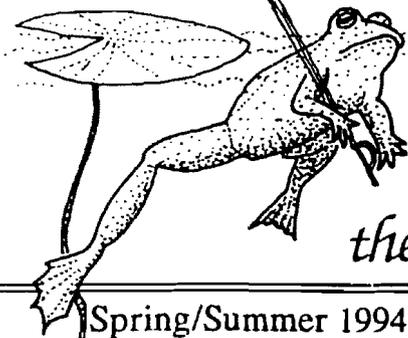
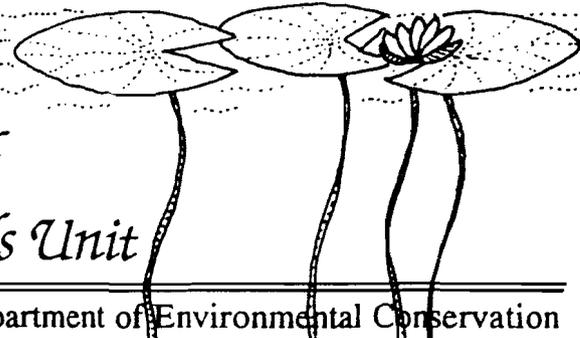


Out of the Blue



A Newsletter of
the Lakes and Ponds Unit



Spring/Summer 1994 No. 8

Vermont Department of Environmental Conservation

Zebra Mussels: A Vermont Update

In the last issue of *Out of the Blue*, it was reported that the exotic zebra mussel has arrived in Lake Champlain. That article touched on the potential impacts this prolific nuisance species may have in Vermont waters, and mentioned that a Vermont Agency of Natural Resources committee was studying how best to cope with the mussel. This update summarizes information from the zebra mussel committee's comprehensive report completed in January, 1994, and explains three new VTDEC zebra mussel projects.

Vermont Zebra Mussel Study Committee

The Vermont Zebra Mussel Study Committee was comprised of representatives from the Vermont Agency of Natural Resources, the Lake Champlain Basin Program, the Lake Champlain Coalition of Water Suppliers, the Northern and Southern Federation of Vermont Lake Associations, the Lake Champlain Committee and other groups. The Committee's report identified 15 municipal water supply facilities on Lake Champlain and the Edgar Weed Fish Hatchery as being at immediate risk of zebra mussel infestation. Control strategies and associated costs were proposed for each of these facilities. The report also discussed zebra mussel controls for small private water systems. In addition, the report addressed the potential ecological consequences of zebra mussel infestations in Lake Champlain and in other

See "Zebra Mussel" page 4

15 Years of Lay Monitoring

"Never doubt that a small group of individuals can change the world. Indeed, it is the only thing that ever has (Margaret Mead)."

And certainly, a small dedicated group of volunteer water quality monitors have made a difference in our understanding and protection of Vermont's lakes and ponds. Did you know that the Vermont Lay Monitoring Program will begin its 16th sampling season on June 1st, 1994! Volunteers, with different background experiences such as farmers, carpenters, lawyers, biologists and teachers, share in common an interest in lake monitoring, and together constitute the core of Vermont's Lay Monitoring Program. Thanks to these dedicated people, who collect weekly lake water samples throughout the summer, informative water quality data has been obtained on 72 lakes and 36 stations on Lake Champlain.

See "Volunteers" page 3

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OUT OF THE BLUE

is produced semi-annually by the Lakes and Ponds Unit. Our purpose is to share information on lake environments, water quality and state activities through articles on lake ecology and Unit programs. Feel free to let us know what articles you would like to see in future issues. To be placed on the mailing list, or to receive extra copies, please contact:

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The Vermont Department of Environmental Conservation is an equal opportunity agency and offers all persons the benefits of participating in each of its programs and competing in all areas of employment regardless of race, color, religion, sex, national origin, age, disability, or other nonmerit factors.

Lake Champlain Needs You!

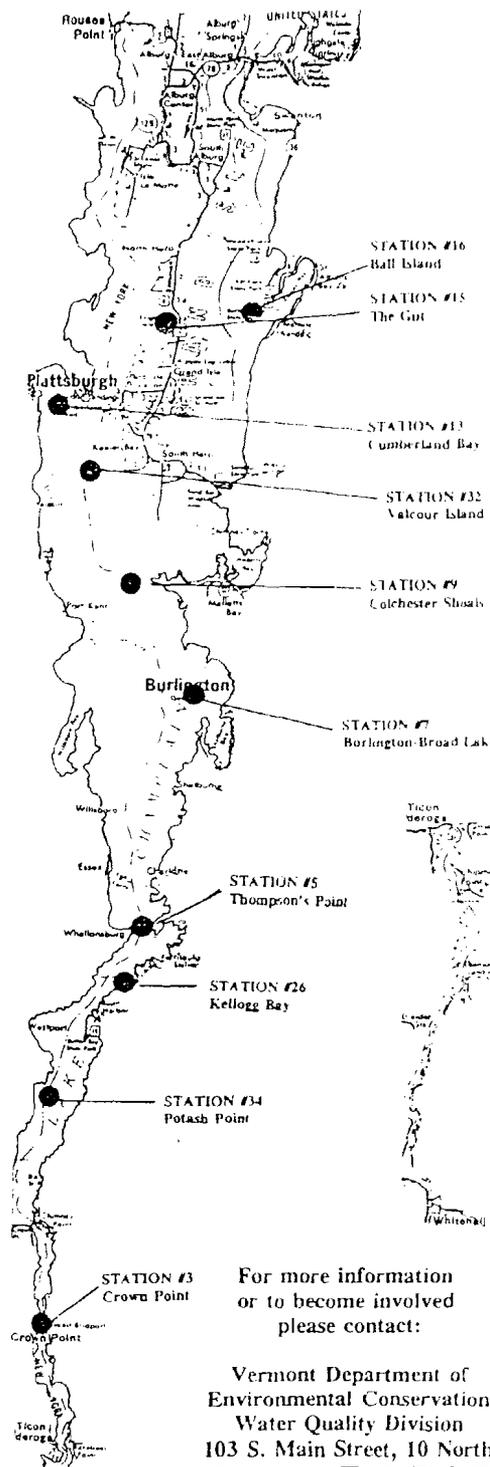
(no experience necessary)

Volunteer water quality monitors are currently needed for eight Lake Champlain stations during the summer of 1994. Anyone can be equipped and trained to collect water quality samples as long as they have:

- ◆ an interest in contributing to the protection of this great resource,
- ◆ one to two hours a week, June-August, and
- ◆ a boat, gas and an anchor.

