

**A Dendroarcheological Analysis of the Westover House,
Point De Bute, New Brunswick**



Amanda B. Young, Carrie A. White, Sarah L. Quann and Colin P. Laroque
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Mount Allison Dendrochronology Laboratory,
Department of Geography and Environment,
Mount Allison University

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Abstract

In attempts to affirm the oral history of the construction date of a house, with scientific backing, the MAD Lab sampled the Westover House at Point de Bute during the summer of 2009. Samples were taken from both the basement (ten) and the kitchen attic (eight), and the samples were given the MAD Lab code of 09BS000. Three of the basement samples were determined to be eastern larch (*Larix laricina*), while the remaining basement and attic samples were red spruce (*Picea rubens*). The larch samples have a high correlation value however they cannot be cross-dated to a regional chronology due to their age. Samples taken from the kitchen attic had end wood and bark present allowing the date of the building to be determined as 1844. Samples covered an interval of 1745-1844 with a significant correlation value of 0.493.

Introduction

The Trueman family has a long history in the Tantramar Marsh region of New Brunswick. Since the 1770's Truemans have lived in Point de Bute. The first Truemans in the area were William and Ann Trueman who arrived on May 17, 1774 from Yorkshire, England (Trueman, 1902).

The Westover house is located about a kilometre west of the main house of the current Trueman family farm. The Westover house is where the parents of George Trueman lived and where his daughter (Mary-Ellen Trueman) now lives. The age of the Westover house is unknown. Oral history says that the building was constructed in 1840 (pers. comm. George Trueman, 2009). The Trueman family asked the MAD Lab to attempt to determine the age of the Westover House, and so in the summer of 2009, 18 dendrochronological samples were taken from the basement and kitchen attic of the Westover House to assist in this process.

Methods

The Westover House is located in Aulac, in Westmoreland County, New Brunswick along the Tantramar Marsh (45° 54' 15.5" N, 64° 15' 21.4" E). Cores were collected on June 5, 2009 from the basement and kitchen attic. The Westover House samples were given the MAD Lab code of 09BS000 and the condition and location of each sample was noted (see Appendix I and II).



Figure 1- Core sampling of the basement in the Westover House (Photo A. Young).

In the lab samples were sanded with progressively finer sanding paper (80-400 grit) to bring out the cellular structures and annual rings of the wood. Rings were counted and measured along a path using a Velmex measuring system with an accuracy of 0.001mm. Measurement paths were run through the most structurally sound portions of the sample.

A time series of measurements from the house samples were correlated to each other thereby creating floating chronologies (chronologies that are not attached to a specific period of time). The floating chronologies were then cross-dated to a previously established regional master chronology that was locked in time from the area. Cross-dating is the practice of taking the pattern of growth from one sample and comparing it to that of another (Figure 2).

To assist in the cross-dating procedure we used the statistical cross-dating program COFECHA (Holmes, 1986a). COFECHA uses correlation values to assist in accurately dating samples. Higher correlation values indicate that the floating chronology corresponds well to the master chronology. Lower correlation values can indicate a variety of things such as ecological or climatic variation from the norm or that the sample is inaccurately dated. The floating chronologies were run against a red spruce (*Picea rubens*) master chronology available from the MAD Lab archive. This insured that the patterns found in the floating samples could be referenced to a chronology that is locked in time.

Each of the floating and master chronologies was standardized to have a mean of one by using a negative exponential curve in the program ARSTAN (Holmes, 1986b). This standardization was completed to allow samples of different ages to be compared.

