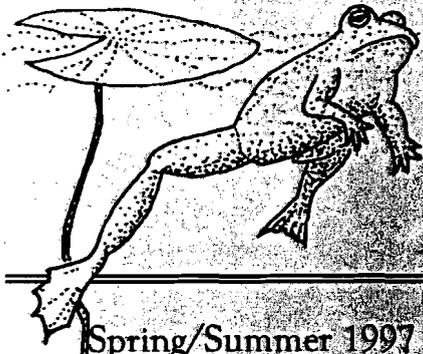


Out of the Blue



*A Newsletter of the
Lakes and Ponds Section*

Spring/Summer 1997 No. 14

Vermont Agency of Natural Resources
Department of Environmental Conservation

Malformed Frogs Found in Vermont

In the early 1970s, naturalists and biologists became aware that many formerly abundant amphibians were disappearing mysteriously. As word spread, it became obvious that these were not isolated incidents, but that amphibian numbers were indeed declining all over the planet. The phenomenon became even more perplexing when researchers discovered that declines were occurring in areas of pristine natural habitat.

There appear to be many factors contributing to the decline of amphibians worldwide. These factors include habitat destruction, fire suppression, increases in ultra-violet radiation, industrial pollution, pesticides, acid precipitation, sedimentation, changes in temperature, introduction of predators or competitors into breeding areas, diseases, and natural population fluctuations.

In the summer of 1995, citizens and scientists in Minnesota found frogs all over their state with missing legs, extra legs, paralyzed legs, legs webbed together, and legs appearing in odd places.

Late in the summer of 1996, national media coverage of deformed frogs in Minnesota gained Vermonters' attention. Shortly after, deformed frogs were reported by the general public to the Vermont Agency of Natural Resources (VTANR) from 12 sites in 5 counties within the Lake Champlain basin of Vermont.

The relatively new phenomenon of amphibian deformities has been receiving increasing attention from the press, the public and the scientific community. Public interest has been heightened by the perception that the anomalies in frogs could indicate an environmental degradation relevant to human health.

See "Frogs" page 4

Conservation Commissions Help Protect Our Water Resources

By Virginia Rasch, Executive Director of
Association of Vermont Conservation Commissions

One of Vermont's most important natural resources is its water, whether it is water flowing in a stream to a nearby pond, water in a river winding its way to Lake Champlain, water in our wetlands, or cool, clear groundwater. Local conservation commissions can help residents to appreciate their water resources and understand their role of stewardship.

A conservation commission is a municipal commission with three to nine members who have either volunteered or have been appointed by the town's select board. The major goal of a conservation commission is to promote community responsibility for its natural resources.

According to state law, a conservation commission can assist the planning commission with natural resource issues; make an inventory of the town's natural, historic, and cultural resources; receive gifts of land for conservation purposes; and encourage the

See "Conservation" page 2

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OUT OF THE BLUE

is produced semi-annually by the Lakes and Woods Societies. Our purpose is to disseminate information on lake environmental water quality and water quality through articles on lake biology and restoration projects. If you would like to contribute an article, please contact the editor at the following address:

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The Vermont Department of Natural Resources, Department of Conservation, Conservation and Water Quality Division, is pleased to announce the publication of the Vermont Water Quality Newsletter. The newsletter is published semi-annually and contains information on lake biology, water quality, and restoration projects. The newsletter is a valuable resource for lake owners and managers. If you would like to contribute an article, please contact the editor at the following address:

Conservation (continued from page 1)

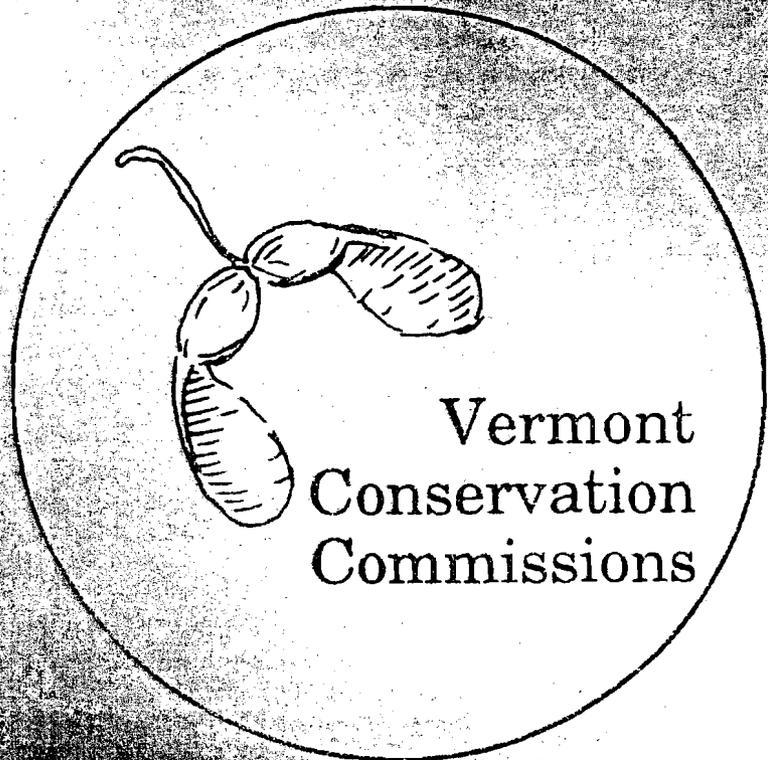
public's understanding of local natural resources.

The Shelburne Natural Resources and Conservation Committee helped protect land and wetlands along Shelburne Pond and at the mouth of the LaPlante River. The Georgia and Milton Conservation Commissions worked with the Arrowhead Mountain Lake Association on "Blue Up Day," a clean-up effort on Arrowhead Mountain Lake.

Many conservation commissions conduct river projects. The Underhill Conservation Commission planted willows along the Browns River to help stabilize the banks. The Montpelier Conservation Commission has devoted its efforts to the rivers that flow through the city. Two park projects are underway, hiking and bike paths are planned for the river corridors, canoe launches have been proposed, and river plantings and fish habitat improvements are planned. A "Rivers Vision" document was produced to guide the process. Additionally, the Montpelier Commission joined with the Berlin Conservation Commission to study the human and natural history of Berlin Pond. The study will be used in future management decisions about the pond.

Other conservation commissions, including those in Berlin and Woodstock, sponsor wetlands workshops to educate townspeople about the values of wetlands. The South Burlington Natural Resources Committee worked with the local high school on a wetlands trail project behind the school and worked with the local planning commission on recommended buffer zones (vegetated shorelands) next to rivers, streams and wetlands.

Conservation commissions can also help start lake associations in their towns as well as participate in the Lay Monitoring Program. Kevin Beattie, chair of the Londonderry Conservation Commission, started as a Lay Monitor for Lowell Lake because of his concerns over a proposed state



park on an undeveloped lakeshore. Although Beattie started as a Lay Monitor before the conservation commission was formed, he believes conservation commissions can play an important role by finding volunteers to serve as Lay Monitors for lakes in their towns.

Susan Warren, an aquatic biologist with the VTDEC Lake and Watershed Protection Program, encourages lake associations to expand their scope of interest into the watershed as a whole. Warren believes that a conservation commission would be a perfect vehicle for teaming up with a lake association to do watershed activities. In addition, a conservation commission can be the critical link to town government that many lake associations need.

These are just a few examples of how conservation commissions can help protect Vermont's water resources, which are critical to our health, our economy, our recreational pursuits, and the beauty of our state. But conservation commissions also work to conserve other natural resources, including farms, wildlife, and forests. Some conservation commissions also work to protect historic and cultural resources in their communities. Each commission tailors its projects to the specific needs and interests of its town.

Currently, 69 Vermont towns have established conservation commissions or similar committees. A town votes to establish a conservation commission at a warned meeting such as Town Meeting Day.

It only takes one energetic person to establish a conservation commission. If you would like more information, including a fact sheet and a newsletter, contact Virginia Rasch, Association of Vermont Conservation Commissions, HC 32 Box 36, Adamant, VT 05640, 802-223-5527, E-mail ilovermont@aol.com.

