

Chapter 2 Context



Valley Complex, Razor Fire. (photo by Karen Wattenmaker)

For thousands of years, the forests and grasslands of this area have been subjected to periodic fires started by lightning and by people.

Context

To understand the significance of the Bitterroot fires of 2000, it is helpful to consider the ecological, social, and historical context in which these fires occurred. The story of what happened during the 2000 fire season reflects the interactions of people and their environment over decades, centuries and millennia. The size and intensity of the fires, and their effects on things people value, were determined in part by the ecological and social setting. While a full understanding of this story may take months or years of study and public dialogue, this report presents observations on how the interactions of people and their environment set the stage for the 2000 fire season.

Ecological Context

The ecosystems of the Bitterroot, like the rest of the Northern Rockies, are adapted to a long history of wildland fires. For thousands of years, the forests and grasslands of this area have been subjected to periodic fires started by lightning and by people.

The fire history of this area is quite varied. Some areas burned as frequently as every few years. These areas tended to be hot and dry, and with more human presence. Other areas, generally the higher elevations with more moist and cold climates, burned much less frequently, but often

with greater intensity. Fire ecologists describe these fire behavior variations as “fire regimes” (Figure 2).

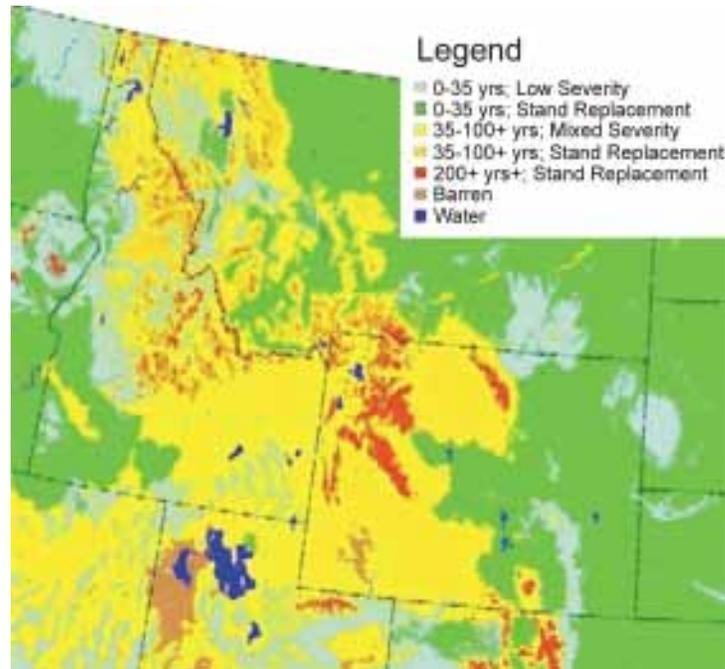
Figure 2: Historical Natural Fire Regimes.

Fire Regime	Frequency (Fire Return Interval)	Severity
I	0-35 years	Low severity
II	0-35 years	Stand-replacement severity
III	35-100+ years	Mixed severity
IV	35-100+ years	Stand-replacement severity
V	>200 years	Stand-replacement severity

Scientists estimate that historically, higher frequency fires (fire regimes I and II) occurred on about one-third of the area. Fire regime III, the mixed severity and moderate frequency regime, occurred on over half of the Northern Rockies. Fire regimes IV and V occurred on less than twenty percent of the area (Figure 3).

For the past 100 years or more, human settlement patterns, fire suppression efforts, and other land use practices have led to significant changes in these historical fire regimes. These changes are most evident in the high frequency/low severity fire regimes seen in warm, dry forests historically dominated by ponderosa pine.

Figure 3: Historical Natural Fire Regimes for the Western United States (11/30/99 Missoula Fire Lab).



The ponderosa pine forests were often characterized by relatively open stands of large pines with few small trees. Frequent fires maintained these characteristics by killing smaller trees and seedlings, while the large, thick-barked ponderosa pines survived. In the past century, fire suppression and the harvest of large pines have radically altered the structure and composition of these forests. Today, many of these areas are much thicker forests dominated by more shade-tolerant, and less fire-tolerant tree species, such as Douglas-fir and grand fir. These

changes in forest composition and structure have altered the general fire regime from more frequent, less intense fires to less frequent and often more intense fires.