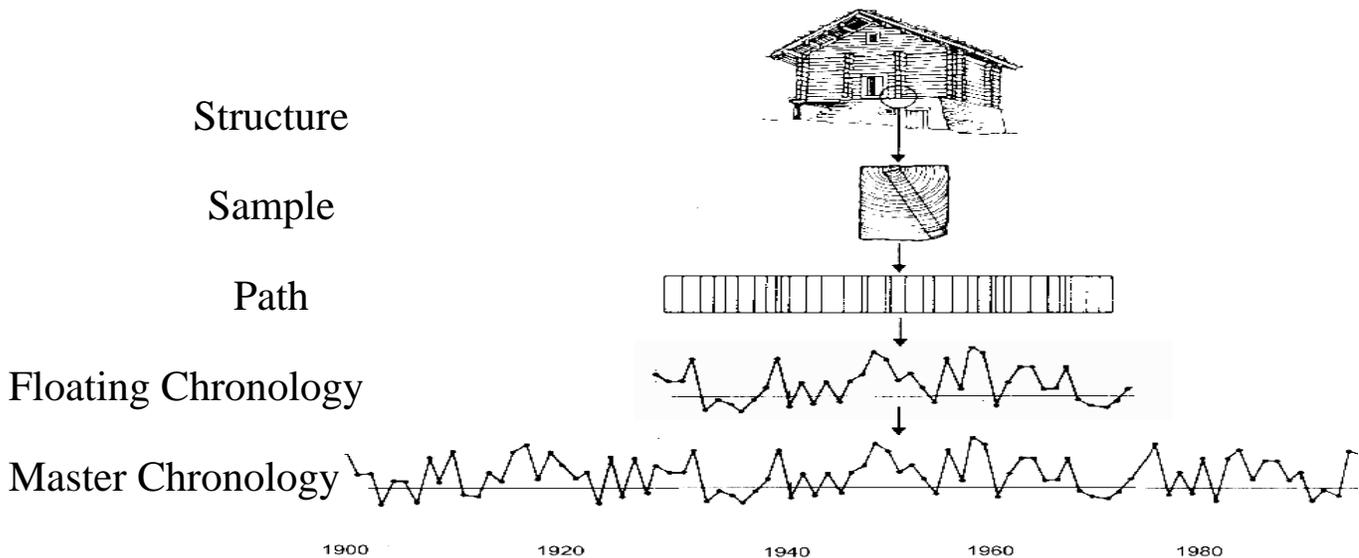


Figure 2 - Example of cross-dating by using patterns from a structure (floating chronology) to compared to a master chronology.

Results and Discussion

Not all of the 18 samples collected were able to be cross-dated. Wood in the basement was in very poor condition due to rot. Ten cores were taken from the basement, seven red spruce (*Picea rubens*) and three eastern larch (*Larix laricina*). Five of the basement spruce cores were able to be cross-dated to the cores taken from the attic. The three larch cores cross-dated to each other but the MAD Lab archive presently does not have a larch chronology that extends back far enough to date the cores. The inter-series correlation between the three larch is 0.498 covering a 40- year period.

All the core samples from the kitchen attic were red spruce. Seven out of the eight cores were able to be cross-dated. The correlation of the floating chronology of the spruce samples from both the attic and basement is 0.493 (Table 1). The floating chronology correlates very significantly to both the master red spruce chronology (0.479 n = 100) and Trueman Barn (0.407 n=100). The Westover House samples locked into the time span from 1745-1844 against both the red spruce regional master and the Trueman Barn (Figure 3A). Samples from Westover House are from the period where there is a high sample depth in the regional master thus adding to the high certainty of the dating procedure (Figure 3B).

Table 1 – Sample identifier, location, species, time span, number of years in the chronology, interseries correlation, and condition of the core.

Sample	Location	Species	Time Span	# of Years	Correlation	Condition
09BS001	Basement	Spruce	N/A	N/A	N/A	broken up
09BS002	Basement	Spruce	1808-1841	34	0.307	missing end
09BS003	Basement	Larch	N/A	N/A	0.446	
09BS004	Basement	Spruce	N/A	N/A	N/A	broken up
09BS005	Basement	Larch	N/A	N/A	0.498	
09BS006	Basement	Spruce	1766-1841	76	0.617	missing end
09BS007	Basement	Spruce	1762-1839	78	0.457	missing end
09BS008	Basement	Spruce	1766-1821	56	0.540	missing end
09BS009	Basement	Spruce	1787-1838	52	0.419	missing end
09BS010	Basement	Larch	N/A	N/A	0.525	
09BS011	Attic	Spruce	1756-1821	66	0.290	missing end
09BS012	Attic	Spruce	1771-1844	74	0.531	
09BS013	Attic	Spruce	1768-1843	76	0.710	missing end
09BS014	Attic	Spruce	N/A	N/A	N/A	broken up
09BS015	Attic	Spruce	1772-1843	72	0.527	missing end
09BS016	Attic	Spruce	1768-1843	76	0.572	
09BS017	Attic	Spruce	1745-1844	100	0.511	bark
09BS018	Attic	Spruce	1766-1843	78	0.301	
Average			1745-1844	69.8	0.493	