The stations in need of monitors are shown on the map at right.

The Vermont Lay Monitoring Program coordinates volunteer monitors at over 30 Lake Champlain stations every summer. This summer is the start of the 16th sampling season! Join the effort to protect Lake Champlain's water quality.



For more information or to become involved please contact:

Vermont Department of Environmental Conservation
Water Quality Division
103 S. Main Street, 10 North
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802-241-3777

After fifteen years of establishing water quality databases for Vermont lakes and ponds, the original objectives of the LMP have been met and are now in need of re-evaluation by monitors and VTDEC staff.

In 1979 when the VTDEC along with assistance from the Lake Champlain Committee established the Vermont Lay Monitoring Program (LMP), two main goals were set:

- 1) to accumulate long-term data bases on lakes, and
- 2) to educate lay people on water quality sampling procedures and lake biology.

By 1985 the LMP had developed as an important resource for other state water quality assessment work, in part by having accomplished these additional objectives:

- 3) to produce annual water quality descriptions for each participating lake,
- 4) to provide a perspective on the range of water quality conditions on Vermont lakes, and
- 5) to furnish data useful in developing statistical eutrophication models for Vermont lakes.

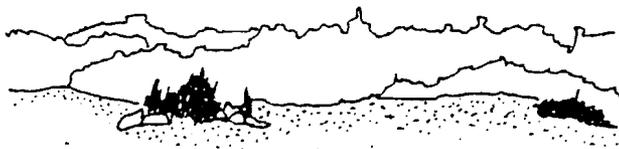
Now that the Lay Monitoring Program is entering its sixteen year, the value and importance of the citizen's data has far exceeded the original expectations. This is especially true on Lake Champlain, where Lay Monitor data was recently used by the governments of Vermont, New York and Quebec, as the basis for establishing numerical standards for phosphorus.

This summer at the Annual Lay Monitoring Conference, Lay Monitors and other interested parties will be asked to re-evaluate this unique partnership and cooperation between state and citizens, and to help devise a future LMP plan. All Lay Monitors are encouraged to provide input on important lake protection issues and on how they would direct the LMP to support their lake protection efforts. The Conference will be held on July 9th at Button Bay State Park on Lake Champlain in Vergennes. For information on joining the Lay Monitoring Program or on the conference agenda, please contact Amy Picotte (802-241-3777) at the Lakes and Ponds Unit.

"It's True"

What causes the orange, reddish scales or slime to form on the surface of some wet soils?

In groundwater, iron may be dissolved out of rock or soil under acidic and/or anaerobic (lack of oxygen) conditions. When ground water high in dissolved iron surfaces, the iron oxidizes on contact with the air creating an orange colored precipitated material. When oxidation occurs in the absence of organic material, rusty "scales" on rocks may be observed. If oxidation takes place in the presence of organic material, such as bacteria, orange or reddish "slimes" on rocks, soils or on water surfaces will appear. Geological factors and groundwater characteristics are key factors in determining whether or not orange precipitate will be formed. Suitable conditions for iron oxidation to occur are fairly common in southern Vermont and along the upper West River drainage basin, although iron seeps are observed throughout Vermont.



What are lake associations and what do they do?

Lake associations are voluntary organizations of people interested in protecting or improving a lake. Lake association activities include water quality sampling, social functions, fire and theft protection, representing the members' interests before local and state government, helping identify and correct problems on the lake, and taking advantage of government programs such as the VTDEC Lay Monitoring Program. Currently 70 Vermont lakes have associations according to the Lakes and Ponds Unit's records, representing 25 percent of the lakes over 20 acres in size. The VTDEC can provide information and contacts for assistance in organizing lake associations.

Snow Melt and "Acid Shock"

The longer days, stronger sun and warmer temperatures melting the snow are familiar signs announcing spring's arrival. As the snow melts, the streams and rivers swell and begin to flow with increased velocity. During this time of spring snow melt the effects of acid precipitation become most acute in Vermont.

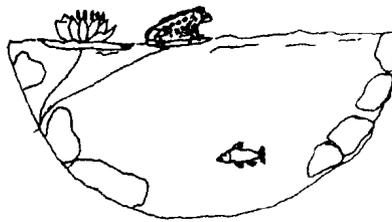
The acidity of rain is measured by a "pH" scale ranging from 0-14 with 0 being the most acidic and 14 the most alkaline. Distilled water has a pH of 7, which is neutral. Normal rain is by nature slightly acidic, with a pH of 5.6. Any precipitation with a pH below 5.6 is considered "acid precipitation."

Sulfuric and nitric acids from industrial and automotive sources mix with the rain, snow and fog, creating acidic precipitation. Even though Vermont emits the lowest amount of acid precipitation causing pollutants than any other state in the nation, emissions

from midwestern states as well as from New York state blow eastward and contaminate the precipitation that falls in Vermont. Snow retains and accumulates pollutants until spring snow melt, when these acidic compounds are released all at once into the environment, creating a phenomenon known as "acid shock." Vermont is particularly vulnerable to acid shock because a large percentage of the annual precipitation is in the form of snow.