Forest ecologists from the University of Montana analyzed data from the Bitterroot National Forest and found dramatic decreases over the last century in fire-tolerant tree species and increases in fire-intolerant species throughout all elevations. At lower elevations, ponderosa pine declined from 51 percent to 26 percent, while Douglas-fir increased from 19 percent to 55 percent. Similarly, the area occupied by western larch has declined from 26 percent to 11 percent in lower elevations, and from 24 percent to only 6 percent in middle elevations.

Changes in land use practices have also affected some cooler and moister forests. While these forests burned less frequently than drier forests, the infrequent fires resulted in a diverse pattern of forest patches that varied in age. When fires did occur, older patches with relatively high fuel loads burned intensely. Some of the patches of younger trees with lighter fuel loads burned less intensely or not at all. This shifting pattern of different aged forest patches often limited the overall size and general intensity of fires in these forest types. In recent decades, fire suppression has tended to shift the patterns on some of these

Fire suppression and the harvest of large pines have radically altered the structure and composition of these forests.

Changes in vegetation conditions can result in dramatic changes in fire size, intensity and severity.

landscapes to a point where fewer younger patches exist to alter fire spread and overall intensity. As a result, fires may burn more intensely and over larger areas than they would have if the natural fire regime had not been suppressed.

Research conducted by the U.S. Forest Service's Rocky Mountain Research Station in Missoula, Montana, reveals that on national forest lands in Montana and northern Idaho less than 30 percent of land is within its historic fire condition. Fire regimes have been moderately altered from their historical range on 30 to 40 percent of the area of these Forests. Scientists estimate that on another 30 to 40 percent of these lands fire regimes have been significantly altered and the risk of losing key ecosystem components is high. In these areas, changes in vegetation conditions can result in dramatic changes to fire size, intensity, severity, and landscape patterns.

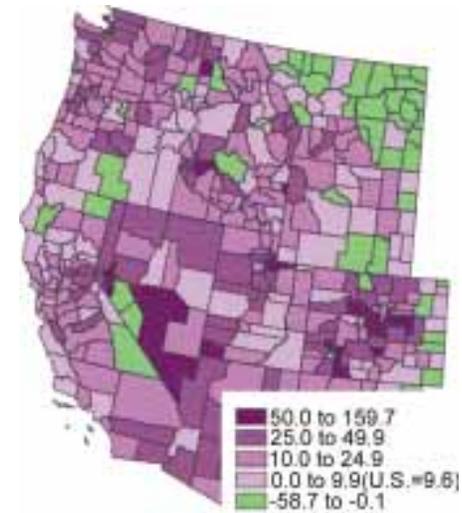
Changing Land Use and Settlement Patterns

The Northern Rockies has experienced population growth well above the national average, particularly in areas touted for their scenic beauty and rural atmosphere. The U.S. Census Bureau reports that for the period 1990 to 1999, the population of Montana increased 10.5 percent and Idaho increased 24.3 percent. The Bitterroot Valley is no exception to these trends. Indeed, Ravalli County, Montana was one

of the 50 fastest growing counties in the United States in the 1990s.

Between 1990 and 1998, the population of Ravalli County increased by more than 10,000 people, or 40 percent. This population growth is occurring throughout the county. Hamilton and Stevensville have seen population increases of over 60 percent (Figure 4).

Figure 4: Percent change in population by County in the West: 1990-1999.



Smaller communities are also experiencing large increases in population growth. For example, the populations of Darby and Pinesdale have both increased by more than 50 percent in the last 10 years. It is evident to many residents that this pattern is also occurring in unincorporated areas of Ravalli County. Key to the discussion of fire is



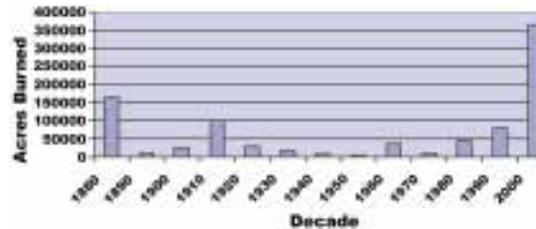
Valley Complex crown fire near Sula. (photo by Karen Wattenmaker)

the fact that so many new developments are occurring in areas within or immediately adjacent to forests and grasslands prone to wildland fires.

