01 to 52. The third digit represents the last digit of the year.

For example, a lot number starting with 241 was made in the 24th week of 2001. (Since few of us refer time by number of week in the year, the table at the bottom of this column may be handy to keep.) These two tables should help you figure out if when the chemical in question is no longer any good.

Are you ready for a quiz? Your Starch Indicator has a Lot number beginning with 172. Is it good to use? When should it be replaced?

Linda Bacon, QA/QC Advisor

Approx. week # for first week of each month

Month	1st Week #
Jan	01
Jan/Feb	05
Feb/Mar	08
April	13
April/May	17
May/Jun	21
July	26
July/Aug	30
Aug/Sept	35
Oct	40
Oct/Nov	44
Nov/Dec	48

***Be sure to read the material Safety Data Sheets that come with your kit. These sheets recommend that gloves and safety glasses be used when handling poinsonous substances and also recommend that they be used in an adequately ventilated area.**

Answer: Yes, through Oct. 2003; should be replaced at beginning of field season 2004

MAINE VOLUNTEER LAKE
MONITORING PROGRAM
PO BOX 445
TURNER, ME 04282

the Water Column

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