

CASIN' THE BASIN

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Lake Champlain
Basin Program

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Reducing Bacteria in Agricultural Runoff: New research suggests manure storage helps

By Don Meals and David Braun

Don Meals



Researchers make it rain on an East Montpelier, VT hayfield to test the effect of manure treatments on bacteria levels.

Every summer some Lake Champlain beaches are closed for short periods of time because high bacteria levels make swimming unsafe. While the bacteria can come from many culprits, including pet, wildlife and human waste, bacteria-laden manure runoff from dairy cows was targeted as one important source to control in a recent LCBP-funded study.

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Looking Ahead to Spring

Spring is a busy time for everyone working to clean up Lake Champlain. The LCBP has begun preparing the 2005 *State of the Lake Report* by assembling information and meeting with regional experts at a workshop in Plattsburgh, NY. The report will answer a selected set of key questions that are important to the public about the condition of Lake Champlain. It will be released in June throughout the Basin, including a program co-hosted with ECHO at the Leahy Center for Lake Champlain in Burlington, VT.

Our first call for proposals in our program with the Army Corps of Engineers brought in many good project requests. In May, we hope to announce nearly a million dollars in new watershed projects by the Army Corps and their local community partners.

Planning for the 400th anniversary of Samuel de Champlain's arrival in the Basin continues. The Vermont and New York Quadricentennial Commissions are working with partners in Québec, and with the LCBP, on joint strategic planning for the years ahead.

Public meetings through the past year have underscored the growing public awareness of and commitment to the challenges in cleaning up the Lake, especially the northern and southern segments. Strong leadership from our US Senators held LCBP funding steady for 2005. Governor Pataki recently announced another 104,000 acres of Adirondack conservation lands and Bond Act funding for nonpoint source pollution abatement. Governor Douglas has proposed unprecedented Clean & Clear funds to implement the Lake Champlain TMDL and the management plan, *Opportunities for Action*.

This spring I hope that you, too, will plan new ways to take extra steps to reduce the pollution of beautiful Lake Champlain.

- Bill Howland
Lake Champlain Basin Program Manager



A skater glides across smooth ice as the sun sets over the Adirondacks on the broad Lake.

About the Lake Champlain Basin Program

The Lake Champlain Basin Program (LCBP) was created by the federal Lake Champlain Special Designation Act of 1990. Our mission is implementing the Lake Champlain management plan, *Opportunities for Action*. Program partners include New York, Vermont, and Québec, the US Environmental Protection Agency and other federal agencies, and local government leaders, businesses, and citizen groups. The Lake Champlain Steering Committee (sidebar) leads the LCBP. The LCBP receives annual US federal appropriations. Many sources fund Plan actions including federal, state, local, and provincial agencies, and contributions from local communities, businesses, and individuals. Visit our website at www.lcbp.org to learn more, or call (800) 468-5227 in NY or VT.

LCBP Awards Nearly \$175,000

Since August 2004, the LCBP has awarded nearly \$175,000 to 39 local projects that address priority issues in *Opportunities for Action*. However, the actual amount requested exceeded \$518,000. The LCBP thanks all the volunteer reviewers who spent many hours making difficult recommendations as they read through so many worthy applications.

Education and Outreach Grants

Ag-lands and Wetlands Program and Training Material

Boquet River Association \$3,000

Community Water Quality Education Training

Middlebury Area Land Trust \$3,825

Educational Enhancements for Canal Schooner

Lake Champlain Maritime Museum \$4,225

Interpretive Panels for Fort Montgomery

Village of Rouses Point, NY and the Town of Alburg, VT \$2,000

Lake Friendly Gardening Demonstrations and Awareness

Cornell Coop. Extension of Clinton County \$5,000

Macro-Invertebrate Collection Tools

Winooski Valley Park District \$350

Southern Lake Champlain Education Center

Poultney-Mettowee NRCD \$3,800

Toxic Blue-Green Algae Public Forum

Lake Champlain Committee \$4,500

Partnership Program Grants

Champlain Valley Clayplain Forest Project Outreach

Middlebury Area Land Trust \$2,817

Driveway Stormwater Runoff Control Demo

Boquet River Association \$3,412

Essex, NY Bicentennial Visit by the *Lois McClure*

Lake Champlain Maritime Museum \$2,136

Lake Champlain Important Bird Area Outreach

Audubon Vermont \$4,200

Lakes Study Project

Castleton Elementary School \$1,985

Outreach for Calais Lakes and Ponds

Calais Lakes and Ponds Working Group \$1,800

"Par Course for the Mind" Shoreline Trail

Friends of Point au Roche State Park \$2,500

Prototype Traveling Exhibit: "19th Century Sailor's Life"