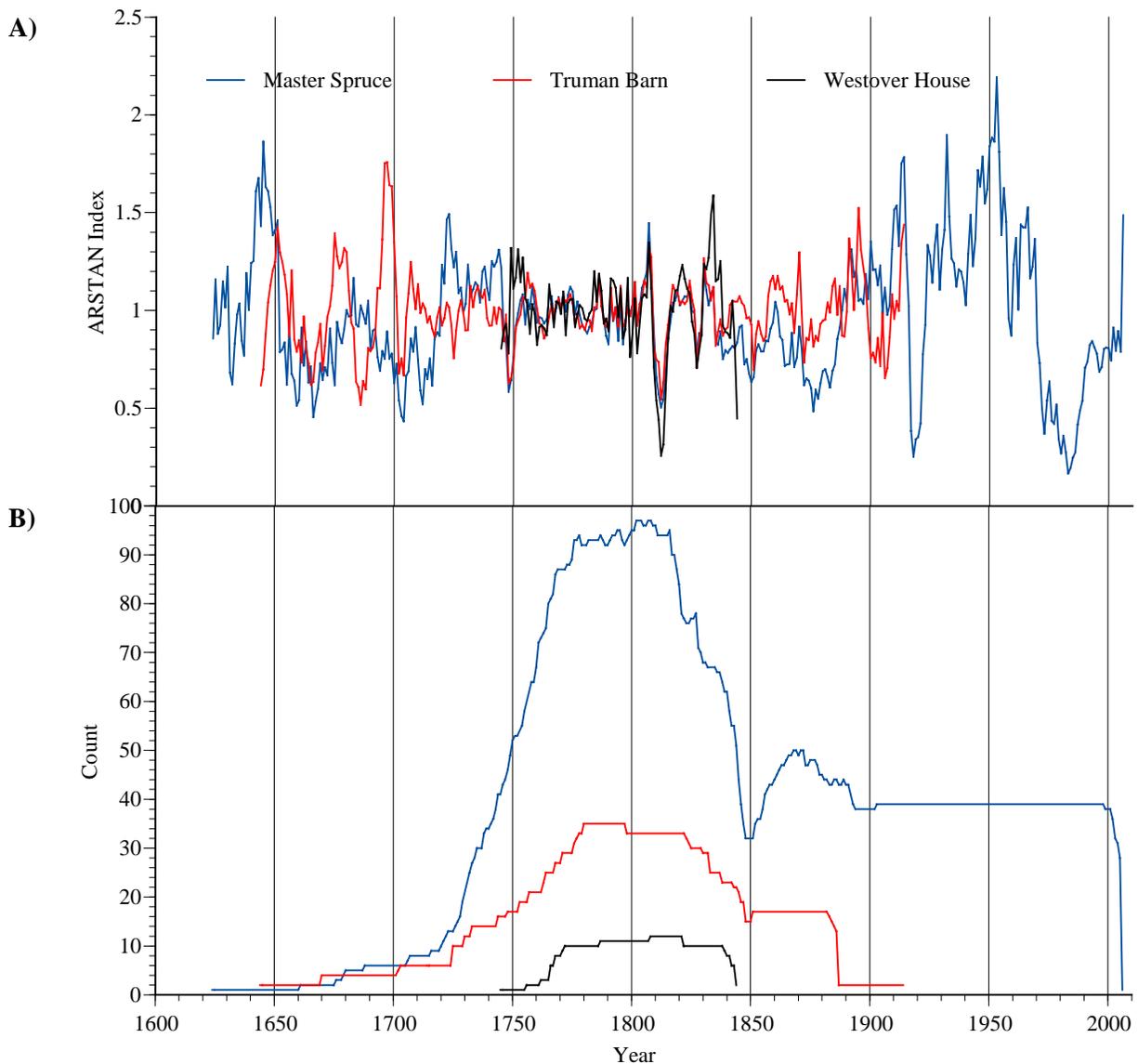


Figure 2A) - The standardized master red spruce chronology, Truman Barn and the Westover House chronologies. 2B) - Sample length and depth for the master, Truman Barn, and Westover House chronologies.

Conclusions

The oral history of the Westover House construction during the 1840's is confirmed by the dendrochronological analysis. Samples collected by the MAD Lab date the wood in the structure being cut in 1844. The attic was built of spruce while the basement was built with a mix of spruce and larch.

References

Holmes, R.L. (1986a). Users manual for program COFECHA. In *Tree-ring chronologies of western North America: California, eastern Oregon, and northern Great Basin* (eds R.L. Holmes, R.K. Adams & H.C. Fritts), pp. 41-49. Laboratory of Tree-Ring Research, University of Arizona, Tucson.

