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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 embarking on a watershed initiative aimed at improving water quality across all waters in the watershed with the involvement of watershed residents and groups. In addition, a new watershed organization the **Memphremagog Watershed Association** has formed to address watershed issues that may be impacting Lake Memphremagog as well as other waters in the watershed. There are numerous lake associations in the watershed all dealing with common issues such as nutrient enrichment, aquatic nuisance species, and shoreline management. 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.

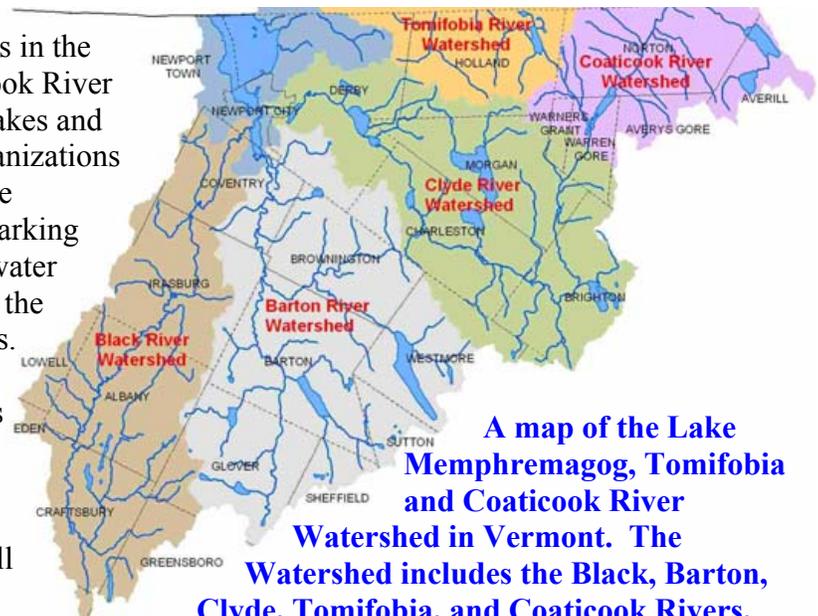
Thank You,

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A map of the Lake Memphremagog, Tomifobia and Coaticook River Watershed in Vermont. The Watershed includes the Black, Barton, Clyde, Tomifobia, and Coaticook Rivers, in addition to many of Vermont's most beautiful lakes and ponds.

Memphremagog Watershed Initiative update

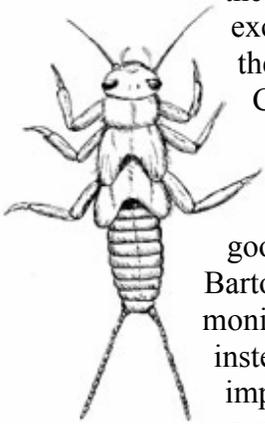
The Memphremagog Watershed initiative kicked off with a number of public forums in the fall of 2007. At these meetings the public was invited to identify important assets of waters in the watershed, threats and solutions. The top threats identified and the focus of the initiative include:

- **nutrient enrichment**, including streambank, road erosion, stormwater, and farm runoff.
- **Aquatic or riparian nuisance species** such as Eurasian watermilfoil, zebra mussels and didymo
- **shoreline development**, and impacts to aquatic habitat and increased nutrient levels
- **threats to fish and wildlife**, such as fish passage issues and increased temperatures

Following the public outreach meeting a watershed council was formed and meetings were held to cover background information on biological conditions of streams and rivers in the watershed, nutrient levels in lake memphremagog and it's tributaries as well the physical condition of rivers and streams, and the current state of agriculture in the watershed, each discussed in separate articles in this news letter. Future meetings are planned to identify projects and develop plans to address each of the major concerns.