The story is the same throughout much of the Northern Rockies and other areas of the western United States. More and more people are living near wildlands, increasing the probability of private property losses from fires. According to the National Fire Protection Association,

wildland-urban interface fires destroyed 8,925 homes from 1985 to 1994. This number continues to increase. Wildland firefighters increasingly face the challenging task of protecting entire communities and individual homes. In previous decades, this challenge was much less common, and fire managers could devote more of their resources to suppressing the entire fire.

Figure 5: Bitterroot National Forest Acres Burned by Decade 1880-2000.

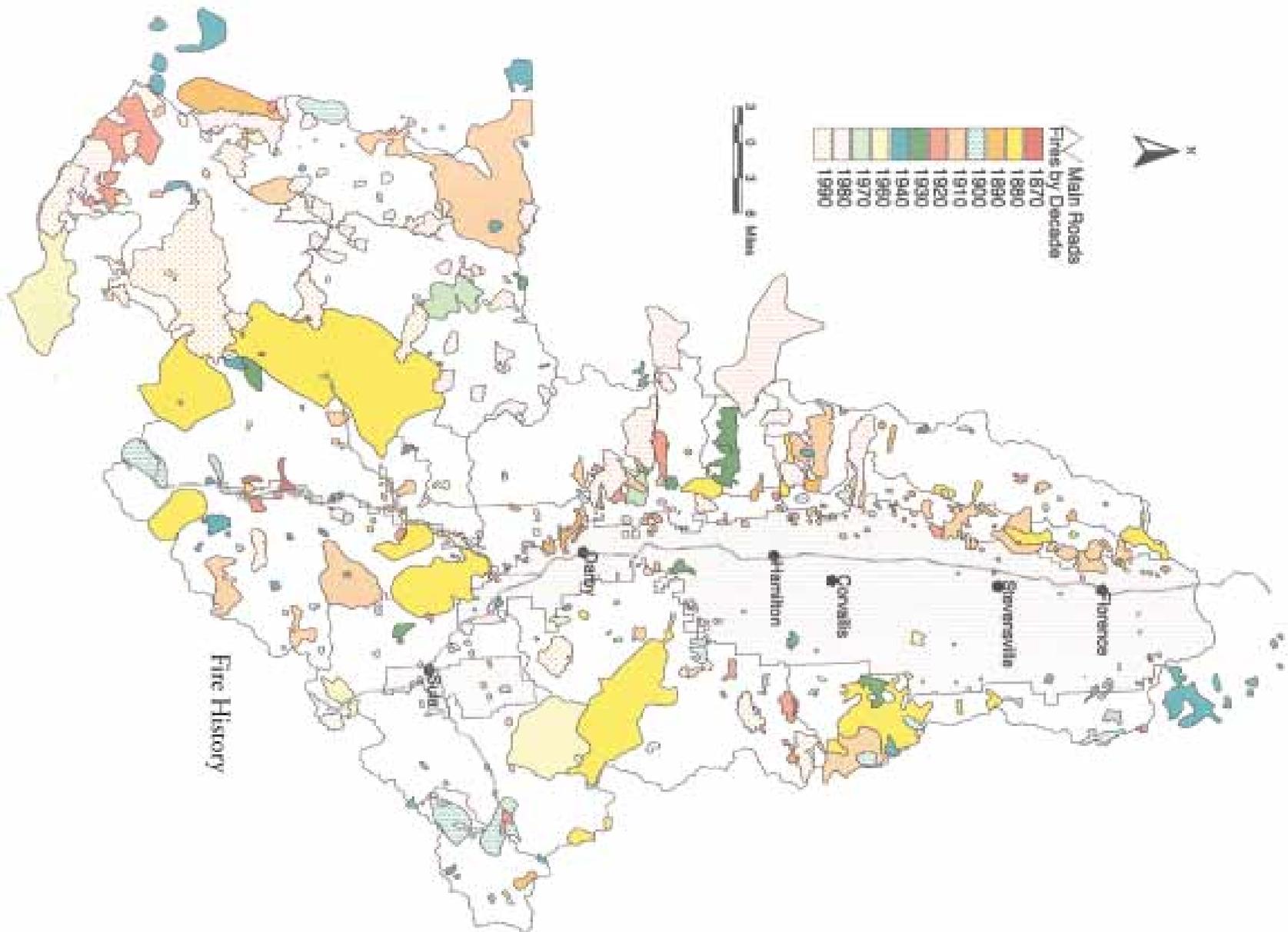


Historic Perspective

The fire history of the Bitterroot National Forest shows wide fluctuations in acres burned per decade (Figure 5). However, it is clear from this history that the extent and effects of the Bitterroot fires of 2000 greatly exceed anything experienced over the last 100 years. The entire decade of 1910 to 1920 burned less than one-third of the acres burned in 2000 on the Bitterroot National Forest. The largest previous fire in recent memory, the 1961 Sleeping Child Fire, burned 28,000 acres, or less than one-tenth of the acres burned in 2000.

It is clear from this history that the extent and effects of the Bitterroot fires of 2000 greatly exceed anything experienced over the last 100 years.

Figure 6: Bitterroot National Forest Fire History.



During the last 20 years, the number of acres burned on the Bitterroot National Forest has increased. Over 80 percent of the acres burned during the last 20 years was in designated Wilderness, where managers often allow fire to play its natural role in shaping and maintaining Wilderness characteristics.

