

California Land and Forest Management Policies Relative to Wildfire

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Introduction

To better understand the factors driving increased wildfire frequency in the state of California (Liberto, 2020), a literature review of land and forest management policies was conducted. Specifically, this study investigated the effect of state and federal fire suppression policies enacted between 1950 and 2019. This study also investigated overall land management and more specifically forest ownership in the State of California to understand the extent of federal and state jurisdictions impacted by forest or fire suppression policies.

Century long fire suppression resulting from various federal and state policies were noted frequently throughout the literature as a primary cause for fuel buildup. The resulting fuel loads were cited as a driver for the current wildfire regime, leading to wildfires that tend to be larger and harder to control. Climate change was also cited as a driver of the extreme wildfire conditions recently observed in California (Goss et. al, 2019). Overall, much of the current literature suggests the need for policies that would cultivate fire as a tool rather than a threat. Under entirely natural conditions, fires are important for the health of forest ecosystems.

This paper first describes federal and state policies relevant to land management and wildfire, then describes the spatial extent of federal land management in California, and then details wildfire frequency over time.

Section 1: US Forest Fire History & Federal Policies

The Federal Forest Fires Emergency Act of 1908 authorized limitless spending on fire suppression (Temple, 2020). This allowed the U.S. Forest Service (USFS) to enhance its firefighting efforts and ensure no wildfire was simply “allowed to burn”. Just two years later, the Big Burn of 1910 --the largest wildfire in American history-- burned 3 million acres in the northern Rockies and killed more than 78 people, in spite of official policy.

In 1935, the 10 a.m. Policy took effect with the aim of containing and controlling all wildfires by 10 a.m. of the morning following their initial report (Temple, 2020). This supported the Forest Service’s ongoing emphasis on fire suppression. However, research in the mid-20th century emphasized the importance of fire as an ecological tool necessary for forest health (Stephens et. al, 2016). These studies led to the abandonment of the 10 a.m. policy in 1978 and a shift from fire suppression to fire management. The USFS began focusing their efforts on fighting fires that threatened human life and property while allowing naturally occurring fires to burn. However, regardless of these policies, the effects of fire suppression are evident today; decades of fire suppression have resulted in fuel-buildup causing today’s wildfire to be larger and harder to

control. Furthermore, the virtual elimination of prescribed burning, along with the interplay of forest management policies have created overcrowded and decadent forests, causing more frequent wildfires across much of the western US and in particular, the State of California.

Section 2: Forest Management Policies in the State of California

California has developed numerous forest practice regulations. It passed the California Environment Quality Act (CEQA) in 1970 instituting a statewide policy of environmental protection (Morrison et. al., 2007). This act has two major functions: (1) to provide decision makers with information about the environmental impacts of projects prior to granting approval for a project and (2) to allow the public to comment on the impact of projects in their community. In addition, the state developed the following policies to better manage its forests and timber harvesting activities. These policies were developed to ensure long-term productivity of forest lands and prevent adverse environmental impacts.

Z'Berg-Nejdly Forest Practice Act (FPA)

In 1973 Z'Berg-Nejdly Forest Practice Act (FPA) was implemented and established a nine-member Board of Forestry whose mandate was the control over the forest practices and forest resources in California (Butler et.al, 1993). This act established Forest Practice Rules (FPRs) that are managed and implemented by the Board of Forestry. The California Department of Forestry works under the direction of the Board of Forestry and is the lead government agency responsible for approving logging plans and for enforcing the FPRs. This act required that a Timber Harvest Plan (THP) be prepared by a Registered Professional Forester (RPF) for any timber harvest on non-federal lands. The act also established the requirement that all non-federal forests cut in the state be regenerated between 100 and 300 stems per acre based on site type. In 1976, this act was declared the functional equivalent of an Environment Impact Report and required for such activities under the California Environmental Quality Act (Green, 1982).

