



# NEWSLETTER

The Federation of Vermont Lakes and Ponds, Inc. • P.O.Box 421, Waterbury, VT 05676

SPRING 2011

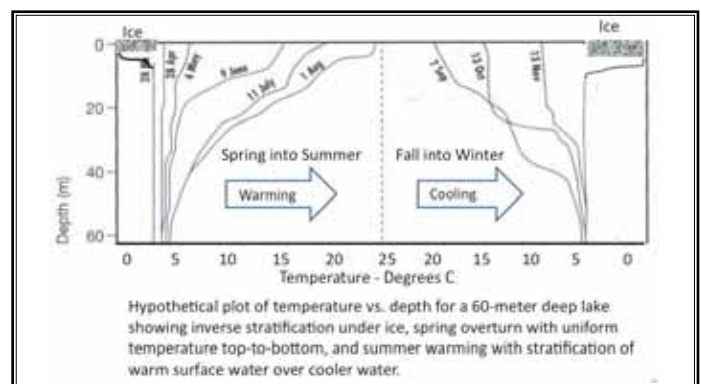
NUMBER 12

## Spring Mixing in Vermont Lakes and Ponds

by Art Brooks, Limnologist-Retired

The winter of 2010-11 has been a long, snowy, cold one for Vermont. Because of the heavy snows, however, many of the lakes have not developed as thick a layer of ice as usual, leading to risky ice fishing and what may be an early ice-out. The snow pack insulates the lake surface from the frigid air like an igloo, thereby keeping the ice from developing a thick layer. Unlike the familiar conditions in summer when warm water “floats” atop colder more dense water below, because of the unique properties of water, which is most dense (heaviest) at a temperature of 4 degrees Celsius (39°F), in the winter the colder water less than 4°C “floats” atop the warmer deeper waters that remain near the temperature of maximum density all winter. As spring approaches the days get longer and the sun gets higher in the sky. More solar radiation reaches the surface of the lake and begins to melt the snow and ice atop the water. Once the snow has gone, the darker surface of the ice absorbs more and more radiant energy until the ice either melts in place or is blown ashore by spring winds. The water temperature and thereby the density difference between the surface waters and the deeper layers is slight as the ice disappears. The cooler surface waters that existed just below the ice layer rapidly warm to the temperature of maximum density and easily mix with the deeper water. Spring winds blowing over the lake greatly enhance the mixing process and the “vernal mixing,” or spring overturn of the lake begins. This is a very important time in the seasonal cycle of a lake or pond as the water that has been isolated from the atmosphere by ice cover during winter can now “take a deep breath” and freely recharge oxygen that may have been consumed by respiration and decomposition processes over winter. In addition, nutrients such as nitrogen, phosphorus and silicon can be re-suspended from the bottom sediments and mixed throughout the water column. With abundant nutrients available and more sunlight penetrating deeper into the lake providing energy for photosynthesis, the spring algae bloom begins. In most lakes the cold-tolerant diatoms

lead the way, producing primary food energy to fuel the base of the food web of the lake. As silicon resources become limiting and the waters warm, other types of algae begin to grow, providing additional food for the small crustaceans that in turn feed larval fish, forage fish and eventually the larger predatory species sought by anglers. The spring bloom continues until either nutrients become limiting in the mixed water column or the surface waters warm to the point that a warm, less-dense water layer forms that inhibits further upward mixing of nutrients from the bottom sediments. With the cessation of spring mixing algal production decreases, the surface waters continue to warm, and FOVLAP members return to their lakes to enjoy another summer season. The duration of ice cover on lakes is very important in determining when the spring bloom begins and ends. This in turn determines how much primary food is produced during this productive period and whether the food will be produced in concert with the spawning of fish and other critically-timed ecological processes. Decades of observations have shown that the duration of ice cover on lakes around the world is decreasing, which is one of the best indicators of global climate change. This summer FOVLAP will examine the influence of climate change on our lakes at the Lakes Seminar on June 3rd and with a Nobel Prize-winning scientist lecture at the Annual Meeting on July 25th. Check your calendar and plan to attend!



