

CASIN' THE BASIN

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Lake Champlain
Basin Program

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Ecosystem Indicators

By Barry Gruessner



Mary Watrin

Information obtained from monitoring Lake Champlain's water quality will be used to develop indicators of the Lake's health.

Once a lake's watershed management plan is complete and implementation under way, it doesn't take long before managers and scientists hear questions such as "How's the lake doing?" and "Are all those programs doing any good?" The Lake Champlain Basin Program is developing a series of ecosystem indicators that will help answer questions about the health of the Basin ecosystem and the effectiveness of management programs.

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Good news from around the Lake Champlain Basin!

Last summer the **Lake Champlain Water Chestnut Control Program** harvested approximately 3,600,000 pounds of the invasive plants from the Lake's southern end. The harvesting, which begins each year at the northernmost extent of the water chestnut's range, was able to proceed to the furthest point south since 1989 (1^{1/2} miles south of Benson, VT). Additionally, six sites that required mechanical harvesting in 1999 were manageable by hand pulling in 2000. The control program is a cooperative effort led by **Vermont DEC**, with funding from the **New York State DEC**, the **New York Canal Corporation**, the **Army Corps of Engineers** and the **LCBP**. In addition, **Nature Conservancy** volunteers hand-pulled 55 tons of the plants from the South Lake and adjacent wetlands last summer. For more information contact Ann Bove of the VT DEC at (802) 241-3777.

Last April about 30 people attended a public input session by the **NYS Department of Environmental Conservation** on management options for the **Split Rock Mountain Tract**. The DEC gathered suggestions for the tract's use and conservation in accordance with the Wild Forest provisions of the Adirondack Park plan. The 3,700-acre Split Rock Mountain Tract is the largest block of undeveloped New York shoreline on Lake Champlain. For more information contact Forest Preserve Planner and Manager Jim Papero at (518) 897-1285 or email jpapero@gw.dec.state.ny.us.

The **Lake Champlain Maritime Museum** (LCMM) recently established the **Maritime Research Institute** to focus on archaeological projects, historical research, underwater resource management, and special projects. **Art Cohn**, the LCMM's co-founder and Executive Director is the Maritime Research Institute's first Managing Director. **Laurie Eddy**, who was responsible for education programs, is now the museum's Chief Operating Officer. For more information contact the LCMM at (802) 475-2022 or visit www.lcmm.org.

The **AuSable River Association** (ASA) has hired a new part-time director, **Megan Murphy**. Megan will coordinate several projects, including a native mussel survey, building a log crib on Palmer Brook, and creating a map of the watershed's geographic features and natural history. ASA will also work with the **Adirondack Park Agency** to develop a citizen's guide about mitigating runoff from development. Although ASA plans to create their own website soon, you can visit our webpage for the ASA at www.lcbp.org/watersheds/asa.htm. For more information about the ASA call (518) 873-3752 or email mmurphy@co.essex.ny.us.



Lake Trout with sea lamprey wounds.

November 29th the *Champlain 2000* partners (**WPTZ**, **KeyBank** and **LCBP**) received a **Vermont Governor's Award for Environmental Excellence in Pollution Prevention**. The annual awards recognize those whose efforts have contributed to the protection of Vermont's environment, the safety of its citizens and the health of its economy. *Champlain 2000* was recognized for its innovative for-profit/not-for-profit partnership to raise public awareness about pollution issues. For more information or to view a list of other award recipients contact the **VT DEC Environmental Assistance Division** website at www.anr.state.vt.us/dec/ead/eadhome/2000.htm.

Dick Pratt



Paul Sands (WPTZ), Martha Colon (KeyBank) and Buzz Hoerr (LCBP Education and Outreach Committee) accept a Vermont Governor's Award for Environmental Excellence in Pollution Prevention from Governor Howard Dean, MD.

Over 200 people attended public hearings in March and April on the **Draft Supplemental Environmental Impact Statement (DSEIS)** to continue sea lamprey control on Lake Champlain. Comments focused primarily on supporting Alternative 1 of the plan, which calls for increased lamprey treatments beyond the scope of the experimental control program. However, some comments also recommended stopping chemical lamprey controls, especially on the Poultney River. The **US Fish and Wildlife Service** prepared the DSEIS, in cooperation with the **VT Dept. of Fish and Wildlife** and the **NYS Dept. of Environmental Conservation**, in accordance with the National Environmental

Mary Watzin

Policy Act (NEPA) of 1969. The USFWS will review the comments and issue a record of decision during late August, which will complete the NEPA process. For more information, contact the USFWS Lake Champlain Office at (802) 872-0629.

