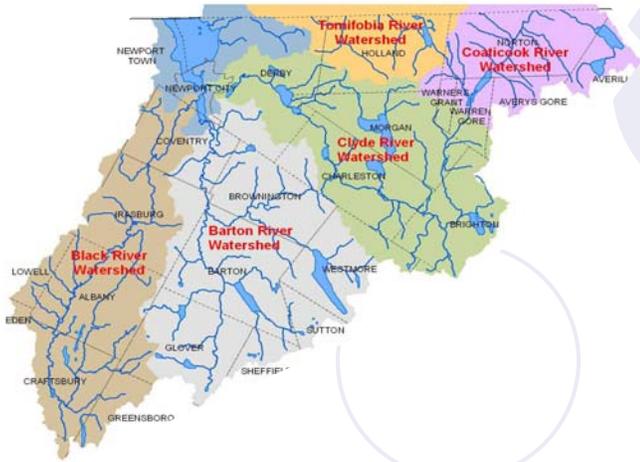


Lake Memphremagog , Tomifobia and Coaticook River Watershed Council Newsletter



Fall 2008

Issue 2

Learn about:

- Phosphorus pollution— where is comes from and what we can do about it.
- Fisheries in the watershed
- How roads effect waters in the basin
- Forestry management practices and water quality
- What other watershed and lake associations are doing

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Meetings to address phosphorus pollution

A combined meeting of the Memphremagog Watershed Association and Watershed Council was held on July 21st 2008 to discuss the issue of nutrient enrichment in the basin. This included a discussion of why levels of phosphorus are so important in lake environments, where this phosphorus comes from and how it moves into streams and then into lakes.

This discussion followed a prioritization of water quality issues in the basin including **phosphorus and nutrient enrichment, nonnative invasive species, aquatic habitat, and contamination.**

Increased phosphorus levels can lead to increased vegetation and algae growth, which can reduce the quality of

waters for recreational uses, and change the habitat. This has been a particular concern in Lake Memphremagog where phosphorus levels have exceeded the state standard and there have been blue green algae outbreaks in recent years. Phosphorus levels have also increased over time in Lake Seymour, and while conditions are still very good on this body of water, this may be a warning. Water quality sampling is being done on tributaries to Lake Memphremagog and Lake Seymour to try to identify sources of phosphorus coming from the watershed.



Blue Green Algae on Lake Memphremagog
September 23, 2008. Photo Stephan King

Where does Phosphorus come from? Some phosphorus comes from the application of fertilizers, manure or wastewater which all have dissolved phosphorus. Most phosphorus actually enters waters in Vermont attached to sediment or as organic matter called particulate phosphorus. All soil types even road gravels contain

(Continued on page 2)

Fisheries in the watershed

On August 30th, 2008 Lenny Gerardi of the Vermont Department of Fish and Wildlife gave a talk to the watershed council on fisheries in the Vermont portions of the St Francis River watershed. This included a discussion of existing species in the watershed, what they need to survive, and some of the major threats.

Fish need the following conditions to survive:

1. Clean gravel in the rivers that allows fresh oxygenated water to flow through as a spawning substrate for salmonid species
2. Rocks and wood structure in streams and lake-shores for hiding and feeding



3. Aquatic vegetation, many warmwater species need plant beds for spawning, feeding and fry protection
4. Some species need cold water

(Continued on page 2)

Phosphorus (continued)

phosphorus although finer particles tend to have higher levels.

The watershed can be broken down into three main land uses developed lands, agricultural lands and forested lands. The land use in the Lake Memphremagog and Lake Champlain watersheds is similar so the calculated export of phosphorus in a recent study in the Lake Champlain watershed can give a general idea of the relative proportion of phosphorus coming from each land use. Meetings will be held to discuss reducing phosphorus coming from sources in the watershed

including:

Roads- make up a majority of the developed lands in the watershed and are often a source of sediment due to erosion and stormwater.

Stormwater – Developed lands also produce runoff from impervious surfaces. This runoff often carries with it sediments and fertilizers and in some cases (stormwater in the City of Newport) goes directly into surface waters. Stormwater also increases the volume of runoff which can cause downstream erosion.

