

UPDATE FROM THE **CENTER FOR THE ENVIRONMENT**

Addressing the science, policies, culture and economics of the natural environment in northern New England through collaborative research and education

Plymouth State University

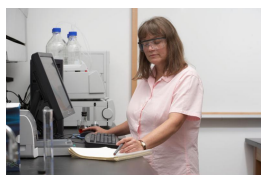
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## Research

### **New Laboratory Ready for Summer Testing**

The Center for the Environment's new Natural Resource Chemistry Laboratory is getting ready for a busy summer of testing and analyzing water samples. The lab serves the Center's research needs, and, through a partnership with the New Hampshire Department of Environmental Services, it also serves central and northern New Hampshire's water quality monitoring needs. Our facility in the Boyd Science Center, located just off I-93, provides a convenient site for testing of water samples for the region's lake and river monitoring programs.



The lab staff includes Janet Towse and Adam Baumann, and one under-

graduate research assistant, Mike Bailey. A variety of analyses are available. For more information, contact the laboratory at 535-3269.

### **Newfound Watershed Plan**

The Newfound Lake Region Association (NLRA) has partnered with Plymouth State University, the University of New Hampshire, Newfound Area School District, and Jeffrey H. Taylor & Associates to develop a master plan for the Newfound Lake watershed. This project is funded by a Watershed Assistance and Restoration Grant from the New Hampshire Department of Environmental Services.

Development pressures and recreational use pose significant threats to water quality in Newfound Lake. The goal of the watershed plan is to improve land use management practices, maintain water quality, and protect habitat.

A watershed plan is often a key component of managing water resources on the watershed scale, as a plan can provide a holistic framework for the application of management tools that meet water resources goals for the entire watershed. As watersheds typically cross town lines, the development of a watershed plan is a collaborative process involving multiple stakeholders.

The Center for the Environment and PSU's Office of University Relations are involved in the project. The Center's associate director Brian Eisenhauer will

conduct an initial survey of residents in the watershed to determine their values and desires for the future of the watershed and its environmental characteristics. This survey will also provide information for stewardship education by asking questions to determine the knowledge base of residents. A follow-up survey will determine if the watershed planning process results in changes in knowledge, and determine the most effective steps to increase stewardship. Oral histories of the region will also be collected to determine past land use and general attitudes about the area.

University Relations will work with the Center and the NLRA to help increase awareness about the need for watershed planning and management, promote watershed initiatives and establish links in the public's mind about the connection between land use, watershed management, and water quality in Newfound Lake.

### **High Elevation Lakes**

The federal Clean Air Act of 1990 has resulted in substantial reductions in acid rain. In the northeastern United States, EPA-funded research, led by the Center for the Environment's director Steve Kahl, has documented recovery in lake chemistry over the past decade, a success story for environmental protection. Part of the evaluation of the effectiveness of the Clean Air Act has been to study the response of high elevation lakes, which respond more quickly than others, giving advance indication of regional response. The New Hampshire Electric Cooperative Foundation has funded the Center to sample remote, high elevation lakes in New Hampshire this year, adding data from lakes in the region to national databases.



Samples collected will be analyzed at the Center for the Environment's Natural Resources Chemistry Laboratory using standard methods established by EPA. Reports of the data will be developed and the public will be informed of these results in press releases and other materials.

## Education

### **Mapping Changes in the West Antarctic Ice Sheet**

The Antarctic continent is hardly the place you'd expect to find a PSU student, but Jennifer Horsman recently returned from an expedition in Antarctica, where she gained invaluable knowledge and experience in studying glacial geology with ground-penetrating radar (GPR), global positioning satellite (GPS) technology and geographic information system (GIS)-based mapping.



Horsman began her work on a master's at UNH, focusing on global climate change and atmospheric chemistry. When her original advisor left UNH, she started to work with her current advisor, Dr. Michael Prentice. Shortly thereafter, Dr. Prentice accepted a position at PSU and Jennifer decided to finish her master's degree at PSU.

