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# Dendrochronological Analysis of Smithville Community Historical Society Cabin and House, Smithville, Ohio

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**Progress Report:  
Dendrochronological Analysis of  
Smithville Community Historical Society  
Cabin and House, Smithville, Ohio**

**June 21, 2006**



Report submitted as an update of ongoing work at the Smithville Community Historical Society. A final report will be submitted upon conclusion of the site study.

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**General Analysis:** Cores of Smithville Community Historical Society's house and cabin were processed and crossdated (Fig 1) at the Wooster Tree Ring Lab using standard dendrochronological techniques (Stokes and Smiley, 1968). These techniques include preparing the cores surfaces, counting rings, measuring and crossdating ring-widths. Ring-widths were measured to the nearest 0.001 mm and crossdating was performed visually and using the computer program COFECHA (Holmes, 1983).

The one sample from the house and one sample from the cabin (Table 1) were internally crossdated with one another to construct a floating ring-width series. This floating chronology was then absolutely dated against calendar-dated, living, ring-width chronologies from the region including Johnson Woods, Sigrist Woods, and Brown's Lake Bog (ITRDB, 2005; Wooster Tree Ring Lab, unpublished data, 2005). Only SCHS01, the cabin sample, crossdated to a calendar date. Therefore the floating ring-width chronology from the Smithville Community Historical Society site can only be analyzed with the cabin sample. The cabin core spans 98 years and when adjusted to calendar dates ranges from AD 1735-1833.

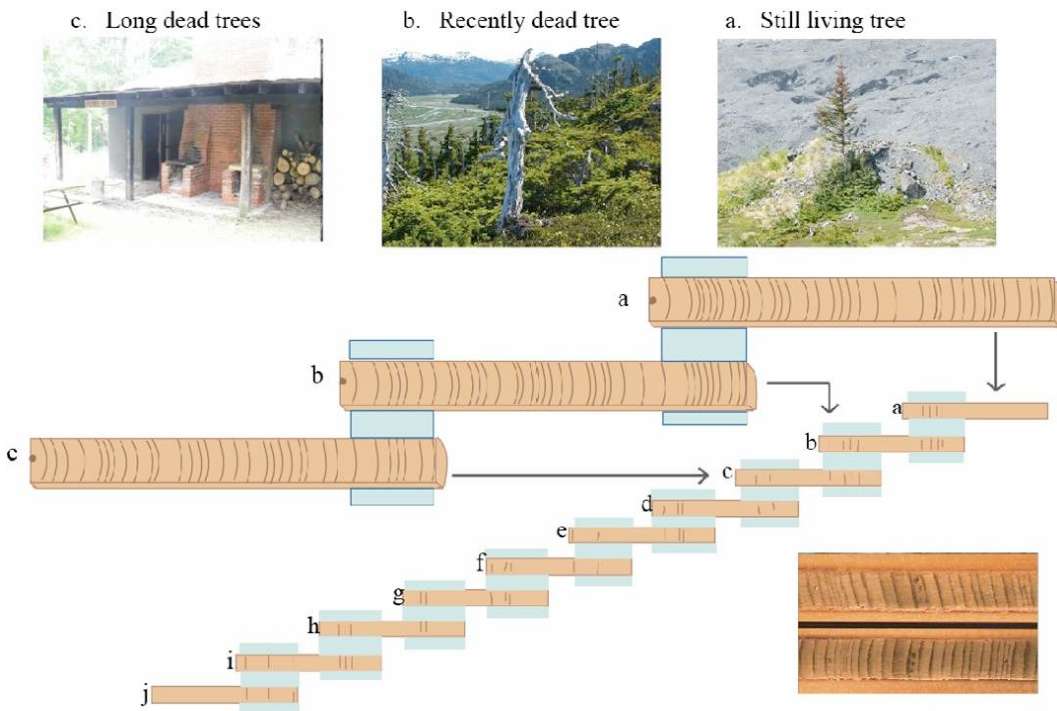
Tables 1 summarizes the calendar dates of each sample and the presence of an outer ring in the samples. Outer rings provide a calendar date for when the tree was cut. Although beam and joist samples include the sapwood, these two samples from the cabin and house do not indicate the last year of growth, as they do not have an outer ring. All of the plugged core holes were labeled in the house so that samples can be keyed directly to the beams for further interpretation.

Thank you for allowing the College of Wooster to core Smithville’s historical structures. The two cores from the Smithville site were some of the best samples the Wooster Tree-Ring Lab has cored from historical buildings. Although we could not find a calendar date for the house, the cabin core locked in through crossdating at AD 1735-1833. 1833 AD cannot be considered the date of construction because there was no outer ring to indicate the year of felling. If allowed, we would be more than happy to come back out and sample, because with more samples from the structures, a more conclusive result can be formed.

All cores and data are archived at the Wooster Tree Ring lab, which is housed in Scovel Hall in the Department of Geology at The College of Wooster.

**Table 1:** List of tree-rings from the Smithville Community Historical Society cabin and house. Neither sample provided an outer ring to indicate the year of construction.

	Sample	Beginning Year	End Year	Years
1	SCHS01	1735	1833	98
2	SCHS02	?	?	191



**Figure 1:** Principles of Crossdating (Anne Krawiec, 2005).

The process of crossdating (Fig 1) allows one to match together overlapping width patterns similar in living and dead trees to extend the tree-ring chronology. Cores may vary in time period and number of rings, but when patterns from differing samples align, rings link together to create one long tree-ring series that spans over many more years than a single sample. The extended record serves to correctly date and place other samples within the chronology. Crossdating aids in developing and extending the tree-ring width chronology for NE Ohio region that will contribute to the understanding of climate variability over the last several hundred years.

**References:**

- Holmes, R.L. 1983. Computer-assisted quality control in tree-ring dating and measurement. *Tree-Ring Bulletin*, **43** (1), 69-78.
- Stokes, M. A., and Smiley, T. L., 1968: *An Introduction to Tree-Ring Dating*. Chicago: University of Chicago Press. 73 pp.
- International Tree-Ring Data Base (ITRDB), 2005, [www.ncdc.noaa.gov/paleo/paleo.html](http://www.ncdc.noaa.gov/paleo/paleo.html).