Welcome to new **Vermont Citizens Advisory Committee** members: Sen. Ginny Lyons, Rep. Hank Schaefer, and Rep. Mike Quaid. Mary Sullivan was reappointed by Governor Dean as a citizen representative. Many thanks to all the hard work and dedication of outgoing members: Gould Susslin, citizen representative, Sen. Liz Ready and Rep. David Zuckerman. The Vermont CAC meetings are open to public. For more information, contact Michaela Stickney, Vermont Lake Champlain Coordinator, at (802) 241-3619 or (802) 372-3213.

The **Navy League's** plans to create a **Lake Champlain Naval Memorial** are underway. The memorial will be located on the "South Spit" on Burlington's waterfront, which is just south of the former Naval Reserve Center (now the **Lake Champlain Basin Science Center**). The memorial will feature a statue of the "Lone Sailor" facing the Lake and six granite etchings of Lake Champlain's important Naval engagements. It will honor the men and women from the region who served in the Navy and commemorate the rich Naval heritage of Lake Champlain. The Burlington site is also the only location ever approved to use the same "Lone Sailor" statue as the Navy Memorial in Washington D.C. For more information or to help out, contact Jim Austin at (802) 658-5682 or jaustin793@aol.com.



LCBP Resource Room

The Lake Champlain Basin Program will be closing its Resource Room at the Lake Champlain Basin Science Center by June 15th. The Science Center will be closing its doors to begin construction on an exciting new center opening in 2003. During the Science Center construction, resource information will be available at the LCBP office in Grand Isle and at our new Resource Room scheduled to open this summer in the greater Plattsburgh area.

Cumberland Bay Cleanup Complete



LCBP

Dredging on Cumberland Bay.

Congratulations to the New York State Department of Environmental Conservation (NYSDEC) for removing 20,000 lbs. of PCBs from Cumberland Bay. Thanks also to the City of Plattsburgh for its support of the cleanup. The project, which began in May 1999, dredged more than 195,000 cubic yards (140,000 tons) of PCB-contaminated paper sludge from 50 acres of the Bay. Approximately seven acres of PCB-contaminated wetlands were also restored.

The cleanup was funded through the State Superfund and the Georgia-Pacific Corporation as a result of a consent order signed in 1997. As part of that order, the State retained the right to seek natural resources damage claims against any party that is potentially responsible for the contamination. The project's final cost is estimated between 30 and 35 million dollars.

Wood pulp, wood chip debris and related processing wastes from wood products industries in and around Plattsburgh created the sludge bed. The wastes either settled there or were directly discharged into the bay for several decades until 1973 when the city's sewage treatment plant began treating local industrial waste. Sampling and analysis from 1992 to 1994 found PCB and other contamination in the sludge. The site was listed on the State's Registry of Inactive Hazardous Waste Disposal Sites in November 1994.

The sampling also found higher than accepted concentrations of PCBs in the Bay's yellow perch. In 1995, a fish consumption advisory was expanded to include yellow perch and the sale of yellow perch from the Bay was banned. Fortunately, the removal of PCBs from Cumberland Bay may allow this fish consumption advisory to end within the next few years.

This summer, contractors for the NYSDEC will finalize the beach cleanings. Field samplings of Lake sediments, fish tissues, zebra mussels, and the water in and around Cumberland Bay will also be done to determine the cleanup's effect on Lake Champlain.

Vermont Watershed Initiative Underway

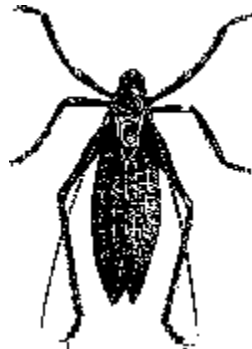
Three new Regional Watershed Coordinators have been hired by the Vermont Agency of Natural Resources: Jim Ryan, Ethan Swift and Karen Bates. Karen is concluding work on the White River Basin; and Jim and Ethan are beginning efforts in the Lamoille and Poultney-Mettowee, respectively.

The coordinators will help local groups and communities locate technical and financial assistance for pollution prevention, resource protection and recreation enhancement programs. Plans for each watershed or basin will also be written, with input from local citizens, municipalities, organizations, and the LCBP.

The new coordinators are part of Vermont's goal to develop plans for all of the State's 17 basins by 2006. Seven of the basins are located within the larger Lake Champlain Basin. The LCBP looks forward to working with the new watershed coordinators and linking their efforts to the implementation of *Opportunities for Action*.

Contacts:

Karen Bates: (802) 241-3777 or karenb@dec.anr.state.vt.us
 Jim Ryan: (802) 241-3777 or jimr@dec.anr.state.vt.us
 Ethan Swift: (802) 241-3777 or ethans@dec.anr.state.vt.us



Back to Grand Isle...

