

Examples of Fire Restoration in Glacier National Park

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Covering just over 1 million acres, Glacier National Park straddles the Continental Divide in northwestern Montana. Diverse vegetation communities include moist western cedar-western hemlock (*Thuja plicata-Tsuga heterophylla*) old growth forests similar to those of the Pacific Coast, dry western grasslands and prairies, dense lodgepole pine forests (*Pinus contorta* var. *latifolia*), ponderosa pine (*P. ponderosa*) savannas, mixed conifer forests, and alpine and subalpine meadows. The diversity and complexity of the park's vegetation and wildlife necessitates innovative, long-term, and holistic management based on scientific knowledge. Fire history studies and records show that much of the park west of the Continental Divide has burned since the mid-1800's (Barrett and others 1991). Moreover, fire has been an essential process in defining vegetation communities and mosaics in the park for centuries and probably for millennia.

Glacier National Park was established by Congress in 1910, a year of widespread fire activity in the western United States. In response to the catastrophic fire season, full fire suppression became the policy for Federal lands, including the park. Little was known regarding fire behavior and its role in the park's ecosystem. Concern that fires would burn precious resources in or out of the park was reinforced in the 1920's and 1930's when a few fires burned structures in the park and quickly ran onto adjacent lands. Suppression efforts were effective in extinguishing small fires early in the century and nearly all fires by the middle of the century.

By the late 1970's, fire was recognized as an important process, and policies began to shift toward allowing and possibly igniting fires in Glacier National Park (Glacier National Park 1977). An 80 acre experimental fire in 1983 in a ponderosa pine community was the first significant fire ignited to restore fire and fire effects to a system that was suffering from 70 years of fire exclusion. A goal of that fire was to help maintain and regenerate ponderosa pine, and the fire did kill approximately 60 percent of the competing young Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) and spruce (*Picea engelmannii*) (Kilgore 1986). Although the fire was successful in accomplishing several goals, it wasn't until 1992 that park personnel ignited fires again.

Fire exclusion policies in the park and on adjacent lands have led to current fire-free intervals of more than 60 years. Comparison of aerial photographs from the 1940's, 1960's and 1980's demonstrated obvious decreases in the extent of grasslands near the western park border. Without frequent

fire, numerous lodgepole pine trees have become established in these grasslands. In 1992 and 1993, fire was ignited in approximately 180 acres of grassland. Lodgepole pine tree mortality was the primary objective of burning as well as nutrient cycling and promotion of native grasses and forbs. Three years following the burning, mortality of 90 percent of the trees was observed. Therefore, the mortality objective of the burns was accomplished. Successive use of fire, both through lightning and management ignitions, is planned in these grasslands on a rotational basis.

Prescribed natural fire policy (limited or no suppression of some lightning-ignited fires) was also adopted in the late 1970's; however, no lightning ignitions were actually allowed to burn until 1987. Climate in Glacier National Park is such that much of the area remains too moist to burn even while other areas in the Rocky Mountains are experiencing a very active fire season. When lightning ignitions occur, they frequently require suppression because the wildfire activity is at a high level in the surrounding regions and few personnel are available to support prescribed natural fires.

Following the nationally catastrophic 1988 fire season, Glacier National Park adopted a new fire management plan with the entire park divided into four prescribed natural fire zones (Glacier National Park 1991). Weather, fire behavior, smoke production, and socio-political factors formulate the "prescription" for burning, which is very restrictive along the borders and in high visitor use areas while it is fairly liberal near the Continental Divide. Since 1991, the park has allowed several prescribed natural fires. Most lightning ignitions in high elevations west of the Continental Divide have been allowed to burn with careful and constant monitoring.

A June ignition near the Park's west boundary in 1994 was declared a prescribed natural fire. Named the Howling Prescribed Natural Fire, it burned less than an acre over a 4 week period. Toward the end of July the fire became more active and the national fire season was very active. Numerous issues surfaced, including: appropriateness of a prescribed natural fire during a busy fire season when few personnel were available; appropriateness of suppressing a natural ignition in a natural area that burns primarily during active fire seasons; ability of a land management unit to manage a large, lengthy fire without assistance; and appropriateness of requiring all new ignitions regardless of location and burning conditions to be "suppression" fires during an very active fire season (Zimmerman and others 1995).

With the use of emerging technology to predict long-term fire spread and behavior (RERAP and FARSITE computer programs), it was demonstrated that the Howling Fire posed no threat to exceed previously determined boundaries. Thus it was allowed to remain a prescribed natural fire. Fire experts throughout the West came to Glacier National Park

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to observe the fire, resolve socio-political concerns, and ensure the fire's success. Persisting through 4 months, burning approximately 2,000 acres and requiring less than \$200,000 to manage, the Howling Fire has demonstrated the practicality of prescribed natural fires.

Fire restoration in Glacier National Park has evolved slowly. Success of prescribed fire from management and natural ignitions over the past decade is leading toward the return of fire to its natural ecological role in the Park. Currently, a 5 year management plan for management-ignited fires calls for burning over 2,000 acres of prairie and ponderosa pine communities and planning for large-scale, mixed severity fires (Barrett and others 1991; Glacier National Park 1993). Fire is now recognized as an important process and a tool for management. However, we must continue to support the philosophy that fire is an important natural resource process that warrants a substantial commitment to maintain it. Although it has had a slow start, fire restoration in Glacier National Park is becoming a reality.

References

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