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2011 Horseshoe 2 Fire— 6 Years Later Chiricahua Mountains, AZ

The Horseshoe 2 Fire started in Horseshoe Canyon on May 8, 2011 and burned over 220,000 acres in the Chiricahua Mountains. Fire suppression activities started on May 8, 2011 and continued for 48 days. Despite intensive suppression efforts, the fire burned most of the Chiricahua Mountains and became one of the largest wildfires in Arizona history.

Fire History

Prior to 1886, wildfires were relatively frequent in the Chiricahua Mountains, but varied depending on elevation, topography, and human influence. For example, low elevation gallery forests in Pine, Rucker, and west Turkey Creek record evidence of frequent fires (MFI <10-13 years) among a matrix of oak woodlands/ grasslands. Rhyolite Canyon in Chiricahua National Monument shows longer fire intervals, ranging between 17-21 years. High elevation mixed conifer and aspen forests show no evidence of stand replacing fires, but rather a pattern of frequent fires (MFI 13-14 years). Fire frequencies show distinct deviations during periods of hostilities with Apaches living in the Chiricahuas (1748-1786; 1831-1886) compared to peacetime periods. Low elevation gallery forests show a cessation of frequent fires reflecting Apache removal and Euro-American settlement at different times, beginning in the 1860s with Pine Canyon, 1886 with Rucker Canyon, 1895 in Rhyolite Canyon, and 1900 in West Turkey Creek.

A successful historic structure protection effort.
Photo courtesy of NPS.

Vegetation Response to Fire

From 1900 to 1994, fires were excluded across most of the Chiricahuas. The 1994 Rattlesnake Fire burned 27,720 acres at ~6000-9000' elevations. Other recent fires include the 2005 Johnson (8,620 ac) and 2011 Johnson Peak (4,126 ac) prescribed fires. All these fires re-burned in the 2011 Horseshoe 2 Fire. As a result, 40,466 acres burned at least twice since 1994. The impacts of mixed-severity re-burns has varied, with high-severity and multiple moderate-severity burns converting substantial areas from forest to shrubfield or high-elevation meadow, and with significant loss of pine species in former pine-oak forests. There is low

Cultural Resources

As of 2016, Chiricahua National Monument has 95 known archaeological sites, dating from the Paleoindian through Historic Periods. Approximately 2/3 of these sites were discovered after the Horseshoe 2 fire in 2011. Because the fire affected about 85% of the park, most of the known archaeology within the park was affected.

Natural impacts to archaeological sites included removal of ground cover leading to erosion, burned sites, trees, and downed limbs. Impacts specific to cultural resources included burned artifacts, spalling, movement of artifacts and features due to erosion, and limbs falling and burning on structural ruins. There were no recorded impacts to any of the known rock art sites in the park. Massive efforts to preserve the historic Faraway Ranch District and the CCC-era buildings prevented any damage to those structures.

Only 2 sites known in 2011 were impacted severely enough to receive BAER treatment beyond a site condition assessment. Both received jute matting and brush broadcasting to slow erosion and encourage regrowth. As of 2012, this had effectively stabilized one site, while the other was still in poor condition with severe gullying and erosion. More BAER treatments were scheduled for 2013, but no report is available.

Range Losses

- 18 grazing allotments affected (4 year-long, 14 winter seasonal)
- 21 permittees affected
- Approx. half of 300 miles of fence destroyed
- Approx. 17 miles of pipeline destroyed
- Several water storage tanks destroyed, dozens of dirt tanks breached or silted in

Reconstruction

- 150 miles of fence material, 20 miles of pipeline purchased through allocated fire-rehab funding
- 60 miles of fence installed or given to permittees in first year
- AZDoC crews constructed dozens of miles of fence over a 5-year period
- RAC grants assisted to supply fencing and water system materials
- With FS funding, 25 miles of fence materials were flown by helicopter to remote locations; district pack string delivered 75,000 pounds of fence material and concrete