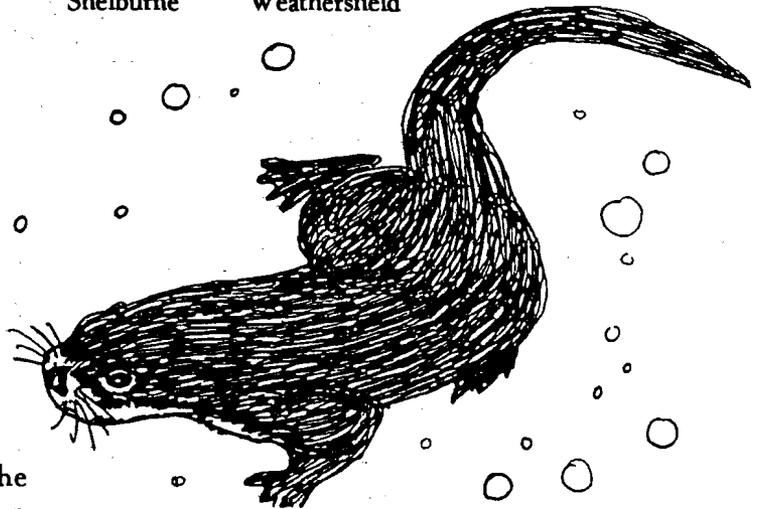
Towns with Conservation Commissions or Similar Committees

Berlin	Dummerston	Irasburg	Peru	Shrewsbury	West Windsor
Bethel	East Montpelier	Jericho	Plainfield	South Burlington	Westford
Bolton	Essex	Landgrove	Pomfret	Stamford	Westmore
Bradford	Ferrisburgh	Londonderry	Poultney	Stannard	Weston
Burlington	Georgia	Manchester	Randolph	Starksboro	Weybridge
Cabot	Granby	Marlboro	Richmond	Stowe	Williston
Calais	Grand Isle	Middlebury	Ripton	Sudbury	Windham
Charlotte	Greensboro	Milton	Sandgate	Sutton	Windsor
Colchester	Hartford	Monkton	Shaftsbury	Thetford	Woodbury
Danville	Hinesburg	Montpelier	Sharon	Underhill	Woodstock
Dorset	Huntington	Newbury	Shelburne	Weathersfield	

— Project WET Joins SWEEP! —

Project WET (Water Education for Teachers) is a kindergarten through twelfth grade, interdisciplinary, hands-on curriculum that focuses on water. Initiated by the Lakes and Ponds Section, the Department of Environmental Conservation sponsored Project WET in the spring of 1995 to strengthen its water resources management by offering a coordinated water-related educational program.

Recently, Project WET joined SWEEP, the StateWide Environmental Education Programs, a coalition of organizations and individuals promoting environmental education in Vermont, who have been working together since 1975. SWEEP's purpose is to foster environmental appreciation and understanding to enable people to make responsible decisions affecting the environment. SWEEP produces a newsletter three times a year and an annual directory that lists all their members, including services offered to teachers, students, and the general public. SWEEP also holds "salons," environmentally-related discussions; semi-annual member meetings; and an overnight annual retreat. For more information about SWEEP contact Susan Clark, 9 Bailey Ave., Montpelier, VT 05602, tel.# 802-223-5824. And for more information about Project WET, please call Amy Picotte at the Lakes and Ponds Section.



At this time, there is no scientific data supporting a link between frog and human health, but there is also no convincing data which eliminates this concern.

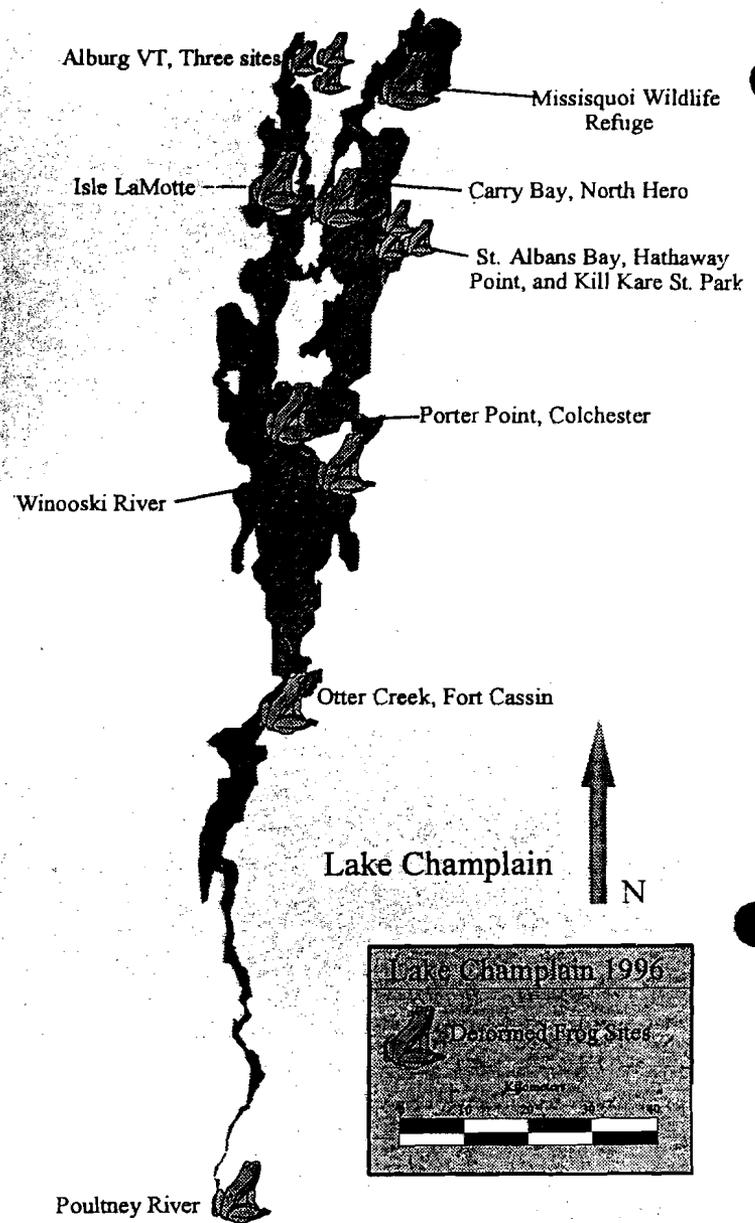
Incidents of deformed frogs have been reported from at least eight states: Texas, California, Minnesota, Wisconsin, Ohio, Kansas, Missouri, and Vermont, as well as the Canadian provinces of Ontario and Quebec. The majority of deformities have involved multiple, fused, or missing limbs. Amphibian species that have been reported with deformities include: northern leopard frog, spring peeper, American toad, gray treefrog, bullfrog, wood frog, green frog, pickerel frog, mink frog, Pacific tree frog, and the long-toed salamander.

Observations of deformities in Vermont have been restricted to the northern leopard frog, *Rana pipiens*. Limited surveys have shown that the rate of deformities in northern leopard frogs, primarily expressed through abnormal limb development, is far higher and more widespread than has been recorded in anecdotal historical records. Deformity observations have included contorted or shortened legs, missing legs, bony projections, un-resorbed/deformed tails, and missing or deformed eyes. All of the frogs collected have been young northern leopard frogs born that year.

At four sites surveyed in the fall of 1996 by the VTANR, the incidence of deformities averaged 13.1 percent (ranging from 5 to 23 percent) from 290 northern leopard frogs observed. These observations in Vermont are consistent with reported increases in amphibian deformities observed elsewhere in North America. Sites where deformed leopard frogs have been observed in Vermont were located near or adjacent to wetland areas close to Lake Champlain or a major tributary.

To date, the mechanisms causing the deformities have not been identified; however, some researchers suspect toxic heavy metals and pesticides building up in aquatic food chains, plus air pollution. Other researchers believe that increased ultraviolet radiation may be affecting the frogs' eggs, which float on the surface of the water, absorbing sunlight. There may be several factors acting in combination which result in abnormal development.

Additional faunal survey and site characterization activities are being planned for the 1997 field season, including a field investigation to examine the occurrence and the extent of deformed frogs. These surveys will be conducted in Vermont by the VTANR, the US Fish and



Wildlife Service, the US Environmental Protection Agency, Middlebury College, and private organizations.

For more national information about the frog deformities, you can visit the North American Amphibian Monitoring Program (NAAMP) at the web site: <http://www.im.nbs.gov/naamp3>, or the Minnesota New Country School Frog Project at the web site <http://www.mncs.k12.mn.us/frog/frog.html>.