Biological conditions on streams in the watershed

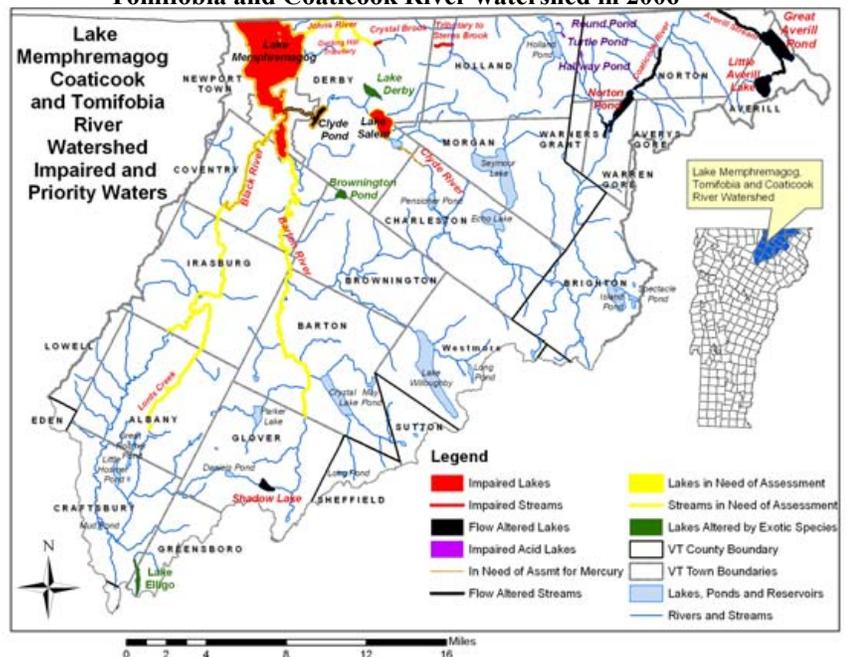
are monitored by the agency of Natural Resources through fish and aquatic insect surveys as discussed at a watershed council meeting on 11/28/07. Impaired stream reaches (sites) were identified in both Sterns Brook and Crystal Brook with fair to poor bug communities. The lower Johns River was also identified as having a poor fish community at site 1.4 and a good fish community at site 3.1 (As measured in miles from the river outlet). Bugs at one site on the Pherrins River were rated excellent and on another site on the Clyde River in East



Stonefly

Charleston was rated as good. A number of macroinvertebrate sites on the Black River were rated good to very good, a site on the Barton River was rated good while the Willoughby River was rated as excellent. Biological monitoring is a very efficient way to monitor streams because it measures the resource directly, instead of using measures of pollution as proxies, and biological monitoring can catch short duration impacts to streams because even weeks or months later because aquatic species take a while to recover.

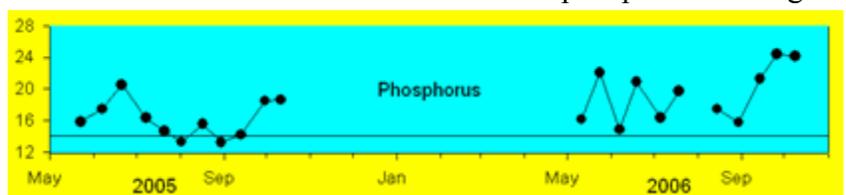
Impaired and altered waters listed for the Lake Memphremagog, Tomifobia and Coaticook River watershed in 2006



Nutrient levels in Lake Memphremagog and it's tributaries

A presentation to the watershed council of nutrient condition in Lake Memphremagog and major tributaries was made at a watershed council meeting on December 11th which showed:

- Vermont in lake monitoring results show that the Vermont mid-lake concentrations of phosphorus are high enough to indicate the lake is not meeting its phosphorus standard. However, South Bay is meeting its (higher) phosphorus standard.
- Littoral (shallow water) and shoreland conditions were mapped in both the Vermont and Quebec and results



Phosphorus levels in Lake Memphremagog which remained above the water quality standard (shown as the line) in 2005 -2006

identified areas where shoreline revegetation is needed, as well as tributary mouths where sediment accumulation is significant. Much of the Vermont portion of the shoreline is considered excessively “artificialized,” e.g. much of the natural vegetation has been removed and replaced with walls, rip rap and lawns. See: http://www.memphremagog.org/article.php3?id_article=115&lang=en for the report.