Battle of Plattsburgh Association \$5,000

Reducing Road Runoff to the Winooski River

Cross Vermont Trail \$5,000

Watershed Steward at Buck Pond Boat Launch

Rainbow Lake Association \$3,550

Wetlands, Beavers and Water Quality Student Project

Keene Central School \$3,000

Local Implementation Grants

BMPs to Control Semi-Aquatic Invasive Plants

Boquet River Association \$8,460

Conservation Nursery Program Development

The Intervale Foundation \$8,250

Eurasian Watermilfoil Control on Lake Colby

Lake Colby Association \$8,200

Improved Sediment Traps: Design, Training & Installation

Essex County Dept. of Public Works \$5,785

Blue-Green Algae Monitoring Project

Lake Champlain Committee \$7,500

Missisquoi Watershed Phosphorus Reduction Program

Missisquoi River Basin Association \$10,000

Sucker Brook Avulsion Stabilization Project

Town of Williston VT \$10,000

Winooski Valley Park District Invasive Species Project

Winooski Valley Park District \$6,250

Lake Placid's Snow Storage Upgrade along Chubb River

AuSable River Association \$8,000

VYCC/Missisquoi National Wildlife Refuge Partnership

Vermont Youth Conservation Corps \$10,000

Organizational Support Grants

In August 2004, \$25,000 in small grants was awarded to the groups listed below to assist with organizational needs. Ten of eighteen proposals were funded from a total request of \$69,227.

Intervale Foundation, Boquet River Association, Friends of the Winooski, Poultney-Mettowee NRCD (for Watershed Association), Missisquoi River Basin Association, Paul Smith's (Lower Saranac Lake Stewardship Program), Lamoille NRCD (for Watershed Association), AuSable River Association, LaPlatte Watershed Partnership, St. Albans Area Watershed Association.

WVPD



A grant to the Winooski Valley Park District allowed local students to create posters about water quality on the Colchester bike path.

LCBP to Create Grant Database

Since 1992, the LCBP has awarded more than \$2.75 million to 559 local grants. In 2005, the LCBP will begin building a searchable grant database on the LCBP website. The database will allow users to search and classify past grants into groupings by organization, by watershed and by location, and will provide brief summaries and contact information. We hope this database will increase information-sharing about projects, which has been requested by local organizations. In the meantime, a list of past LCBP grants is online at www.lcbp.org/grantdata.htm or contact the LCBP office.

Dave Braun

Continued from page 1.

Problems with Pathogens

A single dairy cow can shed up to one billion fecal organisms per day. This suggests that runoff from agricultural land contributes to high bacterial levels or pathogens in waterways, which may trigger beach closures on Lake Champlain. Pathogens in cow manure can include *Salmonella*, *Campylobacter*, *Cryptosporidium*, *Giardia*, and *E. coli* (O157:H7 strain). Humans exposed to these pathogens while swimming may suffer skin rashes, sore throats, and gastrointestinal illness. For most people these illnesses are non-threatening; however, young children and people with compromised immune systems can be severely harmed.

Protecting human health is one of the highest priorities in the management plan for Lake Champlain, *Opportunities for Action*. But, unlike more familiar problems like soil erosion, effective practices to control bacteria in farm runoff are not widely known. To learn more, the Lake Champlain Basin Program (LCBP) funded \$50,000 towards the study, *Demonstration of Methods to Reduce Indicator Bacteria Levels in Agricultural Runoff in Vermont*. The study was conducted by David Braun of Stone Environmental, Inc. and Don Meals of Ice.Nine Environmental Consulting during 2003. The goal was to test some low-cost actions that farmers could take to reduce pathogens in agricultural runoff and to recommend a multiple-barrier approach to protect Basin waters from pathogens.

Field Research

Several factors can kill bacteria in manure, such as heat, solar radiation, drying, and predation by other microorganisms," said researcher Don Meals. "To determine what would be most effective, we created some of these conditions in forty test plots on an East Montpelier hayfield and a Williamstown cornfield."

The first test was to determine whether storing the manure before spreading it on the field would reduce bacteria. Plastic wading pools were set up as mini-manure storage pits. Manure was aged (without adding additional fresh manure) in some pools for thirty days and in others for ninety days. For each trial, the researchers spread aged and fresh manure by hand on the plots. Each plot measured five by ten feet (1.5 x 3m).

The researchers also studied the effect of vegetation height and soil tillage on the manure application. Eighteen of the hay plots had low hay

stubble (2-3 in. or 5-7cm) and eighteen plots had higher stubble (5-6 in. or 13-15cm). The manure on some of the cornfield plots was incorporated by tillage, but left on the soil surface on other plots.

"Making it rain on schedule was the most innovative part of the experiment," said researcher David Braun. "We built a rainfall simulator for controlling the timing and intensity of rainfall to produce runoff at prescribed times, which allowed us to study the effect of time delay from manure application to runoff. On some plots, manure was applied the day before we made it rain, whereas on other plots, manure was applied three days before rain. We then tested the difference in runoff bacteria levels. Without the simulator, we might have waited a long time for a rainstorm large enough to cause runoff, especially given the dry conditions. This would have rendered all treatments pointless."

Effectiveness of Manure Storage

The results confirmed the incredible pollution potential of manure runoff. Runoff from plots that received fresh manure had average *E. coli* counts of 190,000 to 2,400,000 organisms per 100 ml. (The Vermont water quality standard for swimming is just 77 *E. coli* organisms per 100 ml.) However, the use of experimental storage showed a dramatic decline in *E. coli* bacteria in the runoff.