To report any deformities in amphibians or other wildlife species in Vermont, please contact Mark Ferguson, Vermont Department of Fish and Wildlife, at 802-241-3700, or Rick Levey, Vermont Department of Environmental Conservation, at 802-244-4520.

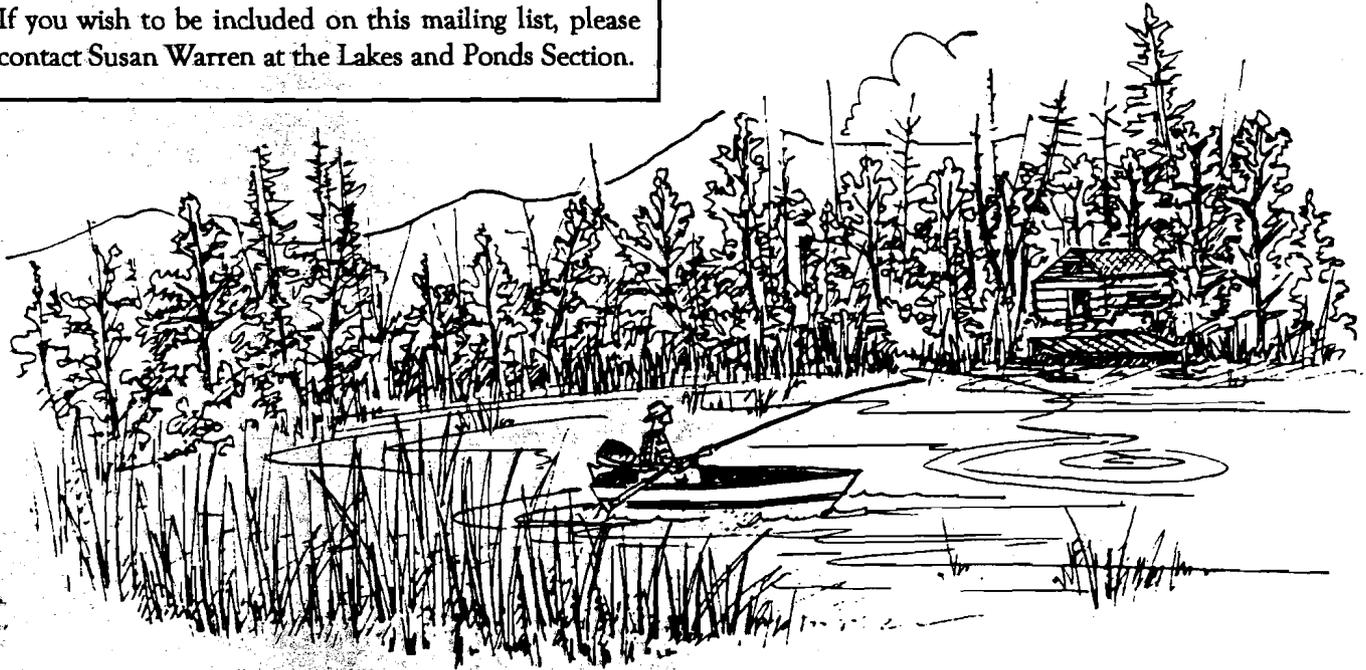
Lake Protection Advisory Committee

The Lake Protection Advisory Committee (LPAC) was established during 1996 to enhance lake protection efforts in Vermont by increasing communication between VTDEC and lake associations and amongst lake associations. This committee of more than a dozen people from lakes all over the state has met three times, and lively and informative discussions have ensued. The LPAC held its third meeting April 11 to discuss how to promote exchange of lake protection information and ideas between lake associations in Vermont. Many ideas were suggested including:

A "lake protection mailing list" of about 130 people has been established for use in disseminating information about such activities as the LPAC, conferences and workshops, grant sources such as the Watershed Fund (see page 16), and other special announcements. If you wish to be included on this mailing list, please contact Susan Warren at the Lakes and Ponds Section.

- ◆ local or state "Lake Day(s)" to celebrate a particular lake, or all lakes statewide
- ◆ dissemination of the results of the Lake Protection Survey conducted during the winter of 1997
- ◆ use of public access cable TV channels
- ◆ shared or linked lake websites
- ◆ statewide conference of lake protection
- ◆ sharing of newsletters amongst lake associations

The committee decided to plan a state wide Lake Day/Week for the summer of 1998, and hopefully promote it as an annual event. The Committee will meet next in June 27, 1:30 to 4:30 in Waterbury to begin planning this event and discuss other ideas. (A second meeting is scheduled for August 22.) Anyone is welcome to join the effort, please contact Susan Warren at the Lakes and Ponds Section for directions if you wish to attend these meetings. A "lake protection mailing list" of



Lake Lingo

Composting - a natural decomposition process where beneficial soil organisms transform plant and animal wastes into a nutrient-rich and biologically active component of soil

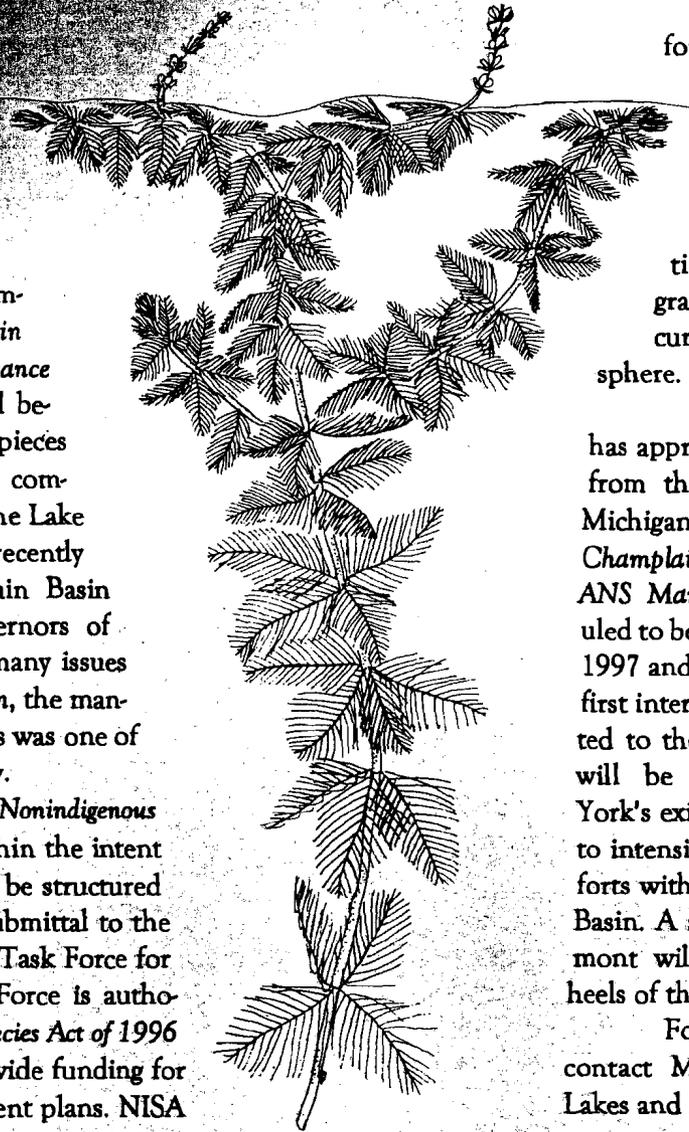
Fauna - animals found in a certain region

Rhizome - an underground stem producing new plant shoots and roots

Aquatic Nuisance Species Management Plan

The VTDEC, in doing its fulsome, diligent committee of Vermont, New York, and Quebec, have jointly coordinated the development of a management plan for aquatic exotic species within the Lake Champlain basin. The *Lake Champlain Basin Nonindigenous Aquatic Nuisance Species (ANS) Management Plan* will begin the implementation of key pieces from *Opportunities For Action*, the comprehensive management plan for the Lake Champlain Basin. The plan was recently completed by the Lake Champlain Basin Program and signed by the governors of Vermont and New York. Of the many issues addressed in *Opportunities For Action*, the management of aquatic nuisance species was one of three identified as a highest priority.