- Tributaries were monitored in Vermont by NorthWoods Stewardship Center. Phosphorus and nitrogen concentrations were routinely highest in the Johns River, followed (distantly) by the Black and then Barton Rivers. The Clyde River has the lowest concentration of measured pollutants, due probably to a combination of having the most forested watershed and the presence of numerous in-stream lakes and reservoirs. In the Johns River watershed a manure pit very near a stream bank was replaced this fall, and it is hoped that this will drop the phosphorus and nitrogen concentrations measured in 2008.
- The downstream ends of the Barton, Black and Clyde rivers in Vermont were monitored by VTDEC over the past two years for flow (volume), total phosphorus, nitrogen and suspended sediment. The results were consistent with those obtained by Northwoods; highest concentrations of pollutants were found in the Black, then the Barton and then the Clyde River (the Johns River was not included in the VTDEC sampling). See http://www.anr.state.vt.us/dec/waterq/lakes/docs/lp_monjointque-vtreport.pdf

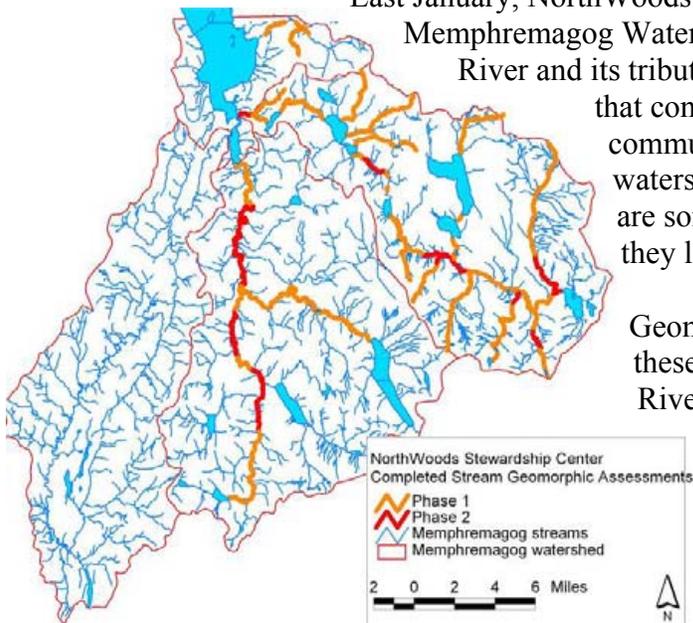
Clyde, Barton and Johns River Stream geomorphic assessment update

NorthWoods Stewardship Center is about to begin its third season of Stream Geomorphic Assessment fieldwork in the Memphremagog Basin. The purpose of these assessments is to identify non-point sources of sediment and nutrients in the watershed. Also, they allow us to evaluate instream habitat, the overall health of our streams and rivers, and identify potential restoration sites. The assessments are completed in two phases: Phase I involves evaluating watersheds and riparian corridors through aerial photos, topographic maps, and GIS data. Phase II involves wading or canoeing portions of the river while measuring and mapping features such as erosion, riparian buffers, bank armoring, and much more.



Photo: Measuring erosion along the Barton River during a Phase II Stream Geomorphic Assessment

Last January, NorthWoods presented the results of the Clyde River assessment to the Memphremagog Watershed Council. These results indicate that much of the Clyde River and its tributaries are in a healthy and stable state. There are many areas that contain high quality floodplain forests, wetlands, or other natural communities which filter nutrient inputs from the surrounding watershed and contribute to great aquatic habitat. However, there are some areas that could benefit from restoration efforts because they lack riparian buffers and contain actively eroding banks.



This summer, NorthWoods will continue Stream Geomorphic Assessments on the Barton and John’s Rivers. So far these rivers appear very different from the Clyde. The Barton River in particular contains many miles of actively eroding stream banks and much higher land use along its corridor, which likely contributes to the higher sediment and nutrient levels detected in its water.

To view results of the Clyde River assessment as well as past water chemistry reports, visit www.northwoodscenter.org/conservationscience.

Stream Geomorphic Assessments completed to date.

Lake and watershed association updates

As this is the first edition of this newsletter we only have an update from the Memphremagog Watershed Association, but in the future if anyone has an idea for an article or short update to include here from another lake association in the watershed please let me know.

