ARCHAEOLOGICAL WOOD ARTIFACTS FROM THE SINCLAIR INN, ANNAPOLIS ROYAL, NOVA SCOTIA

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Abstract

Three wooden artifacts taken from a test pit dug in the basement of the Sinclair Inn in addition to a window panel and a wattle from the building were handed to the MAD Lab for botanical identification and a dendrochronological analysis. Results are summarized below:

1 – The barrel head cant is maple.
2 – The support beam “A” is red spruce. An end date of 1706 was found although it is not a cut date. We suggest only a few rings are missing which would make the sample contemporaneous to the Soullard House.
3 – The slab is larch. The end date is 1769 but up to 15 to 20 rings are missing. The sample could be older than the Soullard House.
4 – The panel is white pine and has an end date of 1671. Many rings are missing and it is not possible to assess their number. Therefore, its age cannot be assessed.
5 – The wattle is oak.

Introduction

The Sinclair Inn is one of the most prominent buildings in Annapolis Royal, Nova Scotia, a town rich in heritage known to be one of the oldest European-colonized areas in Canada. The inn was dated using dendrochronology by the MAD Lab (Robichaud *et al*., 2005; Robichaud and Laroque, 2008) and confirmed the valuable and complex history of the site. The property itself was the subject of archaeological excavations and several artifacts were unearthed. A few of the wood artifacts were handed to the MAD Lab by Dr. Nikki R. Clark (archaeologist) for botanical identification and, if appropriate, for a dendrochronological assessment. They were originally taken from a test pit dug in the basement against the middle of the interior stone wall. Additionally, a section of a window panel and a wattle retrieved from the building itself were provided by Dr. Barry Moody and Mr. Wayne Morgan also to be analyzed.

Analysis

1 - Barrel head cant section (sample number 05AA005)

According to Dr. Clark, this wood artifact was found at Excavation Level 4 below a wooden palette used as a marker. The palette is 1.58 m below the top of the basement stone wall. The barrel head is beveled on both sides and is roughly 44 cm long, 7 to 8 cm wide and 2 to 2.5 cm thick. A small fragment (≈ 1 cm) was cut off the sample and used for wood identification using methods described in Robichaud and Laroque, 2008. Features such as homogeneous rays, spiral thickening in vessels and simple perforation plates identified it as maple (*Acer* sp.) (Figures 1A, 1B and 2A). Although the exact species cannot be determined, it is probably one of the soft maples (Ex.: red maple, or silver maple) because the rays are more commonly 2-3 seriated (i.e. 2 or 3 cells wide) (Figure 2B). Since the cant section had only 4 or 5 rings, we could not do any dendrochronological analysis on the piece.

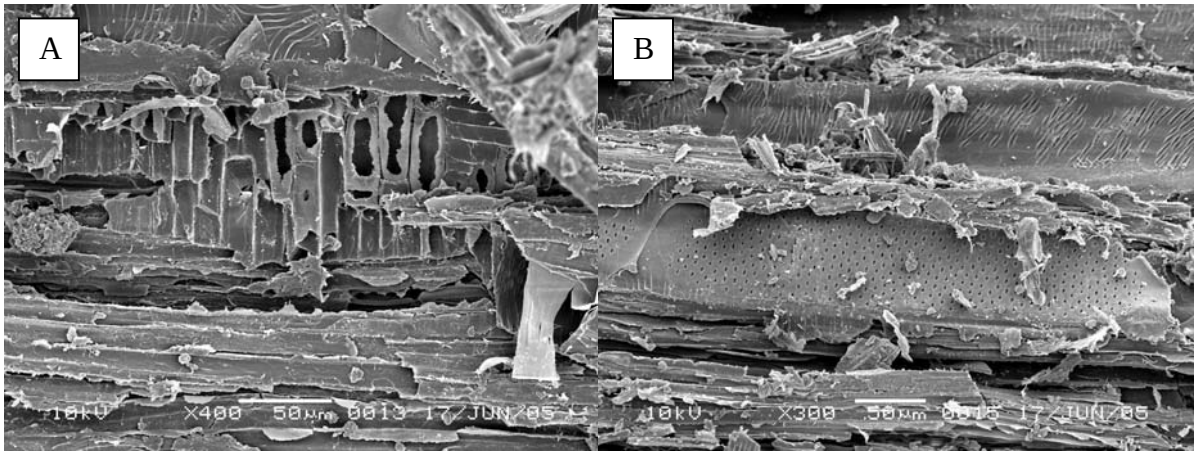

Figure 1: (A) Radial view. The ray is homogeneous, composed of only procumbent cell type. (B) Radial view of vessels showing obvious spiral thickening.