## President's Corner – Perry Thomas

While our lakes are still ice-covered and there's more snow in the forecast as this newsletter goes to press, steam rising from sugar houses signals spring has arrived, finally. In this issue, we celebrate



Identifying aquatic plants at a recent Lake Seminar.

spring and anticipate summer. Many thanks to Art Brooks and Amy Picotte for contributing articles about ice melt and lake turnover. Thanks also to Ginny Garrison and Cindy Swanson for their efforts to keep us informed about happenings at the State House and to Judy Davis and Susan Warren for reminding us of the ongoing, collaborative work of FOVLAP and the Lakes & Ponds Section of the VTDEC Water Quality Division.

Please note details of our Lake Seminar and Annual Meeting (on page 5). We hope to see many of you at one or both of these lake-focused events. We also hope a few of you might consider joining the Board of Directors this year. As a volunteer organization, FOVLAP depends on the talents and energy of our Directors to keep us going.

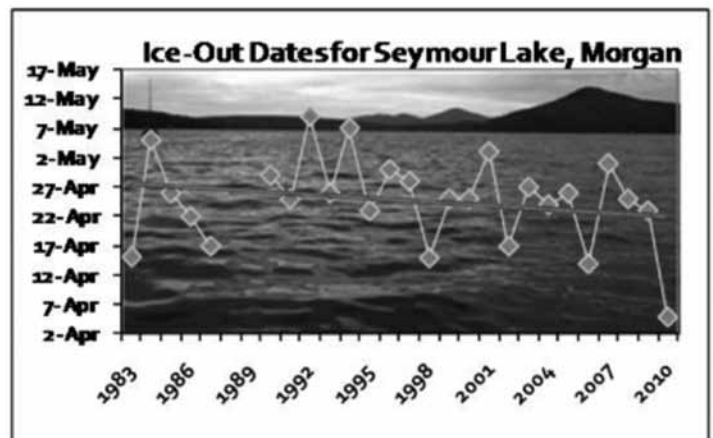
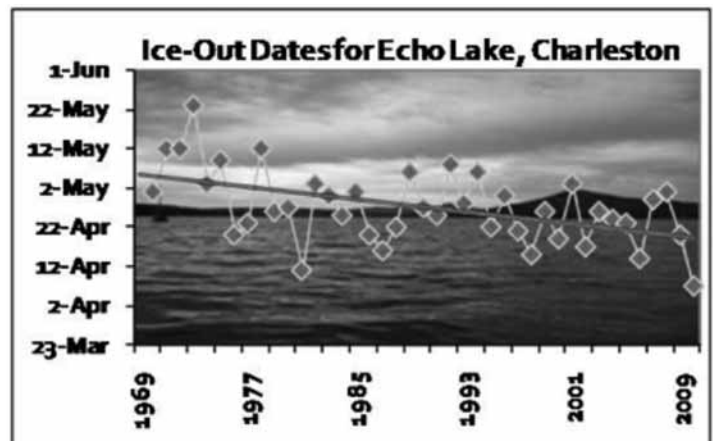
*If you would like to join us in our work on behalf of lakes,  
please send a message to [fovlap@vermontlakes.org](mailto:fovlap@vermontlakes.org).*

## Citizen Scientists Help Detect Lake Ice-Out Trends

*(adapted from Out of the Blue, VTDEC Water Quality Division's newsletter)*

Volunteers from across Vermont are playing an essential role in detecting the impact of changing climate conditions on Vermont lakes and ponds. During 2010, the Vermont Department of Environmental Conservation sent a request to lay monitors and others asking for any available records of ice-out dates on Vermont lakes. Many people, including museums, lake associations, and even weather junkies, responded with excellent logs of seasonal lake information. These citizen scientists had dutifully maintained ice-out lake records for years, in some cases even generations! Using this data, researchers at the VTDEC's Air Quality and Water Quality divisions were able to identify long-term trends occurring at ten different lakes across Vermont; data between 1980 and 2010 showed a trend toward earlier ice-outs.