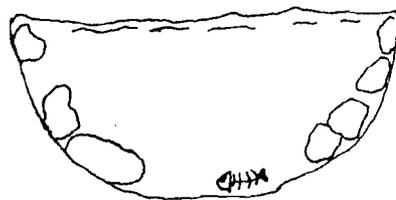
Acid shock can cause significant alterations to the stream and lake water chemistry and aquatic life. Acid shock can be particularly harmful to aquatic

9.0 Healthy Ecosystem up to 9



6.0 Snails & Rainbow Trout begin to die

- 5.6 Smallmouth Bass dies
- 5.5 Tadpoles, crayfish & mayflies die
- 5.4 Brown Trout die
- 5.1 Northern Pike die
- 5.0 Loons, mink & heron face starvation
- 4.8 Brook Trout dies
- 4.3 Yellow Perch, Brown Bullhead die
- 4.2 All Fish dead



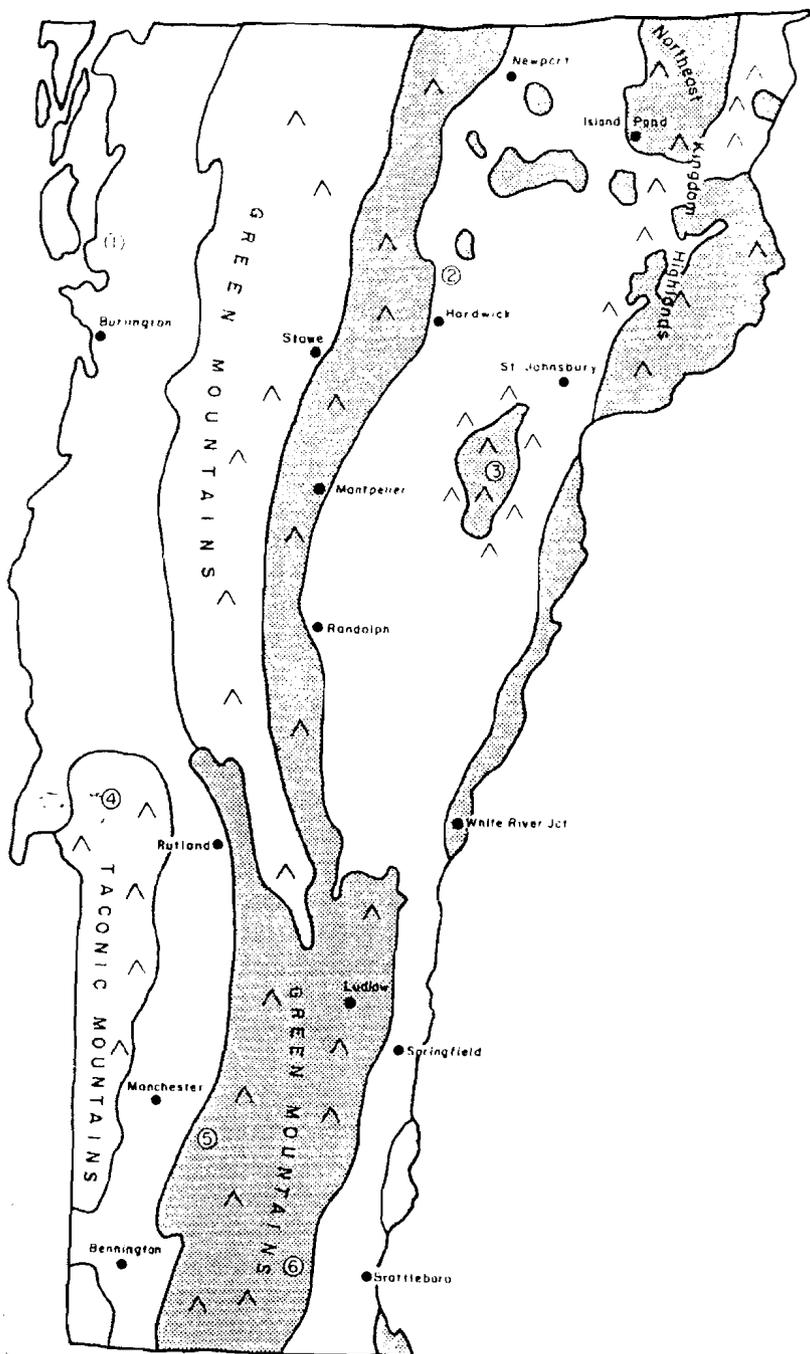
pH scale

14	
13	13.8 Lye
12	12 Bleach
11	11.3 Ammonia
10	
9	
8	8.3 Seawater
7	7.0 NEUTRAL
6	6.5 Milk
5	5.6 Pure rain water
4	4.3 Average VT precipitation
3	
2	2.75 Lowest pH of rainfall in VT 2.4 Coca Cola
1	
0	0.3 Battery acid

communities because it occurs during spawning or the early life stages of many aquatic animals. Vernal pools (temporary puddles of water only present in the spring) are the preferred habitat for some salamanders and frogs to lay eggs. If the pools become too acidic from spring runoff the eggs are unable to properly develop and may die.

Some naturally occurring levels of nutrients, such as calcium, become less available to aquatic life because they are chemically bound up buffering the effects of the incoming acids. A decrease in calcium concentrations can be detrimental to the shell development of crustaceans and mollusks as well as to the ability of fish to respond to changes in water temperature and alkalinity.

The full extent to which streams, rivers and lakes are affected by acid precipitation is determined in large part by the bedrock of the area. For instance the northeast tends to be vulnerable to acid precipitation because the dominate bedrock found in the region is granite or other hard rocks which, unlike bedrock types such as limestone, have limited buffering abilities and do little to counteract the acid loading of Vermont's lakes and rivers. The map (below) shows areas of the State known to be sensitive to acid precipitation, although not all lakes in those regions are highly acidic.



Lakes and Regions Sensitive to Acid Precipitation in Vermont

Bedrock Classification

- Low to no buffering capacity
- Medium buffering capacity
- High buffering capacity

	pH
① Long Pond	7.9
② Caspian Lake	7.6
③ Groton Pond	6.5
④ Lake Bomoseen	8.1
⑤ Branch Pond	4.7
⑥ Sunset Pond	5.9

A Curious Carnivore

Carnivorous plants, those plants that subsist on animal flesh, have always captured the attention and imagination of children and adults alike. Evolutionary adaptations enable these plants to lure and trap their prey using a variety of specialized methods. Pitcher plants use the pitfall method, whereby prey passively fall into their funnel-like traps, apparently attracted by the bright veination pattern on the leaves or their powerful scent. Sundews use the flypaper method in which a sticky substance on the leaves causes entrapment. Some also speculate that their glistening sticky droplets attract insects. Remember the popular Venus fly-trap? The jaw-like leaves of this plant, when lightly touched, close tightly around the victim to prevent escape.

