

System Indicators

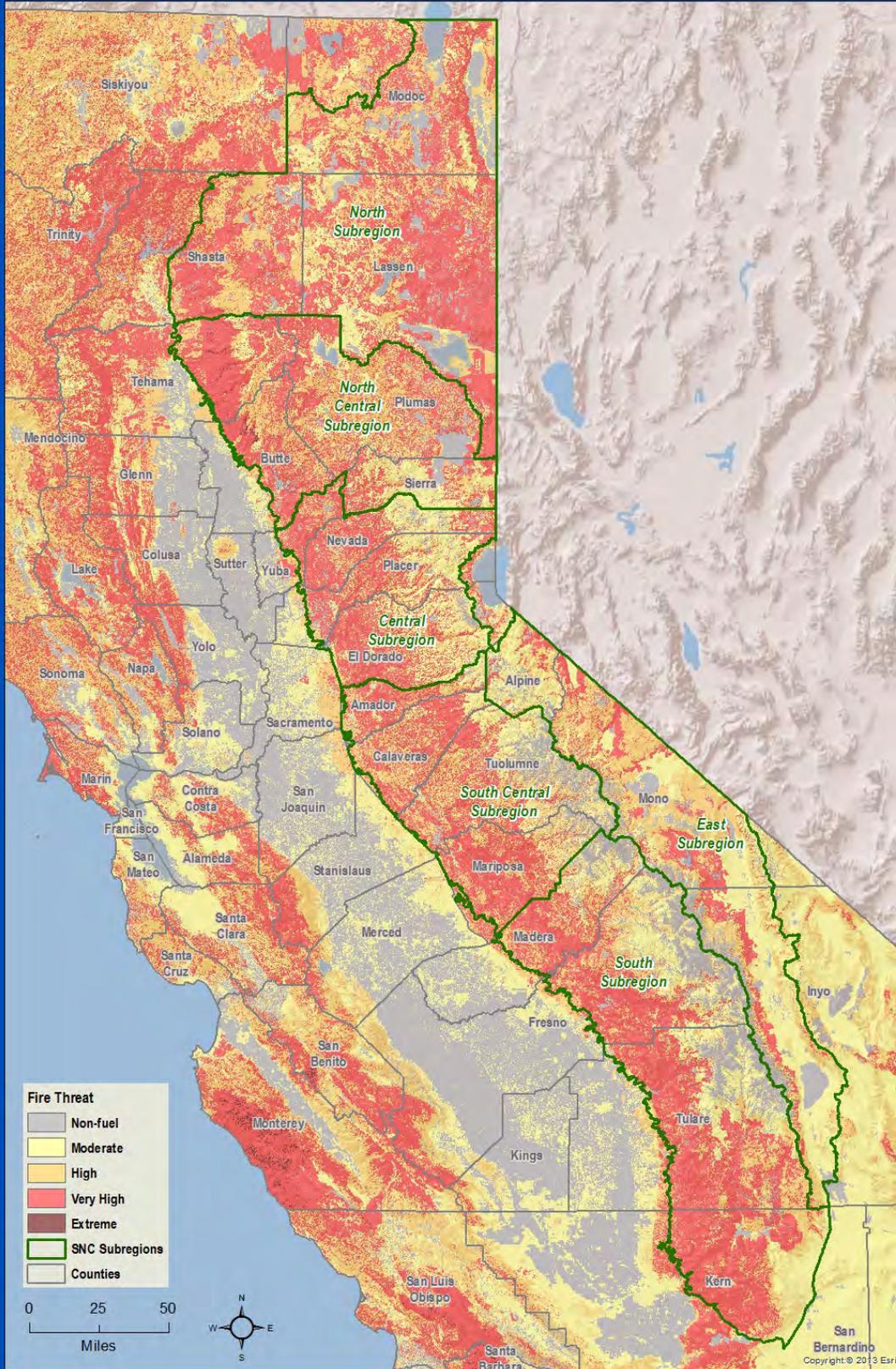
Fire Threat



Number of Acres by Fire Threat Class (2012)

September 2013

SNC Region - CAL FIRE Fire Threat Classes



Number of Acres by Fire Threat Class

It is important to track changes in fire threat class over time as the higher the threat class, the higher the potential for large fires that burn with higher intensities creating more significant short-term and long-term impacts on watersheds and the natural and economic assets they provide.

CAL FIRE identifies and tracks changes in four fire threat classes: Extreme, Very High, High, and Moderate, as well as Non-fuel (which this report refers to as Little or No threat). The preceding map highlights the area of the fire threat classes for the SNC Region. For this report, we have grouped the Extreme, Very High, and High classes together into a 'High and Above' class and left the Moderate and Little or No classes separate. Combining the higher threat classes together simplifies the discussion of fire threat without losing any pertinent considerations. The distinctions between High, Very High, and Extreme have little bearing on how SNC sees its role in trying to understand and reduce fire threat in the Sierra Nevada. Any threat above Moderate is a dire condition. (For a more detailed reference, [Table 2](#) of the Appendix provides data for all five threat classes.)