In both the cornfield and hayfield trials, runoff from plots treated with 30-day old manure averaged 97% fewer *E. coli* organisms than did runoff from plots on which fresh manure was applied; runoff from plots treated with 90-day old manure had more than 99% fewer *E. coli* than runoff from fresh manure treated plots.

"We were really impressed by the corn land runoff trial," said Don Meals. "On the plots that received 90-day old manure, the *E. coli* levels were similar to runoff from control plots that received no manure."

Vegetation Height, Tillage and Rainfall

Other factors tested had a significant, but less pronounced effect on *E. coli* levels in runoff. In the hay and corn land experiments, a



Wading pools were turned into mini-manure storage pits to test the effects of aging the manure on bacteria levels.

delay of three days between manure application and a simulated rainfall yielded a 50% reduction in *E. coli* in the runoff compared to a one day delay in rain. The hay land plots with higher vegetation tended to yield runoff with lower *E. coli* levels than plots with shorter vegetation, although the effect was inconsistent. Bacteria that stuck to long grass blades may have been exposed to higher temperatures, more sunlight and more drying – all conditions that hasten die-off – than on the shorter grass plots where more manure went directly onto the soil.

Finally, incorporating the manure by tillage reduced *E. coli* levels in runoff by 60% for corn plots treated one day before rainfall. After a three-day delay, incorporated and non-incorporated plots had similar *E. coli* levels. However, the most important effect of tillage was on the generation of runoff itself. By loosening the soil, tillage delayed the onset of runoff. In a full-scale field application, this effect could greatly reduce *E. coli* loss, because the amount of runoff would likely be reduced or even eliminated if the manure had been recently incorporated, especially during small storms.

Recommended Practices

Combining these results with information from other research reports, the project investigators recommend a series of practices as a multiple barrier approach to reduce indicator bacteria levels in agricultural runoff in the Lake Champlain Basin.

Among others, the recommended practices include:

- Store manure for about 90 days without adding fresh manure.
- Avoid manure application to frozen or snow-covered ground.
- Avoid spreading manure during heavy rainfall, when the soil is saturated, or when tile lines are flowing.
- Watch the weather: avoid spreading manure less than three days before rain is forecast.
- On corn land, incorporate the applied manure by tilling before the next rain.
- On hay land, allow the hay to grow about 6 in. (15cm) high before applying manure.
- On pasture land, use fencing or other means to eliminate livestock access to streams and other water courses.

The Lake Champlain Basin Program expects to publish the full report of this study, *Demonstration of Methods to Reduce Indicator Bacteria Levels in Agricultural Runoff in Vermont*, during spring 2005. Contact the LCBP for a copy. For additional information about the project, contact Don Meals at dmeals@adelphia.net or David Braun at dbraun@stone-env.com.



E. Coli and Beach Closures

Public beaches are sampled for elevated levels of fecal coliform and/or *E. coli*. (Fecal coliform and *E. coli* are two different measures of the presence of bacteria from fecal sources. Fecal coliform is the name for the large group of bacteria from fecal sources whereas *E. coli* is an indicator whose presence is strongly correlated with the presence of pathogens.) When high levels are found, preventing the transmission of disease to humans usually means closing beaches. Unfortunately, water testing is often difficult for private beach owners and for popular swimming areas that are not monitored by health departments. Swimmers should use caution at these areas after heavy rainfall, which can wash pathogens and other pollutants into the water.

During the summer, information about *E. coli* and the water quality at Burlington, VT beaches is at www.burlingtonecoinfo.net. The Town of Colchester, VT also monitors Malletts Bay. Call the Town at 802-654-0728 for more information.

Miner Institute

Students are learning about CAFO regulations through a new Miner Institute course.

New York Agricultural News

Miner Offers New Course

Through an LCBP grant, the Miner Institute in Chazy, NY created an accredited education course that will provide environmental science students and regulatory professionals with skills to interpret regulations, such as the Concentrated Animal Feeding Operations (CAFO) regulation that will define the dairy industry's future. The Miner Institute's goal is to make sure that trained personnel are available to assist farm compliance with regulations. The course was piloted in the fall and an evaluation will be ready this spring. The CAFO legislation requires regulators that can understand environmental law and current practices in animal agriculture. Instructors from Cornell, Miner Institute, Soil and Water Conservation Districts, UVM, and the private sector participated. For further information contact Miner Institute at (518) 846-7121 or visit www.whminer.com.

AuSable and Boquet River Watersheds Chosen to Pilot Program

The AuSable and Boquet River watersheds are among 200 watersheds nationally and one of five in New York invited to participate in a new agricultural program, called the Conservation Security Program (CSP). The CSP program, enacted by Congress, is designed to reward farmers financially for long-term stewardship and for protecting and improving the environment. An increase in participation through the CSP will likely reduce agricultural nonpoint source pollution to Lake Champlain. The AuSable and Boquet River Associations will help the USDA provide program information to local farmers. For more details, contact Cordelia Sand, BRASS, at (518) 873-3688.