WW treatment and septic systems are also a source of

phosphorus although less so than nonpoint sources.

Agriculture is a significant source of phosphorus in the watershed through manure and fertilizer application and erosion from farm fields.

Forested lands produce the least amount of phosphorus per acre so maintaining forested lands is an important consideration, in addition to reducing erosion associated with logging operations.

Finally, **streambank erosion and stream conditions** can produce large amounts of sediment or can store sediments and phosphorus.

Land use	Memphremagog Watershed land use (1)	Lake Champlain Watershed land use (2)	Phosphorus loading from land use in the Lake Champlain watershed (2)
Developed	5%	5%	53%
Agriculture	15%	14%	39%
Forested	66%	66%	8%

- 1) Vermont Land Cover Classification Project, 1997
- 2) Updating the Lake Champlain Basin Land Use Data to Improve Prediction of Phosphorus Loading. LCBP Technical Report #54

Roads (continued)

(Continued from page 5)

work to increase funding sources that are targeted for this purpose.

5. Educate towns on the advantages of following locally adopted road standards in order to increase compliance

with these standards in the basin. Submit articles on reducing the impact of roads on water quality in the Vermont local road news that goes to town staffs.

6. Provide ANR bridge and culvert assessment results to towns in the basin so this infor-

mation can be used to help towns in prioritizing culvert replacement.

7. Encourage towns in planning for land use changes and resulting changes in hydrology on culverts, encouraging proper culvert sizing and rock aprons at outlets.

Fisheries (continued)

Lenny pointed out that habitat destruction in the form of soil erosion clogs up the cobble and gravel many species depend on in streams. Dams and other obstructions in the rivers are a movement problem for some species, as is water level (on lakes) and flow manipulations and improperly installed . DFW is also very concerned about the spread of disease and has recently instituted new bait fish rules to slow the spread of VHS (whirling disease).

Lenny's management suggestions included riparian zone management to

ensure good cover of vegetation, and sediment runoff controls on land uses such as agriculture, forestry and development. Lake Memphremagog is an international waterbody, with the deeper portions of the lake in Quebec and shal-



lower portions along with a majority of the watershed in Vermont, so consistent management of fisheries across the international border is important and has been done for a number of years.

“habitat destruction in the form of soil erosion clogs up the cobble and gravel many species depend on in streams”

Lenny Gerardi

Forest management and water quality

A watershed Council meeting was held on August 25th to discuss the relationship between forested lands and surface waters.

Gary Sabourin – Clean and Clear forester – State of Vermont discussed Acceptable Management Practices (AMPs), 24 practices in total, have been in place for logging in Vermont since 1987. If there is a discharge of sediment and these practices were not followed landowners and loggers can be held liable.

Scott Machinist – LandVest forester talked about how LandVest manages 12% of lands in the basin including large investment properties such as Heartwood 4 and 5 in the Coaticook River Watershed and other private lands under the current use program or where a forest management plan is desired by the owner of the property. Many of these lands have conservation easements on them so they will remain working forests, and some of these easements have stipulations about maintaining buffer strips or other practices.

Jim Horton - State of Vermont District Forester discussed how the Department of Forests Parks and Recreation manages state forest lands, but also plays a role in the forest management on wildlife management areas in the state. 83% of lands in the state are in private ownership so the department also works with private landowners on forest lands through the current use program as well as through the county forester who is available to advise private landowners on the management of private forested lands. More general information about the Department of Forests Parks and Recreation can be found on the Departments web site :

http://www.vtfrp.org/html/gen_geninfo.cfm

Nick Ecker Racz – Logger,

Forester discussed how one of the most important things that can be done to improve practices on forested lands is to provide education to the general public on the best ways to hire a logger and manage forested lands. Often times a landowner is approached by a logger, and no contract is made and the landowner does not end up with their objectives met through the logging job.

The following draft goals and strategies were developed for the basin plan:

Draft Goal Maintain forested lands in the basin and reduce sediment and phosphorus runoff, and impacts to aquatic habitat occasionally association with management activities on forested lands.