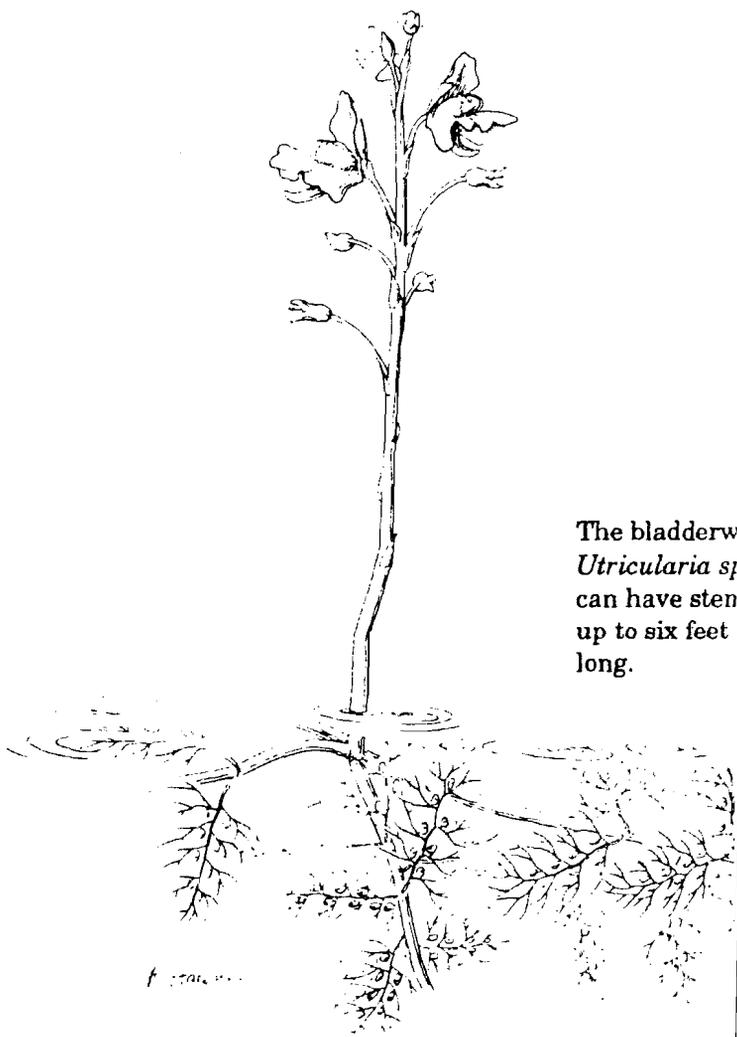
Many Vermont lakes and ponds are home to an interesting group of carnivorous aquatic plants commonly called bladderworts. These plants are members of the Lentibulariaceae family and the genus *Utricularia*, named after the tiny bladders, or utricles, found along the plant's leaves. There are eight different species of *Utricularia* in Vermont, three of which (*Utricularia purpurea*, *U. resupinata*, and *U. gibba*) are listed as rare or threatened by the Vermont Natural Heritage Program.

Some of the characteristics common to all bladderworts are a complete lack of roots, yellow or purple snapdragon-like flowers, and sac-like bladders that capture and digest any animal that will fit into them, from mosquito larvae and tiny crustaceans to newly hatched tadpoles and even fish fry. Early botanists thought the bladders were floatation devices and it wasn't until the late 1800's that it was reported that the bladders were actually minute animal traps.

Bladderworts can be found free-floating in still or slow-moving water, loosely anchored by the leaves and/or stems in shallow areas with mucky or peaty soil, or in clumps wrapped around other aquatic vegetation. They are perennials, and although they do develop seeds, they propagate mainly through vegetative fragmentation and the formation of turions (winter buds).

The mechanism by which the bladderwort captures its prey is fascinating and

unique. Picture a sac about 0.3 to 5 millimeters in diameter, roughly the size of a sesame seed, with an opening on one side covered by a downward-hanging trap door. The lower edge of the door rests on what is called the threshold and a thin membrane, called a velum, helps seal the trap door and make it watertight. Special glands inside the bladder extract water, creating a partial vacuum. Outside the bladder, fine trigger hairs extend from the trap door and a sugary substance is secreted, perhaps to attract unsuspecting prey.

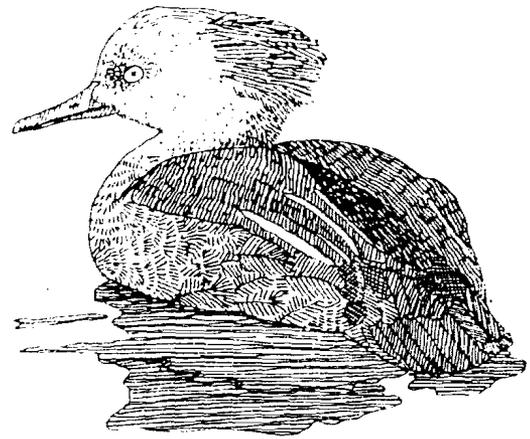


The bladderwort *Utricularia* sp. can have stems up to six feet long.

Illustration from *Water Plants for Missouri Ponds*.
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State of Missouri. Reprinted by permission.

When an animal grazes close to the bladder and brushes the trigger hairs the trap door opens, breaking the watertight seal. Water rushes into the trap and sweeps the prey along with it just before the trap door closes. This happens with lightening speed - within two thousandths of a second! With the help of enzymes and bacteria within the bladder, the prey is digested in as little as fifteen minutes or as long as two hours, depending on the size and digestibility of the meal.

The bladderworts are attractive, interesting and worthwhile plants to have around. Some researchers have suggested that due to their ability to trap mosquito larvae, the plants act as a natural control for mosquitos. Next time you are out on a lake, look for the delicate flowers of the bladderwort in shallow marshy, protected areas along the shoreline. If you gently lift the plant out of the water, you may even be able to hear a faint popping sound as the bladders on the plant are sprung into action.



*hooded merganser
(female)*

Lake Lingo

Glacier - A mass of ice that is formed from compacted snow and is thick enough to slide and move.

Bedrock - The solid rock that underlies loose soil, clay, rock fragments and other materials, sometimes referred to as "parent material", or the original rock source of a particular area.