Dick Furbush Honored

Dick Furbush, Captain of the University of Vermont research vessel *Melosira* received the Lake Champlain Committee's 2004 Environmental Legacy Award. Dick was honored for his work with students and scientists and his Lake stewardship during his 39-year captainship. The LCBP would like to acknowledge Dick's help with the Champlain Basin Education initiative (CBEI) educator workshops. His love of the Lake and expertise is inspirational for classroom teachers. Learn more about the *Melosira* at www.uvm.edu/envnr/?Page=melosira/default.html.

UVM



Caption Dick Furbush aboard the *Melosira*.

Shoreline Handbook Receives Award

The *Shoreline Stabilization Handbook for Lake Champlain and Other Inland Lakes* was selected as the Northern New England Chapter of the American Planning Association and the Vermont Planners Association's 2004 Outstanding Project of the Year. Outstanding Projects reflect the highest achievement of community planning efforts. The 50-page full-color guide was produced by the Northwest Regional Planning Commission (NRPC), and several Vermont and New York groups. The LCBP provided \$10,000 towards the project. For a free copy, call the NRPC at 802-524-5958, or view it online at www.nrpcvt.com/shorehndbk.pdf.

B a s i n B

An eye on what's new on a



LCBP

LCBP Resource Room staff Laura Hollowell with ECHO's *Current Waves* exhibit.

LakeNet Exhibit at ECHO

Last fall, LakeNet teamed up with ECHO at the Leahy Center for Lake Champlain, the LCBP and other partners to create "Wide World of Lakes," a temporary, hands-on exhibit at ECHO. Funding was provided by the U.S. Environmental Protection Agency New England Office. The exhibit was ECHO's first "work-bench", designed to explore lake and watershed issues on a rotating basis. The World Lakes exhibit highlighted the physical diversity of world lakes, and included interviews with people from many nations discussing the economic and social importance of their lakes. Although the work bench has changed to a new topic, the LCBP Resource Room is stocked with new books, maps and information about global lakes, thanks to our partnership with LakeNet. For more information about LakeNet, call (410) 268-5155 or visit www.worldlakes.org.

Adirondack Invasives Program Recognized

Congratulations to the Adirondack Park Invasive Plant Program (APIPP) for receiving an "Exemplary Ecosystem Initiative" award from the Federal Highway Administration (FHWA). The FHWA recognized APIPP for its control of invasive species, such as *Phragmites*

and Japanese knotweed, along roadway corridors and its invasive plant mapping and detection systems. APIPP is a collaboration among the NYS Department of Transportation, the Adirondack Park Agency, the Invasive Plant Council of New York, and the NYS Department of Environmental Conservation, and nonprofits, including The Nature Conservancy and the Boquet River Association. For more information, contact Hilary Oles, APIPP Coordinator, at (518) 576-2082 or visit www.adkinvasives.com.

Michael R. Martin Elected NALMS President

Michael R. Martin, president of Cedar Eden Environmental in Saranac Lake, NY, was elected president-elect of the North American Lake Management Society (NALMS) in November. NALMS' mission is to forge partnerships among citizens, scientists and professionals to foster the management and protection of lakes and reservoirs. It has more than 10,000 members. As the founding executive director of the Adirondack Aquatic Institute, Martin helped establish a volunteer monitoring program and brought to light critical water resource issues facing the Adirondack region. For more information, contact Michael R. Martin at (518) 891-9475.

u l l e t i n

nd around Lake Champlain!

BRASS



Last summer's Boquet River Bio-Blitz.

Robin Ulmer Retires

The LCBP wishes Robin Ulmer a happy and healthy retirement from the Boquet River Association (BRASS), after fourteen years as Executive Director. The LCBP acknowledges Robin's superb effort in the watershed and also her deft handling of the numerous LCBP grants BRASS received over the years. During her tenure, Robin hosted guests from Lake Champlain's Sister Lake, Lake Toba in Indonesia, and traveled to Lake Biwa in Japan and Lake Ohrid in Macedonia. For more information about BRASS, contact their new director, Cordelia Sand, at (518) 873-3688 or visit www.boquetriver.org. Good luck, Robin and welcome aboard, Cordelia!

Vermont CAC Action Plan Available

The Vermont Citizens Advisory Committee (CAC) has released its *2005 Action Plan*. The CAC's 2005 priority initiatives are: secure full funding to implement the Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) by 2009; support the development of a system to monitor and measure the effectiveness of water quality improvement programs and communicate those results to the public; prevent the spread of nonnative aquatic nuisance species; and reduce the human health risks from toxic substances and other water related hazards such as pathogens and blue-green algae. For more information

about the CAC contact Michaela Stickney at (802) 241-3619 or read the plan online at www.lcbp.org/committee.htm.

Land Cover/Land Use Update

The LCBP held a Land Cover/Land Use Change Workshop on October 15th, 2004 in Burlington, VT to discuss updating the land cover data for the Lake Champlain Basin. More than sixty-five regional GIS (Geographic Information Systems) and remote sensing specialists spoke about the need for reliable current land use data and about acquiring new data. This information is vitally important because the existing basin-wide land cover data is from 1992. Updated information is needed for the phosphorus loading models used for the Lake Champlain watershed. The advice gained from this workshop will help inform an update the land use data and analyze land use change. The State of Vermont's Clean and Clear Program will make \$75,000 available through the LCBP for the project. For more information contact Meg Modley, Assistant Technical Coordinator, at mmodley@lcbp.org or (802) 372-3213.