Every year, there is a well-known, lucrative contest for guessing the "ice-out" date on Joes Pond in Danville. This event marks when ice thaws in the center of Joes Pond, sinking a cement brick into the pond. However, lake scientists refer to the lake "ice-out" date as when the entire ice cover completely thaws. Although there are varying interpretations



---

of when lake “ice-out” occurs, as long as citizen scientists are consistent year-to-year with their criteria for determining “ice-out,” then their long-term records are considered credible and can be used to track trends of annual ice-out events.

Since the timing of ice thaw depends primarily on average air temperatures over several days or weeks, ice-out dates are considered to be climate indicators, and can be used to illustrate annual changes in temperature at a particular location. Establishing records of ice-out dates and other climate indicators in Vermont improves our understanding of how the present compares to the past. Statistical long-term trends in the data can also help predict future statewide climate conditions that might occur in Vermont.

Weather-watching Vermonters are helping scientists better understand and protect our lakes. To join this citizen scientist effort, you can send in your records of ice-out dates, or other consistently-collected multi-year data such as summertime water temperatures or lake freeze-up dates, to Jeff Merrell at [jeff.merrell@state.vt.us](mailto:jeff.merrell@state.vt.us); Amy Picotte at [amy.picotte@state.vt.us](mailto:amy.picotte@state.vt.us); or Gwen Dunnington at [gwen.dunnington@state.vt.us](mailto:gwen.dunnington@state.vt.us).

---

## Widening Circles: Expanding the Effectiveness of Lake Protection Outreach: Phase II

*by Judy Davis*

We are excited that FOVLAP will be able to continue our lake protection outreach project with a new state grant award of \$10,400. The 2011 project is Phase II of FOVLAP’s outreach project initially funded by a 2009 Vermont Watershed grant. Phase I included pilot projects for information dissemination options, creation of an entirely new FOVLAP web site, a major survey of lakeshore property owners in Vermont, and development of a creative platform and key concepts for a “wild shorelines” social marketing campaign. Phase II carries on the work of the initial project, and includes final design and roll-out of FOVLAP’s educational and outreach messages and materials as well as implementation of wild shoreline buffer installation projects. The project includes three elements:

*Delivering to lakeshore owners the lake management information they need when they need it.* Phase II implements a process for delivering existing DEC Lakes and Ponds Section Lake Protection Series materials to lakeshore owners through the FOVLAP and DEC Lakes and Ponds web sites, through our lake association members, and/or through municipal offices and conservation commissions at the points in time when lakeshore land is purchased or when a municipal permitting process is initiated.

*Making the newly designed FOVLAP web site [www.vermontlakes.org](http://www.vermontlakes.org) a source for Vermont lake property owners to find best practice information as well as wild shoreline action plans and toolkits – a buffer in a kit.* Phase II integrates new messages, online toolkit materials, a key print/online piece, enhanced links to other watershed web sites, and integration with the DEC Lakes & Ponds Section web information and databases, such as the Vermont Lake Score Card.

*Incorporating social marketing approaches designed to encourage lake property owners to take positive action that will protect or establish wild shoreline buffers.* New messages and materials relating to vegetated buffer strips will be communicated in print format and through an online toolkit, and can be used by all lake associations statewide to implement buffer installation projects on their lakes.

Ultimately, this project will use innovative outreach strategies to connect a growing network of lake and pond associations with new and existing FOVLAP and DEC Lakes and Ponds Section educational materials. It will also coordinate with materials developed for stormwater education in Chittenden County’s Regional Stormwater Education Project (RSEP) and South Burlington Stormwater Services and with watershed projects throughout Vermont. Lakeshore property owners should also check out the new US EPA web site for shoreland protection, which includes a wide range of resources and links to informative lake shoreland protection materials: <http://water.epa.gov/type/lakes/shoreland.cfm>



