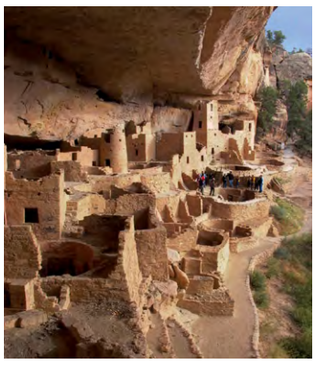
Mesa Verde

National Park Service
U.S. Department of the Interior

Mesa Verde National Park

Archeology and Fire

Archeological Resources



Cliff Palace

Each year Mesa Verde National Park welcomes over 500,000 visitors to see America's premier archeological preserve. Tucked into sandstone alcoves, the cliff dwellings at Mesa Verde represent the last 100 years of the greater Ancestral Puebloan occupation from A.D. 600-1300. The cliff dwellings have been remarkably preserved, remaining largely intact and out of the elements due to the protecting alcoves. Original stones, mortar, wood, plaster, and artifacts offer archeologists many clues about these structures and their builders.

However, the park is home to more than cliff dwellings. Villages and granaries set in alcoves make up only about 600 of the approximately 5,000 prehistoric sites found in the park. Most of Mesa Verde's archeological sites, identified as pueblos, towers, pottery kilns, and farming terraces, among others, are located on the mesa tops.

Although little has changed in these dwellings, our ability to understand them has increased. Over the last 100 years, new archeological techniques have developed as a result of fire.

Protecting the Park and its Resources

Park Point Fire Tower

Mesa Verde was established as a national park in 1906 to "preserve the works of man." Because of the rich collection of cultural artifacts, park managers and others believed that vandals and "pot hunters" were the greatest threat to the park. Natural forces like wildfires were not perceived as a danger until forest fires erupted many years later.

Mesa Verde is prone to lightning strikes - receiving up to 100 strikes in a 24-hour period during the summer. It is also swathed in a dense pinyon and juniper forest that burns easily in dry conditions. The Wild Horse Mesa and Wickiup Fires of 1934 burned a total of 4,614 acres, leaving a visible scar on the landscape and causing irreparable damage to the archeological sites the park was established to protect.

Park managers became increasingly concerned about fire. They directed the Civilian Conservation Corp (CCC) to build access roads, two fire towers, and cut down and remove dead trees for fire mitigation. These efforts from 1932 to 1941 helped the park avoid large wildland fires for many decades, yet the park continually accumulated fallen trees and plant materials.

The Catalyst: 1996 Chapin 5 Fire

Massive smoke plume behind the Far View Visitor Center.

When the 1996 Chapin 5 Fire burned 4,781 acres near the Far View Visitor Center, it was the largest fire in recorded park history. Because of Mesa Verde's difficult terrain and topography, firefighters used aerial water drops and fire retardant, or slurry. The slurry, dyed bright red so aircraft pilots can see it, stains the landscape. While the color will fade, a stain persists, and the slurry can damage the sandstone. Such stains are particularly noticeable along the trail to Spruce Tree House.

Modern firefighting efforts caused immediate impacts to archeological sites. To prevent the flames from spreading, firefighters cleared away vegetation at the fire's edge. Archeologists with firefighting training worked alongside firefighters to help identify sites and minimize the damage caused in the rush to ensure human safety.

Because of their protected location, cliff dwellings might not receive obvious damage from fires. However, organic materials in the alcove, such as pack rat middens (nests) or wall timbers can be set ablaze by blowing embers. Typically, the most devastating fire effects to cliff dwellings occur after the fires are extinguished. For example, "hydrophobic" soils (where rain does not soak into soil, but rather runs off the surface) and the lack of vegetation above the alcoves allows waterfalls of ash, mud, and other debris to cascade down onto sites after rain storms.

The Catalyst: 1996 Chapin 5 Fire (Continued)

In addition, intense heat (700-800°C or 1292-1472°F) from fires leads to spalling, the peeling away of the rock face, as the water in the sandstone evaporates. Spalling does occur naturally but is accelerated by fire. This process is most devastating to "rock art" panels. Because petroglyphs (pecked in) and pictographs (painted on) are only on the sandstone surface, spalling can completely destroy a design. The Chapin 5 Fire destroyed a large panel known as the Battleship Rock Panel.

Portion of the Battleship Rock Panel

← Before spalling
After spalling →

Archeology After the Chapin 5 Fire

Applying silicon beading at Spruce Tree House.

After the Chapin 5 Fire, park archeologists began a post-fire assessment using modified procedures developed at Bandelier National Monument following their 1996 Dome Fire. The first step was a condition assessment of fire effects to known architecture and petroglyph and pictograph panels. Fires made mesa top sites and artifacts much more visible, allowing archeologists to easily walk through burned areas to assess the damage. Archeologists located and mapped sites using GPS technology, updated their site records, and made recommendations for post-fire treatments.

Treatment methods were used to preserve the sites after they were assessed. Erosion posed one of the greatest dangers, threatening to wash away site features and artifacts. Erosion-control matting and silt logs, made from aspen shavings and sometimes impregnated with native seeds, were put in drainages to slow water runoff and shade pioneering plants. Log diverters, burned logs angled on the slope above an alcove site, kept water from rushing down into cliff dwellings and eroding building stones and mortar. A bead of silicon applied to the cliff face redirected the natural drip lines. Archeologists realized that there was no way to restore the pre-fire appearance of spalled surfaces, but they could help to prevent future spalling by removing vegetation from around structures and in front of petroglyph and pictograph panels.

The treatments used after the Chapin 5 Fire set a new standard for how archeological sites would be addressed after a fire. Unfortunately, these treatments were soon needed again. In fact, between 1996 and 2003, five large wildfires burned over half of the park's 52,000 acres.

Archeological Findings

This stone knife was found with its wooden handle and a yucca cord still attached.

Pottery sherds offer clues to social interactions such as trading.

Post-fire surveys located numerous archeological sites which had lain hidden under dense vegetation. By 2007, 676 previously unknown archeological sites, including three cliff dwellings, were recorded as a result of the post-fire surveys.

The most interesting discoveries were extensive water control systems in the form of numerous prehistoric check dams built in narrow drainages and terraces constructed across hillsides. The Ancestral Puebloans were diligent farmers who manipulated the land to increase the water that benefited their crops. By studying check dams and terraces, we can learn more about their prehistoric farming techniques and water control methods.

The Chapin 5 Fire burned at a fortuitous time in the history of archeological documentation techniques. Although archeological sites have been recorded throughout the park's history, only a fraction of those sites have been intensely studied. In 1994, the Archaeological Site Conservation Program (ASCP) was developed to "research, document, evaluate, and preserve" cliff dwellings in the park. The ASCP does not excavate. Rather, it maps, measures, and documents archeological features and standing architecture. The need to document new sites and artifacts exposed after the fires led to the implementation of the ASCP process on a much larger scale than previously imagined. Archeologists first assessed new sites and then began a documentation and treatment process.

With almost 5,000 archeological sites in Mesa Verde, the duty of documenting, studying, and preserving our prehistoric legacy is a continual project. Knowledge gained from these post-fire assessments provides information about the Ancestral Puebloan construction methods, farming techniques, and social interactions. The fires, while catastrophic, provided an opportunity to try new archeological approaches. Although the landscape might take centuries to fully recover, applying new techniques will help the park preserve our past for future generations.

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