California Forest Practice Rules (CFPR)

The FPA was implemented through a series of regulations called FPRs. These rules provide explicit instructions for permissible and prohibited activities and governed the conduct of timber operations in the field. However, the rules varied by region (e.g., California is divided into three major regions: northern, southern, and coastal) and according to Morrison et.al, (2007) these rules covered the following major categories:

- A. Timber Harvest Plan (THP) review and enforcement processes
- B. Silvicultural systems and regeneration methods
- C. Harvesting practices and erosion control
- D. Site preparation
- E. Watercourse protection
- F. Sensitive watershed designation
- G. Functional wildlife habitat and late-successional forest protection
- H. Hazard reduction
- I. Fire protection
- J. Forest insect and disease protection practices

- K. Logging roads and landings.
- L. Cumulative effects analysis.
- M. Long-term sustained yield plans.
- N. Special rules for specified counties and other area.

Section 3: Land Ownership in the State of California

California has experienced an approximate 720% population increase within the wildland urban interface (WUI) since 1960 (Pollak, 2019). It is the third largest state in the United States of America, making up much of the nation’s pacific coast. According to the Congressional Research Service, the state of California is 100.2 million acres in size. Out of that total, 45.4% are federal lands (**Table 1**).

Table 1: Federal land ownership in California, by agency (2018).

Agency	Acres	Percent
U.S. Forest Service	20,791,505	20.75
U.S. Bureau of Land Management	15,088,090	15.06
U.S. National Park Service	7,612,898	7.60
U.S. Department of Defense	1,703,741	1.70
U.S. Fish and Wildlife Service	296,899	0.30
Total	45,493,133	45.40

The USFS manages approximately 60% of the 33 million acres of forest in the State of California (Check, 2018). The State manages just three percent, with the remaining forest lands owned and managed by individuals, private companies, or Native American tribes.

Section 4: History of Wildfire

In the 1800s, wildfires burned approximately 5-12% of the land in California. Most of these fires were considered low intensity burns typically caused by lightning and/or Native Americans using fire as a land-management tool (Quinton & Brown, 2020). Drought conditions and high temperatures were cited as the cause for many of the larger fires burning in the 1800s (Marlon et al, 2012). The regularity of wildfires aided forest ecosystem health by removing dead or dying plant matter. However, long term fire suppression policy enacted in the early 1900’s resulted in an initial decline in wildfires through the end of the century (**Table 2**) but also a concomitant increase in vegetation density and a stockpile of fuel-load. Furthermore, the death of more than a million oak trees due to the Gold-spotted Oak Borer between 1995 and 2018 has resulted in an increase of dead biomass accumulation across California’s forests (Little Hoover Commission, 2018). The result is a recent increase in percent land area burned in the new millennia (**Table 2**).

Today, California is witness to more frequent wildfires and in the time period of 2000–2019, California has burned 14% of its land base (**Figure 1**). State policies like FPA, developed to prevent adverse environmental impacts, likely caused thicker forests and are now cited as the primary reason behind larger forest fires (**Table 2**). The suppression of wildfires has tripled the cost of property damage and firefighting in the State of California (Gorte, 2013) and calls for

development of policies that would cultivate fire as a tool for healthy growth and restoration of forest ecosystem.

Table 2: Percent land area burned by wildfires in California across each decade (1970-2019).

<i>Decade</i>	<i>Area Burned (Acres)</i>	<i>Area Burned (%)</i>
1970 - 1979	2,652,882	2.5%
1980 - 1989	3,413,199	3.3%
1990 - 1999	3,718,298	3.6%
2000- 2009	6,926,076	6.6%
2010 - 2019	7,518,462	7.2%

