

## Algonquin College Strategic Academic Partnerships

### APPLIED RESEARCH ON MUSKRAT LAKE

#### Algonquin College in the Ottawa Valley – Pembroke Campus

Algonquin College students from both the Pembroke and Woodroffe campuses are collaborating on two applied research projects related to Muskrat Lake and its surrounding watershed. Both projects rely on community and industry partnerships along with additional financial support from Algonquin College's Office of Applied Research and Innovation.

In recent years, Muskrat Lake near Cobden, Ontario has experienced several algal blooms including occasional outbreaks of blue-green algae. These outbreaks pose a concern as they may release toxins that, when ingested, can have negative health effects on humans and animals. The decay of algae can also affect various life stages of certain fish species and impact their surrounding ecosystem. More accurately called cyanobacterial blooms, blue-green algal blooms are formed in local water bodies when there are excessive nutrients and other favourable environmental conditions. Not all algal blooms contain blue-green algae, so from a scientific point of view, it is helpful to understand the various types of blooms and to look at new monitoring tools and approaches which may help us anticipate their occurrence.

One of the important steps towards reducing their extent and frequency is to increase awareness of local algal blooms and their underlying causes. In partnership with the local Pembroke Ministry of Natural Resources and industry partner Algal Taxonomy Inc., a company with extensive expertise in algal species identification, Algonquin College Forestry Technician students are involved in projects that are designed to allow them to apply theoretical knowledge gained in their Geographical Information Systems and Freshwater Environments courses towards a relevant community cause. Their work can make a contribution to other information being gathered about local algal bloom species and occurrences.



As part of their study, students from Algonquin's Pembroke campus have been locating, mapping and collecting winter water samples and compiling water quality depth profiles for temperature, dissolved oxygen, chlorophyll, turbidity, and conductivity, at a few locations on Muskrat Lake. Some of this work contributes to a more year-round understanding of the lake and the changes that can occur as the spring and summer seasons advance. Students will continue their investigations over the summer semester.

Their work includes the testing of a new algal sensor currently mounted on a high-end submersible water quality device. These devices are commonly used in industry but the algal sensor added to the device is relatively new on the market. Both teams of students will continue their applied research projects as a component of their Freshwater Environments course which is offered in the summer. Students in the new Environmental Technician program at the Pembroke Campus will be able to continue this research throughout 2012 and into 2013.



Figure 1 & 2 – Fish sampling: Catching and labeling a smelt for data analysis.

Both of these Pembroke Campus student projects are also part of two multidisciplinary applied research initiatives with the Water and Wastewater Technician students at the Woodroffe Campus in Ottawa. Those students are developing methods to calibrate the algal probe and learning how to test for some of the more common algal toxins.

Forestry Technician students Melissa Meneghetti, Jori Baldwin, and Katharine Van der Jagt are part of the team that used a simple water sampler to collect water from a specified depth. They also collected winter smelt samples to prepare for some biological studies that will take place later in the semester. Melissa and her team lead one of two applied research projects on the lake.

Forestry Technician students Matt MacKenzie, Tim Streng, Evan Dombroskie and Cam Ellis lead a second applied research project on Muskrat Lake which involves the collection and mapping of water quality data using Algonquin College's new water quality probe, including the algal sensor. Later in the summer they will be collecting water samples during anticipated blooms in an effort to assess the usefulness of the probe in predicting, characterizing and quantifying the presence of algae in the lake. (Photos: Michael Martin)

**For more information on Algonquin College's Applied Research projects at Muskrat Lake, contact:  
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