



ORIGINAL ARTICLE

Historical dendroarchaeology of two log structures in the Valles Caldera National Preserve, New Mexico, USA



Kristen K. de Graauw^{a,*}, Ronald H. Towner^b, Henri D. Grissino-Mayer^c,
Nicholas V. Kessler^b, Jonathan Knighton-Wisor^d, Anastasia Steffen^{e,f}, James P. Doerner^g

^a Montane Forest Dynamics Laboratory, Department of Geology and Geography, West Virginia University, Morgantown, WV 26505, USA

^b Laboratory of Tree-Ring Research, The University of Arizona, Tucson, AZ 85721, USA

^c Laboratory of Tree-Ring Science, Department of Geography, The University of Tennessee, Knoxville, TN 37996, USA

^d Bryce Canyon National Park, Highway 63, Bryce Canyon, UT 84764, USA

^e Valles Caldera National Preserve, 90 Villa Louis Martin, Box 359, Jemez Springs, NM 87025, USA

^f Department of Anthropology, University of New Mexico, Albuquerque, NM 87131, USA

^g Department of Geography, University of Northern Colorado, Candelaria Hall 2096, Greeley, CO 80639, USA

ARTICLE INFO

Article history:

Received 3 January 2014

Accepted 19 August 2014

Keywords:

Historical dendroarchaeology

New Mexico

White fir

Douglas-fir

Partido system

Baca Ranch

ABSTRACT

We used dendroarchaeological techniques to determine the year of construction of two historic structures in the Valles Caldera National Preserve of New Mexico, USA. Historical documents date some structures in the headquarters area of the Preserve, but the Commissary Cabin and Salt Barn were lacking conclusive construction dates. Both structures were originally thought to have been built by the Otero family who bought the property in 1899. We found that the structures were built from two tree species, white fir (*Abies concolor* (Gordon) Lindl. ex Hildebr.) and Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco), surprising given that ponderosa pines are also found in great numbers in the adjacent forest. Tree rings from 20 logs were confidently crossdated both graphically and statistically and provided cutting dates of trees in both structures of 1940 and 1941 when compared against the Fenton Lake reference chronology (Commissary Cabin: $r = 0.69$, $t = 15.54$, $p < 0.0001$, $n = 263$ years; Salt Barn: $r = 0.77$, $t = 11.7$, $p < 0.0001$, $n = 232$ years). By combining the cutting date years and terminal ring attributes, we suggest that both structures were built in the spring or early summer of 1941 using freshly cut logs and logs that had been cut the previous spring (1940, before or during the growing season) and stockpiled. The cutting dates of 1940 and 1941 indicate that these buildings were constructed during the Franklin Bond (1939–1945) era and associated with the transition from sheep ranching to more modern cattle grazing. These new dates provide a more distinct understanding of the cultural resources at the Valles Caldera National Preserve and provide interpretative staff with more accurate information that can be given to the public.

© 2014 Elsevier GmbH. All rights reserved.

Introduction

Tree-ring dating of historic-period structures has a long history in Europe (c.f. Hillam, 1992; Baillie, 1995; Hillam and Groves, 1996; Hurni and Orsel, 1996). Dendroarchaeology has also often been applied to dating the years trees were harvested and subsequently used to build historic-period (post-AD 1600) structures in the eastern US (Grissino-Mayer and van de Gevel, 2007; Harley et al., 2011; DeWeese et al., 2012; Grissino-Mayer et al., 2012; Therrell and Stahle, 2012). Numerous studies have also demonstrated that

early Euro-American settlement structures can be dated via tree rings in the American Southwest (e.g. Scantling, 1940; Ames, 1972; Robinson, 1985; Towner and Creasman, 2010). Such studies are discernibly fewer in number in the Southwest not because such structures are lacking, but because researchers have emphasized the importance of dating prehistoric rather than historic structures via tree-ring dating over the decades (Nash, 1999). Dendroarchaeology is an important technique for verifying, confirming, and in some cases, refuting structure dates derived from documentary or oral history sources. In addition dendroarchaeological research yields information on species selection, wood use and modification practices, and repair and remodeling episodes that are rare in documents or human memories (Dean, 1996; Towner, 2002).

* Corresponding author. Tel.: +1 6784928111.

E-mail address: kkdegraauw@mix.wvu.edu (K.K. de Graauw).



Fig. 1. The Valles Caldera and location of the Baca Ranch Headquarters area (oval).

