

THE LA MESA FIRE: IMPACT ON CULTURAL RESOURCES AT BANDELIER NM

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The La Mesa fire began June 16, 1977, burning uncontrollably for seven days through Bandelier National Monument, Forest Service, and Department of Energy lands. More than 15,000 acres were burned. This had significant repercussions for both natural and cultural resources in the area.

The fire started on Mesa del Rito, just west of the Monument in Santa Fe National Forest. Variable weather conditions and differing fuel loads, combined with Bandelier's complicated topography, demanded diversified fire suppression approaches. Slurry (chemical retardant) drops began within two hours after the fire was reported and continued until nightfall. Fire crews also constructed a line nearly all the way around the fire. However, the fire reached a sheer cliff where no lines could be built. During that night, the flames dropped down into Alamo Canyon, and with shifting canyon and slope winds, burned back up the sides of the canyon outside the area of containment.

From there, a number of factors contributed to the fire's increasing destructiveness. Fuel moisture was critically low after a dry spring and early summer, and many forested areas had not burned for years. Considerable amounts of downed fuels (natural fire substances like decaying leaves) provided ample fodder. Also, daytime winds gusted to forty miles per hour, and while somewhat changeable, tended to blow from the southwest. This carried the fire into regions with a high percentage of downed fuels. Hand crews, bulldozers, slurry bombers, water tankers, and helicopters were quickly dispatched to the area. This contributed to the upheaval. Finally, fire suppression activities expanded during the next week with continuing increases of manpower and equipment to battle the fire.

During a fire, cultural resources are threatened by the fire itself and by related fire-suppression activities. This was clearly documented during a severe wild fire at Mesa Verde National Park in 1972 (Switzer 1974). In some cases, it appeared that the impact of suppression activities could be far more damaging to archeological resources than the fire. Though little can be done to protect sites from damage once a fire has broken out, damage resulting from fire suppression can be more selectively controlled and, in many cases, totally avoided.

Much credit goes to Dr. Milford Fletcher, NPS Regional Biologist, who recognized the potential danger to Bandelier's archeological heritage and recommended the use of archeologists to minimize fire suppression destruction. Despite initial skepticism from fire officials, Bandelier acted on Dr. Fletcher's suggestion. Archeologists assisted during fireline constructions, making this the first time in the history of park and forest management that archeologists were included in the firefighting scheme.

Archeologists worked individually or in pairs, in front of bulldozers and handcrews, guiding them away from sites. Others hiked or were helicoptered into backcountry areas to accompany line, mop-up, and sawyer crews monitoring these varied fire suppression activities.

While archeologists made their most important contributions during fireline construction, they also assisted in other ways. Their knowledge of backcountry terrain proved useful to fire crews unfamiliar with the area. Archeologists supplied crews with detailed topographic maps. On occasion, they served as impromptu interpretive guides to fire crews, explaining the Monument's prehistory, its native inhabitants, and the importance of leaving surface artifacts untouched.

By the end of the fire, it was apparent that the presence of archeologists on the firelines had in no way hindered the containment of the La Mesa Fire. That their presence helped avoid damage to cultural resources was clearly evidenced, leading to consideration of guidelines requiring their presence on future fires.

While all the post-fire studies from the La Mesa fire should be considered as a whole, the La Mesa Fire Study focused in particular on the impact of the fire and fire suppression activities on cultural resources within Bandelier National Monument. The study was designed in part to: a) survey all areas affected by fire suppression within the Monument boundaries; b) excavate selected sites burned in varying degrees for specific data on artifacts, architecture, and ecofacts; c) salvage sites damaged during fire suppression activities.

The recommendations which emerged from this study should help to mitigate the adverse effects of fire on cultural resources and assist resource managers to develop fire management programs based on findings of the La Mesa study.

