

Summer 7-8-2008

Dendrochronological Analysis of Naftzger Cabin Wayne County Historical Society Wooster, Ohio

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**Dendrochronological Analysis of Naftzger Cabi
Wayne County Historical Society
Wooster, Ohio**

Report submitted to Roger Rowe and Jeff Musselman
8 July, 2008
Sampled: 12 August 2007

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<http://www3.wooster.edu/treering/>

Objective: To develop and analyze a ring-width tree-ring chronology from the timber used in the construction of Naftzger Cabin at the Wayne County Historical Site in Wooster, Ohio. To provide a calendar year for the date of felling timber. The ring-width data will be added to the Northeast Ohio database and will contribute to the understanding of past climate variability over the past six centuries (Fig. 1).

Methods and Analyses: Eight cores were taken from the beams of Naftzger Cabin using a 5 mm manual tree borer (Table 1). The cores were prepared and sanded, annual rings were counted, measured to the nearest 0.001 mm, and then crossdated using standard dendrochronological techniques (Stokes and Smiley, 1968) (Fig. 2). Crossdating cores with the regional chronology provided calendar dates for two cores at the Naftzger Cabin.

Cores represent four species identified to be Oak, Chestnut, Hickory, and Elm (Fig. 3). Due to the differences in species and few rings in some samples, only two out of eight cores were calendar dated; NC02W (1723 - 1789) and NC05N (1685 - 1857). Neither core provided an outer ring, important for finding the year of felling. The outermost represented ring of the oak core (NC05N) is 1857 and appears to be possibly within a few years of the true outer ring. The two ring-width series together span 171 years covering the interval 1686 – 1857 AD.

Interestingly, the chestnut core (NC02W) from the cabin also was calendar dated and statistically correlated with the greater regional oak chronology from Northeast Ohio. This finding may prove to allow wider sampling of historical structures and further extension of the chronology. All cores are stored at the Wooster Tree Ring Lab, housed in the Department of Geology, The College of Wooster.

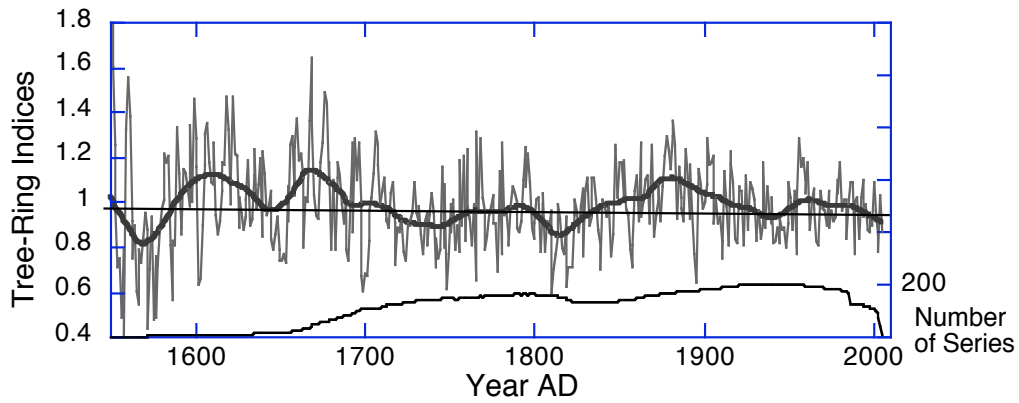


Figure 1: Northeast Ohio regional chronology of oak tree-ring width. The chronology was developed using cores and cross sections of wood from living trees and structural sites. The data is used in paleoclimate studies.

Table 1: List of tree-ring series cored from Naftzger Cabin.

Sample	Ring Count	Range A.D.	Presence of Outer Ring
NC02W	66	1723 - 1789	-
NC03N	118	-	*
NC04N	63	-	*
NC05N	171	1686 - 1857	-
NC07N	94	-	*
NC09E	80	-	*
NC10E	129	-	-
NC01S	100	-	-

N, S, E, W- Denotes side of cabin where sample was cored.

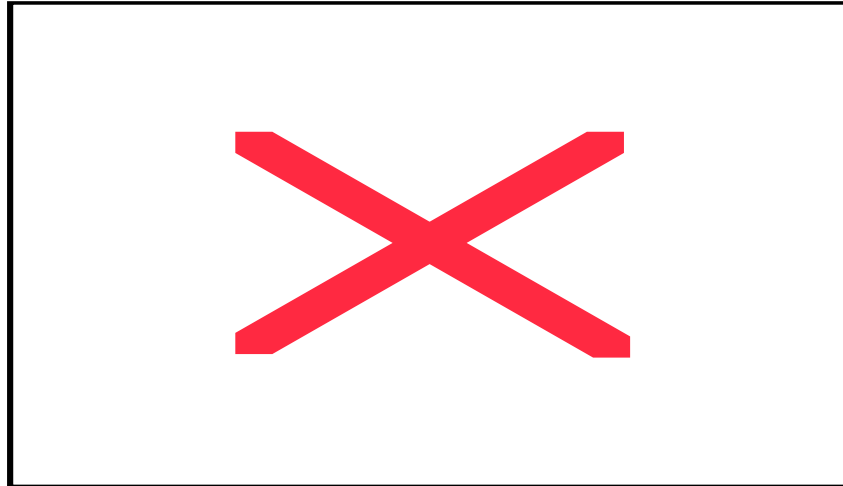


Figure 2: Dendrochronological principle of crossdating used for all site studies. Crossdating allows the crossover and linking of rings from many cores that span similar years, creating a continuous annual record covering more years than a single core could provide.

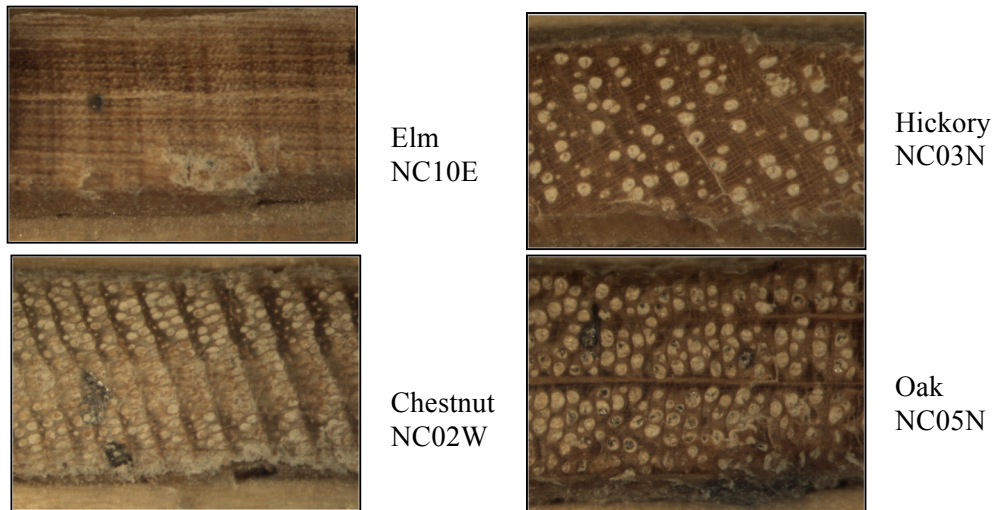


Figure 3: The four species represented from Naftzger Cabin logs (Hoadley, 1990).

References:

Hoadley, R. B., 1990, Identifying wood: accurate results with simple tools: Newtown, CN: The Taunton Press.

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