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Tree-Ring Analysis of Backfilled Rooms at Aztec's West Ruin

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Western National Parks Association and Aztec National Monument

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Background

This report summarizes the final documentation and sampling of wood from the Aztec West Ruin, which was funded by a grant from the Western National Parks Association. The wood information obtained from the present work is part of a much larger study started in 1985 of the construction wood utilized in the building of the Aztec West Ruin. This smaller study had two primary goals: 1) to further refine the wood cutting dates of the various construction episodes at the site and 2) to assess the extent of prehistoric and historic wood contexts in the sample area through a combination of dates and wood species use. The area of investigation in the northwestern part of the building (**Figure 1**) along the present tourist trail was critical to our understanding a potential break in construction at the site between about AD 1111 and AD 1118 (**Figure 1**). Most of the upper story rooms in the area had been stabilized, but with the use of left-over prehistoric wood recovered during the Earl Morris excavations in the 1920s. Using old wood like this has created problems in understanding what happened during construction in certain parts of the site.

The Sample

The overall total number of wood elements recorded from the West Ruin is 4,980, of which 3,943 pieces have been sampled (79.2%). In June 2003, the remaining rooms with structural wood in Aztec's West Ruin were documented. The samples from 2003 were gathered from the northwestern and western parts of the structure before these areas were backfilled and stabilized. Overall, 280 samples were collected in 2003 but many more pieces were documented. Samples were not collected from every piece of wood because they had either been sampled earlier or the wood was too deteriorated.

The Stabilization Problem

Because they are so close to the tops of the walls, the majority of doors and ventilators in the second-story have been heavily stabilized and many of the wood pieces replaced. However, before sampling we were unsure if these second-story pieces of wood had been replaced with historic and prehistoric elements or whether some might still be original. A major problem at Aztec, then, is how to distinguish original pieces of wood from those that have been replaced in the past 90 years. Modern replacements typically reveal steel-ax cut limbs and saw-cut ends, but

with the re-use of prehistoric wood, it is not always possible to distinguish the two. The results from the sample now allow a more precise assessment of the original and stabilized features in the upper stories.

The Shift in Wood Species during Construction

We are fortunate that the initial Aztec builders shifted their harvest techniques from procurement of ponderosa pine, spruces and firs, ~~and~~^{to} aspen to juniper. The former species must have been obtained from quite a distance, perhaps more than 30 or more miles away to the north, while juniper is undoubtedly a local species that was readily available. We find the use of juniper is widespread in prehistoric small houses in the region and was also commonly noted during explorations of the region in the 1700s and 1800s. We interpret this difference to mean that juniper was procured locally with little effort while the other species took considerable organization and effort to procure. Given that long-distance procurement of selected species is a hallmark for greathouse construction in Chaco Canyon and at the Salmon Ruin, a Chacoan greathouse near Bloomfield, the shift in wood harvest may indicate that Chacoan supervisors first took charge at the West Ruin but then later handed off the work to local residents.

The difference in species use and the few dates we obtained from the upper and lower story features in the study area helps to resolve the puzzling mixture of materials. In the western part of the site, juniper is overwhelmingly the species commonly used for door and ventilator lintels. When the lintels in the study area are cut from ponderosa pine, spruce, fir, or *Populus* (cottonwood or aspen), they inevitably are historic replacements. These second-story pieces, which have overwhelmingly been identified as these latter species, seldom dated. When they did, they typically clustered around AD 1111, which suggests that they originally came from the eastern part of the site rather than dating the construction in which they were found. On the other hand, the preference for juniper wood elements, which almost always dated at AD 1118 in the study area within the first story where originality is clearly evident, indicate that the western part of the structure was probably built at about AD 1118 or slightly afterwards. But the switch is not always clean, and sometimes there is a rare mix of species that appear to be in their original contexts. Unfortunately many pieces do not date, so we are not always sure if they have been moved or not.

Conclusions

The 2003 sample allows us to pinpoint the key excavated rooms that show a break in construction between AD 1111 and 1118. These rooms include Rooms 201, 193, and 250, which lie along the north side of the ruins where the visitor's trail winds into the plaza between the excavated and unexcavated sections of the site. This change between architectural constructions continued to the west and includes all of the northwestern block and West Wing built at about AD 1118 or slightly later. The abrupt cessation in construction is puzzling and may be related to some change in the building authority at the site or some other problem impacting the construction crews.

It is clear within the sample area that wood used during stabilization was taken from early rooms in the center or eastern part of the site to be reused, probably from collapsed roofs encountered during the initial excavations by Earl Morris. Much of this wood was also taken for roofing Morris' original house, now the present-day visitor's center.

Results from the sample helped us resolve the identification of one of the major breaks in construction at the site and we can now compare it with other changes in construction and occupation that took place within the overall Aztec complex. In addition, the new information allows a much better grasp of the problems created by the reuse of prehistoric wood at the site and how to distinguish it from those pieces still in their original contexts.