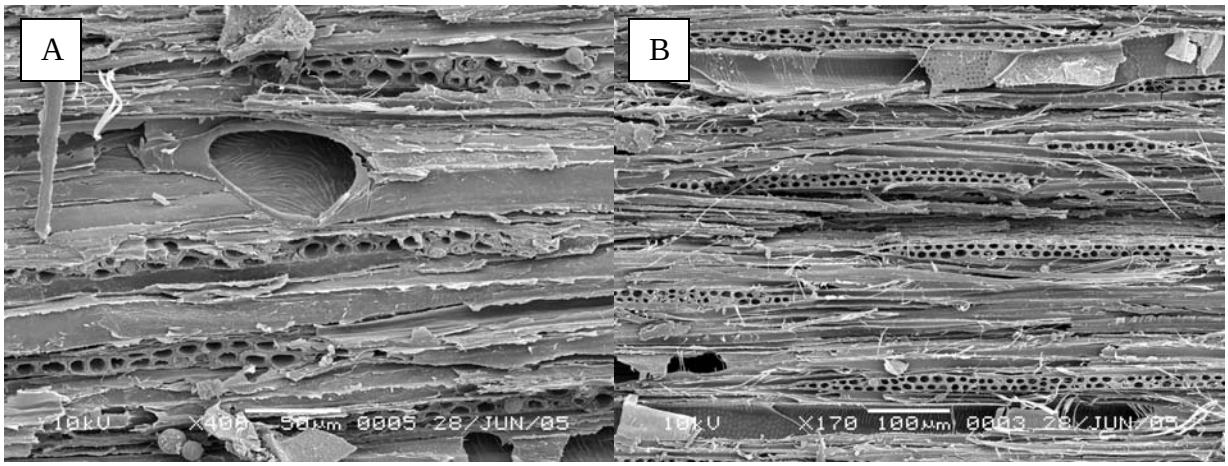

Figure 2: (A) Tangential view showing a vessel with a simple perforation plate.
(B) Tangential view. Rays are 2-3 seriated in this sample.

2 - Support beam "A" for a wooden palette (sample number 05AA003)

Found at Excavation Level 3, at the same level as the wooden palette, it is 103 cm long, 16 cm wide and 7.5 cm thick. It was partly charred and some areas were rounded similar to normal perimeter wood, indicating that bark could have been near. The beam was identified as red spruce (*Picea rubens*) according to anatomical characteristics (Figure 3).

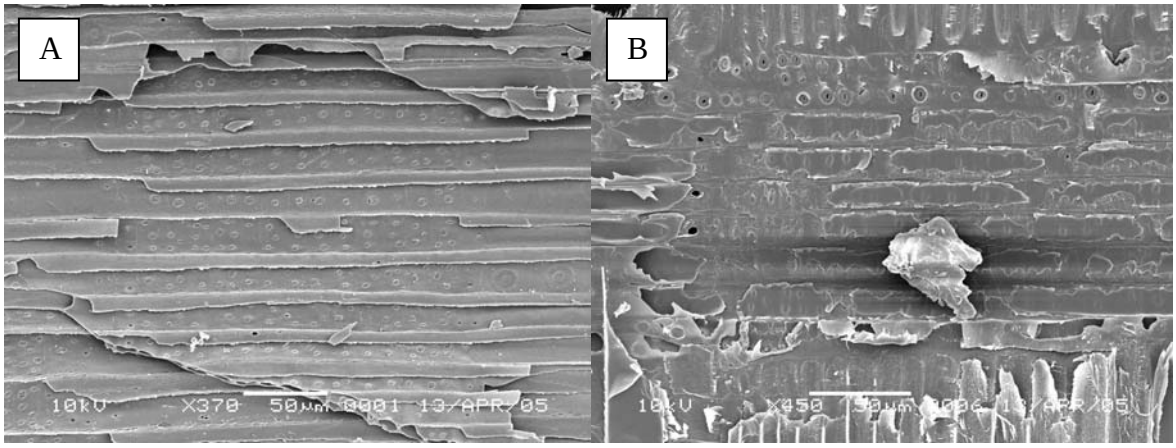

Figure 3: Micrographs from the support beam “A”, both showing radial views of rays with transverse tracheids in several rows bordering the rays and piceoid pits on the parenchyma cells.

