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Lure of the rings

Mount A tree ring lab could hold clues to turtle growth, climate change

By **TOM McCOAG**
Amherst Bureau

SACKVILLE, N.B. — Acadia University student Monik Richard hopes studying tree rings will give her some insight into Nova Scotia's endangered Blandings turtle.

"Turtles grow one ring per year on their belly just as trees grow one ring per year," the Moncton native said as she sat among the instruments of Mount Allison University's new dendrochronology lab.

Dendronchronology is the study of tree rings.

"By studying tree rings we can learn about the climate and if we can correlate their growth pattern with the rings on the bellies of the turtles, we can determine the effect the climate has not only on the trees, but on the turtles as well.

"If we find trends that have to do with the climate and how it affected the turtles in the past, then we can predict the future climate and the growth or lack of it of these endangered turtles that are only found in southeast Nova Scotia."

Richard's studies, which have just begun, are for her master's degree in conservation biology. Her studies would have been made more difficult without the dendrochronology lab, the only one of its kind in Atlantic Canada.

Officially opened earlier this month, the lab was created by geography professor Colin Laroque with a $20,500 grant from the Natural Sciences and Engineering Research Council of Canada.

The lab looks like many others. It has microscopes, tools for taking tree-core specimens and preparing them for examination, as well as high-resolution scanners and several computers.

The computers are the heart of the lab. Their software can measure the width of a tree ring "in the snap of a finger," Laroque said in an interview.

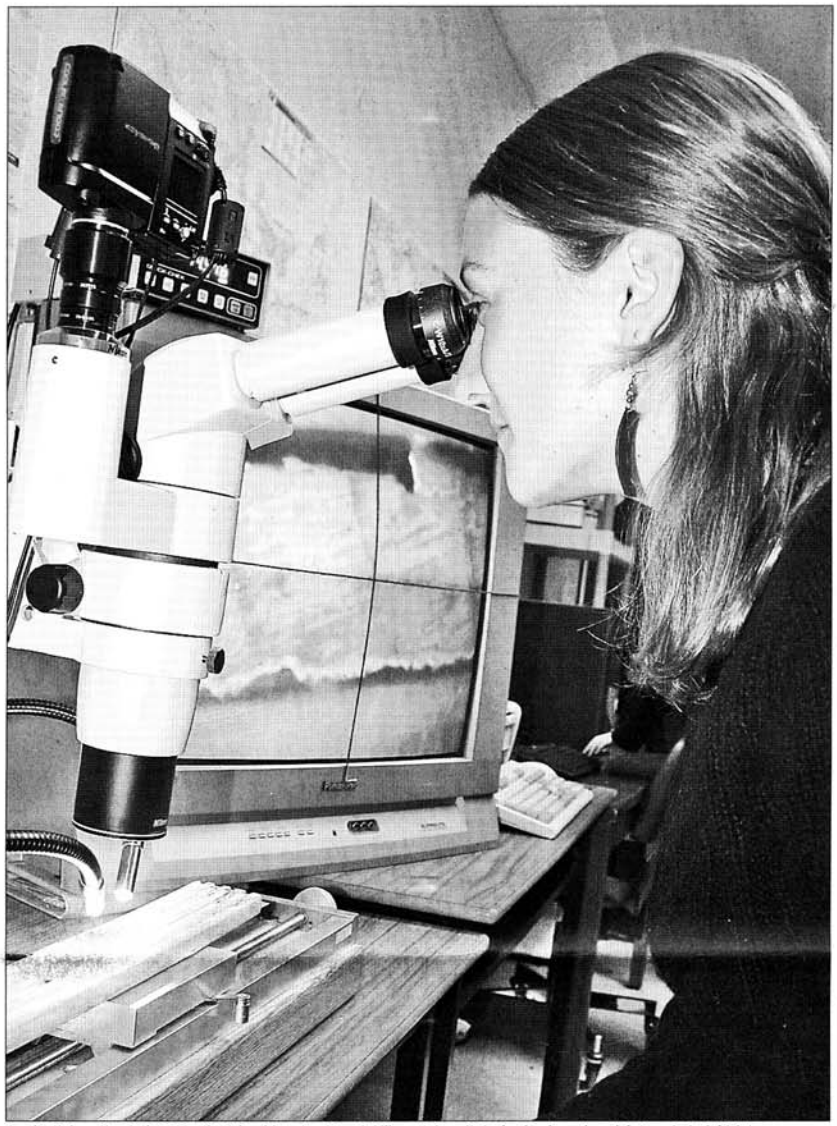
"The old way was good, counting and measuring the width of each individual ring by hand, but it was time consuming. By noon your eyes were tired, yet you couldn't stop in the middle of the work because you'd lose count. This way the work is done quickly and if you have to leave you can pick it up right where you left off."

The software can also produce graphs that provide a visual picture of a tree's good and bad growth years, enabling a look "back in time" at the climate during the tree's lifetime, Laroque said.

That data is important because the information contained in old-growth trees goes back much further than any of the weather records kept in places like Halifax, Saint John, N.B., or St. John's, Nfld.

"The weather data goes back about 100 years. The information in the trees on dry years, wet years, good growing years goes back two or three hundred years. So it gives us a good picture of what the climate was like over that time and even the effect that such things like the Labrador Current and the Gulf Stream have had on the environment," Laroque said.

"In addition, this research can give us that information from remote areas that don't have and probably will never have a long-term climate station."



Acadia University student Monik Richard is using Mount Allison University's dendrochronology lab to gain insight into an endangered Nova Scotia turtle. The computer monitor shows an enlarged image of a tree ring. *(TOM McCOAG / Amherst Bureau)*

Data from the trees will help scientists predict what the environment will be like in the future.

"The more data we can get from different locations, the more accurate the models of the climate in the future will be. That's important for such things as the forest industry," Laroque said.

"For instance, if the models show the area is warming, then a forester might consider planting a different type of tree because we'll be able to tell them what kind of tree will grow well and which would grow poorly in the future. Knowing that might be what keeps the pulp mills going."

Knowing the past climate is also important to biologists who will be able to examine, like Richard is doing, the effect of climate on wildlife. Knowing that will enable them to predict the future of an animal, like the turtle, and hopefully help conserve them.

The lab can also help establish the age of historic buildings by comparing samples from wooden beams to core samples from trees.

"We can date it very precisely. For instance we did a test on the local carriage factory here in Sackville. The data indicated the trees for it were cut in 1843, while the data for a local church showed the beams for it were cut in 1906," Laroque said.

The method is more accurate than carbon dating, which is only accurate to within 25 to 50 years, he said.

Data collected at the lab will be added to similar data collected at other dendrochronology labs across the country. That, in turn, will help Canada maintain its position as a world leader in probing climate change.

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