The fire history of the Bitterroot over the last 100 years generally mirrors the regional and national fire trends. The Northern Rockies, as well as the remainder of the United States, periodically experienced years with a relatively high number of large wildland fires. Although limitations of available data preclude direct comparisons of annual acres burned by state or region over the last 100 years, the historical record clearly reveals particular decades with serious fire episodes (Figure 6).

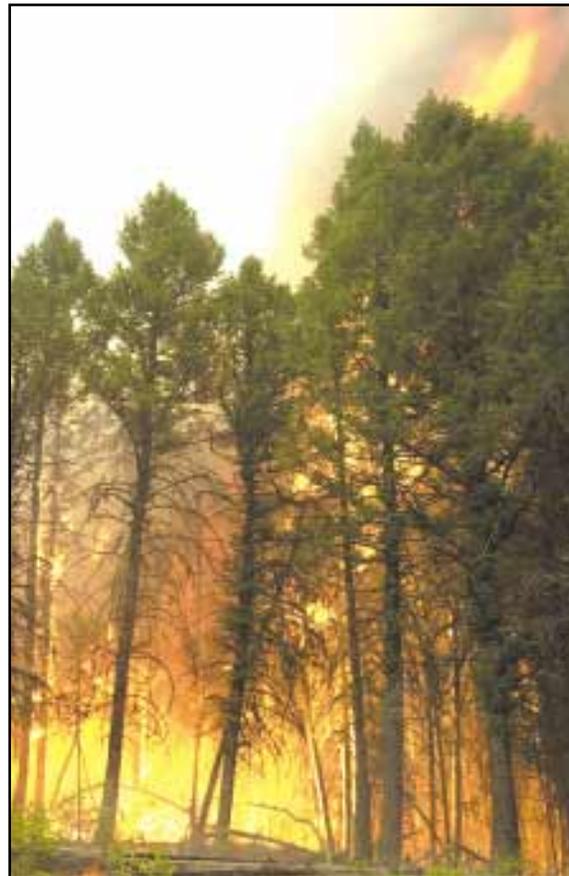
Summary

Fires, even very large fires, are not new to the Bitterroot or the Northern Rockies. For many centuries, plants and animals have adapted to the region's dynamic forests, grasslands, and shrublands which have been shaped by the broad patterns of historic fires.

Recent generations of people have changed the region's environment. Our efforts to exclude fire appear to have the ironic consequence of increasing the probability of uncharacteristically large and intense wildfires. At the same time,

more and more people are moving to the region's fire-adapted environments and building homes, businesses, and communities within and adjacent to areas prone to wildland fire.

These are some of the circumstances, and the paradox, that residents and firefighters confronted as the wildland fire season of 2000 began.



Valley Complex near Sula. (photo by Karen Wattenmaker)

'The fire had turned into something that they read about in the training manuals, trained for, and never hoped to see.'

Alaska Crew Boss
Ravalli Republic 8/23/00

This page left blank for your personal fire observations