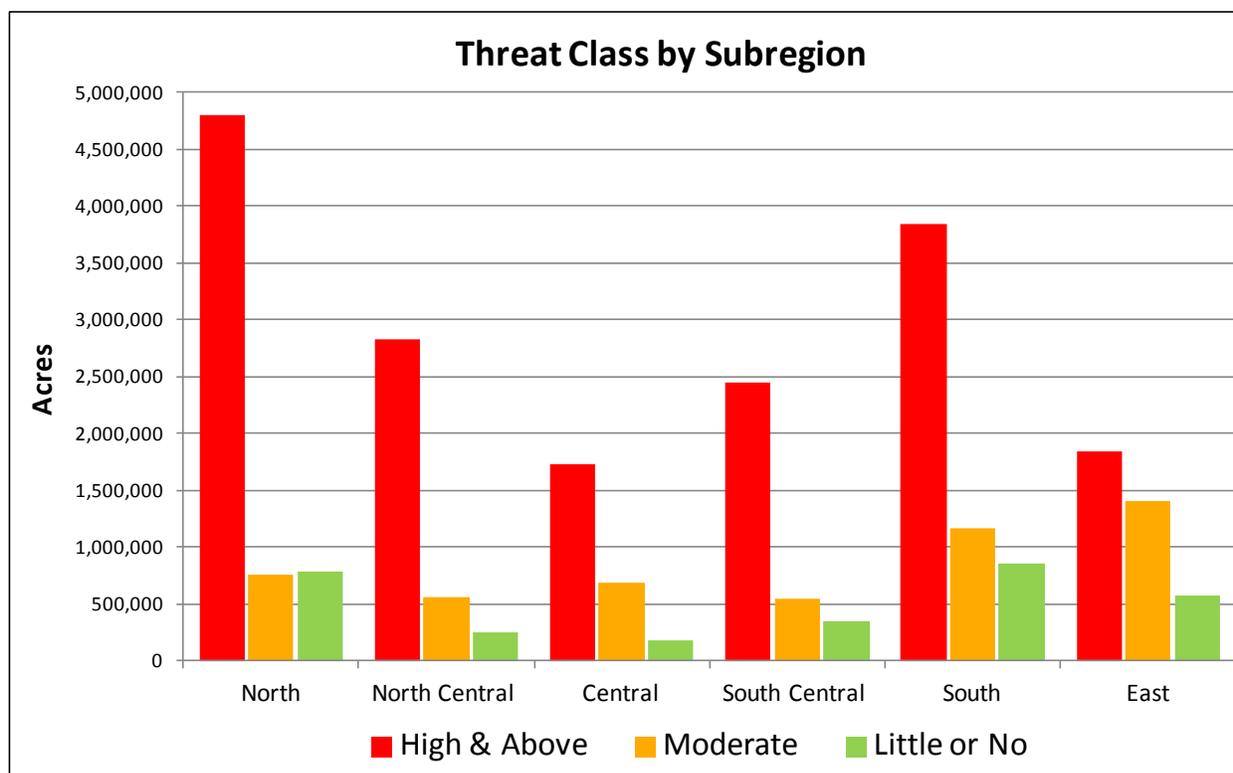
The SNC Region, both forest and non-forest, is dominated by the higher fire threats – 17.5 million acres, 68 percent of the Region, is classified as High and Above as compared to 48 percent for California as a whole. Twenty percent of the Region is classified as Moderate, and only 12 percent is classified as Little or No threat. Most of the Little or No threat area is in the high alpine elevations. Of the 17.5 million acres in the High and Above threat class, 63 percent is Very High; there is very little that is actually classified as Extreme.

Fire Threat by Subregion

As shown in the table and chart below, fire threat is uniformly High across the Subregions within the Sierra, with the exception of the East Subregion. The North, North Central, and South Central Subregions average about 75 percent in the High and Above fire threat classes, while about two-thirds of the Central and South Subregions is in that threat range. There are likely a number of factors that lead to a bit lower threat class for the latter Subregions. The landscape the Central Subregion, which contains the bulk of the Region's population, has been much more modified than other Subregions. The South Subregion is likely at slightly lower overall threat because it has the highest elevations and contains the most area at Little or No fire threat, which is primarily high alpine terrain with little vegetation. The large area of National Park land in the South may also play into the figures. Only 48 percent of the East Subregion is in the High and Above threat range, due mostly to lack of heavy vegetation to carry large fires due to dry conditions on the east slope of the Sierra and in the Owens Valley.