Nematocysts - The stinging organ of some invertebrate animals that when stimulated is used to chemically paralyze prey.

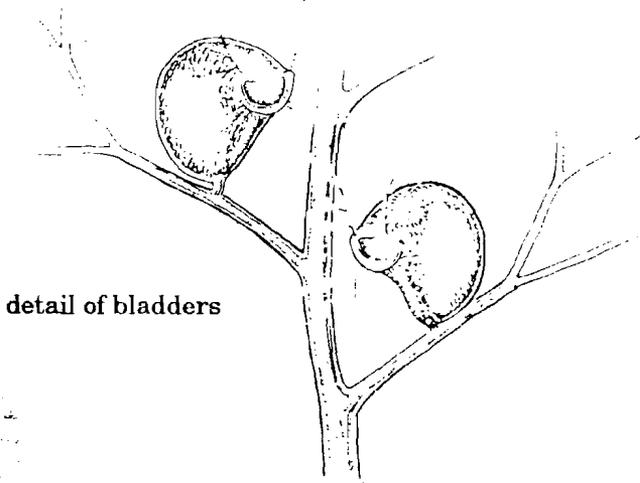
Eddy - A small water current moving contrary to the main water current.

Macroinvertebrate - Animals that are visible to the human eye, and lack a backbone structure.

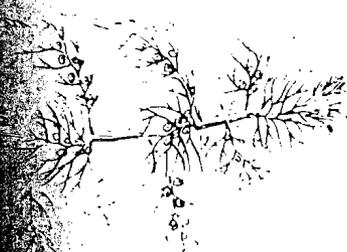
Littoral - The shallow region of a body of water where light can penetrate through to the bottom.

Veliger - The microscopic juvenile lifestage of a mussel.

Eutrophication - increased nutrient enrichment in lakes over time which results in increased lake productivity.



detail of bladders

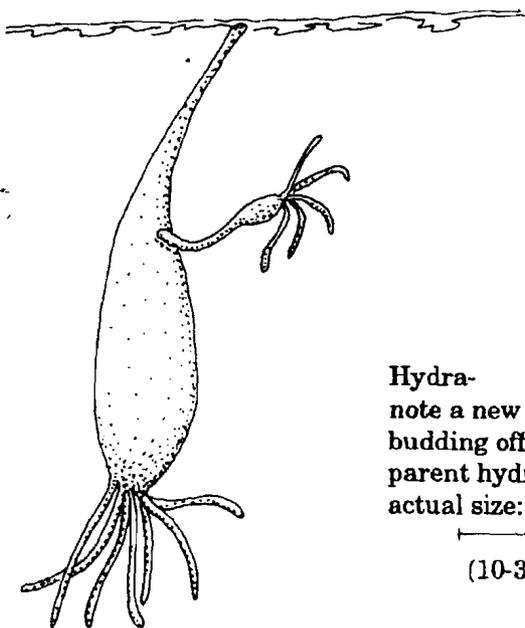


Journey Through the Littoral World

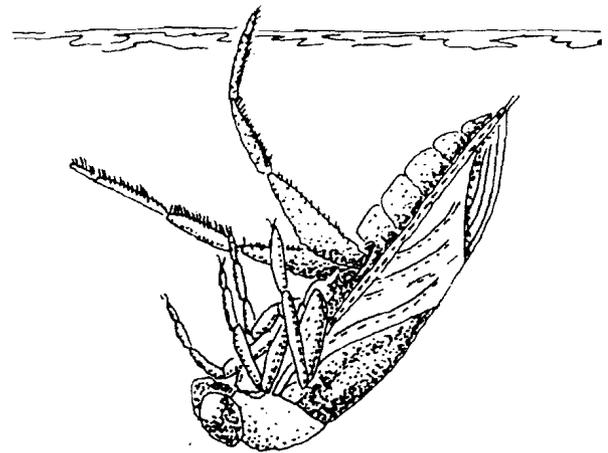
Imagine yourself smaller than you are. Shrink down to the size of a house key, shrink again to the size of a shirt button, and once more to the size of a grain of sand. Now get ready to join me as we dive into a lake! You have just entered the littoral zone, the region of shallow lake water where light reaches the bottom, floating and rooted plants grow, and many groups of animals live. Welcome to the lake zone with the greatest habitat and community diversity.

As you will notice, closest to shore emergent plants with leaves that extend above the surface of the water, such as cattail (*Typha sp.*), bulrush (*Scirpus sp.*) and arrowhead (*Sagittaria sp.*) make an effective trap for organic sediments and nutrients washed in from land. Dancing in the water, a little farther out from shore, are the water lilies (*Nymphaea sp.*) and other plants with floating leaves. Just beyond them lies a zone of submergent vegetation, where plants like Big-leaf pondweed (*Potamogeton sp.*) grow. The littoral zone is generally fairly wide and may include the entire bottom of shallow lakes if light can penetrate through to it.

Follow me and discover that the animals of the littoral zone are as diverse as the plants. Many tiny animals live attached to the stems or leaves of rooted plants, such as protozoa, rotifers, and hydras. *What are hydras?* LOOK OUT! One just side swiped you with its long tentacles as it extended them downward to grasp a phosphorus molecule. Although hydras are made of only three cell-layers, they have nematocysts for stinging their prey, tentacles to grab hold of passing prey, and a mouth both for eating food and depositing waste. Hydras hang unnoticed from the undersurface of water films.



Hydra-
note a new hydra is
budding off the
parent hydra.
actual size:
—————
(10-30mm)



Backswimmer-
actual size:

—————
(12mm)

Larger animals like snails, flatworms, insect larvae and nymphs are not attached to plants but spend their lives moving over and through them. Some of these animals are herbivorous (feeding on plants), others are carnivorous (feeding on other animals) and still others feed only on the particulate matter that swirls through the vegetation in the eddy currents. But come, let us journey a little farther along.

The littoral zone is also rich with small

swimming animals, especially insects, for example back-swimmers, diving beetles and the water boatman. Okay, so you have not seen a backswimmer, well just spend a minute and look around. There goes one now! Backswimmers are easy to identify, because they are the only macroinvertebrate that swims upside down and backwards.