The *Lake Champlain Basin Nonindigenous ANS Management Plan* will stay within the intent of *Opportunities For Action*, but will be structured in such a way as to allow for its submittal to the national Aquatic Nuisance Species Task Force for approval and funding. The Task Force is authorized under the *National Invasive Species Act of 1996 (NISA)* to accept, approve, and provide funding for state and interstate ANS management plans. NISA has authorized significant annual appropriations



for the funding of such management plans. Of course, the appropriations are not guaranteed, but Task Force members are optimistic that ANS programs will fare well in the current congressional atmosphere.

To date, the Task Force has approved management plans from the states of New York, Michigan, and Ohio. The *Lake Champlain Basin Nonindigenous ANS Management Plan* is scheduled to be completed in the fall of 1997 and will likely be one of the first interstate plans to be submitted to the Task Force. The Plan will be consistent with New York's existing plan and will help to intensify ANS management efforts within the Lake Champlain Basin. A state wide plan for Vermont will likely follow on the heels of the basin Plan.

For more information, contact Michael Hauser at the Lakes and Ponds Section.

Lakes and Ponds Staff Member Appointed to the National ANS Task Force

Michael Hauser, VTDEC Zebra Mussel Education and Outreach Specialist, was recently appointed by the Lake Champlain Basin Program (LCBP) to be its representative on the National Aquatic Nuisance Species (ANS) Task Force.

The ANS Task Force was mandated by the Nonindigenous Aquatic Nuisance Species Prevention and Control Act of 1990, and was recently re-authorized and amended by the Nonnative Invasive Species Act of 1996 (collectively called the Act). The Act basically charges the ANS Task Force with overseeing the implementation of the provisions laid out in the Act which focuses on two main areas: 1) prevention of unintentional introductions of nonindigenous aquatic species and 2) prevention and

control of aquatic nuisance species dispersal. This Act is one of the most comprehensive efforts to date addressing aquatic nuisance species on a national scale.

A LCBP appointed representative to the National ANS Task Force will benefit the region in a number of ways including: an in-depth understanding of the Act and its implications for the region; increased national exposure on ANS issues; access to authorities and researchers working in the ANS field; and direct input on national policy.

Michael's appointment has broad, positive implications for aquatic nuisance species issues that we face in this region. It also says a lot about Michael's expertise in this area and his commitment to this problem.

Water Chestnut Composting Demonstration Project Underway This Summer

The Lake Champlain Basin Program recently awarded a local implementation grant to the Otter Creek Natural Resources Conservation District in partnership with the VTDEC and the Addison County Natural Resources Conservation Service to conduct a composting demonstration project with water chestnut.

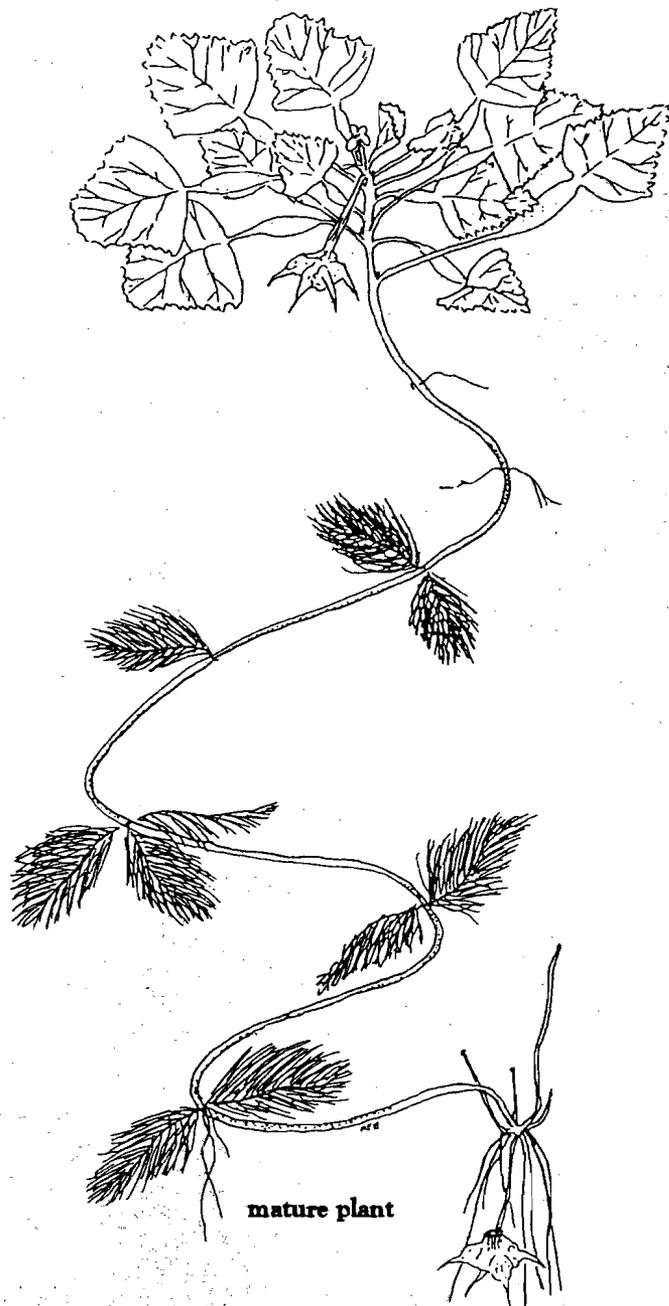
The project will seek to demonstrate the potential environmental and economic benefits of composting harvested water chestnut, an invasive nonnative, annual aquatic plant which has infested Lake Champlain for at least 50 years. The VTDEC has been involved in mechanical removal of water chestnut from Lake Champlain since the early 1980s. Harvested water chestnut plants are transported to and dumped at approved upland sites in Vermont. In 1996, 2,328 cubic yards of water chestnut plants were harvested and land applied.

The composting demonstration project will evaluate on-farm composting as an alternative disposal method for harvested plants. The Champlain Valley Compost Company of Burlington will provide technical support and custom compost turning services for the project. Three farms are expected to serve as demonstration sites for composting. A variety of compost mixing methods and ingredients will be evaluated at these sites. Small control piles containing only water chestnut spoils will also be evaluated.

Slated to get underway in May, project collaborators hope to complete evaluation of the project by November of 1997. For further information about the demonstration project, contact Ann Bove at the Lakes and Ponds Section.



"chestnut"
(actual size)



mature plant

Water Chestnut Workshops Offered

Water chestnut currently infests more than 52 miles of Lake Champlain and has been found in an additional four Vermont water bodies and an unknown number of rivers associated with Lake Champlain. Due to aggressive growth habits and the ability to form extensive surface mats, infestations of this exotic aquatic plant can restrict recreational and commercial uses of the waters it invades. Water chestnut monocultures choke out native aquatic plant communities and negatively impact fish and wildlife.

The Lakes and Ponds Section will hold hands on training workshops this summer to teach individuals how to identify and search for water chestnut in water bodies they frequent. If newly established populations of this plant can be found early, immediate inexpensive control methods can be implemented to prevent water chestnut from becoming an aquatic nuisance. Contact Ann Bove at the Lakes and Ponds Section if you are interested in participating in a water chestnut workshop. Workshop dates and locations have yet to be determined.

Get Ready for the 1997 Dip-In!

The 1997 Great American Secchi Dip-In is scheduled for June 27 through July 13. During this time Vermont's Lay Monitors, already committed to taking weekly Secchi disc readings from the lake they monitor, are asked to participate in this national Secchi water clarity event. Bob Carlson, National Secchi Dip-In Coordinator from Kent State University in Ohio, explains that the data collected from this event is important, but of almost equal importance is that the event brings national attention to volunteer monitoring. The Secchi Dip-In produces a snapshot of water transparency across North America, helps monitor national and regional water quality trends, and proves that volunteers can make a difference in helping to monitor the environment. Results from the 1996 Great American Secchi Dip-In are shown in the table below. Thanks to everyone who participated in 1996, and remember to mark your calendars now for the 1997 Dip-In!