The sample had 68 rings and we attempted a crossdate on the sample following procedures described in Robichaud and Laroque, 2008. We compared the support beam “A” series with several local red spruce chronologies that were developed in the area (Robichaud and Laroque, 2007, 2008; Robichaud *et al*., 2005, 2006). The Soullard

House chronology provided the best correlation that suggests a terminal date of 1706 (Figure 4). However, the terminal ring on the sample was not the actual last growth ring from the tree from which it came from. Therefore, the true age cannot be known, but according to visual characteristics of the sample, it appears possible that only a few rings are missing.

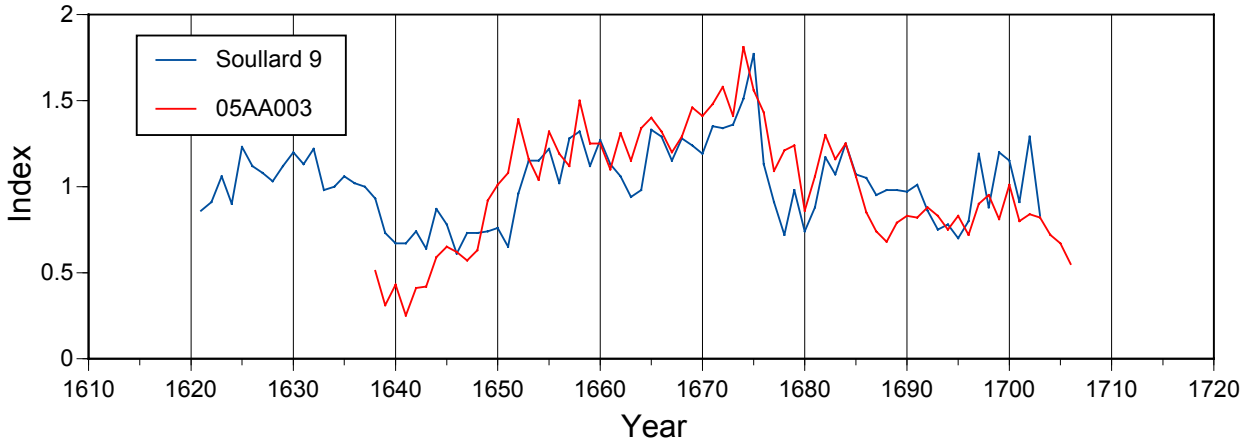

Figure 4: Mean standardized ring-width curve of the support beam “A” (05AA003, in red) compared to the Soullard House local chronology from the Sinclair Inn. The terminal date of the support beam is 1706.

3 – Slab (sample number 05AA004)

Dug out at Excavation Level 4 and wedged under the palette support beam, a 20 to 30 cm section of a slab was cut at one end so it could be removed. It is 21.5 cm wide and 6 cm thick. The sample was identified as larch (*Larix laricina*) according to cell structures (Figure 5) and cross sectional features of the wood (i.e., abrupt earlywood/latewood transition).

The sample had 89 rings which made it suitable for dendrochronological analysis. However, larch reference chronologies for the region are not available. Therefore, we attempted to match it with other local reference chronologies of other species (spruce, white pine, hemlock) from Nova Scotia. Although comparing different species is not the recommended practice, it occasionally works if a sample has enough rings and if it is compared to chronologies within the same region and with more or less closely related species such as conifers.
One excellent possibility emerged with a white pine chronology recently developed by the MAD Lab from the Government House of Halifax (Robichaud *et al*., 2008). An end date of 1679 was determined from the good correlation between the slab series and the Government House chronology (Figure 6). However, the last growth ring was absent from the slab sample, so the 1679 date doesn’t represent a cut date and can only imply a minimal date. The number of missing rings is difficult to assess, but it seems most probable to be less than 15-20 years according to the sample’s outer appearance. This gives it a probable date in the late 1600’s.

