



Prescribed Fire in PJ on Chupadera Mesa, New Mexico

Chupadera Mesa

Chupadera Mesa is characterized by areas that are relatively flat, with numerous moderate to steep canyon complexes breaking off the top of the mesa. A steep escarpment is located on the west edge of the burn area, with some additional steeper slopes located throughout the burn units, especially along and south of Iron Mine Ridge. A communications site that includes a cellular phone tower is located in the burn area. A powerline runs southwest from the cell site, through a portion of the Lower Taylor burn unit to the main powerline located south of US Highway 380.

Goals

The main vegetation type in the Chupadera Mesa is Piñon-Juniper (PJ). The goals of the prescribed fire program are variable, but include: increasing the continuity and diversity of understory vegetation to improve overall watershed condition; improving forage for wildlife; reducing PJ encroachment into grasslands; creating a mosaic of open to moderately dense PJ stands; and reducing PJ stand density. Specific objectives include: improving habitat for mule deer, quail and antelope, reducing fuel loads in a mosaic pattern to create regeneration sites, clearing invaded swales and valley bottoms to enhance wildlife corridors, and removing dead woody material left over from past chaining, thinning and chemical activities.

Treatment Design

One issue with using fire treatments in PJ is a lack of fuel in the understory. To help mitigate this problem, PJ



Interior burning in the Upper Taylor burn unit. Photo courtesy of BLM.



Blackline operations in the Upper Taylor burn unit. Photo courtesy of BLM.

in Kellogg Canyon on the northwest corner of the San Mateo Mountains was thinned in 2004 in preparation for future burning. Generally, the thinning followed the contour in the canyons. When it was burned in 2005, there was no uphill "push" of fire and it left a fairly straight edge the length of the canyon, mainly due to the wind funneling up-canyon. Due to the wind funneling up-canyon, the Upper Taylor burn was designed to follow up a thinning project that used irregular patches with "chevrons" (i.e. inverted "v's") running uphill to help enhance fire effect. With the positive results achieved on the Upper Taylor prescribed burn, similar thinning prescriptions were used to increase fuel loading and allow the physics of fire to open up the PJ stands and help create a mosaic of burned and unburned areas on the landscape. The burns on Chupadera Mesa were done in cooperation with grazing permittees, NM State Forestry, NM State Land Department, and the Department of Defense - White Sands Missile Range, with the BLM as the lead agency.

Burn Units

Prescribed burns have been implemented in three different burn units on Chupadera Mesa over the last three years. The first burn occurred in the Upper Taylor unit in June 2009 and covered 2,500 acres. This burn followed up a 2008 thinning project. The second burn occurred in the Iron Mine unit in 2011 and 2012 at different times of year (1 April, 31 May, and 22 March) under various conditions to help assess the

PRESCRIBED FIRE IN PJ ON CHUPADERA MESA, NEW MEXICO



Blacklining operations in the Upper Taylor burn unit. Photo courtesy of BLM.

impact of burning after a thinning project in PJ and mountain mahogany in 2010. The third burn occurred in the Lower Taylor unit in March 2012 and covered 3,800 acres. This burn followed up a 2009 thinning project in part of the burn unit and a 2002 chemical treatment in the rest of the unit. The prescribed burn had been planned for June 2011, but based on difficulties holding a smaller burn block and the severe fire effects on the Iron Mine prescribed burn, Lower Taylor was postponed for nine months.

Achieving Treatment Objectives

One of the lessons learned at Chupadera Mesa is that the timing of a burn after a thinning treatment may be an important factor in accomplishing desired fire effects. The May and June burns seemed to be too hot; therefore, burns were tried in late March, with good success. Desired results were achieved with fewer negative impacts to soils and desirable vegetation (grasses/forbs/shrubs). Wildfires have also achieved treatment objectives on Chupadera Mesa over the last couple of years. The Aggie Fire burned 1,800 acres in June 2008 and was managed under a confine/contain strategy by burning out from existing roads. The fire helped clean-up an old chemical treatment and opened up patches in the remaining PJ stands. The Mesa Fire was started by lightning the evening of 6 June 2009 in the East School Section burn unit. The Upper Taylor prescribed burn was scheduled for 8 June, so resources assembled were re-directed to secure the firelines by burning out the perimeter of the East School Section burn unit. This was completed by noon on 8 June, and personnel were able to start blacklining the Upper Taylor unit two hours later. A small number of resources were left at the Mesa Fire to hold the line and burn out interior islands using a helicopter that had been ordered for the prescribed burn. In late June 2011

Table 1. Estimated Costs of Hand Ignition for Three Burn Units			
	Upper Taylor Burn Unit	Lower Taylor Burn Unit	Iron Mine Burn Unit
Est. Cost	\$60,241	\$47,355	\$10,504
Total Acres	2,500	3,800	350
Cost Per Acre	\$24.10	\$12.46	\$30.00

three lightning fires started in the South Hoot Owl burn block. Based on the effects seen earlier in the month in the Iron Mine prescribed burn, managers decided to put out all three fires.

Cost and Funding

Table 1 outlines the estimated cost for hand ignitions in the three burn units. Aerial ignition was included as an option for the treatments in the Upper and Lower Taylor burn units. The airspace in the area is controlled by the military, therefore permission is required to use helicopters. Permission was granted for the Upper Taylor unit, but the helicopter was redirected to the Mesa Fire and never used for the prescribed burn. The cost of aerial ignition, however, was estimated to be comparable to hand ignitions in the larger units. Due to its small size, aerial ignition was not considered for the Iron Mine unit. Primary funding for the prescribed burns came from BLM hazardous fuels, wildlife, and range funds. The thinning treatments done pre-burn were paid for primarily with habitat enhancement funds through the New Mexico Department of Game and Fish and BLM hazardous fuels money.



Lower Taylor unit 6 1/2 months post treatment. A mosaic was created when thinned patches burned and un-thinned patches did not. Photo courtesy of BLM.