Results from the 1996 Great American Secchi Dip-In Secchi depth recorded in meters

State	# of Participants	Ave.	Min.	Max.
AL	18	1.0	0.2	1.8
AZ	1	0.1	0.1	0.1
BC	6	7.4	3.2	10.8
CT	7	1.9	0.7	4.5
FL	65	0.9	.04	2.3
GA	66	1.8	0.1	4.2
IA	3	0.8	0.4	1.0
IL	70	1.3	0.3	4.3
IN	45	2.3	0.2	6.6
KS	18	0.9	0.2	1.3
KY	1	0.4	0.4	0.4
LA	11	0.9	0.3	1.5
MA	69	2.7	0.5	10.9
MD	8	0.8	0.4	1.1
ME	121	5.9	0.1	14.6
MI	209	3.7	0.6	10.7
MN	507	3.3	0.2	15.9
MO	18	1.7	0.4	4.6
MT	45	5.7	1.3	12
NB	2	3.8	3.8	3.8

State	# of Participants	Ave.	Min.	Max.
NC	17	1.4	0.1	8.8
ND	1	0.3	0.3	0.3
NE	25	0.7	.01	3.3
NH	87	5.1	1.1	10.8
NJ	33	1.1	0.4	7.0
NS	58	3.6	0.9	7.0
NY	82	2.3	0.2	7.1
OH	50	1.1	0.2	6.1
OK	19	0.9	0.1	3.1
ON	134	2.7	0.4	8.7
OR	1	1.4	1.4	1.4
PA	3	2.1	1.0	3.4
RI	24	2.4	0.6	5.0
SC	15	2.9	1.7	6.6
SD	8	1.0	0.3	3.5
TX	15	1.4	0.3	5.5
VA	38	1.1	.08	8.0
VT	27	5.1	1.0	11.2
WA	68	3.8	.04	8.5
WI	372	3.2	0.3	9.1

Rose of our Lakes and Ponds: The Fragrant Water Lily

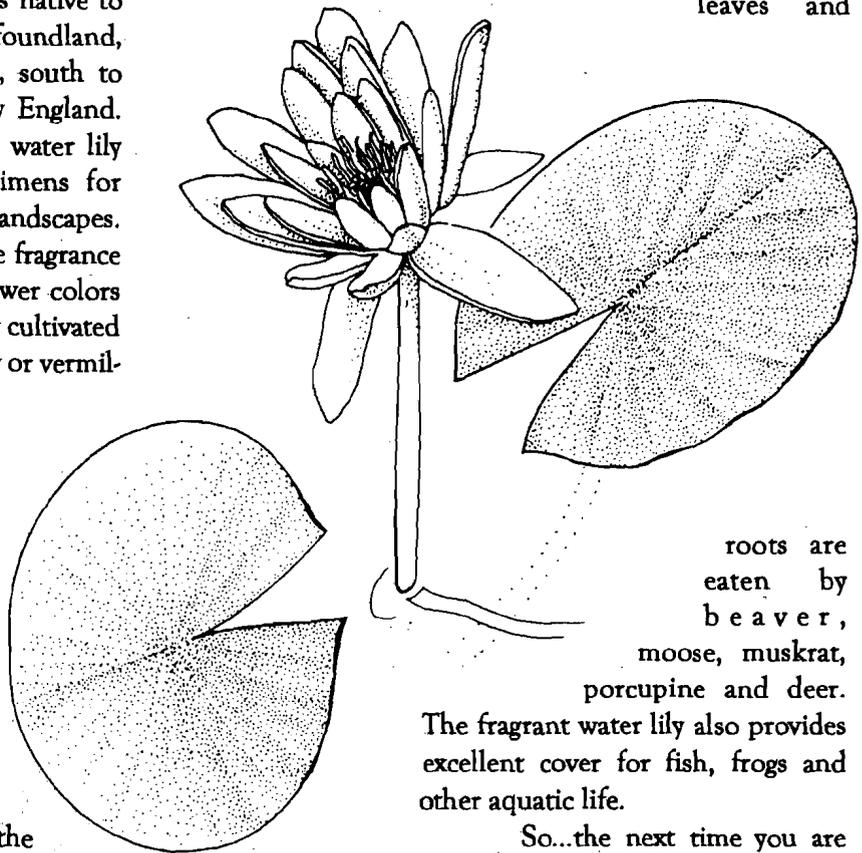
One of the most beautiful aquatic plants that graces Vermont lakes and ponds in the summer is the fragrant water lily, sometimes called the white pond lily (*Nymphaea odorata*). In addition to having a delightful scent, this showy lily seems to epitomize the splendid tranquillity of lazy summer days.

The fragrant water lily prefers the quiet, relatively shallow waters (up to six feet deep) of ponds, sheltered lake shores, and slow streams. It is native to the eastern half of North America, from Newfoundland, south to Florida, and west, from Manitoba, south to Texas. It is very common throughout New England. Horticultural enthusiasts consider the many water lily hybrids now available to be premier specimens for adding dramatic accents to ornamental pond landscapes. Plant breeders have successfully combined the fragrance of this native water lily with the dramatic flower colors found in other water lily species to create new cultivated varieties that have rose, saffron, purple, yellow or vermilion petals.

The native fragrant water lily is one of the most easily recognized aquatic plants in Vermont. Its delicately sculpted flowers are usually white (sometimes pink), up to six inches across, with yellow centers surrounded by 17 to 32 petals. Each blossom opens in the morning and closes in the afternoon, lasting from two to five days. The flowers appear on solitary stalks and are borne at the water surface or slightly above it. The blooming period generally lasts from June to October. The floating leaves of the fragrant water lily are green above and red to purple underneath, nearly circular with a deep, angular notch at the base, and, when mature, are up to ten inches across. The leaves of the fragrant water lily can be easily distinguished

from the leaves of the common yellow cow lily, or spatterdock (*Nuphar variegata*), because the latter has heart-shaped leaves which lack the sharp angle at the base where the leaf attaches to the petiole (leaf stalk).

Water lily reproduction occurs through both seeds and rhizomes, which are thick, fleshy underground stems that grow horizontally. The seeds are eaten by waterfowl, and the leaves and



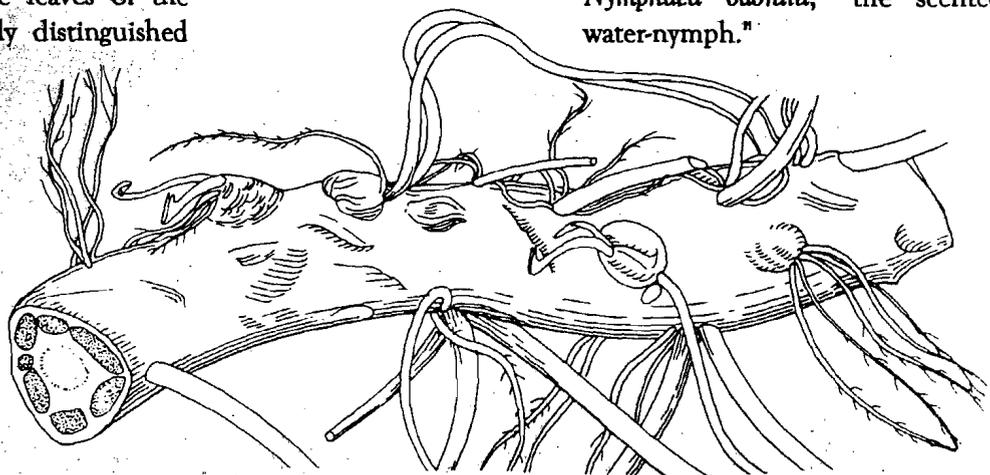
lily flower and leaves

roots are eaten by beaver, moose, muskrat, porcupine and deer.

The fragrant water lily also provides excellent cover for fish, frogs and other aquatic life.

So...the next time you are out on one of your favorite lakes or ponds, take a minute to stop and enjoy the beauty and fragrance of *Nymphaea odorata*, "the scented water-nymph."

rhizome with roots and new plant stems



Aquatic plant line drawings are the copyright property of the University of Florida Center for Aquatic Plants (Gainesville).

Look at the Bugs!

In order to assess the water quality of a lake, stream or river, you can look at the aquatic bugs and the fish. These animal communities reflect the biological health of a waterbody more accurately than sampling the water for its chemistry.

If, for example, a wastewater treatment plant is intermittently discharging a harmful pollutant or nutrient into a stream, the discharge would have to be caught immediately to show a change or violation to the water chemistry standards. However, the evidence of the pollution still remains in the biological community which inhabits that waterway. Increases in nutrients or toxins, even after they have been washed downstream, will be reflected by the number and composition of aquatic insects and fish. These creatures are continuous monitors of overall water quality and habitat conditions. With both point and nonpoint source pollution, biological communities upstream of the pollution source(s) can serve as the standard for comparison to communities downstream under the influence of pollution.