Draft Strategies

1. Increase educational opportunities and outreach to the general public, landowners, and loggers on good forestry practices and the mechanics of logging. Specific ideas included:

- Work with logging equipment distributors to provide information pamphlets on logging practices and contacts

when specific equipment is sold for private logging use.

- Organize and publicize a field tour of a logging operation on state lands to demonstrate BMP's, paired with tour of a problem site if possible.

- Organize a welcome kit with information for new landowners on managing forested lands as well considerations for hiring a logger.

- Support the LEAP Program.

2. Maintain extensive forested lands in the basin do to the water quality and habitat benefits through the current use program, Forest Legacy Easements and the creation of new or expansion of existing town forests.

3. Initiate a portable skidder bridge project in the basin to provide bridges for lease to local loggers and outreach on their use.

4. Discuss the development of a licensing process for consulting foresters and loggers in Vermont as recommended by the Watershed Council and as done in many other states in New England.

“one of the most important things that can be done to improve practices on forested lands is to provide education to the general public on the best ways to hire a logger and manage forested lands”

Nick Ecker-Racz



South Bay Trash Clean up

The Memphremagog Watershed Association in cooperation with the Agency of Natural Resources organized a trash clean up on South Bay. 40 people participated cleaning up over 50 tires, 100's of pounds of scrap metal and enough trash to fill a 20 yard dumpster. Next year plans are in the works for a similar event to be held along the Barton river in Orleans and Coventry.



South Bay Clean up participants and trash.

Photos by Valerie Dillion

Lake and watershed Association Updates.....



"The Essex and Orleans

Conservation Districts

buffering program provides an

inexpensive opportunity to

have native species planted on

your property"

Tamara Colten

Memphremagog Watershed Association

The newly formed Memphremagog Watershed Association had a busy second summer. The group:

- coordinated a trash clean up of South Bay (see page 3)
- hosted shoreline walks to look at the effects of erosion and see the benefits of buffer zones next to water bodies.
- hosted a demonstration shoreline stabilization project using native trees and shrubs.
- Applied for and received a grant to provide "Greeter/Monitors" at fishing access sites.
- Developed an informational hand-out packet on environmentally friendly products and local suppliers.
- Received a LaRosa Grant to sample water for testing by the state from seven tributaries to Lake Memphremagog for phosphorus, nitrogen, and turbidity.
- Sponsored a VIP (Vermont Invasive Patrollers) training session in Newport to train people to survey lakes and ponds for invasive species.
- Ran informational displays at the area spring and fall home shows and at Derby Line Community Day.
- Received a Clean and Clear Ecosystem restoration grant to develop riparian buffer zones on the Clyde River and at Prouty Beach.
- Has taken samples of cyanobacteria (blue-green algae) for testing

By King Boyd

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by the state for possible toxicity.

- Hosted a presentation by Milly Archer on town zoning and planning to protect water quality.
- Granted membership status with the Quebec-Vermont Steering Committee to work for improved water quality of the watershed.
- Continues to support the efforts of The State of Vermont, The Province of Quebec, MCI Inc., The NorthWoods Stewardship Center, and other organizations dedicated to improving water quality in lakes, ponds, rivers, and tributaries.

Contact King if you would like to join, get involved or learn more.

Echo Lake Association <http://echolakeassociation.net>

By Cindy Swanson

cinswanson@gmail.com.

The Echo Lake Protective Association developed a website this year. We listed all upcoming events for the summer so folks knew about local workshops and events and knew where to go to find them. We also linked a blog to the site so residents could talk to each other about issues of interest, like the loon chick that was born on the lake this summer. We were able to post pictures of the new loon chick, thanks

to Bob Wilson and his tele-photo lens! Lake residents and the East Charleston Community can now access information about Eurasian watermilfoil prevention, about the loons and how to keep them safe, and about general water quality issues. We are continually updating the site, so if you know of any water quality information you think would be useful, email Cindy Swanson at cinswanson@gmail.com.

The Echo Lake Protective Association also participated in a road survey with Linda Boudette of the Better Backroads program and Charleston Town Selectman, Tom Jensen. There were a couple of areas of concern in the lake where silt was accumulating and two other areas where we experienced algae blooms late last summer. After a survey of the lake shoreline, we figured the problems were more related

to road and drainage issues. So we surveyed the perimeter road around the lake with Linda and Tom. We found a range of problems. We applied for a Better Backroads Grant: Category A Road Inventory and Capital Budget Planning Project so we can take a proper inventory of all Charleston roads and come up with a long-term plan to fix the biggest problem areas.