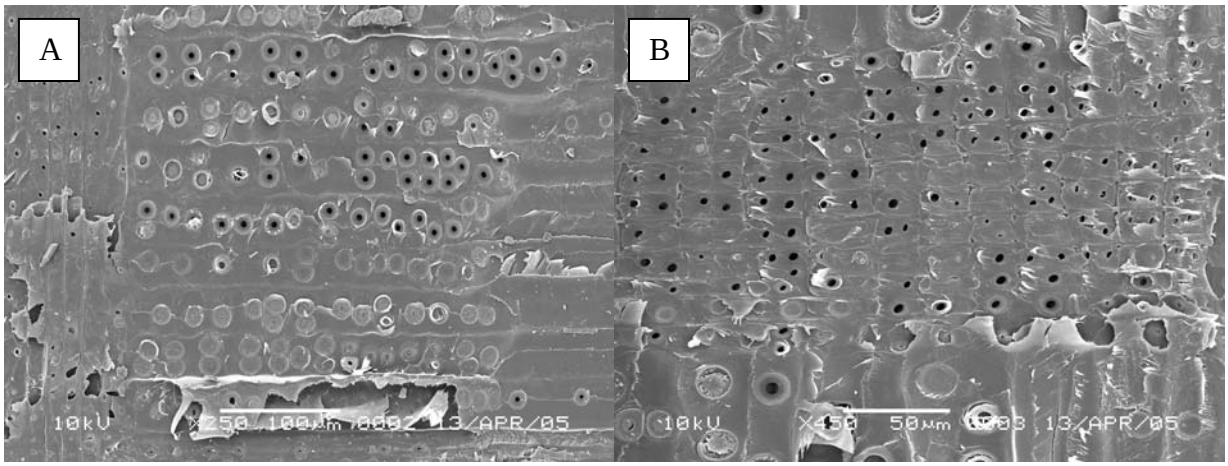

Figure 5: (A) Radial view of axial tracheids displaying biseriated bordered pits which helps to distinguish larch from spruce. (B) Radial view of a ray. *Larix laricina* rays are similar to those of *Picea rubens* and *P. mariana*.

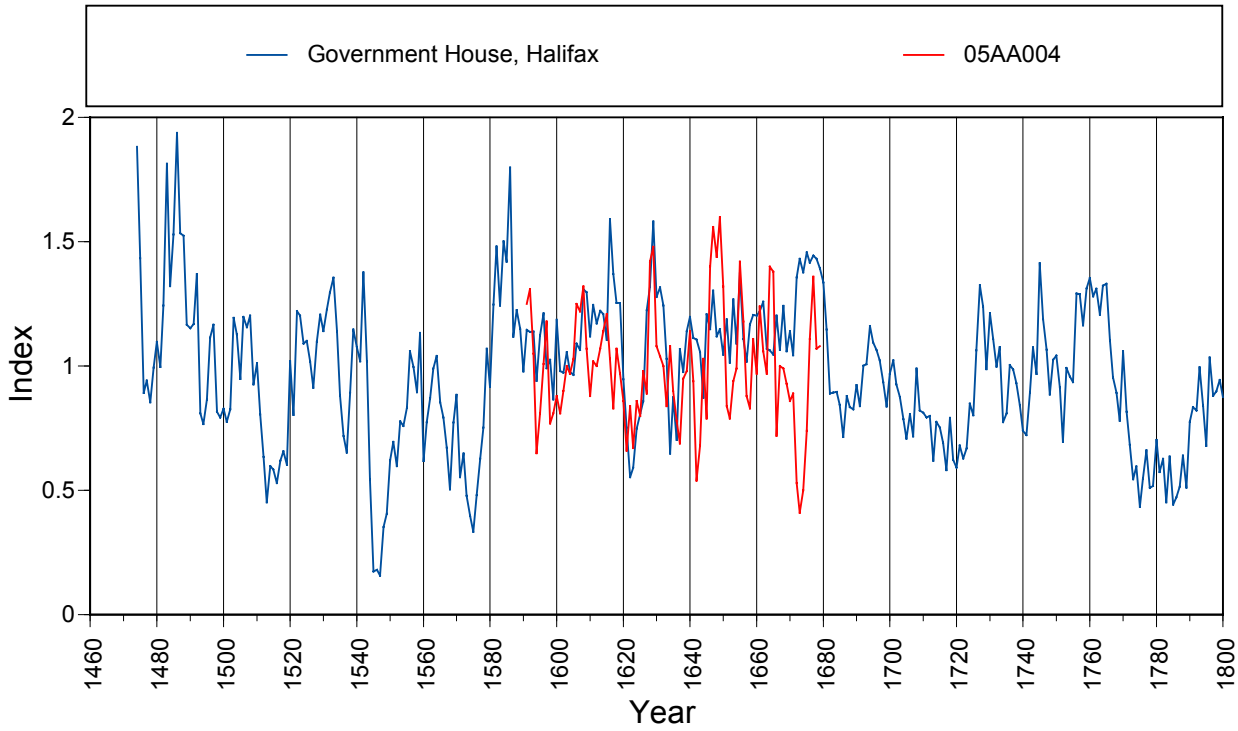

Figure 6: Mean standardized ring-width curve of the larch slab (05AA004, in red) compared to the Government House local chronology from Halifax. The end date of the slab is 1679.

