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Examining the past, predicting the future

By Tracy Bell

They have discovered the oldest red spruce in the world, tested for long-term pollution in cities surrounding toxic waste sites, and assigned calendar dates to the oldest wooden buildings and artifacts in Atlantic Canada. Dr. Colin Laroque, assistant professor of geography and environment, and his team of student researchers make up Mount Allison's Dendrochronology Lab (or MAD Lab as they call it). And their work is getting people talking and thinking about trees.

Simply put, dendrochronology is the dating of past events through the study of tree rings. Members of Mount A's MAD Lab operate by extracting core samples (about the size of a pencil) from a tree or piece of historical wood. They then take their samples back to the lab and, with the use of microscopes and measurement systems, determine the age of the wood as well as environmental signals contained within the patterns of the rings.

The findings from this kind of research are more wide reaching, relevant, and important than you might think. As the only such lab in Atlantic Canada, Colin and his team are widely sought after by businesses, individuals, and government for their expertise.

"Atlantic Canada is steeped in history but a lot of the wooden remnants are slowly deteriorating. Our lab is often contacted by local historians trying to unlock the mysteries of old buildings. Once a time frame is established through core samples, written and oral evidence can be put into proper context. Without our lab, artifacts surrounding the history of our region simply fade away with time," notes Colin.

The MAD Lab is involved in more than a dozen projects at any given time. The focus of some of its current research includes studying the effects of decades of pollution stemming from operations at the Sydney Steel Plant, improving Nova Scotia's climatic records by collecting environmental data

from the oldest trees still standing in the Province, and using comparative research methods to pinpoint the exact age of many Maritime structures from the 16th and 17th centuries.

By digging into a tree's past, Colin and his team are also helping scientists predict future climate change. While trees can't predict the weather, their rings tell a story about the kind of weather conditions that have occurred over the past decades and even centuries. By understanding the past, scientists are able to predict, with greater accuracy, the climates we can expect in the future. This kind of information has global implications.

March 2007-2009 is International Polar Year (IPY). Dozens of countries and tens of thousands of researchers from around the globe are working to understand Arctic and Antarctic climates better. Colin has received funding for two major research projects with IPY. Both take place in remote areas of Labrador. For the first project Colin is using

his expertise in dendrochronology to provide a better picture of climate change patterns and their effects on the tundra region's trees. The second project involves analyzing core samples from just below the tree line in the sub-arctic regions of Labrador.

"We are looking at the ecological structure of the sub-arctic region and changes that have occurred there over the past 300 to 400 years. Because of the isolation of the region this has never been attempted before. Our research will allow us to see what effect climate change has already had on the region and what changes we can expect in the future. Our hope is that the tree rings will reveal the history of past environments, which, in turn, will teach us more about future environments."

It's an exciting area of research, with real world implications for the environment, and Dr. Colin Laroque and his team at the MAD Lab are leading the way forward — by examining the past. ■



Colin Laroque and biochemistry student Mary McQuaid are seen here dating an archeology building in Annapolis Royal, NS.