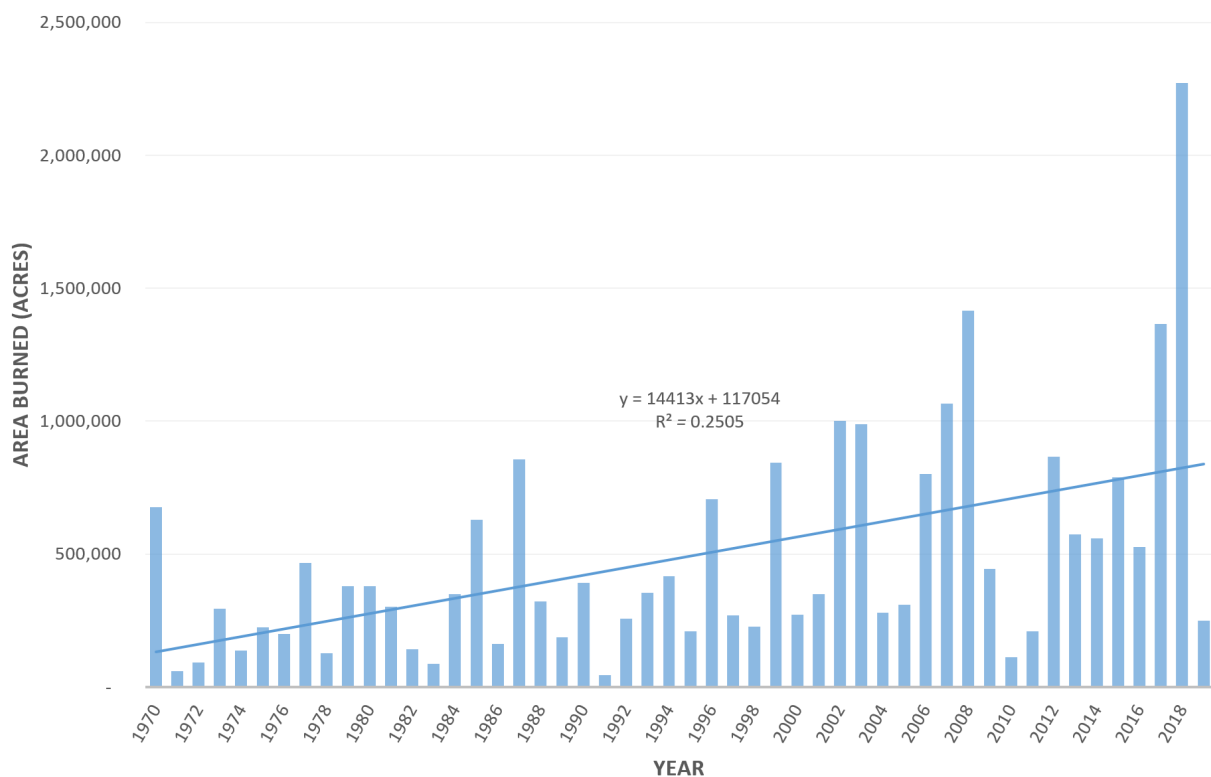


Figure 1. Trend of area burned in the State of California (1970-2019).

Conclusion

Changes in the wildfire regime across the State of California has created the need to evaluate the land management policies which may be driving these changes (Stephens et. al, 2016). Fire is an important tool in a natural ecosystem. They allow nutrient cycling and the removal of dead or dying plant matter resulting in a healthier forest. However, these processes require a long period of time to realize, and wildfire is a difficult problem for the public to fully understand and appreciate. Therefore, political debates fail to acknowledge all the long-term risks and benefits associated with land management policies and wildfires. For example, state policies like FPA -- created to maintain the health of California forest by suppressing wildfires—has likely created

forests with unprecedented understory and high fuel continuity, resulting in the larger and more extreme fires observed over the past two decades. Such management policies have interrupted the natural and historic cycle of fire and have left forests vulnerable to disease, insects, and catastrophic fire (Little Hoover Commission, 2018). Taking these considerations into account, it is apparent that the development of policies that will ultimately facilitate fire restoration and ecologically based fuel treatment to forest landscape is critically important.

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