The Memphremagog Watershed Association

The Memphremagog Watershed Association was founded in 2007 as an organization dedicated to the preservation of the environment and natural beauty of the Memphremagog watershed and to ensure its protection for generations to come.

The objectives of the MWA are:

- To promote the ecological awareness of people who live in, work in and visit the watershed area and enjoy all that it offers.
- To inform and educate the public and promote participation in the preservation of the environment and natural beauty of the watershed region.
- To work with other area lake associations, local, state and federal governments, as well as businesses, to develop guidelines and policies that protect and improve the quality of life in and around the watershed.
- To participate in the monitoring of the water quality of the lake and its tributaries, clean up and re-naturalize the shoreline and river banks and protect area plants and wildlife.



The MWA has written by-laws, elected officers and board of directors. Membership has steadily grown and 2008 will see a concerted effort to increase members in all areas of the watershed. Several educational workshops have been held to promote awareness of effective shoreline stabilization and pollution reduction practices. Working with Vermont State specialists, school groups and volunteers the MWA has begun to draw attention to environmental and water quality issues and increase interest and participation in its projects. A logo design contest was held during the winter at local schools and the winning entry can be seen above.

The Memphremagog Watershed Association is working with the Vermont Agency of Natural Resources to organize a clean-up of the South Bay of Lake Memphremagog on May 17. On the water and along the shore participants will work to remove debris and improve the environment. Refreshments will be provided, and participants will be entered into a raffle including prizes of a canoe, a composter, and a framed duck stamp print.

Other grant allocations will enable us to do the following this summer:

- Staff local boat launch areas with greeters/monitors to distribute information and watch for signs of potential invasive species on boats and trailers.
- Conduct water sampling at six tributaries of Lake Memphremagog.
- Host a VIP (Vermont Invasive Patrollers) training on July 17 in Newport.

Efforts will continue to provide information and education to the public in general. We will also continue to support the efforts of other lake, pond, and river groups. People seeking membership information can contact Robert Bowman at 802-334-5552 or email memphremagogwatershed@gmail.com. Information regarding ongoing or upcoming events can be obtained by calling Gail Lynch at 802-334-5819, or King Boyd at 802-334-2304.

What is the difference between the
Lake Memphremagog, Tomifobia and Coaticook River Watershed Council
and the
Memphremagog Watershed Association?

The watershed council is a diverse group of watershed residents, farmers, foresters, lakeshore owners and groups from around the Lake Memphremagog, Tomifobia, and Coaticook River watershed that are working to draft a watershed plan through a process facilitated by the Agency of Natural Resources to address water quality concerns in this watershed. **The Memphremagog Watershed Association** is a newly formed organization similarly focused on improving water quality in Lake Memphremagog and is watershed (so does not include the Coaticook and Tomifobia Rivers) but is made up of paid members and so has the ability to apply for and follow through on grants. **The Watershed Council and Association** will be working together in developing and implementing the watershed plan, and the association has already applied for grants to assess water quality, and address the issue of invasive species in the watershed, which are also issues that have also been identified by the watershed council. The collaboration of both these groups will allow us to effectively identify and implement strategies to improve the quality of the lakes and rivers in this watershed.

Agriculture in the Memphremagog, Tomifobia and Coaticook Watersheds

Representatives from the Association of Conservation Districts, Agency of Agriculture, Natural Resources Conservation Service and a local Farmer presented information on the status of farming and water quality in the Lake Memphremagog Watershed at a watershed council meeting on March 26th.

Susan Alexander of the Association of Conservation Districts presented information on the number of farms in Orleans County which has increased slightly between 1992 and 2002, and the average size of farms and total acreage of farms which has dropped significantly. The number of dairy farms has dropped by nearly 50% from 1987 to 2002, with a smaller but significant reduction in the number of cows, although total milk volume in the watershed has probably increased. The acreage of corn grown in the county has increased considerably in the last 5 years, and is likely to show additional increases as corn prices have recently increased, possibly due to demand for corn to make ethanol.

