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## Tree Ring Dating of the Martin Cabin, Gerstenslager Park, Wooster, OH

Sampled: 2 October 2015  
Presented to John Parker  
(2 December 2015)

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### Objective:

To provide a calendar date for the beams of the Martin Cabin using dendrochronology. The calendar date of the outer growth ring on beams would provide a cut date for the tree and thus closely date the cabin's construction. The tree-ring data will be added to a regional tree-ring width chronology that is part of ongoing projects to analyze drought in North America. All cores and data are archived at the Wooster Tree Ring Lab, housed in the Department of Geology, The College of Wooster.

### Methods:

Core samples were collected on 2 October 2015 using increment borers and a cordless drill with a specialized bit. Six samples were chosen for analysis as they had an intact outer ring (the last year of growth (Table 1)); many of the beams did not have intact outer rings due to rot or shaving in the construction process. The cores were prepared and sanded to a high polish (Stokes and Smiley, 1968). The growth rings on each core were then counted and marked and then each ring was measured to the nearest 0.001 mm and these measurements were internally cross-dated with one another (Fig. 1) to build a *floating* chronology. The floating chronology was then compared with a *regional master* chronology composed of over 400 samples from living trees and ring-width series from historical structures from northeastern Ohio.

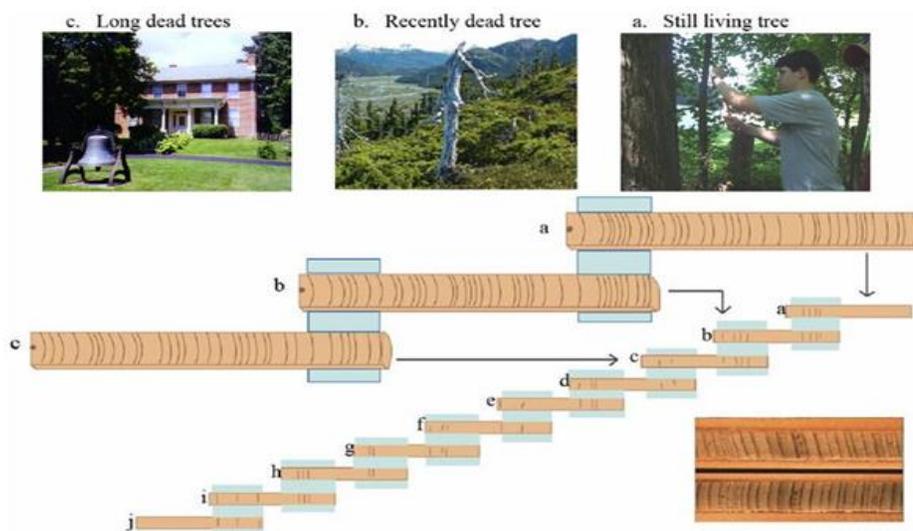
The floating *master* chronology from the cabin was tested (cross-dated) against the *regional master* to determine the calendar date of each ring (Fig. 1). The dating was strong (Fig.2) and unambiguous. The last year of growth, marked by the outer ring, is the year that the tree was harvested for timber and the latest date is likely the year of the cabin's construction.

**Table 1 – Tree ring data from Martin Cabin.**

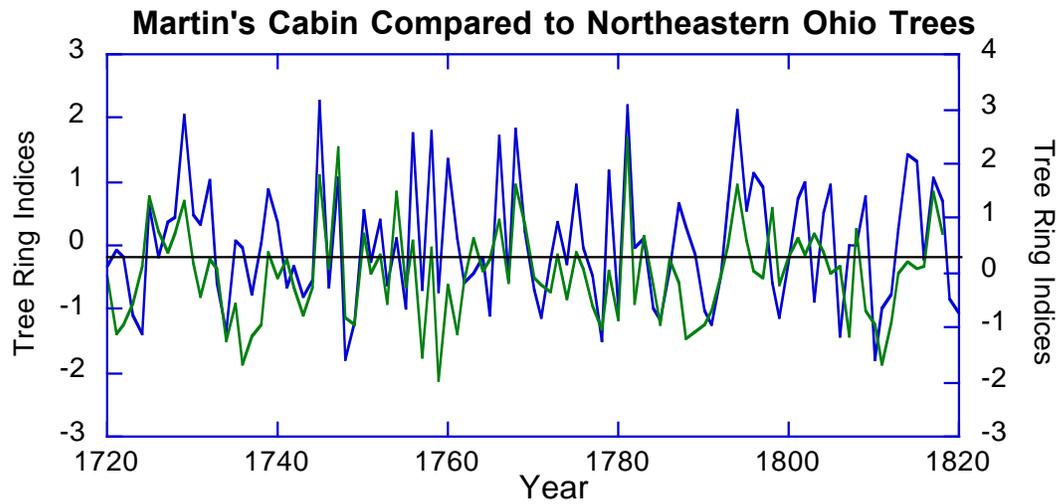
Core ID	Start year	End year	Outer ring present? (Y/N)	Notes
MC01E	1664	1818	Y	Partial outer ring
MC03W	1716	1818	Y	Partial outer ring
MC05E	1642	1818	Y	Partial outer ring
MC09W	1684	1794	N	Broken core
MC11W	1568	1818	Y	Partial outer ring
MC14E	1705	1818	Y	Partial outer ring

**Analysis:**

The cores with partial outer rings were all successfully dated to the calendar year of 1818. The outer ring of sample MC09W is dated to 1794 because there is an unknown number of rings in a broken portion within the core, thus 1794 is not the cut date. Samples with partial outer rings intact indicate that the trees were cut during the growing season of 1818. Taken together this evidence suggests that the cabin was built in 1818.



**Figure 1:** The dendrochronological principle of cross-dating used in this study. Cross-dating allows for a calendar dates to be assigned to each ring.



**Figure 2:** Comparison of the standardized ring widths of the tree rings from the Martin Cabin (green) with our master chronology from northeastern Ohio (blue)

**Reference:**

International Tree-Ring Data Bank (ITRDB), 2003, Some of the tree ring data used here is available at <http://www.ngdc.noaa.gov/paleo/treering.html>.

Stokes M. A., and Smiley, T. L., 1968, An introduction to tree-ring dating: Tucson: University of Arizona Press.