We're now settled in the renovated Gordon-Center House on Grand Isle after our January move. The house meets the LCBP's every expectation, thanks to the hard work of Vermont Fish and Wildlife and the contractors. We've even had some early spring bonuses, including sightings of a bald eagle, great blue herons, osprey, hooded mergansers, and red-wing blackbirds. And being so close to the Lake again, we're even more inspired to work hard for the future of Lake Champlain.

This winter and early spring saw vigorous progress towards the five-year evaluation of *Opportunities for Action*. From February-April the draft plan revisions were reviewed and refined by the LCBP's technical committees, including the Technical Advisory Committee, Cultural Heritage and Recreation Advisory Committee, Citizens Advisory Committees, and Education & Outreach Committee. The Steering Committee will present a draft for public comments in October.

Later in the fall, the Citizens Advisory Committees will host public meetings in New York, Vermont and Quebec to present the draft plan revisions and to hear public comments. We look forward to these meetings to hear your thoughts about the proposed plan revisions. We are also surveying Basin residents this summer to gain further public input.

The Steering Committee also approved the LCBP's FY 2001 budget. The budget exceeds \$2.4 million and is detailed on page six. In FY 2001, the LCBP will continue programs to implement the priority actions in the Plan and will continue our popular Local Implementation Grants program. New projects include a mercury cycling assessment, an agricultural pathogen control demonstration and a study of the effect of zebra mussels on shipwrecks.

To commemorate our return to the Gordon-Center House we're hosting an open house on June 11th. I look forward to meeting you then or at our public meetings in October.

Bill Howland
 Basin Program Manager

OPEN HOUSE!

The Vermont Department of Fish and Wildlife and the Lake Champlain Basin Program invite you to visit the renovated Gordon-Center House.

LCBP



The Gordon-Center House is home again for the Lake Champlain Basin Program.

Date: June 11, 2001
 Time: 1:00 PM
 Where: Gordon-Center House, 54 West Shore Road, Grand Isle, Vermont

The house is just north of the Plattsburgh-Grand Isle ferry landing on the right side of the road. It is a short walk (5 min.) from the ferry landing. For directions call (800) 468-5227 (NY & VT) or (802) 372-3213.

Continued from page 1

The indicators are being developed by a team of researchers from the University of Vermont led by Dr. Mary C. Watzin, in collaboration with scientists, managers and citizens from around the Lake Champlain Basin.

Ecosystem Indicators

Ecosystem indicators are measurable characteristics of the ecosystem that reveal changes in its condition over time. Indicators range from water quality measurements, such as phosphorus concentrations, to more complex measurements that integrate several parts of the ecosystem, such as the number of algae blooms.

“Complex indicators are more representative of the overall condition of Lake Champlain’s ecosystem, but they are often difficult to develop and interpret,” said Dr. Mary Watzin. “Rather than relying on a single indicator for understanding the ecosystem’s health, several indicators of varying complexity will likely provide the clearest picture.”

According to Dr. Watzin, ecosystem indicators that have several important characteristics will be most useful to scientists and managers (see sidebar). Indicators also will relate the condition of the measured parameter to management programs. For example, an indicator may compare the annual phosphorus loads from a specific tributary to the number and size of nonpoint source pollution control projects implemented during the same time period. Although the relationship between the two measures is not necessarily cause and effect, a correlation between an increase in the number of projects and a decrease in phosphorus loads would suggest that the projects are having some impact.

Developing Indicators for the Lake Champlain Basin

The first step in developing ecosystem indicators will be to determine the management goals that embody how citizens in the Basin would like the ecosystem to look and function. An ecosystem

Characteristics of Ecosystem Indicators:

- **Biologically Relevant** - They must be related to a valued component of the ecosystem.
- **Measurable** - They must be quantifiable using standard procedures with little error and measuring them must cause minimal impact to the ecosystem.
- **Interpretable** - They must include a benchmark that distinguishes between acceptable and unacceptable conditions.
- **Cost-Effective** - Measurement of the indicator must be affordable.
- **Historical Data** - Data must be available to track changes over time and to define the acceptable condition.
- **Appropriate in Space & Time** - The indicators must fit the specific management concerns.
- **Timely** - They must be developed in time to allow effective management decisions.
- **Understandable to the Public** - They must be easy to understand, at least conceptually, so they may be used to communicate the condition of the Lake or Basin.

can be considered “functional” or “healthy,” depending on values defined by society.

“Fortunately, the Lake Champlain Management Conference, which was comprised of citizens, managers and scientists, agreed on a vision for the health of the Basin’s ecosystem, which is integrated into the Lake-wide management plan, *Opportunities for Action*,” said Bill Howland, Basin Program Manager.

