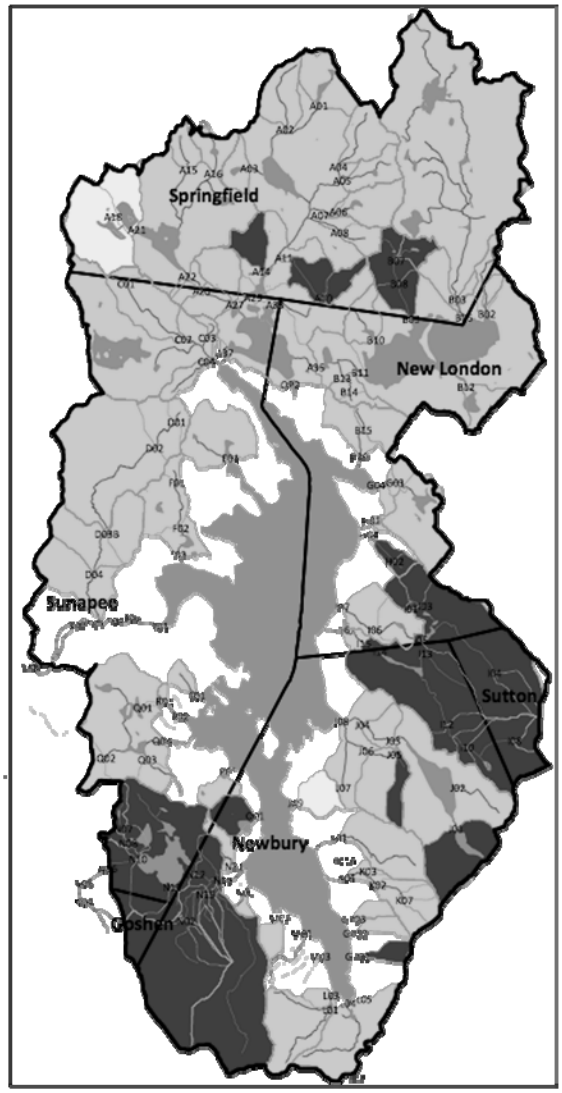
the Beacon

of the Lake Sunapee Protective Association

February 2011



This map of the Lake Sunapee watershed, with subwatersheds delineated, shows by the dark areas those at risk due to culvert failure, under current rainfall conditions. Two additional areas (very light gray) are marginal, and others may become vulnerable with increased development and rainfall.

Runoff and Culvert Study Findings Presented to Towns

The Lake Sunapee Watershed Infrastructure Project, funded by a grant from NOAA (see *the Beacon*, October 2009 and later issues) has completed field work and most data analysis, and is in the process of presenting its results on the adequacy of watershed culverts to manage stormwater runoff.

Representatives of planning, zoning, conservation and select boards from Sunapee and New London have met and heard presentations by lead investigator Michael Simpson (of LSPA's Scientific Advisory Committee); Newbury's meeting is scheduled for March. In May, there will be a large public presentation of the research project, including costs to replace inadequate culverts as compared to costs to repair roads, shoulders and culverts when culvert capacity is exceeded and flash floods occur.

Why Study and Upgrade Culverts?

Factors leading to the need to examine and upgrade runoff capacity include the fact that older culverts were not engineered for expected storms although the experience of the road crews installing them led to managed placement. Today's planning includes analysis of precipitation patterns, soil infiltration capacities, the steepness of slopes that increase runoff, and the land cover and land use in the area that feeds into a given culvert. Increased development, with the consequent increase in impervious surfaces, and the changing trends in precipitation have put more pressure on stormwater infrastructure. In recent years our area has seen more intense rainstorms, more often, particularly in spring and fall seasons.

Increased runoff leading to

(**Culverts,** *Cont. bottom of next column)*

(**Culverts,** *Cont. Page 3)*

Wild Goose Appeals – Patience with Process

LSPA's appeals of permits granted to NH Fish & Game (F&G) for the boat launch at the Wild Goose site in Newbury have been heard. Now LSPA and its attorneys and experts wait for outcomes as the councils hearing the appeals deliberate, vote and write up their decisions.

The Water Council has voted that the Alteration of Terrain permit should go back to the NH Department of Environmental Services (DES) to be reviewed. This order to remand has not yet been officially issued in writing, but LSPA's attorneys have requested these "findings".

The Wetlands Council has not yet closed its hearings and deliberation.

