2011 White/Donaldson Fires New Mexico

The White and Donaldson fires burned in New Mexico in the spring and summer of 2011. Although the two fires never merged, they did burn in similar vegetation types: grass, oak brush, juniper, piñon and ponderosa pine.

In April of 2011, the White Fire burned approximately 10,300 acres (4249.19 hectares) of the Smokey Bear Ranger District of the Lincoln National Forest driven by 60 mph winds. The fire burned from Trash and Lookout Canyons to Lone Pine Canyon, in the Sacramento Mountains, directly adjacent to Ruidoso, New Mexico along Highway 70. The burn severity was high throughout many areas of the fire. Due to this fire being a wind-driven event, total loss of pre-canopy, herbaceous ground cover and litter occurred even on a majority of the moderate burn severity within the burned area. The White Fire burned on Forest Service and Private lands above the southwest portion of the Village of Ruidoso and above all of the Village of Ruidoso Downs. The fire burned five residences, a business and several other buildings. The terrain within the burned area is steep to very steep with a very high potential for excessive erosion and loss of control of water. Due to the topography and proximity of the burned area to private property, there are considerable risks/threats to life and property.

The Donaldson Fire started as two fires: one on private land and the other on BIA managed land which burned together and was managed as one incident. Managers determined the cause to be lightning from the previous day, which also caused other fires in the area including the Capitan Fire. It burned on Private, State, Forest, and BIA managed lands. Approximately 5,000 acres of the fire burned on the Lincoln National Forest. Approximately 3,000 acres within the fire had been previously treated for Hazardous Fuels Reduction and Watershed and Wildlife Habitat Improvement. These treatments included mastication, extraction, and chainsaw "lop & drop" methods. Because the Donaldson Fire started on private land, burned during "extreme fire danger" conditions, and was managed with limited fire suppression resources (occurred at the same time as the top priority Las Conchas Fire on the Santa Fe NF), "protection" was the primary incident management objective. Protection objectives on the fire allowed for both resource benefit and firefighter safety through location of fire lines along roads and treatment boundaries, burn out operations, and fire line rehabilitation specifications. Fences, a windmill and other low value resources were damaged, but no high value resources were lost. The Donaldson Fire, while still having high winds, did not exhibit as extreme fire behavior as the White Fire.

The White Fire threatened Ruidoso Downs near Ruidoso, New Mexico. Photo courtesy of USFS.

Fire Information At-A-Glance

White Fire

Date: 3 April to 13 April 2011
Cause: Human
Size: 10,348 acres

Soil Burn Severity*	**Acres**	**% of Area**
High	4,282	41%
Moderate	3,056	30%
Low	1,582	15%
Unburned	1,429	14%

Donaldson Fire

Date: 28 June to 8 July 2011
Cause: Lightning
Size: 103,537 acres

Soil Burn Severity*	**Acres**	**% of Area**
High	0	0%
Moderate	5,819	6%
Low	83,100	80%
Unburned	14,618	14%

*Severity data courtesy of the USDA Forest Service Remote Sensing Applications Center. Initial data for both fires comes from BARC products. Information for the White Fire was ground-truthed; while the Donaldson was not.

This fact sheet and corresponding maps are available online at swfireconsortium.org

WUI Issues and Prescriptions

Vegetation treatments to reduce hazardous fuels occurred within the wildland-urban interface (WUI) defined under the Greater Ruidoso Area Community Wildfire Protection Plan. Ruidoso is the largest populated community in Lincoln County with around 12,000 year round residents (swells to over 50,000 with part-time residents and tourists). Ruidoso Downs is the second largest populated community. The Lincoln National Forest surrounds these two communities, which were affected by the White and Donaldson fires of 2011. Some treatment prescriptions included thinning from below of pre-commercial size classes (<9 inch DBH); thinning and hand piling with some mastication and commercial logging in Ponderosa pine and mixed conifer stands; and lop and scatter, dozer push, and mastication in piñon-juniper stands. Prescribed fire was implemented on treatments with the exception of mastication units. From 2006 through 2010 mastication became a preferred method of treatment due to limited time and personnel and short burning windows. Heavy use of mastication also reduced smoke issues from prescribed fires in the WUI.

Landscape level treatments

Both wildfires occurred in areas that included hazardous fuel reduction projects, approximately 2,000 acres each. Most were mastication treatments that thinned piñon-juniper trees ≤14 inch DRC to an average spacing of 150 feet between leave clumps (areas where tree crowns touch or nearly touch adjacent trees). Leave clumps are up to 2 acres in size and have a mosaic appearance. In areas with low tree densities, single trees were left at the same 150 feet average spacing. Leave trees and clumps were selected based on healthy leave tree criteria (i.e. no signs of mistletoe or insect infestation; trees have full crowns with no split or broken limbs). Treated areas within the White Fire exhibited little resistance to rates of spread and fireline intensity, especially where topography and winds channeled the fire through narrow portions of the Ruidoso River Watershed. Treated areas within the Donaldson Fire exhibited greater resistance to fire spread through slower rates of spread, although onsite observations of fireline intensity appeared to remain at levels consistent with non-treated areas. Mastication treatments were observationally somewhat effective in slowing rates of spread but not fireline intensity. Fireline intensity may have been reduced if prescribed fire was used prior to the wildfire to remove masticated and other treated fuel loadings. Observations showed that fuel reduction treatments are largely ineffective during extreme wind events, such as what occurred during the White Fire.

Post Donaldson Fire looking south, lop & scatter unit in the foreground, mastication unit in the background. Photo courtesy of USFS.

Watershed Impacts from the White Fire

The White Fire impacted three hydrologic unit code 6 watersheds, impacting 2 municipal water systems, domestic wells, and agricultural wells. Approximately 69% (7,065 acres) of the affected area burned at moderate-high severity; 30% of these areas have slopes >40 percent. Water repellent soils are found exclusively in areas of high burn severity in combination with ponderosa pine forests, which had a thicker duff layer (providing a longer residence time), compared to piñon -juniper woodlands. Field observations included ash deposits up to 8 inches deep in drainages. Long-term site productivity is threatened by accelerated erosion and high flows. Soil erosion will delay vegetative reestablishment and forest regeneration. Limited soil depth over portions of the burned area limits current and future site productivity. BAER treatments included aerial seeding of approximately 7,000 acres and straw mulch on approximately 1,800 acres.

Suppression capabilities

Fuel treatments may have extended time to evacuate populations, however neither fire spread nor fire behavior appeared to change and treatments were not used as holding lines due to rapidly spreading high intensity fire. Three treated areas (two on private lands) did limit impacts of fire, protecting two homes. The Hale 2 dozer push slowed or stopped fire spread along the southeast edge of the head of the fire. The 2000 Cree Fire boundary also assisted with suppression capabilities. As for the Donaldson Fire, the mastication treatments along Forest Road 443 allowed for easier and quicker prep and burn out operations to be implemented.