Aquatic animals have varying tolerances to pollution. The VTDEC Biomonitoring and Aquatic Studies Section (BASS) uses the presence or absence of these animals to determine the stream health. For example, the larvae of non-biting midges (Chironimidae) are mostly found in nutrient-enriched waters, while stoneflies (Plecoptera) and mayflies (Ephemeroptera) are mostly found in low nutrient, well-oxygenated rivers and streams.

Biological monitoring methods are used not only to assess impacts of wastewater treatment plants on streams but also impacts from logging, acid rain, draw-downs on lakes, agricultural practices, removal of stream side vegetation, and the effects of exotic species on natural populations.

So, the next time you look at a river, stream or lake, think about the biological clues that lie below the water's surface. The aquatic bugs and the fish provide biological clues as to the health of a waterbody. If you would like more information on biomonitoring, contact BASS at 802-244-4520.

mayfly larva

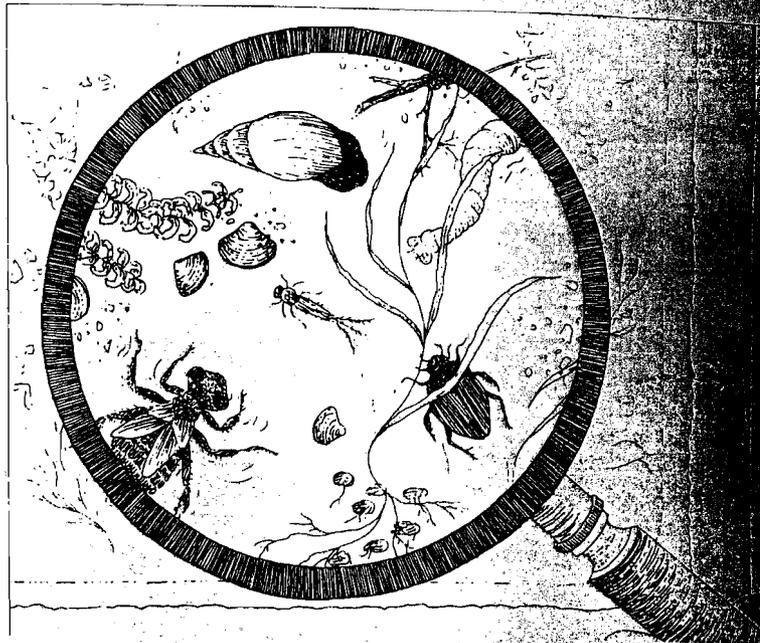
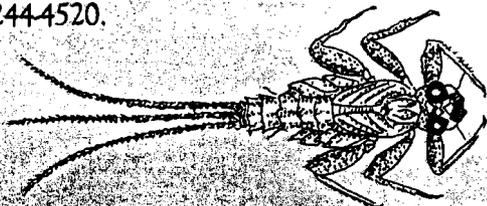


illustration by Libby Walker Davidson

A New Lake Assessment Approach! Bioassessment and Paleolimnology of Vermont and New Hampshire Lakes

During 1996, the VTDEC teamed up for a five-year effort with the New Hampshire Department of Environmental Services to initiate a biological and paleolimnological (a scientific study into a lake's history) assessment project of 24 lakes.

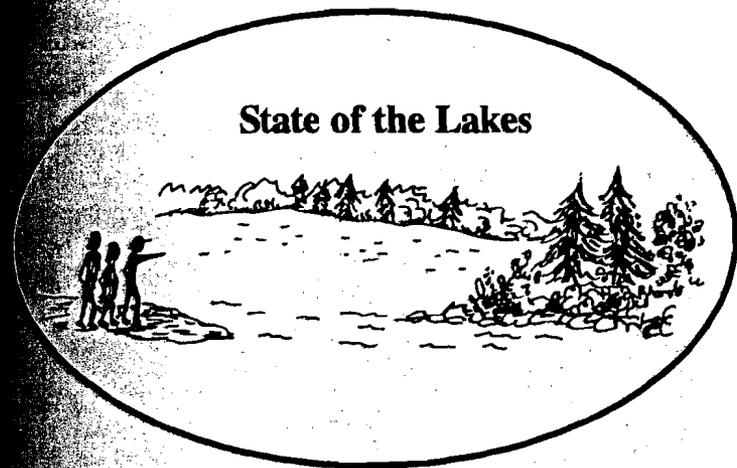
The purpose of the biological portion of the project is to establish data on pristine or near-pristine lakes against which data from impaired lakes can be compared. In order to identify biological criteria, the following "communities" on lakes with little or no human disturbances will be studied:

- ◆ phytoplankton (algae, usually microscopic, suspended in the water currents);
- ◆ benthic macroinvertebrates (bottom-dwelling animals, such as insects, that lack an internal skeleton and are large enough to see); and
- ◆ macrophytes (rooted aquatic plants);

Once lake biological criteria are developed, samples of the aquatic life from a lake of unknown status can be used to determine if that lake has experienced a decline in water quality. Biological community monitoring can be more sensitive than traditional chemical monitoring at detecting slowly evolving changes in lake water quality.

The goals of the paleolimnological investigations are to determine changes in the lakes' sediment chemistry since pre-settlement times, and to determine if lake management goals established for certain nutrient-enriched lakes are realistic.

State of the Lakes



Working Together for a Cleaner Lake: Lake Carmi, Franklin, Vermont

After several years of in-lake monitoring and watershed surveys, the Lake Carmi Campers Association is about to begin implementing phosphorus and sediment control projects in the lake's watershed. The monitoring determined that significant phosphorus is entering the lake due to runoff from various land uses, which has resulted in high algae levels and nearly annual late-summer algae blooms. The following article was submitted by John Barrows, Chair of the Water Quality Committee of the Lake Carmi Campers Association.

Representatives from the Lake Carmi Campers Association, the town, the VTDEC Lakes and Ponds Section, the Natural Resource Conservation Service, the

Franklin Select Board, and watershed landowners met this winter to form the Lake Carmi Watershed Committee. The collaborative effort brings technical assistance from town, state and federal governments together with lots of eager volunteers from the Franklin community.

The committee is focused on bringing together interested groups to work on a variety of projects to improve the quality of the water in the Lake Carmi watershed. The purpose is to correct soil erosion problems and reduce nutrient runoff to the lake. Projects will be in one of four groups:

1. shoreland vegetation - a series of replanting of public and private shorelines is being planned;
2. open land - a cooperative project with a large landowner is being pursued;
3. roads - three town road erosion sites are being evaluated for corrective measures;
4. landowner education - shoreland property maintenance information and education efforts are being planned to include such uses as septic system and driveway maintenance, and shoreland vegetation.

The details of the projects are currently being worked out, and the committee hopes to implement something in each category this summer.

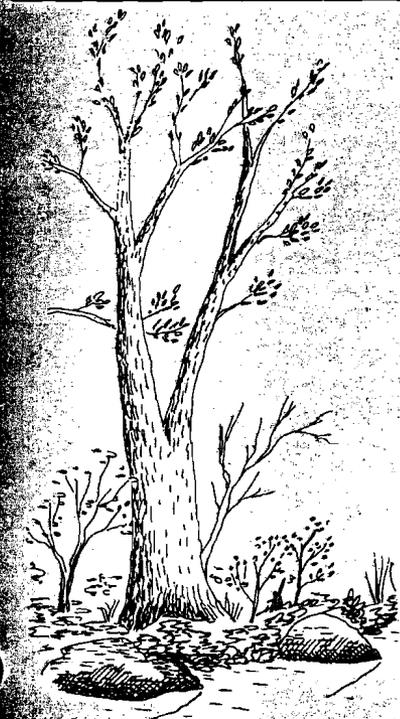
Out of the Blue welcomes article ideas and submittals from lake associations and residents.

Shoreland Buffer Strip Projects

It's true, "the greener the shores, the bluer the water." In early unseasonably cold and wet 1997 May conditions, there were a few outdoor projects that could not be delayed. Folks at Lake Parker in Glover and Lake Dunmore in Salisbury were busy planting bare-rooted tree and shrub species in an effort to revegetate sections of the lakes' shoreland.

Native seedlings of cedar trees, highbush cranberry bushes, serviceberry trees, red osier dogwood shrubs, and elderberry bushes were donated to these lake groups through a special Environmental Education Training and Partnership Grant awarded to the Vermont Project WET (Water Education for Teachers) program. Thanks to the Lamoille County Conservation District and Nature Center, native tree species are annually made available at a very reasonable cost for projects such as lakeshore revegetation.

