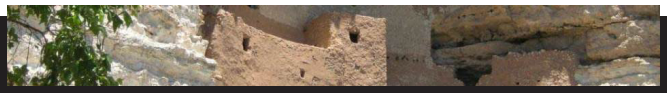


FACT SHEET

Preservation: Montezuma Castle

Montezuma Castle, a Sinagua cliff dwelling built and lived in between A.D. 1100 and A.D. 1425, is one of the best preserved prehistoric structures in all the Southwest. The astonishing level of preservation of this 19-room, 5-story building is in part the result of environmental conditions, but also of prehistoric building techniques and modern stabilization efforts.

Environmental Conditions

Montezuma Castle was built in a large natural limestone alcove above Beaver Creek, affording the building substantial protection from precipitation above and flooding below. The protection of the alcove and the overall low humidity within the dwelling are the main reasons why Montezuma Castle remains standing.

Prehistoric Building Techniques

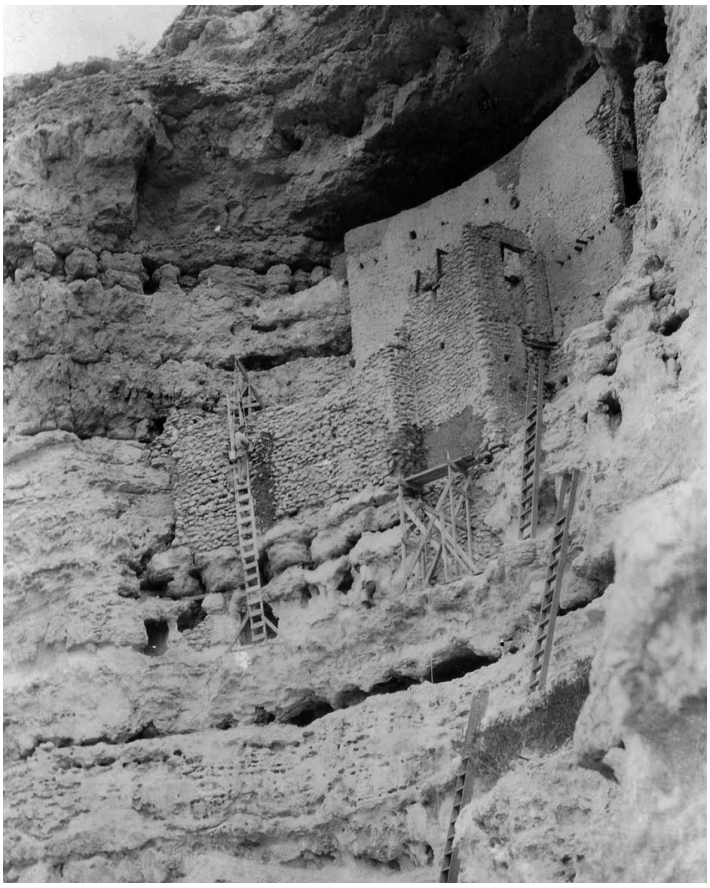
Montezuma Castle is an adobe and cobble construction with viga and latilla roofs. The prehistoric builders used local limestone and mud mortar to build the walls of the Castle, large beams (vigas) to frame the roofs, and over these, placed smaller beams (latillas), thatch material, and mud to finish the roofs, which also doubled as floors for upper story rooms.

The large roof beams were harvested with stone axes that could fell a moderate sized tree in less than 15 minutes (Windes 2012). Sycamore, the most widespread tree species along Beaver Creek, was used most often, followed by alder, ash, Douglas fir, juniper, ponderosa pine, and in lesser amounts, hardwoods like pinyon. Some of these species, including Douglas fir, ponderosa pine, and pinyon, are nonlocal and found in only small quantities — these may have been collected from distant stands or perhaps from floodwater debris.

Modern Stabilization

Montezuma Castle was first stabilized by the Arizona Antiquarian Association in 1897 (Protas 2002). The goal of the Association was to repair damage from vandals and to "restore and preserve what remains of this famous old ruin with as little change of appearance as possible."

In 1906, Montezuma Castle was one of four national monuments created through the passage of the Antiquities Act and proclaimed "of the greatest ethnological value and scientific interest." Early visitors to the Castle were allowed inside, and many left their mark, carving their names and dates into the vigas of the dwelling. In the 1920s, the National Park Service embarked on a major stabilization project that included repairing damaged walls and floors, rebuilding portions of the roof, restoring doorways and lintels, and scrubbing off hundreds of names written on the walls (Protas 2002).



FRANK PINKLEY, NPS

Making repairs to Montezuma Castle, 1923.

Over the years, the National Park Service completed additional stabilization projects, including one in 1933 to repair damage caused by looters, and others in 1947, 1964, 1974, and 1984. The last major stabilization project was in 1996, when the National Park Service replastered the outer walls of the lower, forward rooms to repair severe damage caused by an infestation of carpenter bees that had bored holes in the original plaster. The two-toned appearance of the Castle is a result of this project.

Prepared by Meghann M. Vance

BLANCHETT ET AL. (2010)

Healthy beams and a salt damaged beam is Room 1 (Level 4). The damaged beam also has significant beetle damage and severe wood defibration.

Current Concerns

Despite stabilization efforts, the Castle is still susceptible to damage, with the original wood beams and plaster floors particularly vulnerable. Problems of concern within Montezuma Castle include powder beetle attack, water infiltration, soft rot decay, and wood defibration (break-down) from salt and mineral accumulation (Blanchett et al. 2010). Cracking and decayed wood have to be monitored frequently because beam loss could result in a room or multiple rooms collapsing.

Pooling water is a major cause of damage to roofs, walls, and wooden elements. For Montezuma Castle, this has long been a problem for the roof of the second story. First repaired in 1897, when the Arizona Antiquarian Association placed a corrugated metal roof over the damaged area in an attempt to protect the interior, this same roof was again repaired in the 1920s, and most recently in 2011, when the National Park Service installed an Ethylene Propylene Diene Monomer (EPDM) membrane over the roof to prevent water from reaching the interior.

Preservation Today

Centuries after it was built, Montezuma Castle remains remarkably intact. Since the closure of the ruin to public entry in the 1950s, the main cause of damage witnessed during earlier years — humans — is no longer a problem, with access to the Castle limited to a few researchers per year, and when necessary, stabilization crews. However, some of the floors are weakening, endangering the structural integrity of the Castle itself. The National Park Service monitors the condition of the ruin frequently and continues to do cyclic stabilization, as needed, focusing on preventative measures like the installation of the membrane roof in 2011, and with care, Montezuma Castle will continue to stand for future generations.

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GUEBARD ET AL. (2011:FIGURE 83)

The second story roof of Montezuma Castle during repairs in 2011.