An opportunity arose in 2012 when the Valles Caldera National Preserve (VCNP) hosted the North American Dendroecological Fieldweek (NADEF) where land managers, researchers, and students from across North America gathered to learn techniques and methods related to dendrochronology. One group at the 2012 NADEF concentrated on teaching and learning dendroarchaeological techniques by applying these techniques to develop dates of construction of two historic structures in the VCNP known as the Commissary Cabin and the Salt Barn. Although historical documents have provided dates for some structures in the VCNP, these two structures were lacking conclusive construction dates and associated historical/socioeconomic contexts. We had two specific objectives in this project: (1) determine the construction dates of these two log structures in the VCNP using dendrochronological techniques to obtain the years of harvesting for the trees used to build the two structures and (2) compare these dates to the known historical documentation for the VCNP to better understand who built these structures and for which purpose these structures may have served.

Setting and historical background

The VCNP is in a volcanic caldera covering 36,219 ha at the center of the Jemez Mountains in northern New Mexico, USA (Fig. 1). The caldera lies between 2400 and 3430 m in elevation and supports ponderosa pine (*Pinus ponderosa* Douglas ex C. Lawson), Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco), white fir (*Abies concolor* (Gordon) Lindl. ex Hildebr.), pinyon pine (*Pinus edulis* Engelm.), and juniper (*Juniperus communis* L. and *Juniperus scopulorum* Sarg.). The land has served as pasture for livestock since the 1820s when the Baca family took ownership as a land grant from the Mexican Government. The Baca Location No. 1 land grant has been a working ranch since at least 1860 (Anschuetz and Merlan, 2007) after the area was incorporated into the United States as the territory of New Mexico. Previous investigations into

the historical significance of the Salt Barn and Commissary Cabin centered around their association with *partido* system sheep ranching in the Valles Caldera during the first half of the 20th century. The *partido* system was a system of lending capital, in the form of sheep, at interest. The system persisted in New Mexico from the early 18th century until after World War II (WWII). The *partido* system involved a contract between a *partidiario* (the sharecropper) and a *patron* (owner) who provided a loan of sheep and the use of pasture. The contract required the *partidiario* to return a percentage of the annual increase in the herd and a percentage of sheared wool, as well as compensate losses (Martin, 2003; Anschuetz and Merlan, 2007).

Mariano Sabine Otero, his son Frederico J. Otero, and Frank Bond were the land owners most responsible for the introduction and maintenance of the *partido* system in the Baca Location from the late 19th Century until the end of WWII. The Otero family acquired the Baca Location in 1899, and soon after the Valles Land Company began using the area as summer pasture for livestock (Martin, 2003). In 1909, F.J. Otero sold the Baca Location to the Redondo Development Company, but he and his family continued to lease the pasture until 1917. In 1918, the G.W. Bond and Brothers Company purchased the Baca Location and began making improvements. The Bonds discontinued access to grazing pastures for cattle and horses owned by local Pueblo people but continued to allow traditional uses, such as plant and mineral gathering (Anschuetz and Merlan, 2007). After 1918, Frank Bond amassed large holdings of public and private grazing land which forced many small ranchers and herders to sign *partido* contracts (Anschuetz and Merlan, 2007). By 1939, Frank Bond's son, Franklin, assumed more responsibility for the family's ranching operations in northern New Mexico and diversified their operations by adding cattle. Wool demand declined at the end of WWII, encouraging Franklin Bond to add even more cattle to their grazing operations. In 1945, Franklin Bond's son, Frank Bond, entered into more lease agreements with cattle ranchers who did not continue the *partido* system contracts. The trend to more modern style contracts with cattle ranchers continued through the 1950s, and over the course of the decade the number of cattle at the Baca Location increased by as much as 140% (Anschuetz and Merlan, 2007). After Franklin Bond's death in 1954, outside ranchers leased the Baca Location pasture, and the ranching era ended by 1963 when James Patrick Dunigan purchased the Baca Location. For the remainder of the 20th century, the Valle Caldera was the subject of lawsuits involving Dunigan and various logging interests over logging practices and revenues (Anschuetz and Merlan, 2007), until Dunigan's death in 1980. Finally, the U.S. Government acquired the land as part of the Valles Caldera Preservation Act of 2000, which created the Valles Caldera Trust to protect the Preserve's natural and cultural resources and provide interpretations to the public (http://www.vallescaldera.gov/about/trust/trust_ref.aspx).

The structures

The Commissary Cabin and the Salt Barn are among a number of structures located in the historic district of the Baca Ranch Headquarters of the VCNP (Fig. 2). The Commissary Cabin (LA136351) (Fig. 3) is an east-facing, single-story, single-room rectangular structure located in the Baca Ranch Headquarters historic district which was used as a supply shop for the sheep and cattle ranchers from the area. The cabin was constructed with peeled horizontal logs with saw-cut ends that were joined by double-saddle notching. One notable feature on the south wall of the cabin is a large shuttered window, likely used as an area to transfer goods without entering the building. The main entry on the east side of the cabin

Download English Version:

<https://daneshyari.com/en/article/10250247>

Download Persian Version:

<https://daneshyari.com/article/10250247>

[Daneshyari.com](https://daneshyari.com)