The animals living along the lake bottom which do not swim are known as "bottom dwellers." Some live within the sediment and others just move over it. Most bottom dwellers survive on the extensive quantity of organic particles that get trapped around the rooted vegetation, while still others, like the dragonfly and damselfly larvae, are carnivorous and only eat other animals.

The aquatic life of littoral zones can reflect localized water quality conditions. Unpolluted waters will have a good diversity of aquatic insects such as mayflies and caddisflies. Large amounts of algae and plant growth may indicate higher levels of nutrients and may decrease the diversity of animals living in the littoral zone. Thanks for the company on this journey through "littorally" a diverse and wild world.

Currently the VTDEC Biomonitoring and Aquatic Studies Unit is establishing a data base on the littoral zone bottom dwellers of Lake Champlain, in order to understand how the recent infestation of the exotic zebra mussel will alter the structure and function of these communities and the higher food chain species which depend on them.

Know Your Watershed



Get to know your watershed this summer!

If you are interested in maintaining or improving the water quality of the lake you live on, then understanding conditions in the lake's watershed is critical. Also called a "drainage basin", a watershed is all the surrounding land area that drains into a waterbody such as a lake. Any human activity anywhere in the watershed can affect lake water quality. Since water moves downhill, most pollutants are eventually carried into the lake where they accumulate over the years. By learning about land uses and potential pollution problems in a watershed, residents can effectively put together a plan of action to protect the lake. Everyone has heard the saying "the best time to plant a tree is twenty years ago", the same could be said for beginning lake protection activities!

This summer, the Lakes and Ponds Unit will be offering two ways to assist lake or town residents in learning about what activities or conditions in the watershed should be considered in developing an action to protect the lake.

1. Speaker and Slide Show Available! A new slide show has been developed this winter, "Lakes, Watersheds and Good Property Management." Steve Markason,

Aquatic Biologist with the Lake Protection Program is available to present the slide show and discuss watershed protection. The slide show is a good way to introduce a group to watersheds, explain how land uses can affect lakes and provide information on how to conduct a Watershed Survey (see below). Call Steve to schedule a showing; weeknight showings are encouraged as weekend time will be somewhat limited.

2. Conduct a Watershed Survey!

Instructions have been developed to help lake and town residents investigate a watershed, identify existing pollution sources and inventory land uses. Such information can then be assembled to develop a plan of action for addressing existing problems and preventing future ones. The survey methodology is divided into three parts: in-lake conditions that may indicate sources of problems; shoreland land uses and potential problems; and watershed land uses and potential problems. The Survey can be adjusted to suit any situation and available volunteer time, and VTDEC staff are ready to help get you started. Contact Cathy Kashanski or Steve Markason of the Lake Protection Program to receive survey instructions and to schedule on-site assistance.

NALMS Chapter Comes to New England

A New England Chapter of NALMS (the North American Lake Management Society) has recently been organized and was formally accepted as the 20th chapter of NALMS at the Society's Board of Director's meeting in Seattle, WA on November 30, 1993.

The North American Lake Management Society is the only international organization on the North American continent dedicated solely to lakes. Founded in 1980, the Society's mission is *"To forge partnerships among citizens, scientists, and professionals to foster the management and protection of lakes and reservoirs for today and tomorrow."* The goals of the Society include, among others, facilitating the exchange of information concerning lake management; promoting public awareness of lakes and their ecosystems; encouraging public support for national, regional, state and local programs promoting lake management; and providing guidance to public and private agencies involved in or planning lake management activities. The 20 existing NALMS chapters represent 18 states, one Canadian province, and the New England region.

The seed for a New England chapter of NALMS was planted at a meeting in Chicago in May 1993, when state Clean Lakes Coordinators, members from statewide lake associations, and others met at an EPA sponsored conference on Enhancing the States' Lake Management Programs. A small group from the New England states met twice following the Chicago meeting to discuss the value of having a New England chapter and to complete the basic groundwork necessary to establish such an organization.

NEC NALMS Purpose

While the stated goals and objectives of the New England Chapter (NEC NALMS) are



the same as those of NALMS, those attending the initial Chapter organizational meeting envisioned that the Chapter would focus on *fostering interstate communication and cooperation on lake management issues among the New England states to enhance lake management in each state and in the region.* To achieve this objective, the NEC NALMS plan

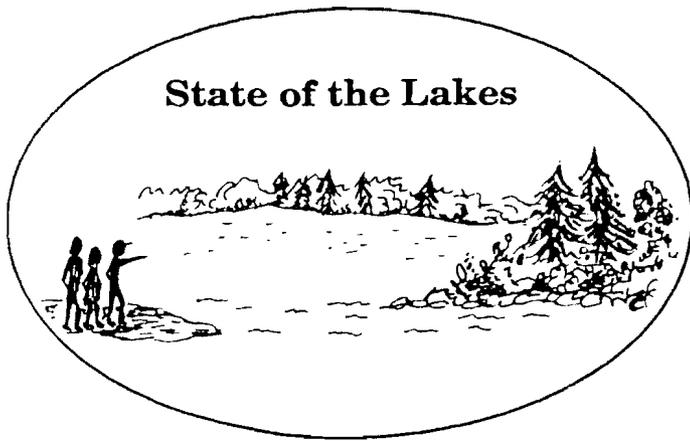
include:

- 1) circulating a newsletter (composed of articles clipped from other newsletters in New England and elsewhere);
- 2) holding an annual New England lake management conference;
- 3) increasing New England's influence in Washington, DC;
- 4) promoting lake management products and services tailored to New England's needs;
- 5) cooperating on interstate issues such as the spread of non-native nuisance aquatic plants and animals;
- 6) and increasing the exchange of ideas within New England.

How to Join NEC NALMS

Since a diverse membership made up of citizens, lake associations, lake management professionals, and scientists is best to ensure sound decision making, any interested party is invited and encouraged to join NEC NALMS. The annual membership fee to join NEC NALMS has been established at only \$ 5.00 (in addition to regular membership in NALMS). You must be a member of NALMS to join NEC NALMS. If you would like to learn more about NALMS, NEC NALMS and how to join, contact Ginny Garrison at the Lakes and Ponds Unit.

