WOOD FROM THE GOVERNMENT HOUSE, HALIFAX, NOVA SCOTIA: SPECIES IDENTIFICATION, RING COUNT AND PRELIMINARY MEASUREMENTS

André Robichaud, Felicia Pickard, Benjamin E. Phillips and Colin P. Laroque

MAD Lab Report 2008-02

Mount Allison University, Department of Geography and Environment
Mount Allison Dendrochronology Lab

Table of Contents

Abstract

A sample cut from a beam of the Government House in Halifax was analyzed for ring count and wood identification. A total of 282 rings were obtained and the wood proved to be eastern white pine (*Pinus strobus*). More samples were retrieved from the structure and will be processed. Due to the preservation of the wood, the site has the potential to become one of the best white pine chronologies in Nova Scotia.

Introduction

The Government House in Halifax, Nova Scotia, is a prominent architectural and cultural feature in the province (Pacey and Comiter, 1994). Constructed in 1800, the exterior is made of stone (Figure 1), but its structure is supported by large timbers. A few years ago, extensive renovations were initiated and they are expected to last until approximately November 2009. A sample of a sizeable beam was salvaged from the renovations by Ron Jeppesen of the Nova Scotia Department of Transportation & Infrastructure Renewal who wished to have the species identified. The piece seemed to have features of Douglas-fir (*Pseudotsuga menziesii*), a tree common in western Canada but absent from the Maritimes. Additionally, because some of the rings were tight, it was difficult to count the years precisely. The sample was then given to Bruce Lohnes, Area Supervisor at the Nova Scotia Department of Natural Resources. He contacted and then passed the sample on to the Mount Allison Dendrochronology Lab (MAD Lab) which had the expertise to undergo both analyses on the sample.

Figure 1: The Government House in Halifax under renovations, January 2008.
Photos: B.E. Phillips

Analysis

A shard of wood was delicately cut out from the sample with a chisel. Fragments were then cut with a razor blade on a wooden bloc under a dissecting microscope to expose the radial section of the wood. The best pieces were glued on a metal stub and taken to the Mount Allison Digital Microscopy Facility (http://www.mta.ca/dmf/) where they were prepared for viewing under a Scanning Electron Microscope (SEM). Observations of

anatomical structures revealed characteristics typical of the eastern white pine (*Pinus strobus*) (Figure 2), a common tree in Nova Scotia and considered as one of the most valuable softwood lumber species in Canada.

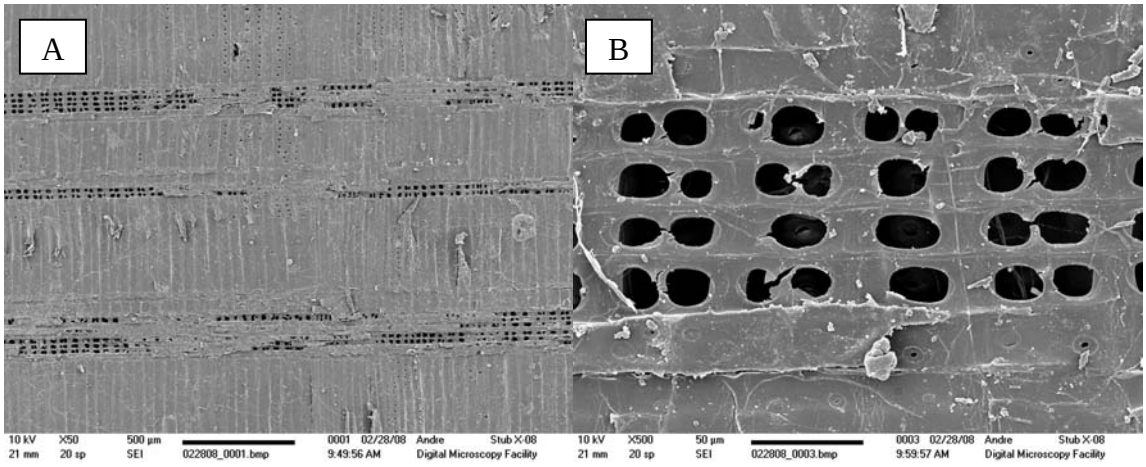

Figure 2: (A) Radial view showing rays with window-like pits, characteristic of white pine. (B) Close-up of a ray with associated pits.

After, the sample was prepared for ring counts by resurfacing it with a band saw and sanding it with increasingly finer-grained sandpaper to expose the annual rings. The rings were counted under a dissecting microscope magnified up to 63 times and a total of 282 rings were found. This feature indicated that the sample was one of the longest white pine series from a historical building encountered by the MAD Lab in the Maritimes.

Given this information, we decided to go back to the site to conduct an appraisal on other wood that might be salvaged. At the site we were permitted to sample cookies from other beams that were being scraped from the renovations and were also permitted to core a few more prominent beams from within the Government House structure itself. These subsequent samples are still being processed.