RECOMMENDATIONS:

1. Perhaps the most important function is to keep the lines of communication open to all factions involved.
2. Contingency plans should be established by area resource managers according to the resource priorities they set within their jurisdiction and according to permissible policy. Furthermore, all personnel should be informed of that policy.
3. Areas should establish and maintain resource base maps showing exact site locations and provide copies to archeologists and fire bosses on firelines.
4. Under any circumstances in which cultural resources are threatened by fire, archeologists should be present to mitigate fire, fire suppression, or rehabilitation impact on these resources.
5. Priority attention should be given to bulldozer line construction, potentially the most destructive of the fire control functions. Handlines, helispots, fire camps, and mop-up areas should be closely monitored also.
6. All archeologists serving on fire duty should have completed a certified course on fire behavior and hold a current red card. They should also have knowledge in basic first aid and be competent in the use of topographic maps.
7. An archeological liaison officer should coordinate all activities of line archeologists with fire bosses, especially when more than one agency is involved with the fire.
8. Line archeologists should be briefed on their duty area and be certain of their function on the line.
9. Special flagging and pin flags in some color other than the bright red and orange commonly used by fire crews should mark sites, and everyone concerned with the fire should be aware of what that color means.
10. When feasible, archeologists should photograph fire suppression activities to record both damage and avoidance of sites and to provide photos for the fire record.

Controlling the fire is the prime concern for the firefighters. Cultural resources may have to suffer surface impact, but little or no damage need result from fire suppression if archeologists are present during these activities. During the La Mesa fire, Forest Service crews willingly cooperated in avoiding sites. However, certain procedures could have served the cause of preventative maintenance.

Removing high fuel content vegetation from the tops of sites or their periphery may be one solution to avoiding fire damage. Sites frequently have trees and other plants growing on them in abundance, and if periodically cleared, would create less fuel to catch.

Information on fire and fire suppression in connection with cultural resources should be taught at fire training centers. This would acquaint firefighters with archeologists and with cultural resources. Agencies dealing with cultural resources might also find this information useful.

While the La Mesa fire study has made inroads into the effects of fire on surface and subsurface materials, particular problems may exist in different areas of the country. Prescribed burning may become a more common practice as a means of preventing large scale fires such as the La Mesa fire. The study indicates a need to develop specific guidelines regarding cultural resources for key NPS areas, and general guidelines for fire management service-wide.

In the development of a fire management program, all sensitive cultural resources within areas scheduled for prescribed burning should be considered. This can be accomplished by sample surveys, literature searches, assessments, or other mechanisms to formulate a baseline information source. In instances where a prescribed fire area contains structures listed in the National Register, a Section 106 compliance procedure must be initiated prior to the prescribed fire. Care should also be taken so that discovery sites not listed in the National Register are protected.

During any fire, the four basic sources of damage to cultural resources are fire intensity, duration of heat, heat penetration into the soil, and use of fire suppression equipment. During prescribed burning these four elements will be minimized; however, surface impacts could be realized depending on type and amount of vegetation located on an archeological site. The four elements mentioned will be minimized due to fast-moving cooler fires which would be burning only the understory vegetation with minimal handlines for control. Also, post fire erosion could alter the surface of prehistoric sites, an element to be minimized during any prescribed fire.

Direct fire damage to artifacts appears to be mainly confined to those surface materials. Ceramics are most commonly oxidized or carbonized by exposure to the fire. Lithic materials sometimes exhibit surface residues, and hydration factors can be affected. Surface pollen grains can be destroyed by temperatures above 300 F. Controlled testing is needed as part of the prescribed fire testing program to determine surface temperatures, heat penetration, treatment of various surface materials, and minimal impacts to cultural resources.

Until La Mesa, little attention was given to fire and fire suppression impact on cultural resources. Now that a study has been initiated, the positive presence of archeologists during fires can be shown. Hopefully, situations encountered during the La Mesa fire can and will be part of a useful and ongoing program of research and policy for all those involved with fire and fire management.

The authors completed the study as part of a program in the Southwest Regional Office. Questions concerning the study can be addressed to the Regional Archeologist in the Southwest Region.