Northeast Kingdom Lakeshore Buffering Program

By Tamara Colten Stevens; Essex County NRCD District Manager

There have been many successful shoreline protection programs instituted throughout Vermont over the years, and the Essex and Orleans County Natural Resources Conservation Districts are looking to bring such a program to lakes and ponds in the two counties.

Vegetative buffers of native plants have countless benefits, all of

which enhance and improve upon the value of your land as well as the property of your neighbors and the health of your pond. The planting program can minimize the cause and effects of nutrient loading in two ways: through active restoration with the planting of trees and shrubs, and education & outreach. Vegetated banks are also more aesthetically pleasing, attract many species of wildlife (especially birds), maintain cooler water

temperatures, improve fish habitat and swimming suitability, and enhance the biodiversity of your backyard.

The Essex and Orleans Conservation Districts buffering program provides an inexpensive opportunity to have native species planted on your property. We are in search of a few good demonstration sites to include some simple examples of shoreline plantings and a

professionally designed sign (or two) that would be visible to onlookers from land and/or water.

If you are interested in our buffering program and believe your property would work well as a demonstration site, we would like to speak with you. Please call Tamara at the Essex District office at 802-748-3885 ext. 114 or email tamara.colten@vt.nacdnet.net.

Roads and water quality

The Watershed Council held a meeting on reducing the impacts from roads on water quality. Roads are a source of phosphorus pollution and can impact aquatic habitat. All sediments contain phosphorus, even road gravel, so when roads or ditches erode and sediments wash into streams or winter sand washes off this carries phosphorus with it. Roads also alter flow patterns and can increase stormwater flows which can increase sedimentation and cause small drainages or streams to erode and sometimes gullies to form. Sediments not only carry phosphorus but can also reduce the quality of aquatic habitats. Finally culverts can cause erosion in stream systems and can be barriers to fish.

Roads cover over four percent of the basin, including over 1,300 miles of roads and some 300 miles of driveways, so roads are likely a factor in a significant proportion of the phosphorus that reaches Lake Memphremagog, as well as some of the other lakes in the watershed. A majority of the public roads in the watershed are managed by local towns (generally 80% state wide), but the state manages highways and local residents or road associations manage driveways and private roads.

Dale Perron- Vermont Agency of Transportation - District manager discussed how the Agency of Transportation (AOT) works hard to minimize impacts from roads on waters including a lot of work on culverts to ensure fish passage, as well as including erosion control, seeding and mulch on ditches immediately after they have been dug out. Salt and sand application is another area where AOT has tried to be efficient in it's use of these materials during winter months although Dale said many states have found that

sand has a larger environmental impact than salt.

AOT does provide some funding for towns to manage roads, and some cities and villages manage class 1 roads as they travel through the town (Newport City for example). Most towns have adopted local road standards including: minimum culvert sizing standards, ditch maintenance standards, and road gravel and subbase requirements.

Undersized culverts are a common issue since they cause a backwater above the culvert which causes sediment to drop out, and then the water shoots out the culvert and causes erosion downstream directly below the culvert and even further downstream and culvert washouts can wash tons of material into streams.

Louis Glodgett – Brownington Road Commissioner talked about how the Town of Brownington has worked on a number of projects addressing slides along the Willoughby River. One of these involved placing 3 + foot rock along the river and smaller rock along the bank up to the road. This project was funded through a stormwater mitigation grant. The town has also rocklined a ditch further up on Schoolhouse Rd through a Better Backroads grant and upgraded a number of small culverts over time.

Bob Merchant – Retired AOT - Town Road Planning Consultant revealed that towns primary focus when it comes to roads is keeping the roads passable. The Better Backroads program is great because it provides funds for towns to address water quality issues on roads, but there needs to be more funding to really address the magnitude of this problem and without additional funding it will be hard to



Route 111 after getting washed out when a beaver dam broke in 2003. Similar washouts are often caused by undersized culverts. Photo by Bruce Barter

address this issue effectively.