On short, but workable notice, Bob Johnson, the Lake Parker Lay Monitor, coordinated the tree plantings for Lake Parker, revegetating about 130 feet of lake shore. Tori Knauff, the environmental educator from Camp Keewaydin at Lake Dunmore, involved more than 60 campers in an effort to revegetate some of the camp's shoreland and teach campers about good lake protection management practices.

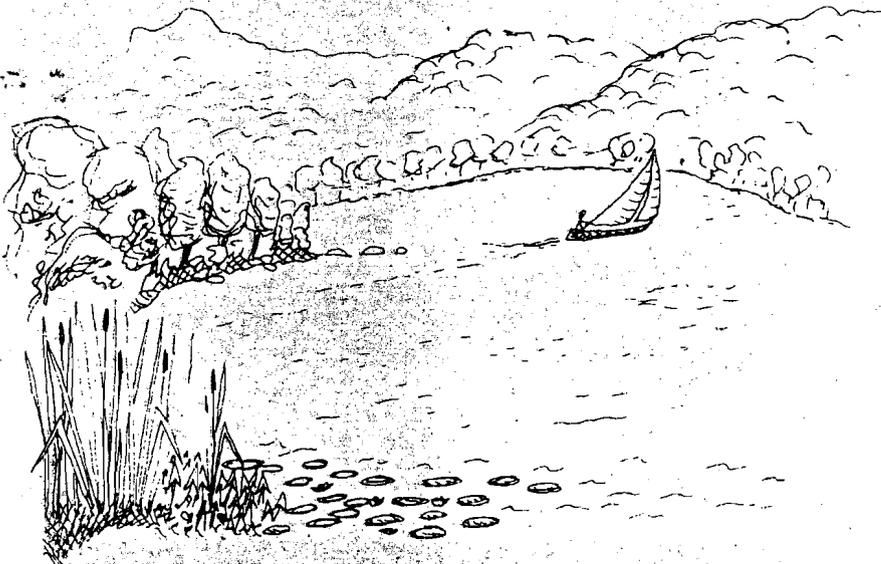


Notice From The Water Resources Board

Under the Vermont Use of Public Waters Rules adopted by the Vermont Water Resources Board in 1994, the use of personal watercraft (e.g. jetskis) is prohibited as of May 1, 1997 on the following lakes:

Amherst Lake	Metcalf Pond
Bald Hill Pond	Miles Pond
Brownington Pond	Neal Pond
Burr Pond	Newark Pond
Cedar Lake (Monkton Pond)	North Hartland Reservoir
Center Pond	Lake Parker
Chipman Lake (Tinmouth Pond)	Pensioner Pond
Coles Pond	Lake Raponda
Curtis Pond	Rescue Lake
Lake Derby	Ricker Pond
East Long Pond	Sabin Pond (Woodbury Lake)
Echo Lake, Plymouth	Sadawga Pond
Lake Eden	Shadow Lake, Concord
Lake Eligo	Shadow Lake, Glover
Forest Lake (Nelson Pond)	Sherman Reservoir
Great Hosmer Pond	Silver Lake, Barnard
Greenwood Lake	South Pond, Eden
Halls Lake	Spectacle Pond
Lake Iroquois	Sunset Lake, Bensen
Lake Lamoille	Sunset Lake, Orwell
Little Pond	Valley Lake (Dog Pond)
Martins Pond	Winona Lake (Bristol Lake)

Other types of high-speed motorboat uses on these lakes, including water skiing, are not affected. For more information, call Bill Bartlett at the Vermont Water Resources Board at (802) 828-3355.



It's True

People confront dilemmas daily. A dilemma is a problematic situation that requires a person to choose from two or more alternatives, each of which can produce desirable or undesirable effects. Managing water resources often creates dilemmas. What course of action would you take that addresses the following dilemma?

You own a cabin on a lakeshore and there are 200 other cabins facing the lake. Several residents around the lake have been complaining because they think the lake's water quality is poor. (There has been an increase in algae growth and unpleasant odors.) A public service announcement informed the community that these problems likely are caused by septic tanks leaking sewage into the ground water that feeds into the lake. The announcement advised that septic systems should be checked and pumped every three years. It has been almost ten years since yours has been checked, and you know other cabin owners have not checked theirs recently either. Checking your septic tank and fixing the problem could be costly. What are you going to do?

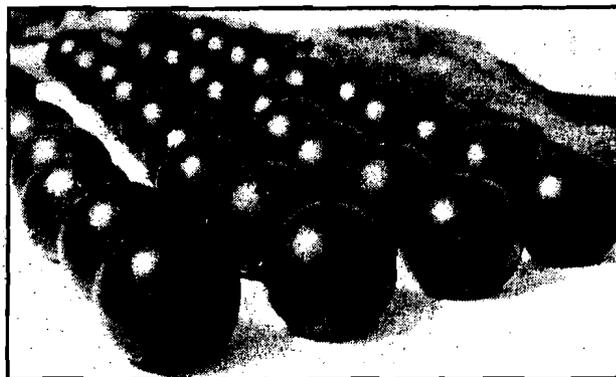
1. Sell the cabin.
2. Do nothing, your tank probably isn't leaking.
3. Have your septic tank checked; and if it's leaking, pay to have the sewage pumped and hauled to a safe place.
4. Have your septic tank checked, and if it's leaking, sell the cabin.
5. Have your septic tank checked; fix it if it's leaking, and form a homeowner's association to encourage everyone else to check their tanks, too.
6. Lobby the town government to develop a community water and sewage system and pay to have your cabin hooked up.
7. Other?

(This situation involving decision making is one activity of many from the national *Project WET Curriculum and Activity Guide*.)

Discoveries at Mirror Lake (Number 10 Pond), Calais, VT

Courtesy of Art Cohn, Lake Champlain Maritime Museum

When divers Maria and Will Jennison and Dave Knight began to explore this small lake in central Vermont, they had no idea they would be transported back to the Civil War. Swimming in the lake's clear water, they discovered more than 100 12-pound spherical case shot just laying on the bottom. The iron shot were intact, with their wooden bases (sabots) secured by tin straps around the pewter Bourmann fuses. They also were "live." The center of the shells were filled with a sulphur and 58 caliber ball matrix, with a bursting charge of black powder in the center.



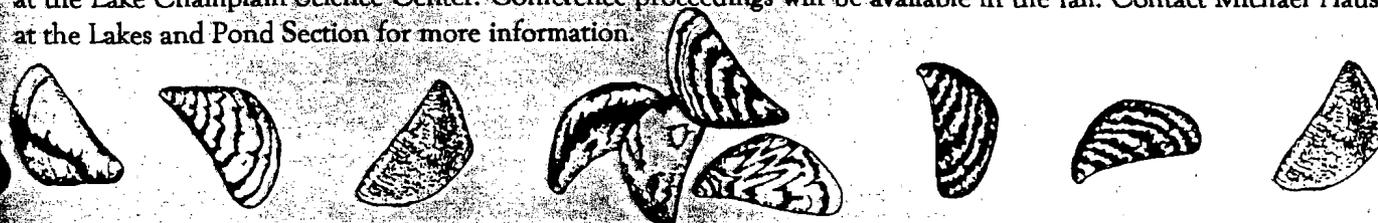
the cast iron shells of the Civil War from Mirror Lake

The State Police and the U.S. Army, concerned for public safety, initially recovered and destroyed 93 shells. After another cache of shells were located in the same general area, the Lake Champlain Maritime Museum, working in cooperation with the Vermont State Police, the Vermont Division for Historic Preservation, area SCUBA divers, the Navy Legacy Program, the Vermont Air and Army National Guard, the Lake Champlain Basin Program Cultural Heritage Office, and Senator Patrick Leahy's office, was able to design a program to recover, disarm, and conserve 63 of these perfectly preserved specimens of our horrible national conflict.