Jane Potvin "Love the Lake" Series



The LCBP is offering a free winter speaker series in memory of our co-worker, Jane Potvin, who loved to bring locals together to talk about Lake Champlain. The speakers will all appear at the LCBP offices at 54 West Shore Road, Grand Isle, VT. New York residents can easily walk from the ferry. Coffee, tea and desserts will be served. Please join us!

Home Sweet Home: Great Blue Heron Rookeries on Lake Champlain's Islands
Zoe Richards, UVM Wildlife Biologist
March 17, 2005, 6:30-7:30 p.m.

Aquatic Invasive Species and the Champlain Canal: Would a Barrier to Lake Champlain Make Sense?
Mark Malchoff, Aquatic Resources Specialist,
Lake Champlain Sea Grant
March 24, 2005, 6:30 - 7:30 p.m.

Upcoming Events

- Memorial Day Weekend, 2005: **Bluff Point Lighthouse Relighting**. Clinton County Historical Association (518) 561-0340
- June 18, 2005, 10am: **Navy Memorial Dedication** on Burlington Waterfront. Dr. James Austin (802) 658-5682
- June 23, 2005, **LCBP State of the Lake Report released**. (802) 372-3213
- June 25 & 26, 2005: **Voices for the Lake Weekend** at ECHO. (802) 864-1848 or www.echovermont.org

- June 29, 2005: **Bon Voyage Party for Schooner Lois McClure**. (802) 475-2022 or www.lcmm.org
- July 9, 2005: **28th Annual Mayor's Cup Regatta**, Plattsburgh. (518) 562-9708 or www.mayorscup.com

LOTS more events are on www.lcbp.org on our **Watershed Activity Calendar**. To post an event, email your information to: lhollowell@lcbp.org.



Sea Grant Lake Champlain NEWS

Lake Champlain Sea Grant (LCSG) has been busy with extension and outreach programs. Last fall, Plattsburgh State (PSU) graduate student Doug Furman joined LCSG to deliver watershed science programs to northern New York schools. About 175 students in Lake Placid, Essex and Cumberland Head have been reached, and about 100 teachers have been contacted.

LCSG has collaborated with the Friends of Burlington Gardens on the “Business Friends of Englesby Brook” project. Englesby Brook is an impaired watershed in Burlington, Vermont. The project is informing non-residential property owners about water quality and pollution prevention issues, and is providing guidance on reducing pesticides and fertilizers in landscaping. About 30% of the contacted businesses have agreed to participate.

Mark Malchoff, LCSG Aquatic Resource Specialist, is working with NYS specialist Chuck O’Neill of SUNY Brockport to develop water chestnut educational materials and a website. In cooperation with several other partners, LCSG completed the project, *Analyses of the Feasibility of Champlain Canal Barrier Options*, which was funded by the National Sea Grant Office. Upcoming projects include investigating potential exotic zooplankton introductions to the Lake.

Sea Grant research funds allowed two scientists to experiment with ultrasound as a potential water chestnut control. Dr. Jun-Ru Wu, UVM Department of Physics, and Dr. Meiyin Wu, PSU Earth and Environmental Sciences, reasoned that energy ultrasound could rupture water chestnut leaf petioles, which are air bladders that allow the weed’s leaves to float. Rupturing the air bladders would cause the plants to sink and deny them access to the sunlight necessary for survival. Initial laboratory tests resulted in the successful rupture of air bladders. In 2005, the researchers will do an environmental assessment and cost-analysis of this technology.

For more information contact Mark Malchoff at (518) 564-3036 or Jurij Homziak at (802) 656-0682.

Alfred F. Cofrancesco, Jr., USACOE



Water chestnut was recently the subject of new Sea Grant research and is an important species in the updated nuisance species management plan for the Lake.

Aquatic Nuisance Species Update

In January 2005, the *Lake Champlain Basin Aquatic Nuisance Species Management Plan* revision was approved by the LCBP and submitted to the National ANS Task Force. The Lake Champlain plan was the first revised plan completed nationally. The revision also completes a task called for in *Opportunities for Action*. The plan describes the extent and severity of ANS concerns in the Basin and outlines specific goals, strategies and actions to address them. Approval by the National ANS Task Force allows Vermont and New York to qualify for a cost-share grant program to implement the plan’s priority actions. Existing projects funded through this grant include: Lake Champlain water chestnut management, public outreach to help prevent the spread of ANS, and education for law enforcement officials on ANS regulations. For more information, contact Lisa Windhausen at lwindhausen@lcbp.org or (802) 372-3213

The 3rd Annual Water Quality Conference, “Managing Aquatic Nuisance Species in the Adirondack Park”, will be held on August 15-17 at Paul Smith’s College. Speakers will describe the state of ANS management in the Adirondack Park and provide guidance to citizens on ANS management. The audience will also participate in a workshop to develop an ANS management plan for the Park. For more information, email Daniel L. Kelting at keltind@paulsmiths.edu or call the LCBP .

