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## Tree Ring Dating of the Biggio Barn, Wooster, OH

Sampled: 22 February 2016  
Presented to Anthony Biggio  
(11 April 2016)

2016 Climate Change Class  
Wooster Tree Ring Lab  
Department of Geology  
The College of Wooster  
Wooster, OH 44691  
Contact: Greg Wiles  
Tel: 330-263-2298, [gwiles@wooster.edu](mailto:gwiles@wooster.edu)



### **Introduction:**

The objective of this study is to provide a calendar date for the beams of the Biggio Barn 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 barn'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 22 February 2016 using increment borers and a cordless drill with a specialized bit. Ten 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 each ring was measured to the nearest 0.001 mm. These measurements were then 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.

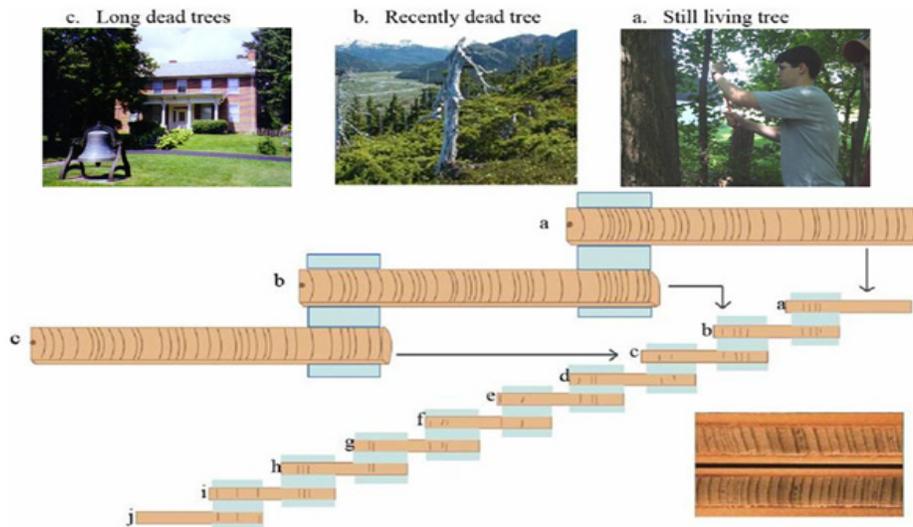
The floating *master* chronology from the barn was tested (cross-dated) against the *regional master* to determine the calendar date of each ring (Fig. 1). The dating was strong (Fig. 2) and unambiguous. The last year of growth, marked by the outer ring, is the year that the tree was harvested for timber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

**Table 1 – Tree ring data from Biggio Barn.**

<b>Core ID</b>	<b>Start year</b>	<b>End year</b>	<b>Outer ring present? (Y/N)</b>	<b>Notes</b>
<b>BIG03</b>	1719	1840	Y	Partial outer ring
<b>BIG05</b>	1708	1840	Y	Partial outer ring
<b>BIG06A</b>	1717	1840	Y	Partial outer ring
<b>BIG06B</b>	1730	1840	N	Broken core
<b>BIG10</b>	1677	1840	Y	Partial outer ring
<b>BIG11</b>	1591	1840	Y	Partial outer ring
<b>BIG13</b>	1618	1840	Y	Partial outer ring
<b>BIG14</b>	1758	1840	Y	Partial outer ring
<b>BIG15</b>	1603	1840	Y	Partial outer ring
<b>BIG16</b>	1719	1840	Y	Partial outer ring

**Results:**

The cores with partial outer rings were all successfully dated to the calendar year of 1840. Samples with partial outer rings intact indicate that the trees were cut during the spring of 1840. Taken together this evidence suggests that the barn was built in 1840.



**Figure 1:** The dendrochronological principle of crossdating used in this study. Crossdating allows for a calendar dates to be assigned to each ring.

**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.