Range Perspective

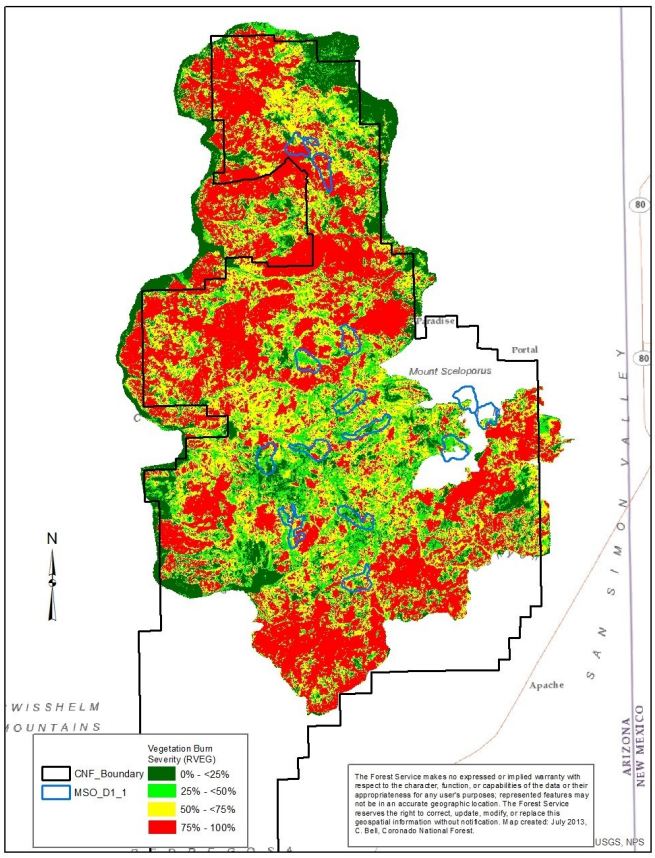
Out of the 21 permittees affected, 8 applied for non-use, 2 applied for full numbers and season, and the remainder were approved for a shorter grazing season or fewer than permitted numbers or both.

Due to a wide range of fire severity, there vegetation response varied across the burned area. Some of the low severity areas appeared untouched after a few growing seasons. In the high severity areas, some vegetation shifted entirely from shrubby species like manzanita and silk tassel to a mixture of native and non-native grasses. Other areas previously dominated by mountain mahogany are now completely devoid of the species, with manzanita and oak dominating. Areas with Chihuahua and Ponderosa pine overstory and pinon rice grass are now silverleaf oak and bullgrass.

Grazing capacity changed dramatically as well. Initially after the fire, permittees were restricted by lack of infrastructure and sensitivity of forage regrowth. More recently, however, forage production on most of the burned areas has increased exponentially from pre-fire conditions. This has allowed for increased forage availability. Also, the lack of dense tree and shrub over story allows livestock to spread out across the landscape and decrease concentration on and demand for those areas that were open enough to provide favorable forage growing conditions. Recorded use levels on key areas on these allotments have decreased dramatically, demonstrating a definite increase in capable grazing acreage and stocking capacity.

Wildlife Response

The area affected by the Horseshoe 2 Fire supports important habitats and several Federally Threatened and Endangered fish and wildlife species. A BAER Report from June 2011 stated that there are no emergency conditions that exist for jaguar and ocelot or their habitat. For aquatic species Yaqui chub, Yaqui catfish and the Chiricahua leopard frog, floods, debris flows and sediment deposits resulted in temporary loss or reduction of suitable habitat. These small and isolated populations are at a high risk of local extirpation as a result of post-fire conditions. Habitat restoration and releasing of Yaqui chub are ongoing in an attempt to stabilize the species. The fire significantly reduced the amount of old-growth Douglas-fir trees, which provide suitable breeding habitat for the Mexican spotted owl (MSO). It will take a minimum of 100 years for the burned habitat to become suitable again. An August 2011 survey showed that MSO now utilize cliff habitat as a result of the fire, however, there is still concern for MSO due to habitat loss. The endangered lesser-long nose bat population is stable. The following are FS-designated Sensitive Species: Elegant Trogon (big loss), Twin-spotted rattlesnake (loss), Longfin Dace (stable), and the fate of the Lemon lily is uncertain.



Vegetation Burn Severity within MSO protected activity centers. Photo courtesy USFS.