The plan established goals and objectives for issues of concern in the Lake Champlain Basin that begin to define the ecosystem’s desired conditions. The indicators development team will work closely with the LCBP during the project to further refine these conditions where needed. The indicators project will identify the most important characteristics of the ecosystem needed to support the Plan’s goals and objectives and develop indicators for them.

.....
“The ecosystem indicators scorecard will go a long way towards helping communicate the effectiveness of Lake Champlain management efforts to the public,” said Jim Connolly, NYSDEC Lake Champlain Coordinator.

.....
“The indicators will include many ecological measures of Lake Champlain as well as human use and enjoyment measures,” said Dr. Mary Watzin. “Some examples might include stressors to the Lake, such as phosphorus loading from wastewater treatment plants or increases in urban development. Frequencies of beach closings and nuisance algae blooms could be used as human use and enjoyment measures.” When linked to related management actions, the resulting suite of indicators will provide a picture of the ecosystem’s health and the effectiveness of management efforts.

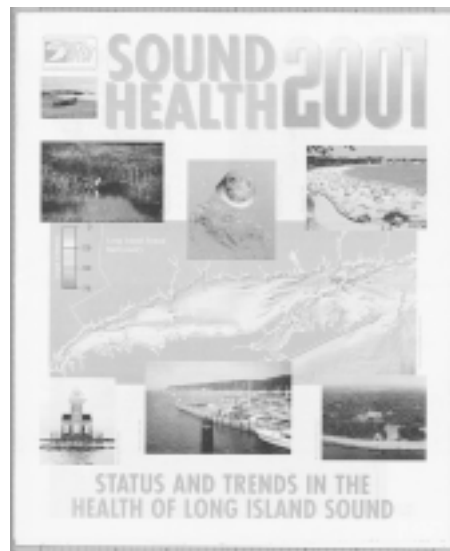
Ecosystem indicators will be used to develop a scorecard on the health of Lake Champlain. The indicators development team will first review the indicators literature, other programs from around the country, and the available data on Lake Champlain. The team will also convene a workshop for technical experts, managers, and interested groups to refine the list of possible indicators, and provide an opportunity for public comment. A final suite of indicators will then be selected to develop Lake Champlain’s scorecard.

“The ecosystem indicators scorecard will go a long way towards helping communicate the effectiveness of Lake Champlain management efforts to the public,” said Jim Connolly, NYSDEC Lake Champlain Coordinator. “We hope it will help us better answer citizen’s questions about the health of the Lake.” The team will also recommend appropriate monitoring and assessment programs needed to track the indicators over time.

Conclusion

Opportunities for Action is an evolving plan that will respond to new scientific understanding and societal goals. Ecosystem indicators will facilitate the implementation and evolution of the plan through an improved understanding of the Basin ecosystem, better tracking of progress toward the plan’s goals, and more effective communication to the public.

This article was based on the project workplan for *Developing Ecosystem Indicators and an Environmental Scorecard for the Lake Champlain Basin Program*, prepared by Dr. Mary C. Watzin and others from the University of Vermont for the LCBP.



Several other groups in the nation have used indicators to illustrate ecosystem health to the public. For example, the Long Island Sound Study recently distributed an insert in over 400,000 local newspapers and made it available on their website: www.epa.gov/region01/eco/lis/. The Chesapeake Bay Program has also posted information about environmental indicators on its website: www.chesapeakebay.net/indicators.htm.



NEW Educator Workshops

Join the Champlain Basin Education Initiative (CBEI) for these upcoming fun and informative educator workshops.



Padding the Watershed

July 26, 2001

Adirondack Visitors Interpretive Center,
Paul Smiths, NY

Spend a day canoeing the Saranac River from one part of the Lake Champlain Basin to another while learning about water quality and habitat. Includes canoe rentals, resources and door prizes! For more information, contact Liz Soper at the National Wildlife Federation (802) 229-0650 or soper@nwf.org. Fee: \$15.00.

Exploring Biodiversity in the Lake Champlain Basin

October 2, 2001

Shelburne Farms, Shelburne, VT

Spend a day in the field learning about biodiversity and how to apply it to your curriculum. The Lake Champlain Basin is home to more than 300 species of birds, 56 mammal species and over 80 fish species! For more information, contact Amy Demarest, author *This Lake Alive!*, by email at abd@together.net.

CBEI Summit - Coming Spring 2002!

Planning ahead? Last year more than 80 teachers shared their teaching experiences about the Lake Champlain Basin. Be there for field experiences, classroom demos and lots of experts.