Phil Benedict of the Vermont Agency of Agriculture described the three levels of regulatory oversight on farms. Accepted Agricultural Practices (AAPs) are applicable on all farms, and include such things as the winter manure spreading ban, 10 foot buffer along waters required on cropland, soil testing, and limitations on soil erosion from farm fields. In addition Medium Farm Operations (200-699 Mature Dairy Animals) have a general permit that as just come into effect and Large Farm Operations (700+ Mature Dairy Animals) have had to have individual permits since 1995. Both permits require an approved nutrient management plan, and have a prohibition of discharges from production areas.

Assistance Programs

Best Management Practice (BMP) assistance – fund manure storage - barnyard improvements – silage bunkers- clean water diversions, animal fencing and streambank stabilization. **Conservation Reserve Enhancement Program (CREP)** – funds the planting of grasses and enhanced planting of trees adjacent to surface waters through a rental rate payment and signing bonus, and by covering installation costs. **Nutrient Management Planning Assistance Grants** – Financial assistance for the development, maintenance, and implementation of Nutrient Management Plans (NMPs) to reduce agricultural non-point source runoff. **Farm Agronomic Practices** – Provides Financial assistance for NMP maintenance and soil-based practice implementation to Improve soil quality, Increase crop production, Reduce erosion and agricultural waste discharges. Eligible practices include NMP Maintenance, Cover Cropping, Strip Cropping, Conservation

Crop Rotation, Cross-Slope Tillage **Alternative Manure Management** – Provides funds to assist farms address manure issues through methane digestion/electrical production and solid separation/drying

Dave Blodgett with the Natural Resources Conservation Service in Newport helps farmers identify issues such as soil and streambank erosion, develop plans to address these issues if landowner is interested and provides financial assistance to help fund these projects. Much of the funds go to address agricultural waste runoff which includes barnyard and manure pit construction (\$1.2 million is budgeted for this year to cover 8 projects) and this program partners with state programs such as the BMP assistance program and the CREP program.

Richard Nelson long time dairy farmer in the watershed described one of the main changes in recent years related to water quality is the use of nutrient management plans for large and now medium sized farms. These plans take a look at the nutrient levels on all fields and provide a fertilization plan for the efficient use of nutrients on the farm. This ensures proper levels of phosphorus, nitrogen and potassium in the soil, maximizing crop growth but minimizing runoff of excessive nutrients.

Future meetings of the Watershed Council will get into more detailed discussions of strategies to assist farmers in improving practices and reducing water quality impacts from farming in the watershed.

Upcoming Meetings and events in the Watershed

Meetings - contact Ben Copans 751-2610 for more information on any of the following meetings

- April 21st Memphremagog Watershed Association meeting at 7:00 at North Country High School. This meeting will focus on projects in the works for this summer (see page 4)
- April 30th Memphremagog Watershed Council meeting at 6:30 at the Emory Hebard building in Newport. Fish in the Lake Memphremagog watershed
- May 19 Memphremagog Watershed Association meeting on riparian buffers (Location to be determined)
- May 28th Memphremagog Watershed Council meeting-Issue prioritization-6:30-Lake Region High School

Volunteer events

- April 12th Barton River Volunteer tree planting – Volunteers will be meeting at the Lake Region High School on April 12th to plant willow species along the banks of the Barton River.
- May 17th Lake Memphremagog South Bay Trash Clean up – Come help clean up South BAY!!! Volunteers will be meeting on the morning of May 17th to clean trash out of South Bay. A raffle will be held (with a canoe and other prizes). Contact Ben Copans for More information at (802) 751-2610
- July 17th VIP training – Concerned about invasive species in your local lake? Come to this training and learn how to set up an early identification program for invasive aquatic species. By completing this training and working with local volunteers you can identify invasive species before they become well established and while control efforts are more effective. Contact King Boyd at (802)-334-2304

Ongoing volunteer opportunities

- Stream geomorphic assessment volunteers are needed to help with an ongoing study of the Barton River being done by the NorthWoods Stewardship Center (see page 3). Contact Melissa at 802-723-6551 x103.
- Lake Memphremagog Water Quality sampling. Contact King Boyd at (802)-334-2304

Grant opportunities

- 319 nonpoint source project deadline April 29th <http://www.anr.state.vt.us/dec/waterq/grants.htm>