RODEO-CHEDISKI WILDFIRE: A SUMMARY OF IMPACTS

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The 462,600 acre Rodeo-Chediski Wildfire of 2002 was the largest known in Arizona's history and the ninth largest wildfire in the United States (National Interagency Fire Center 2009) in terms of the 462,600 acres impacted by the burn.. It damaged or destroyed ecosystem resources, disrupted hydrologic functioning, and altered loadings of flammable fuels in much of the ponderosa pine (*Pinus ponderosa*) forests exposed to the burn. An opportunity to study the impacts of this wildfire on ecosystem resources, hydrologic functioning, and flammable fuels presented itself on the Stermer Ridge Watersheds near Heber, Arizona. These watersheds were instrumented as a cooperative endeavor of the School of Natural Resources and the Environment, University of Arizona, Tucson, and the Rocky Mountain Research Station, U.S. Forest Service, to obtain baseline information on watersheds located on sedimentary soils (Ffolliott and Baker 1977). This information complemented the results obtained from "experimental watersheds" located in ponderosa pine forests on basaltic soils. One of the Stermer Ridge Watersheds was exposed to a high severity (stand-replacing) fire and the other to a low severity (stand-modifying) fire (Ffolliott et al. 2008, 2009). This five-year study (2002 through 2007) was initiated shortly after cessation of the wildfire and continued through implementation of salvage cutting and fuel reduction treatments on the watershed burned by a high severity fire.

A more comprehensive report of the impacts of this historical wildfire on ecosystem resources, hydrologic functioning, and loadings of flammable fuels has been prepared (Ffolliott et al. 2010). The purpose of this paper is to present a brief summary of these impacts.

IMPACTS ON ECOSYSTEM RESOURCES

The Rodeo-Chediski Wildfire impacted on the structures of tree overstories on the Stermer Ridge Watersheds, with the changes more drastic on the watershed experiencing a high severity fire than on the watershed burned by a low severity fire (Ffolliott et al. 2008). The pole class of trees (8 to 10 inches dbh) suffered higher mortality than trees in the sawtimber classes (12 inches dbh and larger). Most of the trees surviving the wildfire but severely damaged by the burn died within two years of the burn and many had started falling to the ground at this time. Salvage cutting and fuel reduction treatments imposed on the watershed burned by a high severity fire eliminated most of the remaining standing trees on this watershed. Stocking of ponderosa pine seedlings after the wildfire was insufficient to sustain a ponderosa pine forest on either of the watersheds.

Production of herbaceous plants and the grass and forb components of herbaceous plants were greater on the watershed burned by a high severity fire throughout the study. An earlier study in southwestern ponderosa pine forests found that production of herbaceous plants generally increases when densities of competing tree overstories decrease (Bojorquez-Tapia et al. 1990). Burning intensities that consume the litter and large amounts of the duff layer can also increase the level of herbage production in these forests (Clary et al 1968). Such a fire occurred on the severely burned watershed.

Mullein ((*Verbascum thapsus*) represented almost one-half of the production of the forbs on the severely burned watershed at its peak occurrence, while this early-seral species contributed less to the lower level of forb production on the watershed burned by a low severity fire. Mullein then declined in its occurrence after dominating the forb component on both of the watersheds in the early and middle years after the wildfire.

Impacts of the Rodeo-Chediski Wildfire on indigenous ungulates and small mammals inhabiting the Stermer Ridge Watersheds at the time of the wildfire differed in magnitude and duration. The increased presence of elk on the watershed burned by a high severity fire in the third year after the burn was attributed to the increase in preferred forage plants (Kufeld 1973, Thill et al. 1983), with availability of a cover being a secondary factor of importance. The smaller quantities of browse preferred by mule deer (Severson 1981, Thill et al. 1983) resulted in lower occurrences of this ungulate relative to that of elk on

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