



Water Quality in the Lake's Region

Situation:

The fresh waters of New Hampshire represent a valuable resource contributing to Belknap County's economic base through recreation, tourism and real estate revenues. Some lakes and rivers also serve as current or potential drinking water supplies. For most residents, our waters help insure a high quality of life. However, New Hampshire currently leads all New England states in the rate of new development and redevelopment. The long-term consequences of the resulting pressure and demands on the state's precious water resources remain unknown.

Of particular concern is the increasing non-point source pollutant loading due to watershed development and land use activities. Local citizens, lake/watershed associations and local decision-makers remain in dire need of additional information required for the intelligent management of our water resources. Limited financial resources do not allow for adequate monitoring of these waters by state or federal agencies, and the increased development and recreational use require a more accurate assessment of the water quality of our estuaries, lakes, ponds, rivers and streams.

Recent research confirms the importance of maintaining the quality (and quantity) of our fresh water resources. For the Lakes Region of New Hampshire, it was determined that a perceived decline in water quality in lakes and rivers would result in a \$245 million loss in sales, an \$8.8 million loss in local income and an estimated loss of at least 396 jobs (Nordstrom 2007). A previous study (Gibbs et al 2002) estimated as much as a 25% loss in property value occurs from a loss in water clarity. In addition with water demand exponentially increasing against development and growth our pristine NH waters, especially our lakes are poised to serve as primary and secondary water supplies.

UNH Cooperative Extension's Response:

The NH Lakes Lay Monitoring Program (LLMP), supported and administered by UNH Cooperative Extension, offers a cost-shared, quality-assured water quality monitoring and assessment program taking advantage of the commitment of county residents to serve as volunteer monitors. We have worked with a majority of the towns and local lake and watershed associations in Belknap County (for over 35 years in some cases) providing monitoring and water quality assessment assistance that include the following water bodies:

Lake Winnepesaukee

- There are two long-term monitoring sites and five sites in Meredith Bay that were expanded in 2008. The UNH Center for Freshwater Biology field team for expanded and in-depth monitoring also visited the site in 2008.
- Alton Bay has four active sampling sites with three other sites monitored intermittently. The UNH Center for Freshwater Biology field team visited twice for expanded and in-depth monitoring in 2008. We provided direct assistance to a middle school student who conducted water quality sampling in the Merrymeeting River during the period of spring runoff as part of a school science project.
- Governor's Island has one active deepwater monitoring site and eight historical shore land sites.

Opechee Lake

- Two deepwater monitoring sites were recently re-established.

Lake Winnisquam

- Volunteer monitors are sampling four stations to track long-term changes and to monitor suspected problem areas in the north-westerly quadrant of the lake.

Squam Lake

- Continued volunteer monitoring was undertaken at Sturtevant Bay and Dog Cove (Belknap county sites) and included three visits by the UNH Center for Freshwater Biology field team for expanded and in-depth monitoring.
- LLMP staff attended an informational session at the Squam Lakes Association for volunteers and new Squam Lake Association staff to provide an overview of the water quality monitoring program and to answer questions the volunteers/staff had (ongoing every year).

Silver Lake (Belmont/Tilton)

- One deep monitoring site as well as inlet and outlet sampling.

How We Make a Difference:

- *Landscaping at the Water's Edge*, a 96 page book written by Extension staff including Amy Ouellette, was published in 2007. In October, 2007, at the Meredith Community Center, forty five municipal employees and landscapers attended a two-day workshop based on the book's ecological landscaping theme. According to a phone survey conducted 10 months later, 92% of participants reduced the amount of fertilizer normally used on lakefront properties they own or landscape.

Community Capacity Building:

- NH LLMP volunteers are empowered to act as local experts on the water quality conditions and in providing assessment results as well as resource stewardship support through UNH Cooperative Extension and cooperators (NH Lakes Association, NH Dept. of Environmental Services, NH Fish and Game) outreach programs and materials. Over 84% of our participants report back to their local communities in this way. There are over 27 active lake and tributary monitors working in Belknap County.
- In conjunction with NH DES, the UNH Cooperative Extension Water Resources specialist has presented two overview sessions in Meredith on how shore land owners can minimize their water quality impact and follow the recent changes in the NH Comprehensive Shoreland Protection Act. Post workshop surveys indicated that over 88% of the participants gained new knowledge on water quality protection from the presentation.

In addition, we have provided analysis, special project support and presented information at public hearings and sessions including the following:

- For the past five years, we have worked with Meredith officials (town manager, community development director and town planner) to address the questions regarding the need for expanding the sewer system. We recently helped develop an expanded sampling program to better locate the problematic land use areas contributing to the decline of Meredith Bay. In 2008, we participated in a special training program for volunteers and Plymouth State University students to participate in this study.
- UNH Cooperative Extension staff provided materials (i.e. monitoring design/analytical services) to the Lakes Region Planning Commission to help develop the Lake Winnepesaukee Watershed Master Plan grant application which secured an EPA/NH DES Nonpoint Source Program Grant (\$76,640). The primary study area for this grant is completely within Belknap County.

Economic Assistance:

- We (NH LLMP and UNH Cooperative Extension) have committed over \$15,000 for in-kind services grant matching for various federal and state-funded Belknap County organization grants concerning lakes and their watersheds in the past five years.
- Through reduced sampling costs and professional services, the NH LLMP has saved Belknap County participants (lake associations and towns) an average of \$4,253 per year.

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