The Beacon will report further when both groups have issued written decisions.

Memorial Contributions

LSPA has recently received contributions honoring the memory of:

Betsy Alexander
Judy Dietel
Paul Grevstad
Remsen Kinne
William Mayer
Barbara & Oliver Oldman
Ellen & Sam Stevens
David Thayer
Audrey Weathers Wallace

Our sincere thanks to the families and friends who thought LSPA an appropriate recipient for these memorial gifts.

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From the Helm: Goals are Good

The LSPA Board is off to an energetic start in the New Year. Each Board committee identified one major goal for the New Year. Goals for the 2011 year are as follows:

Science, Chair Kak Weathers: Lead the international Global Lakes Ecological Observatory Network (GLEON) Conference for scientists at Lake Sunapee in October;
Education, Chair Taffy Beckman: Create new, engaging exhibits at The Knowlton House to educate the public;
Land Preservation, Chair Barbara Freeman: Work with ASLPT and other land preservation groups to preserve land critical to the environment and water protection;
Membership, Chair Dave Macdonald: Increase membership by 25 new members;
Public Access, Chair Charlie Forbes: Bring environmentally friendly closure to Wild Goose;
Finance, Chair Phil Schulz: Report finances, including budget projections, quarterly to the board;
Knowlton House, Chair Sue Venable: Promote being green and walking tours of the rain garden;
Loons, Chair Kristen Begor: Recruit more volunteers for full lake coverage of loons;
Beacon, Chair Midge Eliassen: Produce five Beacons plus the Annual Report, to keep our membership informed;
Lighthouses/GLEON Buoy, Chair John Merriman: Continue maintenance efforts and explore LED lighting;
Development, Chair Gordon Marshall: Redefine membership categories and promote the 1898 Col. Hopkins Society;
Events, Chair Debbie Dellinger: Implement our first Beacon Night at The Knowlton House;
Nominating, Chair Deb Benjamin: Recruit members with diverse skill sets to serve on the Board.

It is my privilege and pleasure as President to serve with a truly gifted and talented Board and staff.

Tanya Wilkie, President

Stowell Wins Door Prize for Free Consulting

At last winter's Wellborn Ecology Fund conference, where LSPA's Kathleen Stowell was one of the presenters, she won a door prize of two days' free consulting time by Peer Associates. (This group was consultant to LSPA in 2006 when we developed a survey of all elementary teachers in the region regarding their needs for support in ecology curricula.)

LSPA is using this donated consulting time to develop a system for educational program evaluation. It will include using Survey Monkey online to get teacher and administrator feedback on LSPA's classroom visits, field trips, and teacher workshops. The tool being developed will also set up a systematic way for Stowell to do and record her own evaluations after each teaching experience.

Editor's Note: This short Beacon without a color masthead is a brief update for members, falling between the December 2010 Beacon and LSPA's Annual Report which should reach members in April. The next full issue of the Beacon will come out in the spring.

A publication of Lake Sunapee Protective Association Founded 1898

All articles prepared by Staff, Officers, *Beacon* committee or *Beacon* Editor Midge Eliassen unless noted. Photos by Midge Eliassen unless credited otherwise.

Collaborators Receive INBRE Grant to Study Mercury

LSPA will be a participant in a large National Institute of Health (NIH) grant awarded to academic institutions in NH. Dartmouth College and the University of NH are the lead institutions for a group, including eight additional undergraduate colleges, who have received a $15.4 million grant under NIH's IDeA Network of Biomedical Research Excellence (INBRE) program. INBRE grants intend to foster collaboration and sharing of resources between institutions with doctoral programs in biomedical research and undergraduate and community colleges, and to promote undergraduate student research experience.

LSPA Scientists

The NH INBRE grant application included a research proposal by LSPA Scientific Advisory Committee members Kak Weathers (Cary Institute of Ecosystem Studies and LSPA Research Director), Nick Baer (Colby-Sawyer College and LSPA Board member), Celia Chen (Dartmouth College) Kathy Cottingham (Dartmouth College) and Holly Ewing (Bates College). Their proposal is to study the linkages among dissolved organic compounds and mercury cycling in streams of the Lake Sunapee watershed, using stream invertebrates as sentinel species. LSPA will provide support ranging from use of The Knowlton House for meetings and housing visiting scientists to working in the field with the researchers.