Established in 1992, CBEI is a consortium of New York, Vermont and Quebec organizations dedicated to helping educators learn and teach about Lake Champlain issues. More than 475 educators have participated in CBEI's one-day forums or weeklong institutes. The LCBP was a founding partner to CBEI and provides financial support for many activities.

Get in on SWEEP!

SWEEP is a coalition of individuals and organizations promoting environmental education in Vermont since 1975. As a SWEEP member organization, the LCBP has enjoyed the opportunity to network with many people and organizations statewide. SWEEP helps foster responsible decision-making that affects the environment. Members receive newsletters twice a year, and can attend statewide gatherings, or participate in other education initiatives. To become a member, contact Linda Wellings at Shelburne Farms or email llwellings@shelburnefarms.org.

LCBP Awards 13 Outreach Projects

The Lake Champlain Basin Program recently awarded \$36,000 in US Environmental Protection Agency funds to 13 organizations in the Lake Champlain Basin. Funds will be used for projects to inform students and/or adults about key issues identified in *Opportunities for Action*. Each project requires a 25% non-federal match. This year, 20 proposals totaling \$104,000 were received.

- **Adirondack Waterfest for Water Resource Education**
Warren County Soil and Water Conservation District \$2,000
- **Ecosystem Exposition 2000**
Poultney-Mettowee NRC \$3,000
- **Floating Classroom**
Lake George Association \$2800
- **Hook, Line and Sinker: A Standards Based Unit to Fishing and the Environment**
Vermont Folklife Center \$3,400
- **Lake Champlain Shoreline Stabilization Handbook**
Town of Alburg \$2,500
- **Outreach Campaign**
Middlebury River Watershed Partnership \$1,900
- **Training for Habitat Stewards in NY and VT**
National Wildlife Federation \$4,000
- **Toxic Substance Education and Reduction Plan**
City of Winooski \$2,100
- **Watershed Based Landowner Awareness Project**
Vermont Association of Conservation Districts \$2,300
- **Watershed Information Project**
AuSable River Association \$4,000
- **Watershed Group Information Sharing**
Boquet River Association \$2,500
- **Watershed Newspaper Insert**
Winooski Conservation District \$3,000
- **Winter Outreach Program**
Lake Champlain Maritime Museum \$2,500

For more information about the projects, contact Colleen Hickey, LCBP Education and Outreach Coordinator at (802) 372-3213 or (800)468-5227.



LCBP

Funding from the LCBP will again support the Adirondack Waterfest, which was held last summer in Port Henry, New York.



FY 2001 Lake Champlain Basin Program Funding Plan

On January 23, 2001 the Lake Champlain Steering Committee approved its FY 2001 funding plan for Lake Champlain Basin projects. Funds allocated totaled over \$2.4 million, including \$1.5 million from the US Environmental Protection Agency, \$350,000 from the National Park Service, \$90,000 from the US Department of Agriculture, and \$270,000 from the US Geological Survey. The LCBP projects address the priorities in *Opportunities for Action*. All project grant recipients must provide a minimum 25% non-federal match.

Building Local Level Implementation	\$339,285
Local Project Grants & Watershed Support	\$221,500
NY Circuit Rider	\$ 45,000
Technical Coordination & Assistance	\$ 72,785
Phosphorus Reduction	\$412,450
Watershed Geomorphic Assessment	\$ 40,000
Phosphorus Report Follow-up	\$ 76,950
Offsetting Phosphorus Loads from Growth	\$ 40,000
Constructed Wetland to Treat Dairy Waste	\$ 50,000
VT Agricultural Phosphorus Reduction Tracking	\$ 40,000
Urban and Agricultural BMPs	\$165,500
Toxic Pollution Prevention	\$135,000
Stormwater Management Outreach	\$ 30,000
Mercury Cycling Assessment	\$105,000
Human Health Protection	\$ 60,000
Blue-Green Algae Monitoring & Risk Assessment	\$ 10,000
Agricultural Pathogen Control Demo	\$ 50,000
Nuisance Aquatics Management	\$ 78,000
Sea Lamprey Survey	\$ 25,000
Nuisance Aquatic Plant Management	\$ 53,000
Measuring & Monitoring Success	\$298,712
Lake-Wide Long-Term Monitoring	\$283,712
Citizens Lay Monitoring Program	\$ 15,000
Cultural & Recreation Resources	\$344,236
Cultural & Recreation Resources Coordination	\$135,236
Public Access & Bicycling Organizational Support	\$ 35,000
L C Bikeways Clearinghouse	\$ 8,000
Heritage Tourism Framework	\$ 44,000
Open New Underwater Preserves	\$ 35,000
Underwater Survey	\$ 40,000
Zebra Mussel Study on Encrusted Shipwrecks	\$ 20,000
Technical Assistance Program	\$ 20,000
Historic Landings Heritage Trail	\$ 7,000
Informing & Involving the Public	\$319,569
Resource Rooms	\$ 10,000
Public Outreach Tasks & Public Input	\$116,000
Educational Support Grants	\$ 55,000
E & O Program Coordination	\$138,569
Framework for Plan Implementation	\$418,248
Operations, Management, Controls, Publications	\$233,248
Vermont & New York Coordination	\$185,000
TOTAL	\$2,405,500

