

MAINTAINING SOUTHWESTERN PONDEROSA PINE ECOSYSTEM RESILIENCE AND DIVERSITY BY PRESCRIBED BURNING WITHIN THE NATURAL FIRE REGIME

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ABSTRACT

The maintenance of resilient and diverse southwestern ponderosa pine ecosystems on the San Carlos Apache Reservation in Arizona is a goal identified in the Tribe's long-term strategic planning and integrated resource planning initiatives. Years of livestock grazing and fire exclusion have detrimentally affected the natural fire regime in the southwestern ponderosa pine ecosystem by increasing stand densities and the incidence of mistletoe and bark beetles infestations, and altering the plant species composition and fuel bed characteristics. The natural fire regime in southwestern ponderosa pine ecosystems is characterized by low-intensity, high-frequency fire that likely burned for long periods of time and covered large areas. Fires were largely the result of pre-monsoon dry lightning storms. An effort was made to determine the natural fire regime for southwestern ponderosa pine ecosystems on the San Carlos Apache Reservation by researching the cultural-anthropological aspect of fire use, coupled with fire history and stand density studies, and an investigation of fire effects for biotic components of these ecosystems. The cultural-anthropological research has indicated that Apache people did not historically practice prescribed burning in southwestern ponderosa pine because these ecosystems had burned due to natural ignitions prior to the Apache's annual migration to the mountains. Fire history studies conducted throughout the Southwest, including the San Carlos Apache Reservation, provide a preponderance of evidence not only for the low-intensity, high-frequency character of the fire regime, but also the late spring-early summer seasonality of the fire regime. Fire effects data for many of the overstory and understory plant species also indicate a strong ecosystem adaptation to the historic fire regime. Research findings were conclusive enough to allow the program to embark on a schedule of annual low-intensity spring prescribed burns that are intended to restore these ecosystems to more of their presettlement state. To maintain the resilience and diversity of these ecosystems the Tribe has moved toward an acceptance of the natural fire regime as a way to fulfill their strategic planning goals.

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