Linda Boudette – Better Backroads program, Northern Vermont RC&D

discussed here role to provide towns with technical assistance associated with Better Backroads grants. The three main issues she usually deals with are: undersized culverts, ditch maintenance, and slope failures.

The Better Backroads program provides two types of grants, one that pays for towns to do a road inventory (up to \$4,000) and one that pays for towns to complete a project (up to \$7,000) that will address a water quality related issue. Typical projects include: Stone lining ditches above 5% grade, forming new ditches on roads less than 4% grade and seeding and mulching, increasing the size of culverts and bank stabilization projects. Towns need to provide a 25% match for both types of grants. A link to the program is: <http://www.vt.nrcs.usda.gov/rc&d/bbcoverpage.html>

The meeting finished with the development of a draft goal and draft strategies to be included in the watershed plan

to address water quality issues associated with roads. These include:

Draft Goal: Reduce the impacts from roads on aquatic resources in the basin.

Draft Strategies:

1. Organize a road review committee to identify roads, ditches and culverts in the basin that are having an impact on water resources, focusing initially on towns which have not yet participated in the better backroads program.
2. Work with all towns in the basin to apply for at least one Better Backroad Grant to address one of the major water quality issues identified by the road review committee.
3. Host and advertize local workshops for road crews and commissioners on the best management practices to address road/water quality issues. Include a workshop in the Roads Scholar program on minimizing impacts from roads on surface waters.
4. Identify and promote funding sources for towns to address road/water quality issues, and

(Continued on page 2)

Lake Memphremagog , Tomifobia and Coaticook River Watershed Council Newsletter

This newsletter provides an overview of efforts in the Lake Memphremagog, Tomifobia and Coaticook River watershed to improve the quality of streams, lakes and ponds in the watershed so individuals and organizations can learn from each others work. Currently the Vermont Agency of Natural Resources is coordinating a watershed initiative aimed at identifying and implementing projects as well as drafting a plan to improve and protect water quality across all waters in the watershed with the involvement of watershed residents and groups in the form of a watershed council. The watershed council has identified nutrient enrichment, invasive species, aquatic habitat, and surface water contamination as priority issues to be addressed through this process. Hopefully many of you can participate in the watershed initiative but for those who can't we hope this newsletter can become a helpful resource so you can keep up with all that is going on and so you can get involved when an issue of interest comes up. Please contact Ben Copans at 751-2610 if you have any questions, suggestions or if you would like to become more involved.

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Upcoming Watershed Meetings, Events and Grants.....

Meetings - contact Ben Copans 751-2610 for more information

Nov 24th 6:30 Emory Hebard Office bldg. Memphremagog Watershed Council discussion on stormwater pollution

January (TBD) Memphremagog Watershed Association meeting presenting water quality sampling results

February (TBD) Discussion of shoreline development on lakes and ponds

April (TBD) agriculture in the watershed

May (TBD) River corridor planning meeting

Events for next summer (tentative)

- River Clean up
- Newport City riparian buffer plantings
- Upper Barton River riparian buffer planting
- Lower Barton River riparian buffer planting
- Memphremagog Lakes Discussion Forum

Ongoing efforts

- Lake Seymour and Memphremagog Water sampling
- Northwoods Stewardship Center stream geomorphic assessment
- Vermont Invasive Patrolers (on many lakes)
- Shoreline greeter programs

Grant opportunities

ANS grant Due: March 3rd
Supports aquatic invasive species control and spread prevention:
http://www.anr.state.vt.us/dec/waterq/lakes/html/ip_grantinaid.htm

LaRosa Grant Due: February
Supports water quality sampling (pending program funding)

Better Backroads grant
Supports towns in road surveys and projects to address water quality issues.
Due: in the early fall each Year (it's never too early to plan) (see page 5)

Northeast Kingdom Lakeshore Buffering Program (Page 4)

Section 319 program (Date TBD)
Supports nonpoint source pollution abatement
<http://www.anr.state.vt.us/dec/waterq/grants.htm>



May Pond wetlands in fall
Photo by Ben Copans