4 – Window panel (sample number 05AA007)

The panel section given to the lab was about 35 cm long and was later identified as white pine (*Pinus strobus*) (Figure 7). To minimize any destructive effects of sample

manipulations, we delicately sanded one side of the panel where the cross section was indicating exposed rings. We counted 57 years so we proceeded with the measurement phase. It was done with WinDendro which requires only scanning of the sample without need to cut it down to fit under a microscope. The ring pattern was compared to white pine chronologies from Nova Scotia and one possibility emerged, again with the Government House white pine local chronology. Correlation between the panel series and the chronology suggest a terminal date of 1671 (Figure 8). In this case, there is no way to assess the number of missing rings, the panel being entirely squared.

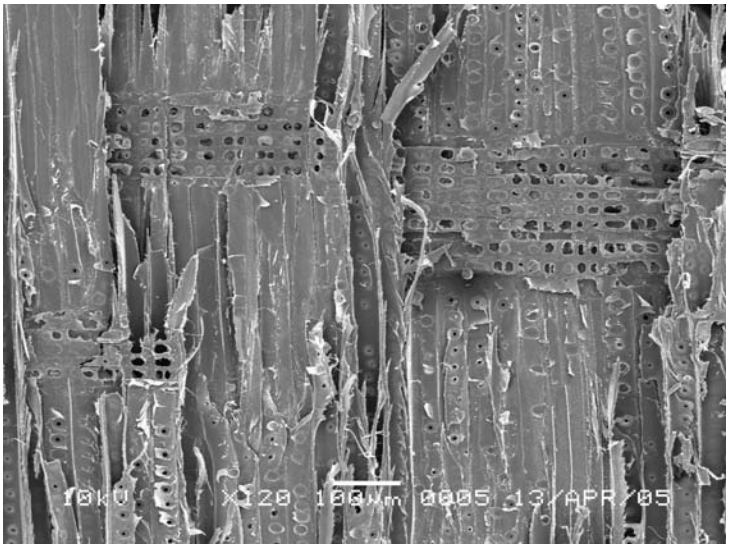

Figure 7: A micrograph taken from the Sinclair Inn window panel. The large window-like pits on the ray parenchyma suggest that it is pine. Features on the cross section (large resin ducts and gradual early/late wood transition) confirm it to be white pine.

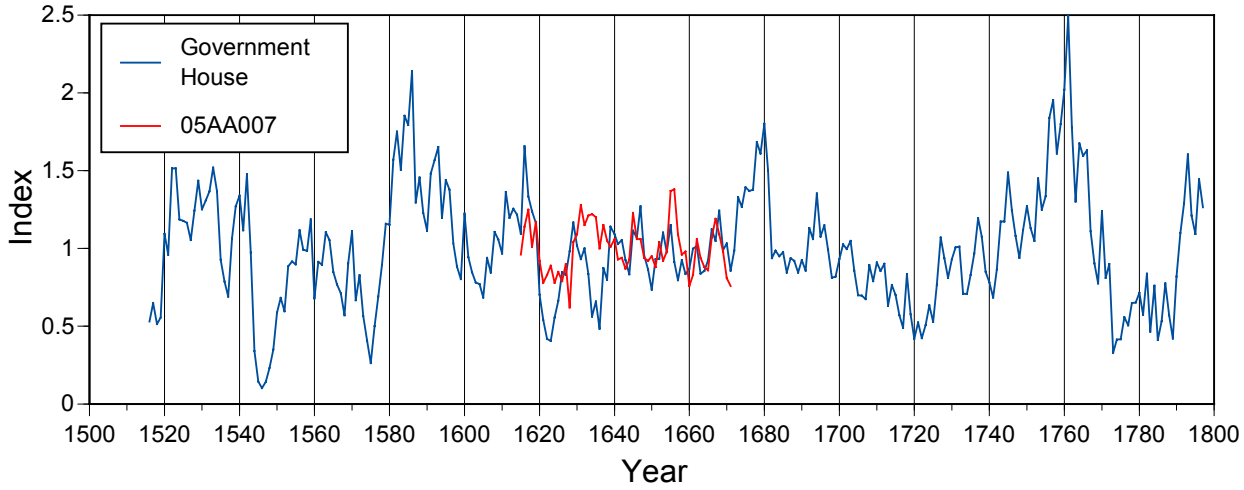

Figure 8: Mean standardized ring-width curve of the window panel (05AA007, in red) compared to the Government House local chronology from Halifax. The end date of the panel is 1671.

