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Dendrochronological Analysis of the Crowe Barn

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Dendrochronological dating of the Crowe Barn, 9809 Stephen-Young Road, Camden Ohio 45311

Sampled: August 12, 2015

Wooster Tree Ring Lab
Department of Geology
The College of Wooster
Wooster, OH 44691
Tel: 330-263-2445, nwiesenberg@wooster.edu

<http://treering.voices.wooster.edu/>



Objective:

To provide a calendar date using dendrochronology for the felling of timber used to build the Crowe Barn in Camden, Ohio. Core samples were returned to the Crowe family and the tree-ring data is archived at the Wooster Tree Ring Lab, housed in the Department of Geology, The College of Wooster.

Methods:

Twelve core samples were taken from beams within the Crowe Barn using an electric drill with a specialized core drill bit. The cores were then glued to wooden sticks and sanded so that the rings could be viewed clearly. Using a microscope, the rings of the cores were counted and measured to the nearest 0.001 mm. The ring series were then cross-dated with each other to create a “floating” chronology. This chronology is floating in time with each series internally cross-dated with one another. Using the computer program COFECHA, the floating ring-width chronology was then compared to a calendar-dated southwest Ohio (SWO) regional ring series to obtain calendar years for the Crowe Barn ring-width chronology. Outer ring dates were assigned to each ring and the felling dates of the timbers were determined (Fig. 1).

Results and Analysis:

All core samples were taken from beech beams; the primary species used in the structure. Cross dating of the Crowe Barn core samples with the SWO master series allowed calendar dates to be assigned to each ring and the results show that every tree was cut in 1849 (Table 1). Furthermore, each of the core samples had a fully formed outer ring (latewood transitions to a darker brown), which indicates that the trees were all felled after the growing season of 1849. Quite often trees were harvested during the winter months when the ground was hard and outside temperatures were more conducive to hewing and converting trees to timber. Timber was much more difficult to work and assemble once it began to dry and the need for an immediate structure would lead us to say with confidence that the barn (including the east and west shed additions) was built in 1850.

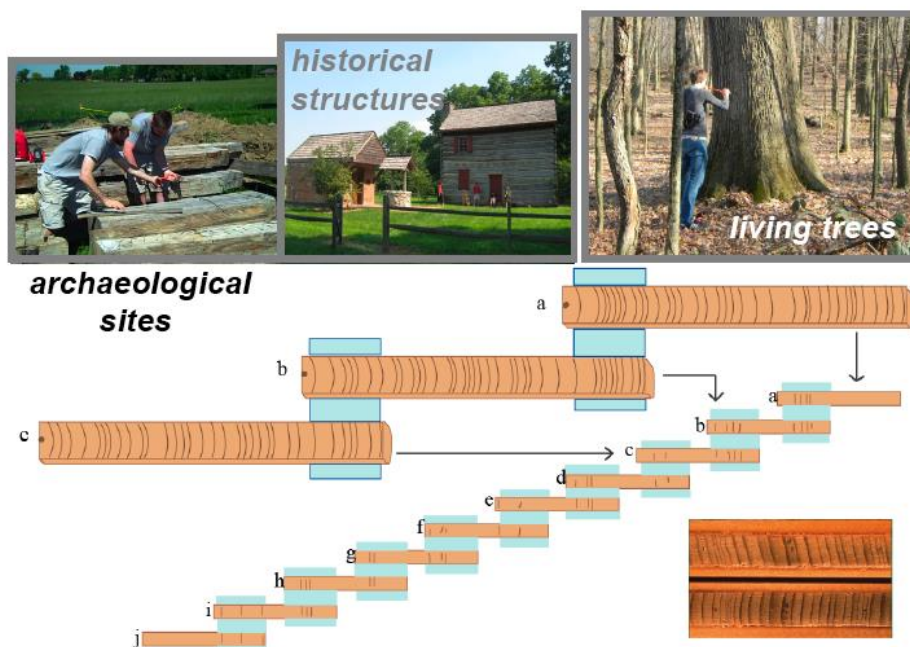


Figure 1. Diagram illustrating tree-ring cross-dating. Patterns in ring widths from archaeological and historic structures are compared to living tree ring chronologies in order to assign calendar dates to each ring.

Core	Inner Year	Outer Year	Beam Description	Observations
Crowe01	1690	1849	swing beam (hewn)	outer ring present
Crowe02	1773	1849	mow joist (hewn)	outer ring present
Crowe03	1758	1849	center post (hewn)	outer ring present
Crowe04	1702	1849	corner post (hewn)	outer ring present
Crowe05	1697	1849	wall post (hewn)	outer ring present
Crowe06	1689	1849	tie beam (hewn)	outer ring present
Crowe07	1769	1849	mow joist (hewn)	outer ring present
Crowe08	1740	1849	tie beam (hewn)	outer ring present
Crowe09	1760	1849	shed rafter (sawn)	outer ring present
Crowe10	1695	1849	floor joist (hewn)	outer ring present
Crowe11	1729	1849	sill beam (hewn)	outer ring present
Crowe12	1740	1849	floor joist (hewn)	outer ring present

Table 1. Tree-ring data from the Crowe Barn. All samples were taken from the main barn with the exception of Crowe09 which was taken from the east-facing shed roof.