The first NEC NALMS conference has been set for June 4th, 1994 in Concord, New Hampshire.



Planning for Lake Champlain's Future

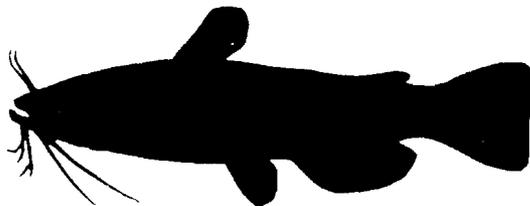
Lake Champlain is large and diverse, as is its drainage basin. Over 48% of Vermont is located in the basin as well as almost half of Vermont's lakes. Activities anywhere in the basin can affect the quality of lake resources. In an effort to bring together diverse issues and concerns, the Lake Champlain Basin Program is seeking public input on a draft plan to manage and restore the resources of the lake and its basin. Even people living as far away from Lake Champlain's shore as Montpelier and Hardwick have a role to play in its future.

The Lake Champlain Basin Program has been in existence now for three years and much has been accomplished. Numerous research, educational and citizen participation projects have been funded or managed through the Program, including several programs within the Lakes and Ponds Unit: water chestnut harvesting in the South Lake (Champlain) in 1992, 1993 and 1994, Summer Assistants to the Lake Champlain Lay Monitoring Program,

1992-1994, and in 1994 the new Zebra Mussel Education and Outreach Specialist (see page 4), the Long Term Water Quality and Biological Monitoring Project (see *Out of the Blue* No. 5), and the international agreement to establish consistent phosphorus criteria for Lake Champlain. Other projects funded by the Program include wetland acquisition, toxic substance monitoring, underwater cultural resource inventory, recreation use studies, 29 community-based conservation projects, streambank revegetation and much more.

But the work to enhance and protect the diverse natural, cultural, recreational and historic resources of the lake basin is just beginning! The challenge is to create a means to focus attention on basin issues and sound management that will continue well into the future. As a first step, a draft "Opportunities for Action" document was released during the winter of 1994 and underwent extensive public review through April 30. Based on the comments received, a draft plan will be developed by late June and again undergo public review during the summer and into the fall of 1994. Topics included in the draft plan include Reducing Nutrients, Managing Living Resources - Fish, Wildlife, Wetlands, Nuisance Non Native Aquatic Plants and Animals, and Building Local Capabilities for Watershed Planning.

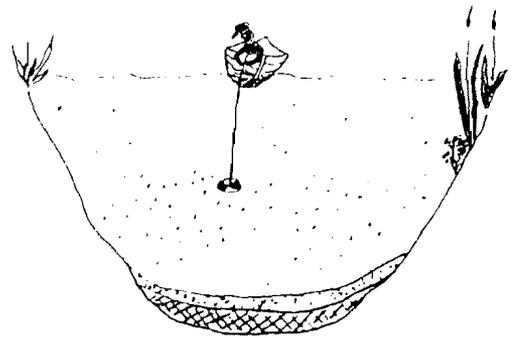
Anyone interested in Lake Champlain's future is encouraged to participate in the public review process. Call the Lake Champlain Basin Program office in Grand Isle at 1-800-468-5227 and ask for a copy of the draft plan and a schedule of summer public meetings.



Happenings

3rd Annual Lay Monitoring Conference

DATE: July 9th, 1994
PLACE: Button Bay State Park, on Lake Champlain,
Vergennes
CONTACT: Amy Picotte, Lay Monitor Coordinator
Division of Water Quality
103 South Main St. bldg. 10-North
Waterbury, VT 05671-0408
(802)- 241-3777



1994 Loon Watch Day

DATE: July 16th, 1994, 8:00am-9:00am
CONTACT: Vermont Institute of Natural Science at 802-457-2779

List-in-the-making: Zebra Mussel Residential Control Products



VTDEC is compiling a public resource list of businesses offering zebra mussel residential control products and/or services. If you offer such products or services and would like your business name to be added to this resource list, please contact Mike Hauser (802)-241-3777 at the Lakes and Ponds Unit.

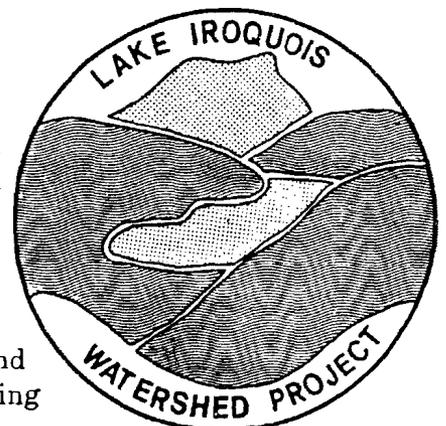
Help with Camp Road Maintenance!

Gravel road or ditch erosion can be a significant source of sediments and phosphorus to lakes. Proper maintenance procedures can prevent erosion, as well as protect the investment in the road. Many lakeshore property owners maintain private camp roads, located in close proximity to the lakeshore. The Lakes and Ponds Unit has received a grant from the US Environmental Protection Agency to offer technical assistance to private road owners and town road managers on preventing erosion, protecting water quality, and making road investments last. The Backroads Water Quality Project is scheduled to begin in November 1994, so watch for announcements about workshops and available assistance beginning then (contact Susan Warren at the Lakes and Ponds Unit).



Lake Iroquois Watershed Project Final Report Available

The Lake Iroquois Watershed Project field work was completed in the fall of 1993 and the final report is now available. The Project focused on correcting existing erosion problems (phosphorus sources) in the lake's watershed and educating landowners about preventing polluting runoff from their properties. A Watershed Education Plan developed by the project Steering Committee is included in the report. A slide show about the project is also available upon request. Contact the Lakes and Pond Unit if you wish to receive a copy of the report or to schedule a showing of the slideshow.



1) List of Available Resources for Zebra Mussel Spread Prevention

A list of various resources currently available to help with zebra mussel control and spread prevention is obtainable by contacting the Lakes Ponds Unit.

2) For Sale: Aquatic Weed Harvester

The Town of Hinesburg, Vermont, plans to sell its aquatic weed harvester by bid in early July. The harvester is diesel-powered and hydraulic-driven with an aluminum body. It is fully portable on a trailer (trailer included in sale). Approximate dimensions: 8' wide by 30' long. Call 802-482-2096 to order a bid form or to make arrangements to inspect the machine.

