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Published on April 1, 2015 - Source: [Top Stories](#)

Tree ring dating sheds light on history of Rebel's Rest and local forest

The Rebel's Rest research project headed by professors Gerald Smith and Sarah Sherwood continues. As the architectural documentation was being completed at the building site recently, the dendrochronology (tree ring dating) of the wood was progressing and archaeological study was beginning.

The study has revealed that Rebel's Rest was built from oak, American chestnut, and tulip poplar timbers, which were intermingled in the construction. Recycled logs of varying ages and sources seem to have been used in at least some additions to the house.

The dendrochronological work has been led by Professor of Forestry Scott Torreano and conducted by Patrick Vestal, C'12 (*right*, collecting samples). To date, they have taken approximately 100 samples from the timbers at Rebel's Rest and are using tree rings in the samples to date them. The painstaking work involves sanding the samples to bring out the detail in the wood, then counting and measuring the rings. A Velmex measuring system measures the tree ring widths, and software enables Vestal to match the ring measurements in an undated sample to those in a sample that has already been dated, a process known as "crossdating."

Because Fairbanks kept detailed records and the University Archives hold the original mill invoices for the Rebel's Rest, Vestal and Torreano know when the logs of the original structure were cut. For these logs, the dates when the trees started growing are of more interest. Some samples from the timbers include the center of the log "pith" to the bark, so it is possible to know the entire lifespans of these trees. Cut dates are more important for the logs that made up the additions; learning these dates will help confirm whether the logs from the additions were recycled from other structures.

In addition to being used to date historical buildings like Rebel's Rest, dendrochronology allows researchers to learn more about the forest dynamics and past climate of the area. For example, they can learn when there were disturbances in the forest and when there were years of drought.

Dendrochronology is a highly specialized science and the work is time-intensive. For Vestal, it is also a labor of love. As a student, he was a recipient of the Environmental Studies and Raoul Conservation Internships and had an opportunity to learn dendrochronology from some of the most respected experts in the field, while working in the old-growth forest in nearby Savage Gulf. He has used the dated chronology of wood samples from Savage Gulf to date the timbers from Rebel's Rest.

Vestal has dated about 20 oak samples thus far, and the chronology spans from 1706 through 1866 (when Rebel's Rest was built). He expects to find some samples that go back even further. The dendrochronological work is expected to continue through the end of the year. An archaeological survey will soon assess evidence of earlier structures and subsurface features on the site. Archaeological testing and excavations may follow over the next several months.

Left, Torreano identifies some of the wood used in Rebel's

Rest.



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