Sea Grant News

Two workshops hosted by Lake Champlain Sea Grant have provided useful information for fisheries researchers and marina employees. In March, 16 New York and Vermont marina employees participated in an anti-fouling hull paint/pesticide re-certification workshop to learn about legal requirements and management issues to apply the paints. These paints discourage organisms such as zebra mussels, barnacles and algae from attaching to boat hulls. Cornell Co-op Extension of Essex County co-sponsored the workshop.

An April workshop on hydroacoustic sampling was attended by 23 participants. Hydroacoustic devices use sound pulses to record and image underwater objects, including fish. Researchers and managers can use such data to manage the Lake's smelt population and the trout and salmon fisheries, which are

sustained by smelt. For more information about this Sea Grant project, contact Mark Malchoff at (518) 564-3038 or mhm4@cornell.edu.



The University of Vermont's Watershed Alliance recently hired a new coordinator, Lori Cragin. A joint venture of Sea Grant and UVM Extension, the Watershed Alliance supports statewide watershed education and water quality monitoring. In addition to

working with local schools and youth groups, the Alliance is planning to create and host an online database of Vermont water quality data. For information contact Lori Cragin, at (802) 656-5428 or lrcragin@zoo.uvm.edu, or Jurij Homziak of Sea Grant at (802) 656-0682 or jhomziak@nature.snr.uvm.edu.

Lake Champlain Steering Committee

Tamsen Benjamin

Montpelier, VT - VT Agency of Transportation

Stuart Buchanan

Raybrook, NY - NYS DEC

Patrick Brennan

Albany, NY - NYS Department of Agriculture and Markets

Gregory Caito

Plattsburgh, NY - NYS Dept. of Economic Development

Peter Clavelle

Burlington, VT - Mayor

Canute Dalmasse

Waterbury, VT - VT Agency of Natural Resources

Mario DeWicario

New York, NY - USEPA Region 2

Jean Rivet

Longueuil, Quebec - Quebec Ministere de L'Environnement

Donald Garratt

Plattsburgh, NY

Leon Graves

Montpelier, VT - VT Department of Agriculture

Buzz Hoerr

Colchester, VT - VT CAC Chair

Ron Manfredonia

Boston, MA - USEPA, New England

Kenneth Miller

St. George-de-Clarenceville, Quebec - CAC Chair

Ronald Ofner

Crown Point, NY - NY CAC, Chairman

Robert Reinhardt

Albany, NY - NYS OPRHP

Dave Tilton

Essex Junction, VT - US Fish and Wildlife

John Titchner

Winooski, VT - USDA, NRCS

Emily Wadhams

Montpelier, VT - VT Agency of Commerce and Community Development

Mary Watzin

Burlington, VT - UVM School of Natural Resources

Poultney-Mettowee Watershed Residents Surveyed

Last fall the Poultney-Mettowee Watershed Partnership surveyed nearly 300 New York and Vermont residents in the watershed about their water quality attitudes. Residents were asked questions on topics such as how polluted they felt local waters are and what causes the pollution. The survey results will be used to help plan information and outreach projects in the watershed.

The Lake Champlain Basin Program, Vermont Community Fund and the National Fish and Wildlife Foundation provided funding for the research. The Partnership plans to post the results on its website. For more information call (802) 287-4284 or visit www.together.net/~pmnrtd.

Wayside Exhibit Manual Available



A new manual on outdoor wayside exhibits that interpret our natural, cultural and historic resources is now available. Wayside exhibits help local communities place their unique stories in the broader context of places and events around the Lake, resulting in a richer sense of history and regional identity. The LCBP developed the manual in cooperation with the Chittenden County Regional Planning Commission.

The manual provides guidelines on planning, designing and fabricating wayside exhibits using the LCBP template. Illustrations of completed projects are included to answer questions on implementing wayside exhibits from start to finish. The template and design services are available to municipalities and organizations in the Champlain/Richelieu regions at no cost through the LCBP. To order a manual or to begin planning your wayside exhibit, contact Maja Smith, Recreation Coordinator at (518) 597-4212 or (800) 468-5227 or majasmith@anrmail.anr.state.vt.us.