Collaboration and Student Research Opportunities

The scientists who are involved with this mercury research met in December 2010, upon the news of the NH INBRE grant, to map out their plans for the five year grant. Key to their thinking is how to involve students in the research and how to build on the already existing collaboration between LSPA, CSC and Dartmouth.

Chen is an ecotoxicologist whose research focuses on metal contaminants in aquatic food webs. Her work at Dartmouth has been part of a toxic metals Superfund research program looking at the human health impact of exposure to arsenic and mercury. (The other SAC members participating are already working on Lake Sunapee issues, especially the cyanobacteria *Gloeo,* and have been profiled in earlier *Beacons*.)

The mercury study is only a very small part of the large INBRE grant. CSC has another professor doing a research project under the INBRE program, and the college will receive a total of nearly $1 million in support of the INBRE research projects. LSPA is a collaborator under the mercury study, and will also benefit by its participation in the grant research as well as from the greater knowledge we will have of water quality in the streams feeding Lake Sunapee.

(***Culverts,*** *Cont. from Page 1)*

erosion and flooding has both ecological and economic consequences. Sediment filled streams and washed out roads have high eventual costs. Anticipating where problems will happen and updating culverts will lessen these costs.

Low Impact Development

In addition to culvert updates, much can be done on the land to lessen stormwater impacts. Low Impact Development (LID) principles aim to retain runoff on a site or lot, by techniques to permit water to infiltrate the soil rather than run off the surface and create erosion, on that site or areas further "down hill".

Town of Sunapee

As the map on page 1 shows, the town of Sunapee has fewer vulnerable areas than Newbury or New London. Sunapee has more permeable soils and less steep slopes than the areas to the south and east. Sunapee also has had a long term culvert replacement program, under the direction of Road Agent Tony Bergeron, that has aimed to stay ahead of the increasing runoff from heavier and more frequent rainstorms.

Members of LSPA's education committee traveled to Burlington, VT in early January to visit the ECHO Center on Lake Champlain. The group experienced ecological displays and interactive materials as part of their research on appropriate exhibits to install at LSPA's headquarters. Here, Kathleen Stowell tries an exhibit on frogs, watched by Executive Director June Fichter and education committee chair Taffy Beckman.

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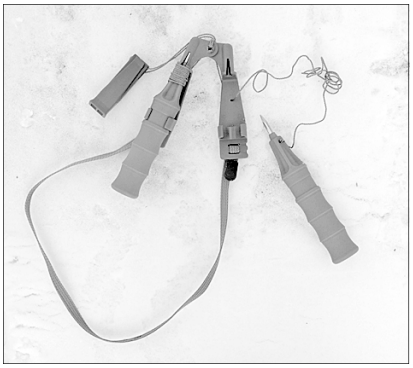

Safety on the Ice

Winter is a time for fun out on the lake, but hazards are real if you are not careful and prepared. An LSPA member who fell through the ice in early season skating credits the ice claws shown above and appropriate clothing for his survival.

Safety ice claws with steel points, available from www.nordicskater.com, fit in a comfortable harness that goes around your neck (it also has a whistle). Should you fall through the ice, they are immediately accessible and can be used to drag yourself back onto the shelf of ice where you fell in.

Continued below the fold

Safety on the Ice

Continued from above the fold

Dressing warmly in layers of synthetic material that will shed water, and covering with good wind resistant outer layers, will help you make your way home if you get wet. Down and cotton absorb water and are not good choices for going out on lake ice.

Open Water or Thin Ice to Avoid

There are four kinds of open water or thin ice to give a wide berth: inlets, areas near docks where ice prevention devices are in use, areas near submerged rocks, and "leads". In areas around rocks just near the surface (often near buoys) and along the shore in early and late season, water motion causes upwelling that can leave the ice thin. A lead is an opening in the ice created by movement, wind or current; leads can open and close suddenly and must always be avoided. Leads definitely form on Lake Sunapee – it was an open lead in solid black ice that led to the early season ice skater's close call.

LSPA's water quality buoy, part of the worldwide GLEON network of lake data collection buoys, is spending the winter in Sunapee Harbor. After two years of winter battering, at its normal mid lake location, leading to difficult repair work out on the ice and expensive damage to instruments, LSPA decided that the buoy would spend the 2011 winter in the harbor. Here it can record much of the data collected in other years, but not be vulnerable to the high winds and ice pack movement it was subject to in the middle of the lake. The buoy will be returned to its normal position, off Loon Island, in the spring.