5 – Wattle from the Sinclair Inn (sample number 05AA006)

One wattle was recovered from a wall of the Sinclair Inn, similar to that of Figure 9. It was in very poor condition, being badly perforated by insect galleries. We were only able to identify the wood and it turned out to be oak (*Quercus* sp.) (Figure 10).

Figure 9: Wattle-and-daub exposed in the Sinclair Inn. A similar wattle was given to the MAD Lab for analysis.

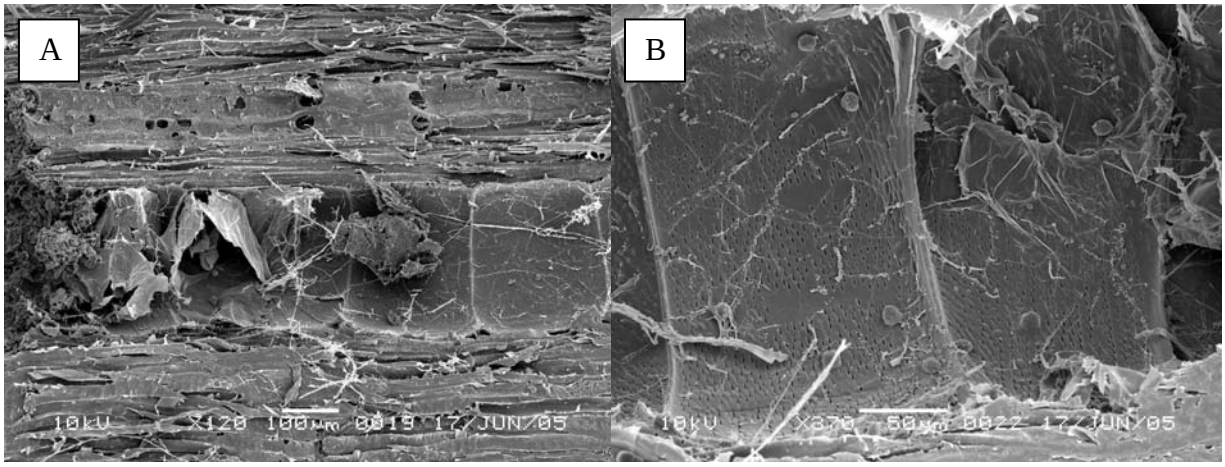

Figure 10: Views of huge vessels typical of the oak species.

Conclusion

The wood identification and dendroarchaeological analysis performed on the Sinclair Inn artifacts illustrate the following results:

1 - The barrel head cant is maple.
2 – The support beam “A” is red spruce, with an end date of 1706 although it is not a cut date. We suggest only a few rings are missing which would make the sample contemporaneous to the Soullard House (~1709).
3 – The slab is larch. The end date is 1769 but up to 15 to 20 rings are missing. The sample could be older than the Soullard House.
4 – The panel is white pine and has an end date of 1671. Many rings are missing and it is not possible to assess their number. Therefore, its age cannot be assessed.
5 – The wattle is oak.

Bibliography

Robichaud, A. and C.P. Laroque (2007). *Tree-ring analysis of heritage buildings in Annapolis Royal, Nova Scotia*; MAD Lab Report 2007-10, Mount Allison University, Department of Geography, 18 pp.

Robichaud A. and C.P. Laroque (2008). Tree-ring chronologies in Atlantic Canada: A case study from Annapolis Royal, Nova Scotia. *Tree-Ring Research*. In Press.

Robichaud, A., A. Colford, B. Phillips, K. Hartlen, B. Bakke, R. Quinlan, and S. Smith (2005). *Dendroarchaeological investigation of the Sinclair Inn, Annapolis Royal, Nova Scotia*; MAD Lab Report 2005-03, Mount Allison University, Department of Geography, 16 pp.

Robichaud, A., M. Leighton, B.E. Phillips, N. Selig, and C.P. Laroque (2006). *Dendroarchaeological investigations in the Annapolis region, Nova Scotia*; MAD Lab Report 2006-06, Mount Allison University, Department of Geography, 14 pp.

Robichaud, A., F. Pickard, B.E. Phillips, and C.P. Laroque (2008). *Wood from the Government House, Halifax, Nova Scotia: species identification, ring count, and preliminary measurements*; MAD Lab Report 2008-02, Mount Allison University, Department of Geography and Environment, 4 pp.