3) Buffer Strips and Native Vegetation

Along many lakes, rivers and wetlands in Vermont, the vegetation that once grew on the shorelines has been removed for lake access, views, siting of houses and lawns, farming, roads and other activities. However, the importance of this vegetation in protecting the quality of our waters, maintaining the stability of our land and soils, and in providing unique and essential habitat for numerous aspects of the natural community is being recognized as a "must" by more and more people. Many people have become increasingly interested in trying to restore these special features of our landscape.

A booklet entitled *Native Vegetation for Lakeshores, Streamsides, and Wetland Buffers* is now available for those interested in re-establishing a buffer strip of natural vegetation along a river, lake or wetland. This booklet discusses buffer strip values, appropriate buffer strip widths and how to plan for and plant native Vermont trees and shrubs. Following these introductory sections are descriptions of over 75 native trees,



shrubs, ferns and flowering plants that could transform eroding, slumping shorelines to stable, vegetated, dynamic communities good for soil and water protection.

This booklet encourages the use of native species in buffer strip plantings. In addition to their beauty and wildlife value, there are several important reasons to use native plants, especially along lakes, streams and wetlands. One reason is to maintain natural diversity, thereby ensuring a balance of vegetative growth; non-native or alien species can escape from cultivation and will encroach on natural habitats often out competing the native community members for nutrients, water and space. Another reason is that native plants, especially those grown locally are well adapted to the local conditions and as a result will generally require less care and maintenance.

For more information on native plants, call the Water Quality Division for a copy of the booklet described above. For information on nursery sources of native plants, also request the listing *Sources of Native Plants Materials in Vermont*.

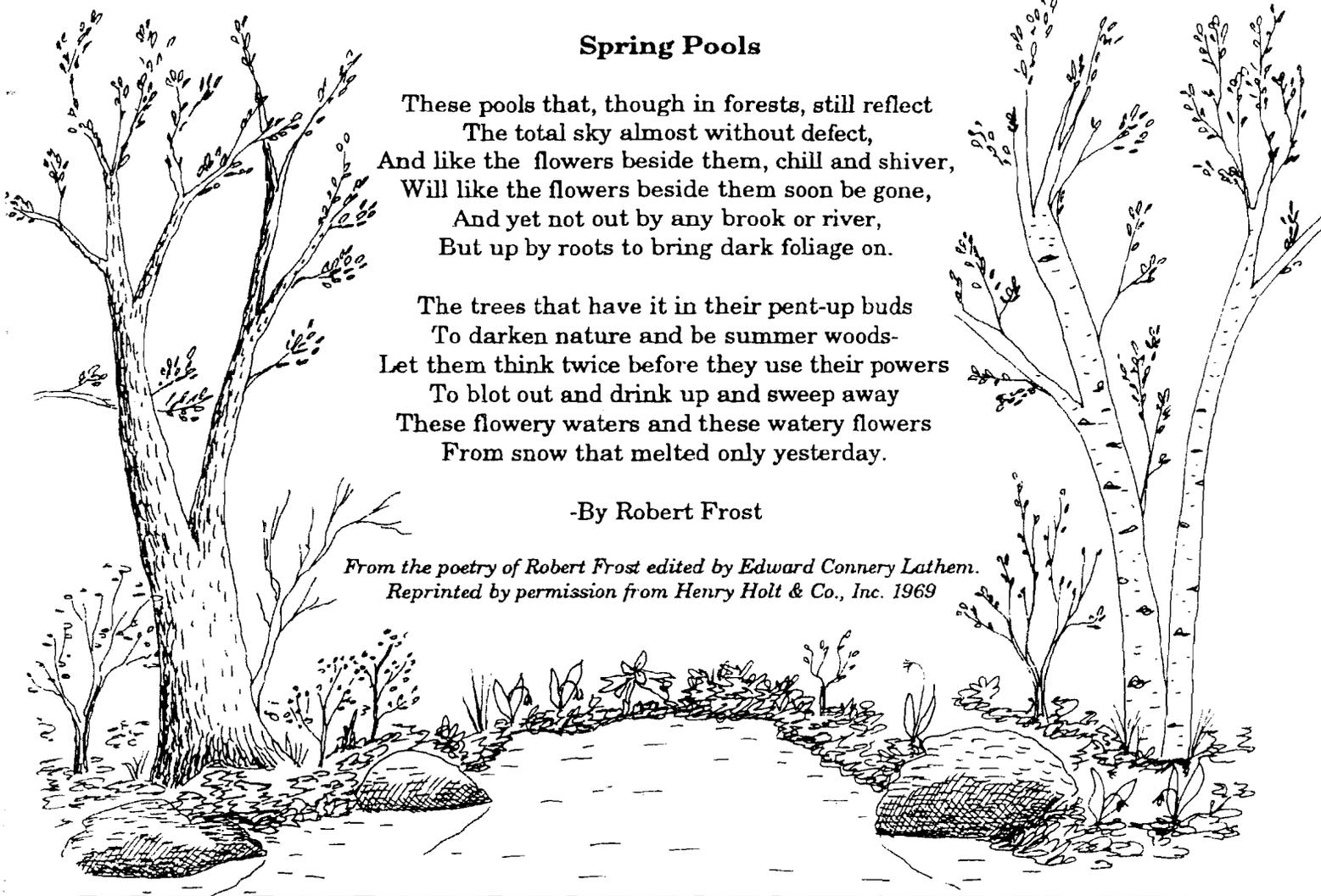
Spring Pools

These pools that, though in forests, still reflect
The total sky almost without defect,
And like the flowers beside them, chill and shiver,
Will like the flowers beside them soon be gone,
And yet not out by any brook or river,
But up by roots to bring dark foliage on.

The trees that have it in their pent-up buds
To darken nature and be summer woods-
Let them think twice before they use their powers
To blot out and drink up and sweep away
These flowery waters and these watery flowers
From snow that melted only yesterday.

-By Robert Frost

*From the poetry of Robert Frost edited by Edward Connery Lathem.
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