## Happenings at the State House

by Ginny Garrison

FOVLAP's Legislative Committee is watching what's going on in the Vermont Legislature this year and keeping members informed through FOVLAP's new legislative update email distribution list. As of late-March, 534 bills have been introduced into the Legislature this year. Twenty-two bills may be of particular interest to FOVLAP members, namely H.020, H.024, H.026, H.035, H.130, H.139, H.159, H.163, H.192, H.210, H.211, H.212, H.213, H.258, H.343, H.393, H.407, H.409, H.423, S.023, S.025, and S.035. These bills relate to a variety of topics including public trust; Maidstone Lake road; fertilizer use; pesticide permits; Clean Water Act delegation; motorboat noise levels; stormwater funding; a Lake Champlain Bridge fishing access; fishing tournaments; the floating bridge in Brookfield; the use of felt-soled boots and waders, lead sinkers, and baitfish; environmental enforcement proceedings; Lake Champlain water quality; Winooski River fishing regulations; groundwater withdrawals; invasive plants; and wetland management. The text and status of these bills can be found via the Legislature's bill tracking system: <http://www.leg.state.vt.us/ResearchMain.cfm>

A water-related amendment to Vermont's constitution has also been proposed this session, and is currently under review in the Senate Natural Resources and Energy Committee. The amendment would add a new Article 23 to Chapter I of Vermont's Constitution: *That the people shall have the right to clean water and air, to a natural environment uncompromised by manufactured substances that are toxic and unhealthy, and to the enjoyment of nature, forests, wilderness, and wildlife.*

To-date, one of the above bills (H.026) has passed the House of Representatives and is currently under review by the Senate Natural Resources and Energy Committee. Among other things, this bill proposes to regulate the sale and use of fertilizers containing phosphorus on turf (defined as land planted in closely-mowed, managed grasses, including residential and commercial property and publicly-owned land). Agricultural lands and golf courses are not included, but golf courses would be required to submit nutrient management plans for the use of fertilizer to the Agency of Agriculture, Food and Markets. If this bill passes, the use of fertilizer containing phosphorus would be prohibited on lawns (and other turf) unless applied to new lawn, damaged lawn, or lawn that is deficient in phosphorus as indicated by a soil test. The use on lawns of fertilizer labeled for use on turf and containing less than 15 percent slow-release nitrogen would be prohibited. The use of all fertilizers would be prohibited on impervious surfaces, on lawns before April 1 or after October 15 or at any time when the ground is frozen, and on lawns within 25 feet of state waters.

The other bills mentioned above of potential interest to FOVLAP members have not been acted upon in the Legislature to-date. FOVLAP will be monitoring their progress during the remainder of the legislative session. If you would like to receive bi-monthly email updates during the legislative session regarding happenings at the State House, please email Cindy Swanson ([cinswanson@gmail.com](mailto:cinswanson@gmail.com)) and ask for your name to be added to the Legislative Committee's Vermont Lake-Related Legislative Updates email distribution list.

## WANTED - YOUR IDEAS!

The VT DEC's Water Quality Division is in the process of developing a water quality management plan for the Winooski River Basin in Central Vermont. The Division's Winooski River basin planner would like to meet with a group of people who live and or use the lakes and ponds in the basin to develop a list of strategies to better protect and restore these water resources. If you are interested in participating in a few short meetings (could be by phone), please contact Karen Bates, [Karen.Bates@state.vt.us](mailto:Karen.Bates@state.vt.us) or at 802-879-2339. Visit the Winooski River basin planning web site for more information: [http://www.anr.state.vt.us/dec//waterq/planning/htm/pl\\_winooskibasins.htm](http://www.anr.state.vt.us/dec//waterq/planning/htm/pl_winooskibasins.htm)

**REMINDER: *You do not want to miss!***

## **Lake Seminar**

Friday ~ June 3, 2011 ~ Montpelier, VT

Mark your calendars for Friday, June 3, 2011. FOVLAP and the VT DEC Lakes & Ponds Section will hold the annual Seminar in the Pavilion Building in downtown Montpelier next to the State House. We plan to offer talks and workshops on invasive species spread prevention, lakeshore ordinances and management, and stream dynamics. Please join us for an informative and friendly discussion. Watch the FOVLAP web site for details or write to us at [fovlap@vermontlakes.org](mailto:fovlap@vermontlakes.org) to make sure you are on the mailing list. *See you there!*