Horsman prepared for the Antarctic coursework with a practicum much closer to home, at Squam Lake. The practicum provided experience in using GPR to detect the character of sediments on the lake bottom.

Horsman flew to Antarctica in November 2006. The goal, according to Prentice, was to determine how certain controversial glacial deposits formed, based on the geometry of internal sediment structures. "The deposits were transported by the West Antarctic Ice Sheet that today is 600 miles away from the study area and only a shadow of its former size. The scale of and reasons for the last collapse of this ice sheet are written in the deposits. No one has looked into the deposits before using radar. The information gives insights into the vulnerabilities of the ice sheet and will impact predictions for how the remnant ice sheet will respond to global warming."

While the work was physically demanding, Horsman enjoyed the adventure. "The scenery was awe inspiring," said Horsman. She will graduate in May and encourages other graduate students seeking practical scientific research experience to consider Plymouth State University, adding, "PSU has a great program in Environmental Science and Policy with people willing to support our work."

## Outreach

The Center for the Environment's work supports Plymouth State University's regional university mission. As part of the M.S. in Environmental Science and Policy, classes have recently incorporated projects for a local community or organization. This winter, students in a Land Use Seminar course worked on an audit of land use plans and regulations for the Town of Holderness. The purpose of the project was to help the town identify inconsistencies between stated land use intentions, accepted principles, and actual practices. Working with the Holderness Planning Board, the class reviewed planning documents and regulations and prepared a report for the Board. The Planning Board Chairperson stated, "The audit is a great tool to help the Planning Board make our regulations clearer and hopefully more effective."

This spring, the Environmental Consulting class is conducting a Phase 1 Environmental Assessment of the New Hampton School. The objective of this project is to identify recognized environmental conditions in connection with current and past uses of petroleum and hazardous substances on the campus. The school will use this information in future campus planning.

**Yes, I'd like to help!** \_\_\_\_\_ Please send me more information about the Center and its programs.

My interests are:

\_\_\_\_\_NH forests    \_\_\_\_\_NH lakes    \_\_\_\_\_NH rivers    \_\_\_\_\_NH mountains  
\_\_\_\_\_drinking water    \_\_\_\_\_land development    \_\_\_\_\_toxics in the environment    \_\_\_\_\_Other (please specify)

My primary geographic interest is in the following region: \_\_\_\_\_Lakes Region    \_\_\_\_\_White Mountains    \_\_\_\_\_Other (please specify)

Name: \_\_\_\_\_ E-mail Address: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

*If you would prefer to receive this newsletter electronically in the future, please let us know at [jhammondrowan@plymouth.edu](mailto:jhammondrowan@plymouth.edu).*

## Talks, Presentations and Conferences

The first annual **New Hampshire Water Conference** was held on April 9, 2007 at the Grappone Conference Center in Concord. The conference drew over 200 people, including researchers, legislators, water system operators, land use planners, and government officials. Governor John Lynch spoke to the attendees about the importance of New Hampshire's water resources. The conference was organized by the Center for the Environment, NH Geological Survey, NH Department of Environmental Services, NH Water Resources Research Center at UNH, NH Water Works Association, US Environmental Protection Agency, and US Geological Survey.

The conference theme was "*Sustainability of New Hampshire's Water Resources in a Developing Landscape.*" The current knowledge of the quality, quantity and use of water was examined through talks and sessions on the current conditions of New Hampshire's water resources, water

demand trends, projected household costs for water, effects of climate change, and the sustainability and management of surface and ground water. The day closed with a panel discussion on the future outlook on the sustainability of our water resources.

Participants at the conference commented that the day provided needed information about the state's water. The conference will be an annual event, so save **April 16, 2008** for the next NH Water Conference. *For more information, visit [nbwaterconference.org](http://nbwaterconference.org).*



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