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Dendrochronological dating of the Mann Homestead, Medina Ohio

Sampled: August 17, 2015

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Objective:

To provide a calendar date using dendrochronology for the felling of timber used to build the structures on the Mann homestead in Medina, Ohio. Core samples and tree-ring data is archived at the Wooster Tree Ring Lab, housed in the Department of Geology, The College of Wooster.

Methods:

Core samples were taken from beams throughout the Mann homestead 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 northeast Ohio (NEO) regional ring series to obtain calendar years for the Mann homestead 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 and hickory beams; the primary species used throughout the three structures. Cross dating of the Mann homestead core samples with the NEO master series allowed calendar dates to be assigned to each ring. The analysis results show that the following cut dates were 1852 for the house, 1863 for the 20x40 barn and 1905 for the 40x60 barn (Table 1). In each structure, outer ring dates indicated that some or all of the core samples had a fully formed outer ring (latewood transitions to a darker brown). This indicates that the trees were felled after the growing season of that year. 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 each structure was built the year following it's cut date.

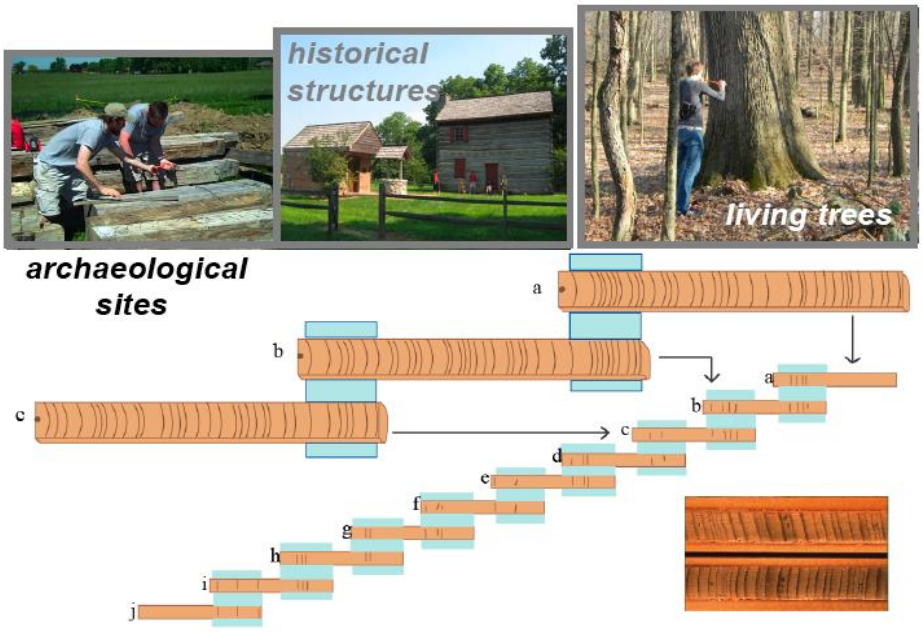

Figure 1. Diagram illustrating tree-ring cross-dating. Patterns in ring widths from archaeological and historic structures are compared to living tree ring chronologies in order to assign calendar dates to each ring.

Core	Inner-ring Year	Outer-ring Year	Structure	Beam Description
Mann01	1718	1905	40x60 Barn	Hickory post (sawn)
Mann02	1741	1905	40x60 Barn	Hickory tie (sawn)
Mann03	1800	1905	40x60 Barn	Beech brace (sawn)
Mann04	1780	1905	40x60 Barn	Beech joist (sawn)
Mann05	1706	1905	40x60 Barn	Hickory tie (sawn)
Mann06	1749	1905	40x60 Barn	Beech brace (sawn)
Mann07	1769	1905	40x60 Barn	Hickory tie (sawn)
Mann10	1749	1863	20x40 Barn	Beech post (hewn)
Mann11	1745	1863	20x40 Barn	Beech post (hewn)
Mann12	1719	1863	20x40 Barn	Beech post (hewn)
Mann20	1751	1852	House	Beech joist (sawn)
Mann21	1748	1852	House	Beech joist (sawn)
Mann24	1732	1852	House	Beech wall gert (hewn)
Mann25	1693	1852	House	Beech wall gert (hewn)
Mann26	1668	1852	House	Beech tie beam (hewn)

Table 1. Tree-ring data from the Mann homestead.