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09BS001

(much missing)

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09BS002

09BS003

09BS004

09BS005

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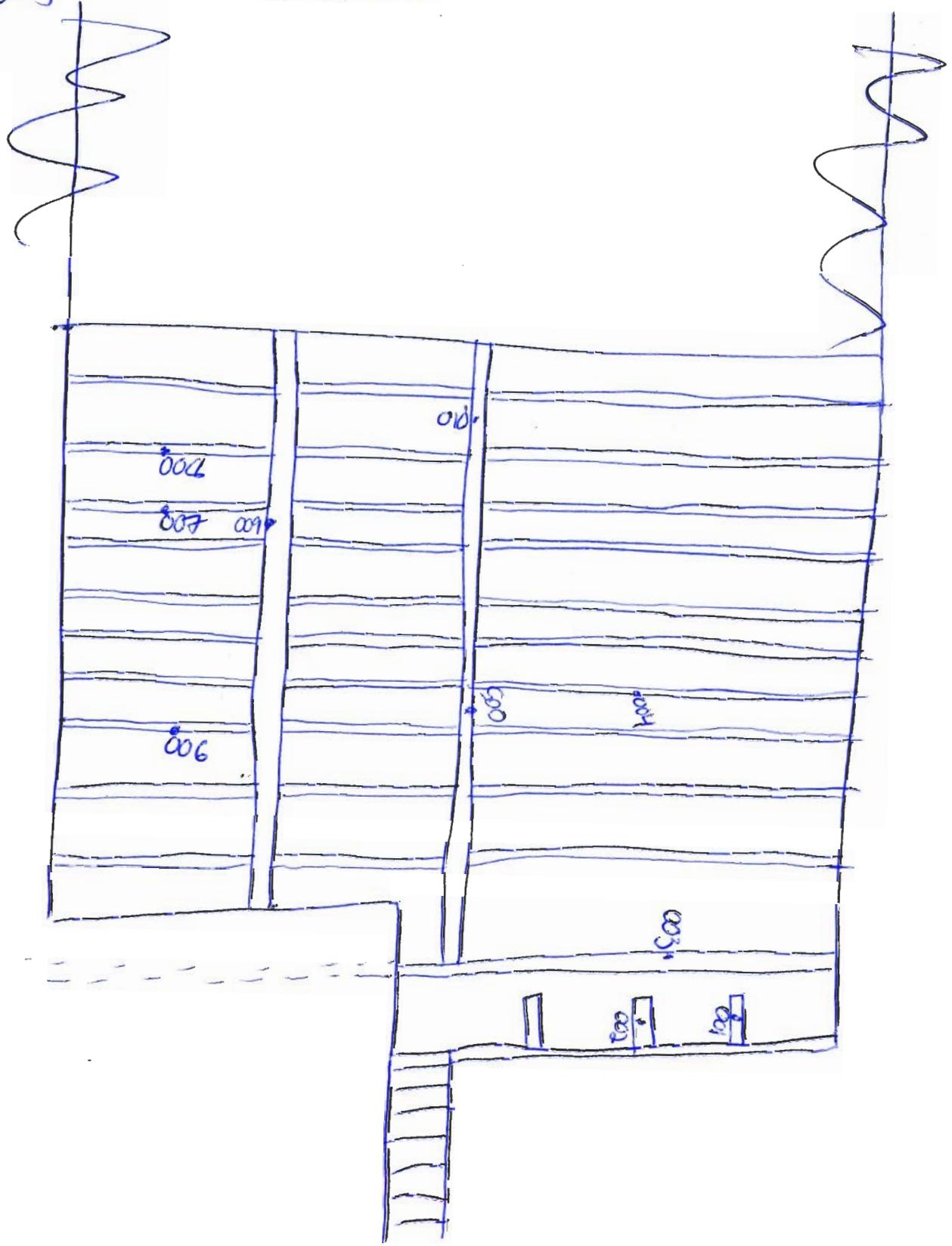
09BS018

Date	June 5 th , 2009	Site	09 BS000	Diagram #	1
		Name	Westover House (Mary-Ellen's House)		
Drawing n°	area				
<u>1</u> of <u>2</u>	basement				

Diagram #1

basement

Basement is wobbly



Date	June 5/09	Site	08BS	Diagram #	2
		Name	Westover		
Drawing n°	area				
2 of 2	Attic				

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