New Cultural Heritage Projects Funded

The Lake Champlain Basin Program recently granted five new cultural heritage Technical Assistance Program (TAP) awards totaling \$5,000 with National Park Service funding. TAP awards support engineering and architecture assessments, National Register documentation, downtown revitalization, and cultural heritage tourism.

- **Conservation of O.J. Walker Artifacts**
Lake Champlain Maritime Museum, Vergennes, VT \$1,000
- **Feasibility Study of the Estes House for use as Visitor Center**
Housing Assistance Program of Essex County, NY \$1,000
- **Hollywood Theater National Register Nomination**
Friends of the North Country, Inc., Keeseville, NY \$1,000
- **Preservation Assessment of Building at Noblewood Park**
Town of Willsboro, NY \$1,000
- **Stabilization of Marl Pond Dugout Canoe**
Lake Champlain Maritime Museum, Vergennes, VT \$1,000

For more information about the projects, contact Tricia Foster, LCBP Cultural Heritage Coordinator at (518) 597-4212 or (800) 468-5227.

Friends of the North Country, Inc.



Hollywood Theater, AuSable Forks, NY

Cultural Heritage and Recreation Advisory Committee Formed

The LCBP has formed a new Cultural Heritage and Recreation Advisory Committee (CHRAC) to advise the Lake Champlain Steering Committee. The CHRAC will help increase opportunities for dialogue about emerging cultural heritage and recreation issues throughout the Basin.

The LCBP would like to thank and welcome the new CHRAC members. Mayor Peter Clavelle of Burlington, will serve as Chair, a position which will rotate between a Vermont and New York representative. Other members are:

- Tamsen Benjamin**, VT Agency of Transportation
- Bob Reinhardt**, NYS Office of Parks, Recreation and Historic Preservation
- Emily Wadhams**, VT Division for Historic Preservation
- Peter Clavelle**, Mayor of Burlington, VT
- Kenny Miller**, Quebec Citizens Advisory Committee
- Buzz Hoerr**, VT Citizens Advisory Committee
- Ron Ofner**, NY Citizens Advisory Committee
- Jean Hubert**, Le Ministre de L'Environnement
- Deborah Doyle-Schechtman**, VT Arts Council
- David Fasser**, NYS Department of Transportation
- Virginia Westbrook**, Champlain Valley Heritage Network
- Bill Johnston**, Essex County Planning Department
- Sally Cavanagh**, VT Department of Tourism and Marketing
- Tim Shea**, Lake Champlain Regional Chamber of Commerce

Maja Smith, Recreation Coordinator and Tricia Foster, Cultural Heritage Coordinator will staff the new committee. The CHRAC meets every 1-2 months and all meetings are open to the public. For more information call the LCBP at (802) 372-3213 or (800) 468-5227.



Mercury: Every Drop Counts!

Just three grams (.1 ounce) of mercury — the amount found in one home thermostat — can contaminate a 60-acre lake! That's why every drop counts when preventing pollution and protecting human health from this highly toxic substance. We would like to recognize the following voluntary mercury collection programs in the Basin for their successes.

Dental Office Outreach & Collection <i>National Wildlife Federation (w/ LCBP funding)</i>	40 lbs. (18 kg)
Dairy Farm Manometer Replacement <i>NW VT Solid Waste Management District & VT Dept. of Agriculture (w/ LCBP funding)</i>	38.5 lbs. (17.3 kg)
Vermont Mercury Thermometer Swap* <i>VT ANR Dept. of Environmental Conservation</i>	100 lbs. (45 kg)
Vermont School Mercury Clean-Up* <i>VT ANR Dept. of Environmental Conservation</i>	600 lbs ¹ (270 kg)

The LCBP also thanks WPTZ-TV for their terrific promotion of the Vermont Mercury Thermometer Swap and for the *Champlain 2000* special, "Target Mercury," which aired during December. For a free video of this recent special, contact the LCBP. Great for schools! For more information about mercury reduction efforts visit, www.lcbp.org/c2k/mercury.htm.

Notes: Estimates are approximate.

* Includes Vermont statewide collections.

¹ Includes elemental mercury, mercury added products and compounds.

RESOURCES

Call the LCBP at (800) 468-5227 or (802) 372-3213 to order (unless otherwise noted). Visit www.lcbp.org/reports.htm for a complete list of technical reports and other publications.