The conservation of these shells was open to public viewing all during the summer of 1996 at the Lake Champlain Maritime Museum. A new exhibit about Vermont's role in the Civil War was created to help put the project in context. Lake Champlain Maritime Museum Conservator Scott McLaughlin has done an excellent job putting the various components through the proper treatments for preservation. One significant challenge was to remove the Bourmann fuses without damaging them. After trying a number of methods, the machine shop crew at B.F. Goodrich Aerospace in Vergennes designed a special tool which did the job perfectly. The wooden bases are still undergoing treatment and, upon completion, the Lake Champlain Maritime Museum will be making recommendations to the Vermont Division of Historic Preservation for the distribution of selected shells for exhibit to museums both in Vermont and out of state. Although this project was a great example of how citizens, cultural institutions, and state and federal agencies working together can make positive things happen, there remains one question unanswered: how did the Civil War ammunition end up in Mirror Lake? The Lake Champlain Maritime Museum is currently investigating this mystery and will keep the public informed as to what it learns.

Aquatic Nuisance Species Conference Held in Burlington

Regional and national aquatic nuisance species experts met at the Ramada Inn in Burlington in April for the Second Northeast Conference on Nonindigenous Aquatic Species. Participants at the two-day conference, co-sponsored by the Connecticut Sea Grant College Program, the University of Connecticut, and the Vermont Department of Environmental Conservation, heard presentations on a wide range of aquatic nuisance plants and animals, from hydrilla to purple loosestrife and blue-backed herrings to zebra mussels. Particular highlights were a hands-on workshop for the identification of zebra mussels and nonindigenous aquatic plants and an evening reception at the Lake Champlain Science Center. Conference proceedings will be available in the fall. Contact Michael Hauser at the Lakes and Pond Section for more information.



List of Invasive Exotic Plants of Vermont

For a complete list of aquatic, wetland, and upland invasive, non-native plant species, contact Holly Crosson at the Lakes and Ponds Section.

Waterchestnut Workshops

Please see page 7 for a complete description of how you can attend a waterchestnut workshop this summer.

Watershed Fund

You can show support for wildlife and watersheds by using Vermont conservation license plates on your vehicle. For a registration form to order the special plate, contact the Vermont Department of Fish and Wildlife at 802-241-3700. Please see page 16 for information about the Watershed Fund and the projects it will support.



the invasive, exotic Purple Loosestrife
illustration by Libby Walker Davidson

FIELD GUIDE
TO
THE VERMONT
AGENCY OF
NATURAL RESOURCES



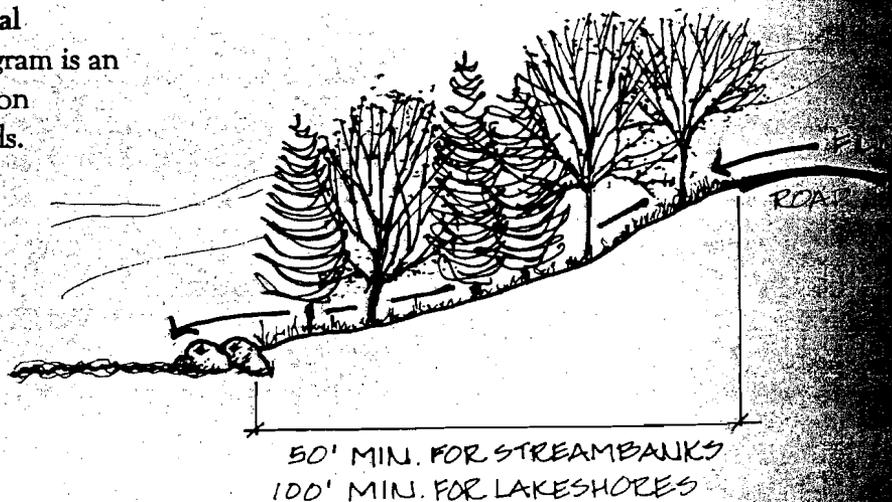
3rd Edition
APRIL, 1997
Lawrence Howard (Chair, ANR)
Suzanne Harwood (Secretary)

Field Guide to the Vermont Agency of Natural Resources

A revised version of the ANR Field Guide has recently been made available. The Guide includes information, such as phone numbers and responsibilities of the Agency's three Departments: Fish and Wildlife; Forests, Parks and Recreation; and Environmental Conservation. Contact the Lakes and Ponds Section for a free copy, or check it out on ANR's website—<http://www.state.vt.us/anr>

Vermont Better Back Roads Manual

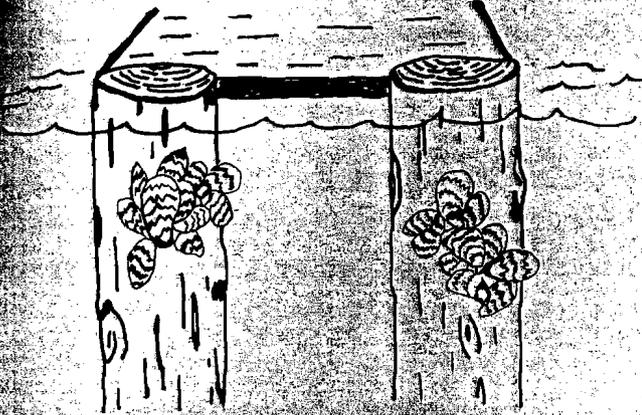
The Vermont Better Backroads Program is an on-going effort to provide information about erosion control on gravel roads. The Better Backroads Manual graphically points out cost effective techniques and actions that can be used to enhance maintenance of graveled backroads while improving the quality of the water. Please contact Susan Warren at the Lakes and Ponds Section for a copy.



a vegetated buffer between the body of water and the road

Volunteers Needed!

Help **PROTECT YOUR LAKE** from zebra mussels and other aquatic nuisance species. Participate in the **Zebra Mussel Citizen Action Program**. Contact Michael Hauser, at the Lakes and Ponds Section for more information.



The Champlain Basin Education Initiative (CBEI), a consortium of environmental education groups throughout the Lake Champlain Basin, is holding a series of workshops for educators and interested citizens.

July 30, 1997

Are there Monsters in Lake Champlain?

This workshop, sponsored in part by the South Champlain Lake Trust, will concentrate on the southern portion of the Lake Champlain Basin and the specific issues it faces: nuisance, non-native aquatic species; water quality degradation; and fish and wildlife issues.

Fee: \$10.00, which includes a copy of "This Lake Alive! An interdisciplinary Handbook for Teaching and Learning about the Lake Champlain Basin."

To Register or for more information contact Liz Soper at the National Wildlife Federation, 58 State St., Montpelier, VT 05602 or call 802-229-0650

**Vermont Project WET
(Water Education for Teachers)
Upcoming 1997 Workshops**

June 20-22, 1997

Special three day Watershed Education Training (2 credit course)
WET/GREEN Workshop (Global Rivers Environmental Education Network)
Shelburne Farms
Shelburne, VT
\$90.00, including lots of GREEN materials and the WET Guide
To register call the Lakes and Ponds Section at 802-241-3777 or
Shelburne Farms at 802-985-8686

July 20-25, 1997

Project WET offered at the "Fish and Wildlife Course For Educators!"
Buck Lake Conservation Camps
Woodbury, VT
\$275.00, including fee for 3 credits, room, meals, the WET Guide and lots more
To register call the Vermont Fish and Wildlife Dept. at 802-241-3700.

August 11, 1997

Project WET Workshop
8:00am - 4:00pm
Essex Jct. Parks - Indian Brook Reservoir
Essex, VT
\$15.00, including cost of the Guide book (some scholarships available!)
To register call Essex Jct. Parks at 802-878-1376



The Watershed Fund

There is great news for lake associations and residents in the form of a new grant source to accomplish watershed projects! Half of the revenue from the new Vermont Conservation License Plate Program will generate the Watershed Fund. Community groups and local governments can apply for this funding to carry out a wide variety of projects including monitoring and water quality improvement, improving fish and wildlife habitat, and land acquisition for access or protection purposes. An Agency of Natural Resources team is currently establishing application procedures and a Selection Committee to rank and select projects for funding. The Selection Committee will be made from people outside the Agency. The first round of applications and more detailed information on eligible projects and selection criteria will be available in mid-summer, so start thinking about lake related projects that some funding would help you accomplish. Please contact Susan Warren at the Lakes and Ponds Section if you want to talk about developing a grant proposal.



**Vermont Agency of Natural Resources
Department of Environmental Conservation
Water Quality Division
Lakes and Ponds Section
103 S. Main Street, 10 North
Waterbury, VT 05671-0408**

<p>BULK RATE U.S. POSTAGE PAID WATERBURY, VT PERMIT No. 17</p>

Address correction requested.