Public Input Received by LCBP and CACs

Despite the overlap with October’s exciting baseball playoffs, the LCBP’s public input meetings were well attended. Hosted in coordination with the Vermont and New York Citizens Advisory Committees (CACs), three meetings were held to obtain comments on Lake Champlain issues. Each began with a brief update on Lake clean-up progress and a presentation about a current lake issue.

About seventy people came to the Alburg, VT Elementary School for a presentation on blue-green algae by Dr. Mary Watzin of the University of Vermont. Numerous questions were asked about algae. The public had a clear willingness to help, asking several times about how they can reduce phosphorus inputs into the Lake.

A brief presentation about the aquatic nuisance species plan for Lake Champlain was presented by Lisa Windhausen of the LCBP for the Vergennes, VT meeting. Issues raised at the meeting included sea lamprey control, threats from alewives, the effectiveness of nonpoint source management, and concerns about eating the Lake’s fish.

At the Elizabethtown, NY meeting, a discussion occurred about LCBP grants and how local groups and communities can apply for grants. Issues of public concern included the impact of aquatic nuisance plants on recreation, the need for blue-green algae monitoring on the New York shore of Lake Champlain, and the amount of money available for local grants.

Thank you to all who attended. In addition to public meetings, comments on Lake Champlain Basin issues are welcomed at anytime.



Champlain Connection Series Goes to Schools!

When WPTZ's award-winning *Champlain 2000* news series was retired last fall after five great years, *Champlain Connection* debuted. *Champlain Connection* continues exploring what makes the Lake Champlain region special, from history to the environment to the people who are working together to make a difference. And, the new series will now go to Champlain Valley classrooms! News Channel 5 Anchor Thom Hallock will visit area middle schools to speak about "5 Things You Can Do to Save the Lake." He will also incorporate related study topics such as history, natural resources, geography or journalism that may be part of the classes' current curriculum. *Champlain Connection's* community partners are the Lake Champlain Basin Program and Calkins Realty of Plattsburgh. Watch the series on Mondays at 6pm, or visit www.lcbp.org or the www.thechamplainchannel.com.

CBEI Plans Educator Training

The LCBP will partner with the Champlain Basin Education Initiative (CBEI) during the next six months to train educators about Lake Champlain issues. Plans for 2005 include a teacher needs focus group in April and a one-day educator summit in July. In addition, a once-a-month evening series will be hosted by ECHO at the Leahy Center in cooperation with CBEI partners beginning in September 2005. For more info, contact Colleen Hickey at (800) 468-5227 or visit www.lcbp.org/cbei.htm.

South Lake Champlain Resource Room Opens

The Poultney-Mettowee Natural Resources Conservation District (PMNRCD) has a new home! In February, the PMNRCD moved to the renovated Stonebridge Inn in Poultney, Vermont. As a participant in Vermont DEC's Poultney – Mettowee watershed partnership, the PMNRCD will also create space at the Inn for outreach on South Lake Champlain issues. An LCBP Education and Outreach grant will help set up the room and the LCBP will provide many technical and educational resources. Materials will also be provided by Sea Grant. Green Mountain College environmental interns will staff the room to assist the public with questions about nearby waterways and Lake Champlain. The Stonebridge Inn is located adjacent to a conservation trail created by the PMNRCD with another LCBP grant five years ago. The trail is used frequently as a study site by local elementary and high school students. For more information, contact Marli Rupe at (802) 287-5841 or pmnrkd@together.net.



A local artist painted the Grand Isle ferry dock on a recent winter day.

In Memoriam

The LCBP is saddened to report the loss of three individuals who served valuable roles on LCBP committees or as staff over the years. We send our condolences to their families.

Robert Bonham – worked on the Lake Champlain long-term monitoring program as a NYSDEC staff member for more than a decade.

Robert (Bob) Churchill – served on the LCBP Technical Advisory Committee and was a Middlebury College Professor of Geography.

Rosaire Daigle – served on the Québec Citizens Advisory Committee and was a former Mayor of the Municipality of Venise-en-Québec.

Live Weather at ECHO!

Opening April 14th, ECHO's new permanent exhibit —*Be a Watershed Weather Reporter*. You star as "guest" meteorologist for WPTZ NewsChannel 5. Go on camera with real weather maps, "on location," or report how daily weather affects water quality. You can even record a take-home DVD to show family and friends. The LCBP partnered in this project to help explain how the weather influences Lake issues, such as algae blooms and polluted runoff. To explore Lake weather online, visit ECHO's enhanced *Weather Station*, which will soon include real-time lake level and temperature, thanks to partnerships with the U.S. Geological Survey and WPTZ NewsChannel 5. Learn more at www.echovermont.org.

