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FRIDAY/7 A.M.  
DECEMBER 10, 2004canadaeast.com  
Eastern Canada's Information Source

B4 Friday, December 10, 2004

LIFE &amp; TIMES

Times &amp; Transcript

## Open your ears to what the trees have to say

Talking trees? Yes, we've all heard of whispering pines, quaking aspens, murmuring maples and more. No, there is little doubt about trees not talking as we know speech, however, that certainly does not mean trees don't have a lot to say. Let's spend a moment today tuning in to the incredible things trees can tell us. The secret to the whole affair is learning to interpret the "language", and yes, it's all recorded just as accurately (if not more so) as any human historian might have recorded events as they happened that year. Yes, trees tell a whole story of their past experiences, such as how cold it was that year, how dry it was that year, what wind they encountered that year, what the snow load was that year, what chemicals they were exposed to that year, and lots, lots more. This incredible historical record is all recorded in the annual growth rings of the tree.

Let's take a look at what the rings can tell us and the wealth of information they are willing to share with those who speak their language. To get on par with these folks that can interpret this well-recorded tree life story, we'd best learn a new word for the week... dendrochronology, the study of tree rings. The study of tree rings is not new, however, laboratories devoted to it in Atlantic Canada are. There are indeed dendrochronology labs in Canada, with the major ones located at Laval, Que., the University of Western Ontario and the University of Victoria in B.C. However, over the past year, N.B. now has a lab devoted to the study of tree rings in Atlantic Canada. It's centrally located in Sackville at Mount Allison University. The MAD Lab (Mount Allison Dendrochronology Laboratory) is very actively investigating what some



This cross sectional image is of a Black Spruce tree from Cap Maringouin near Rockport, N.B., shows the annual growth rings. Note the wider rings on one side in a few rings indicating a windy growing period that year.

of our Maritime trees have to tell us and they've been getting "an earful". Dr. Colin Laroque is the director of the MAD Lab and yes, this lad can look at the rings of a tree and understand what it has to say. Fortunately, in a university setting, Colin is able to teach students his skills. Therefore, we can look forward to a new crop of people trained to interpret the language of Maritime trees and pass on the very significant historical records these trees have to tell.

Let's take a look at a tree-ring picture to understand better what is happening. Glance over the accompanying image today to better illustrate a very simplified explanation. One growth ring runs from the end of one dark line to the end of the next. Each spring as the buds of the trees start to burst open and needles (leaves) start to appear, some very rapid radial growth occurs. This is the "early wood", the area at the start of the annual growth ring. This thick-

ness of early wood is actually laid down very quickly and in many species may last only six to eight weeks. The radial-growth will then start to slowly alter to become what is called "late wood" with the cells becoming thicker and darkening. Voilà, an annual-growth ring has been created. The complete growth ring is often completed after a few months. At this point, the tree may start to alter where it sends its growing energy, diverting it back into leaves, cones, roots and other nutritional demands. So, yes, the ring we see does indeed represent one year's growth, however it probably took only a few months in a tree's growth season to complete the ring. Neat, eh!

The image today shows a whole tree in cross section. The MAD Lab uses whole cross sections when the opportunity presents itself without destroying a tree. The method they use routinely is by taking an "increment core". This is simply a pinkie-finger-sized tubular section removed from the tree with a hand auger. The wound heals over readily and the life of the tree goes on with its historical record shared with the researchers. This core removal can be compared to the minor wounds created by tapping the sugar maple trees each year, which results in relatively minimal tree damage.

A growing tree will take all the signals it gets from its immediate environment and this information will be reflected in the way in which the annual ring is laid down that year. If a certain year happened to be very dry, that would be reflected in the thickness of the ring (width of growth). If it was a year of pleasant temperature and adequate moisture, the ring may be pleasingly plump. If there happened to be a heavy prevailing wind that year, the growth on one



side of the tree would differ from that on the other. If the tree had been damaged by fire, insects, disease, mechanical damage, or other events, it would be recorded in the ring of that year. If a tree had been exposed to a certain chemical that could be taken up and incorporated into the woody tissue of the tree, then that chemical could be traced within the ring pattern of the tree. This means a chemical analysis (dendrochemistry) could tell us what chemical, the relative amount of that chemical and in what year a tree had been exposed. One could only imagine the amount of information this type of

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study could lead to in our pollution-prone society. We have been harvesting our trees in the Maritimes for 400 years. This means we don't have a lot of senior Maritime tree citizens left. This is very different in other parts of Canada, such as the western end of the country where settlement and forestry is relatively recent on the big time clock. This would tend to suggest reading the historical records of trees in the Maritimes may mean a shorter record. However, many of those old harvested trees are very much still around as part of the structure of our very old buildings, such as some churches, carriage factories, forts and simply very old dwellings. The MAD Lab gets around this by going to these very old buildings and taking core samples from the beams of these buildings. These beams, in many cases, have been perfectly preserved as they have been protected from the weather by a roof. The recorded information that can be taken from the trees used to construct these old buildings will be just as accurate as a core sample taken from a tree standing in 2004. However, you guessed it: the pages of recorded history in those tree rings will be much longer.

Many thanks to the MAD Lab and Colin Laroque for providing me with much greater appreciation of what a tree ring is all about and I hope I have been able to share that appreciation with you. Make sure to take just a bit closer look the next time you see a cut piece of tree. Maybe we can learn just a few phrases of tree talk!

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