## **Annual Meeting**

Monday ~ July 25, 2011 ~ The Steak House  
at 1239 US Route 302 – Berlin (Barre-Montpelier Road)

## **Aquatic Nuisance Species Workshops**

Access Area Greeter Program Training Workshop – May 13, 2011 from 10AM-3:30PM, Capitol City Grange Hall, Montpelier, VT. Open to anyone who will be staffing or supervising an access area greeter program during Summer 2011. Those interested in starting a new greeter program are also welcome to attend. For more information contact [leslie.matthews@state.vt.us](mailto:leslie.matthews@state.vt.us) 802-241-3798.

Learn how to monitor your water for new introductions of harmful invasive species. Host a Vermont Invasive Patrollers (VIP) workshop at your lake this summer! For more information contact [leslie.matthews@state.vt.us](mailto:leslie.matthews@state.vt.us) 802-241-3798.

***Please send us your updated list of Association Officers and e-mail contact.  
Mail them to our P.O. Box or email them to us at [fovlap@vermontlakes.org](mailto:fovlap@vermontlakes.org)***



## **2011 Membership Dues**

**WE INVITE YOU TO JOIN OUR FEDERATION AND HELP PRESERVE VERMONT'S LAKES AND PONDS.**

( ) \$25.00 Association Member    ( ) \$15.00 Individual Member

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Association: \_\_\_\_\_

Contact Phone No.: \_\_\_\_\_ e-mail: \_\_\_\_\_

( ) We would like to show our support with the following additional donation \$ \_\_\_\_\_.

*The Federation is a 501c3 non-profit organization. Your contribution is tax deductible in accordance with I.R.S. regulations.*

*Checks payable to the Federation of Vermont Lakes and Ponds  
and mailed to our P.O. Box 421, Waterbury, VT 05676.*



## NEWSLETTER

P.O. Box 421  
Waterbury, VT 05676

### OFFICERS OF THE FEDERATION

Perry Thomas, President (Lake Eden)  
Andy Dales, Vice-President (Caspian Lake)  
Judy Davis, Treasurer (Little Hosmer Pond)  
Ginny Garrison, Secretary

Greg Allen, Director (Lake Morey)  
Art Brooks, Director (Lake Willoughby)  
Joe Ciccolo, Director (Lake Elmore)  
Ron Dreher, Director (Lake St. Catherine)  
Bruce Durgin, Director (Lake Morey)  
Al Muenster, Director (Halls Lake)  
Dick Simpson, Director (Lake Willoughby)  
Cindy Swanson, Director (Echo Lake)  
Don Weaver, Director (Lake Champlain)

## How is My Lake Doing?

*Adapted by Susan Warren and Ginny Garrison*

The Vermont Water Quality Division's Lakes and Ponds Section has developed the Vermont Lake Score Card to provide information to answer just that commonly asked question. Through the Lake Score Card, monitoring data is analyzed and interpreted to determine current lake status, which is then reported out in a simple, short, and educational format. The score card rates the condition of 375 Vermont lakes in terms of water quality, aquatic invasive species, atmospheric pollution, and shoreland and lake habitat. The score card reports on the condition using three colors to convey the meaning of complex data sets: blue = good conditions, yellow = fair conditions, and red = reduced conditions. Additionally, the score card provides a checklist of lake protection actions that lake users can take to care for their lakes. For more information on the Lake Score Card, see the Winter 2011 edition of the Division's newsletter *Out of the Blue*.

To access the Vermont Lake Score Card and learn about the condition of your lake, visit the Lakes and Ponds Section web site <http://www.vtwaterquality.org/lakes.htm> and follow the directions. Once in Google Earth, click on any lake from the map to receive the lake's score. There are also layers of specific information, such as Lay Monitoring Program data, aquatic plant species found in the lake, or fish species in the lake that can be opened by selecting the desired folder on the left side bar. You can also click the plus signs in the side bar to get a list of lakes with the selected information and navigate to a lake by clicking on its name. There is an amazing amount of information about your lake available at your fingertips on this web site!