LCBP FY 2005 Budget for New York & Vermont Implementation (USEPA Funds)

Framework for Plan Implementation	Sub-Total \$500,097
Basin Program Management, NY and VT Coordination	\$315,691
Administrative Assistance and Office Operations	\$184,406
Informing and Involving the Public	Sub-Total \$281,214
Program Coordination and Implementation	\$164,469
NY/Quebec Resources, LCBP Resource Room at ECHO	\$69,245
Website Database, Publications, <i>State of the Lake</i> , Supplies	\$47,500
Local Implementation & Grants	Sub-Total \$306,616
Local Grant Programs & Organizational Support	\$194,000
NY Circuit Rider Development	\$49,016
Educational Grants, Watershed Training, Awards	\$42,500
Low-Impact Tourism Clearinghouse Partnership	\$9,550
Wayside Exhibit Design Grant Program	\$11,550
Technical Implementation Programs	Sub-Total \$644,061
Technical Programs Coordination	\$99,999
Long-Term Monitoring Program	\$335,062
NY Agricultural Best Management Practices Tracking System	\$76,000
Evaluating & Monitoring Blue-Green Algae Toxins	\$50,000
Lake Champlain Water Chestnut Management Program	\$63,000
Lake Champlain Alewife Management Options	\$20,000
Recreation and Cultural Heritage Resource Programs	Sub-Total \$103,212
Cultural Heritage & Recreation Coordination	\$74,112
Heritage Education Programming on the <i>Lois McClure</i>	\$5,800
Coordination for 400 th Anniversary Commemoration NY, VT, QC	\$5,800
Lake Champlain Documentary Development	\$7,500
Natural and Historic Interpretation Materials	\$10,000
Total US EPA funds to support LCBP 2005 budget:	\$1,835,200
Additional Programs in LCBP Budget Funded through Other Sources:	
Lay Monitoring Program (State of VT)	\$16,000
Update Land Use Information (State of VT)	\$75,000
NY & VT Stream and Lake Gauging (USGS)	TBA
Agricultural Best Management Practices, Little Otter Creek (USGS)	TBA
Urban Best Management Practices, Englesby Brook (USGS)	TBA
Mercury Cycling Assessment (USGS)	TBA
Alternative Manure Management Programs (NRCS)	\$295,000
Nuisance Aquatics Management Program Coordination (USFWS)	\$45,000

Please note: Additional federal, state, local and provincial funds are used to support the priority actions in *Opportunities for Action* each year.

Québec News

Work is going strong on Québec's *Missisquoi Bay Action Plan*. As of January, 700 farm regulation visits have been conducted and at least 115 fertilizer management plans will be completed through the Ministry of Agriculture, Fisheries and Food (MAPAQ). MAPAQ will also create stream buffers and wind breaks on farms in the Pike River watershed.

A peat bog in Clarenceville will be acquired by the Nature Conservancy of Québec, with a grant of \$334,137 (CAN) from the Ministry of Environment (MENV). It is one of a few intact wetlands in Québec near Lake Champlain, providing habitat for amphibians, reptiles and threatened plants, and bordering protected wetlands in the United States.

New research will model contaminant transport in the Pike River watershed and identify areas that contribute the most phosphorus, nitrates and sediments to Missisquoi Bay. The three-year project is a collaboration among universities: McGill, Sherbrooke, UVM and government agencies including MAPAQ and MENV, as well as the Missisquoi Bay Basin Corporation (CBVBM).

The CBVBM has been very active with outreach. A school program called *The Four Musketeers* starts with basic learning about the watershed and culminates with water quality activities in the field. With funding from Environment Canada, CBVBM will inform lakeshore residents around Missisquoi Bay and Lake Selby about shoreline stabilization and lake-friendly lawn care. CBVBM will also host a water festival on July 9th in Venise-en-Québec with music, children's games and nature activities, and launch a website this spring. For more information, call Chantal d'Auteuil at (450) 446-9510.

Québec MENV



Volunteers from the Missisquoi Bay Basin Corporation and Québec MENV staff helped plant trees for wind breaks on farms near the Bay.

Planning for the 400th Anniversary of Champlain's Arrival

State of NY, Champlain Tercentenary Report



Crowds packed Plattsburgh, NY during the 300th anniversary of Champlain's arrival on the Lake.

In 2009, Lake Champlain will mark a 400-year milestone. While the lake was formed by retreating glaciers more than 10,000 years ago—and native people have been living along its shores ever since—2009 commemorates the arrival of the Lake's current namesake, French explorer Samuel de Champlain in 1609. The upcoming 400th anniversary, or quadricentennial, will offer residents and visitors more opportunities to explore the Lake's cultural heritage and its abundant natural beauty.

The LCBP is working with the Lake Champlain Quadricentennial Commission of Vermont and New York's Hudson-Fulton-Champlain Quadricentennial Commission on planning for the commemoration. Coincidentally, Henry Hudson sailed up the river named for him a few months after Champlain's travels here.

Similar commissions were established for the 300th and 350th anniversaries. The 300th anniversary, or tercentennial, was a week-long event featuring parades, speeches, pageants, mock naval battles, and fireworks. The 350th anniversary in 1959 was broader in scope. Promoters proclaimed there was "something to see and do practically every day for an entire year." The potential for the 2009 quadricentennial is outstanding. A recent study estimated that a 400th Anniversary celebration could generate more than \$200 million in additional revenues in the Champlain Valley over the next eight years!

The Quadricentennial Commissions have asked the LCBP to obtain public input for the 2009 anniversary. Please email your ideas, suggestions or concerns to: champlain400@lcbp.org.