However, two of the choice samples were selected and measured along with the original sample for preliminary dendrochronological assessment. One of the secondary samples contained 311 rings and the other 121 rings; they were also both determined to be white pine. To measure each ring within these samples, we used a 24 inch movable Velmex stage connected to a digital encoder which gave the measurements an accuracy of 1/1000 mm. Four paths were measured on the first sample and two on the secondary two cookies. Ring-width series were produced from those measurements and a mean standardized ring-width curve was created to be compared with master chronologies from Nova Scotia. Two white pine master chronologies were available: one made from a dated structure in Port Medway, western Nova Scotia (O'Neill, Robichaud and Laroque, 2006) and another one generated from live trees at Sporting

Lake, western Nova Scotia (unpublished data). Figure 3 illustrates the mean standardized ring-width curve of the Government House compared to the two master chronologies. They are in good agreement and suggest that the trees used to build the Government House were indeed cut around the year 1800 in a Nova Scotia forest.

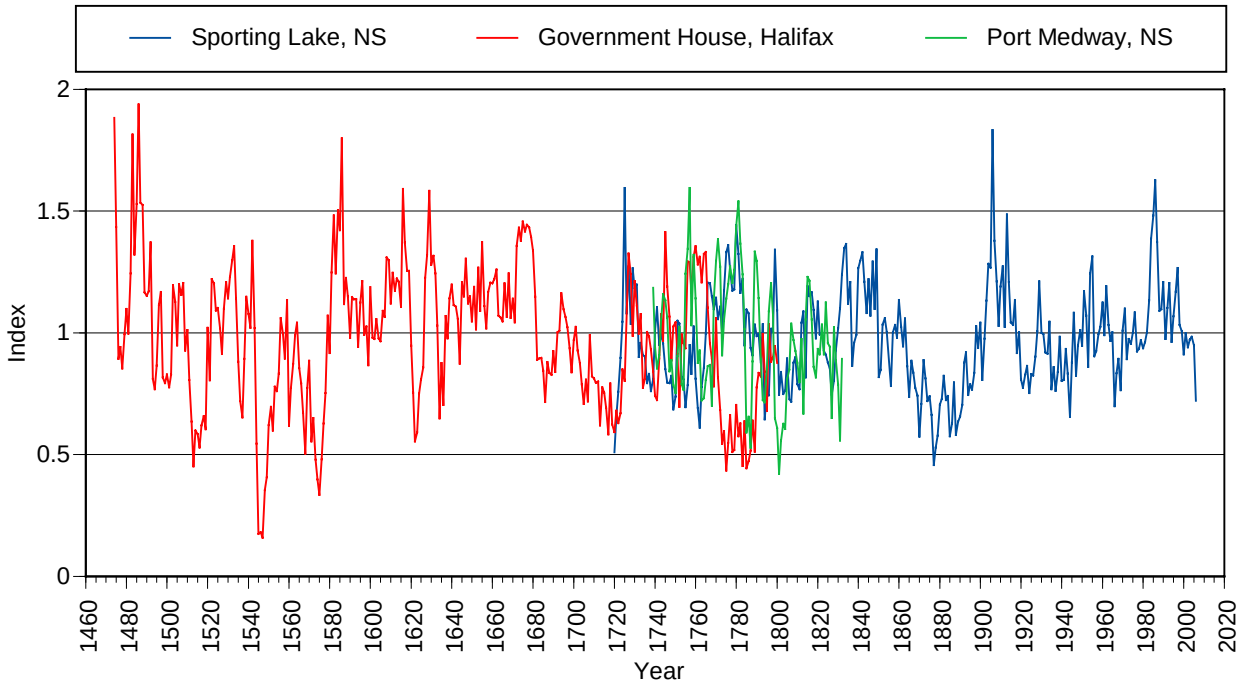

Figure 3: Mean standardized ring-width curve of the Government House (in red) compared to white pine master chronologies from Port Medway (green) and Sporting Lake (blue).

Conclusion

Wood analysis indicates that the beams from the Halifax Government House are white pine. The first sample submitted to the MAD Lab had 282 rings, and two other samples yielded 311 and 121 rings. Preliminary assessment of the dendrochronological potential of the series suggests that a high quality multiple-century white pine chronology, ranging from the late 1400s to the early 1800s, can be developed from the samples retrieved from the Government House. Subsequent work is being conducted on the remaining samples.

Bibliography

O'Neill, N., A. Robichaud and C.P. Laroque (2006). *A dendroarchaeological analysis of Old Meeting House, Port Medway, Nova Scotia*; MAD Lab Report 2006-33, Mount Allison University, Department of Geography, 11 pp.

Pacey, E. and A. Comiter (1994). *Landmarks: Historical Buildings of Nova Scotia*. Nimbus Publishing, Halifax, 208pp.