GENERAL INTEREST PUBLICATIONS

Drainage Basin Map. This 24" x 32" map highlights town, county, state and international boundaries within the Basin. Also includes principle surface waters and major river basin boundaries. \$3.00

Fact Sheet Series. Free fact sheets on zebra mussels, nonpoint source pollution, the Basin, wetlands, Lake Champlain historic sites, and boating to Lake Champlain's parks and historic villages. FREE

Lake Champlain Basin Atlas. This full-color atlas contains over 50 maps, photos and graphics about the nature of the Basin, the socio-economics of the Basin and Lake Champlain issues, such as phosphorus and nuisance species. Includes the land use map. \$25.00 from Northern Cartographic (802) 860-2886.

Land Use Map. This 24" x 32" full-color map depicts land use and vegetation types in the Basin derived from satellite imagery. \$3.00 from Northern Cartographic (802) 860-2886 or the LCBP.

Opportunities for Action. The LCBP's final plan

recommends priority management actions for Lake Champlain. October, 1996. FREE

Progress 2000. Reports on the progress towards implementing *Opportunities for Action*. September, 2000. FREE

RECENT TECHNICAL REPORTS

Lower Trophic Level Interactions in the Pelagic Foodweb of Lake Champlain. Dr. Suzanne N. Levine, Dr. Mark Borchardt, Dr. Moshe Braner, Angela Shambaugh, and Susan Spencer, UVM School of Natural Resources and Marshfield Medical Research Foundation. July 1997. LCBP Report #30. \$12.00

Estimation of Lake Champlain Basinwide Nonpoint Source Phosphorus Export. William Hegman, Associates in Rural Development, Inc, and Catherine Borer, UVM Water Resources & Lake Study Center. September 1999. LCBP Report #31. \$7.25

The Freshwater Mussels of the Lower Missisquoi River: Current Status and the Potential for a Refugium from Zebra Mussel Impacts. Paul Marangelo, VT Agency of Natural Resources. June 1999. LCBP Report #32. \$5.50

Ecological Effects of Sediment - Associated Contaminants in Inner Burlington Harbor, Lake Champlain. Tetra Tech, Inc.. September 1999. LCBP Report #33. \$7.50

Benthic Phosphorus Cycling in Lake Champlain: Results of an Integrated Field Sampling/Water Quality Modeling Study. Part A: Water Quality Modeling/ Part B: Field Studies. HydroQual, Inc. June 1999. LCBP Report #34A \$13.25 & #34B \$8.25

Determination and Quantification of Factors Controlling Pollutant Delivery from Agricultural Land to Streams in the Lake Champlain Basin. J.W. Hughes, W.E. Jokela, D. Wang, C. Borer, UVM. September 1999. LCBP Report #35 \$5.00

Cost-Effective Phosphorus Removal from Secondary Wastewater Effluent through Mineral Adsorption. Larry D. Goehring, Sr., Tammo S. Steenhuis, Andrea S. Brooks, Melissa N. Rosenwald, Jennifer Chen, Cornell University and Victor J. Putnam, Essex County Planning Department. December 1999. LCBP Report #36 \$5.00

NEW URBAN RUNOFF POSTERS

A series of four posters featuring urban runoff issues such as pet waste, lawn fertilizers and oil leaks from cars. First set free (if you pick them up). \$4.00

SLIDE SHOW PRESENTATION

The LCBP staff presents free 20-40 minute slide shows on issues in the Lake Champlain Basin to schools and community groups. Can be adapted to most any audience. Call to schedule. FREE

Casin' The Basin is published three times a year by the Lake Champlain Basin Program to inform the public about events and issues which affect the Lake Champlain Basin. The public is encouraged to respond to information presented in this newsletter and can send comments to:

Casin' the Basin
Lake Champlain Basin Program
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NEIWPCC operates the business affairs of the Lake Champlain Basin Program. NEIWPCC is a non-profit interstate agency established by an Act of Congress to serve and assist its member states by providing coordination, public education, training and leadership in the management and protection of water quality in the New York and New England Region.



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Lake Champlain Basin Program

THE LAKE CHAMPLAIN BASIN PROGRAM

The Lake Champlain Basin Program (LCBP) was established to coordinate the activities envisioned by the Lake Champlain Special Designation Act of 1990. The LCBP is a government funded initiative working in partnership with numerous cooperating agencies, organizations and individuals to develop and implement the comprehensive pollution prevention, control and restoration plan for Lake Champlain. The program is guided by the Steering Committee which represents a broad spectrum of lake-basin interests and organizations from New York, Vermont, and Quebec including local government and citizen representatives, scientists, and state and federal agencies. In addition, many individuals are involved in the planning process through advisory committees and interested citizens participate through public meetings. The ultimate goal of the LCBP is to insure that the Lake and its drainage basin will be protected, restored and maintained so that future generations will enjoy its full benefits.

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