Staff News

Meg Modley

Meg Modley was hired last July as the LCBP's Assistant Coordinator for Technical Programs. Meg works on grant administration, coordinating technical issues, and on specific programs such as phosphorus reduction. Meg holds a BA in Environmental Studies and a Masters in Public Administration from the University of Vermont. Meg started at the LCBP as an Education and Outreach intern and is excited to delve into Lake Champlain's technical issues. In her free time, Meg enjoys traveling, scuba diving, hiking, and outdoor activities.

Ann Smith

Ann Smith filled in as Vermont Coordinator for Lake Champlain while Michaela Stickney has been on maternity leave, and is now on part-time to support the VT CAC until May. Ann relocated to Vermont from Philadelphia where she was the Director of Watershed Programs for the Pennsylvania Environmental Council. She holds a Bachelors degree in finance and economics from the University of Wisconsin-Oshkosh and a Masters degree in environmental policy from the University of Michigan. Ann and her husband moved here to enjoy their outdoor hobbies which include kayaking, skiing and horseback riding.

Welcome Aven!

Michaela Stickney, Vermont Coordinator for Lake Champlain, gave birth to baby girl Aven Eowyn Edith Baughman on July 17th 2004.



Michaela and husband, Leland Baughman, are delighted in the joy Aven brings to their family.

Thanks to Resource Room Volunteers!

Your help in the LCBP Resource Room has been terrific!

- Tara Daly
- Rachel Ogden
- Naomi Reece
- Joseph Reznik

The LCBP is currently looking for more volunteers, especially during the summer. All that's required is an interest in the Lake and a willingness to share your interest with the public of all ages. Contact Laura Hollowell at lhollowell@lcbp.org or 802-864-1848 ext. 109.

Contact the Lake Champlain Basin Program

Our office is centrally located near the Grand Isle, VT ferry landing. Additional staff supporting the program work in New York, Vermont, and Québec and at US EPA offices.

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Staff Supporting the Program
Call (802) 372-3213, unless otherwise noted

- Nicole Ballinger - Communications & Publications Coordinator
- Erik Beck - LC Coordinator, US EPA New England, (617) 918-1606
- Jim Brangan - Cultural Heritage & Recreation Coordinator

- Beckett Grealish - Coordinator, US EPA Region 2, (212) 637-3866
- Colleen Hickey - Education & Outreach Coordinator
- Laura Hollowell - Resource Room Specialist, (802) 864-1848 ext. 109
- Bill Howland - Basin Program Manager
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- Stephanie Larkin - Resource Room Specialist, (802) 864-1848 ext. 109
- Chris Lassell - New York Circuit Rider, (518) 897-1367
- Miranda Lescaze - Technical Coordinator
- Martin Mimeault - Québec MENV, (450) 928-7607
- Meg Modley - Assistant Technical Coordinator
- Cynthia Norman - Resource Room Specialist, (802) 864-1848 ext. 109
- Art Stemp - NY Coordinator, NYSDEC, (518) 897-1216
- Michaela Stickney - VT Coordinator, VT DEC (802) 241-3619
- Lisa Windhausen - Aquatic Nuisance Species Coordinator

R E S O U R C E S

Shelburne Bay Interpretive Water Trail Guide

This new guide links kayaking and canoeing with natural and cultural history sightseeing. Developed by the Chittenden County Regional Planning Commission, it is intended for self guided tours of the Bay's geology, natural history and cultural heritage. The LCBP funded \$3,250 towards this project. Call the RPC at (802) 646-4490 for a free copy.



Baitfish Guide

Anglers will want to catch this free *Lake Champlain Baitfish* guide by the Vermont Fish and Wildlife Department. The 44-page guide identifies many baitfish and has instructions about ones that could become invasive in the Lake and/or are illegal. Sections also cover New York and Québec portions of the Lake. The LCBP funded \$10,000 towards this project. Contact VTFWD for a copy at (802) 241-3700.

NEW Websites!

Clean and Clear Action Plan: Visit www.vermont.gov/cleanandclear to learn about Vermont's new initiative to focus state funds on Lake Champlain's clean-up, particularly in the algae prone areas of Missisquoi and St. Albans Bays. The LCBP is a Clean and Clear partner.

LCBP Website Gets a Facelift: Hop on to www.lcbp.org to see our new look. We've improved the navigation and search capabilities and posted new pages, including a list of watershed data sources. Stay tuned for searchable grant and publication databases to come in 2005.



NEW Technical Reports

These LCBP-funded research reports are hot off the press! Contact the LCBP for copies.

*Stage-Based Population Viability Model for Sea Lamprey (*Petromyzon marinus*)*. Howe, Eric A., E. Marsden and T. M. Donovan, UVM School of Natural Resources and R.H. Lamberson, Humboldt University Department of Mathematics. March 2004. LCBP Technical Report #43.

Exploratory Study of Dismantling Sea Lamprey Nests to Reduce Egg and Larval Production in Two Lake Champlain Basin Tributaries. Laroche, W., Stonefish Environmental; C.D. Martin, U.S. Fish and Wildlife Service; H.P. Wimmer, Middlebury College. August 2004. LCBP Technical Report #44.

Casin' the Basin Editorial Staff

Nicole Ballinger, Colleen Hickey (Co-Editors)
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