Threat Class by Subregion (Acres and Percent)

	High & Above		Moderate		Little or No		Total Acres
	Acres	%	Acres	%	Acres	%	
North	4,799,843	76%	751,306	12%	785,844	12%	6,336,993
North Central	2,825,785	78%	562,998	16%	241,467	7%	3,630,250
Central	1,721,863	67%	683,069	27%	170,315	7%	2,575,247
South Central	2,447,832	73%	549,627	16%	344,960	10%	3,342,419
South	3,845,603	66%	1,161,359	20%	850,240	15%	5,857,202
East	1,838,179	48%	1,402,414	37%	578,728	15%	3,819,321
Total	17,479,105	68%	5,110,773	20%	2,971,554	12%	25,561,432



Fire Threat by Ownership

Just about 60 percent of the SNC Region – 15.3 million acres – is under federal management (primarily U.S. Forest Service (USFS), Bureau of Land Management (BLM), and National Park Service (NPS)). Almost 10 million acres – nearly two-thirds of the federal land – is in a fire threat class of High and Above.

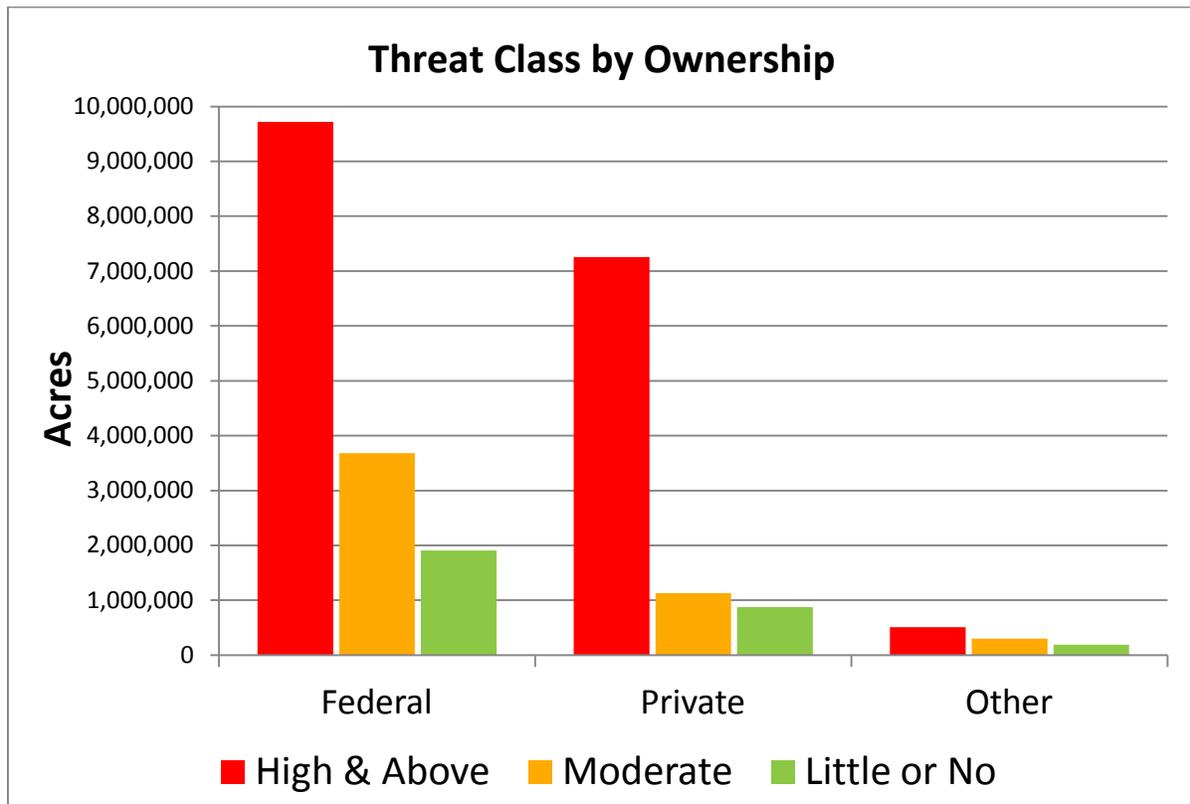
Land in private ownership totals 9.25 million acres (36 percent of the Region) and has an even higher proportion – 78 percent – in High and Above fire threat classes. Part of the explanation

for this difference is that most of the lands with high alpine terrain with little vegetation occur on federal land (for example wilderness lands). This fact results in a lower proportion of federal lands being classified at High and Above.

‘Other’ land summarized below consists of land under state or local municipality ownership, Tribal lands, and protected private land held in public trust. It totals just less than one million acres, about 4 percent of the Region. About half of these lands are in the High and Above fire threat classes. A possible explanation for this lesser amount in High and Above may be the nature of lands held by these entities, much of which has been converted to a less natural state (developed lands, improved parks, etc.).

Threat Class by Ownership (Acres and Percent)

	High & Above		Moderate		Little or No		Total Acres
	Acres	%	Acres	%	Acres	%	
Federal	9,718,960	64%	3,683,786	24%	1,906,677	12%	15,309,423
Private	7,252,000	78%	1,127,721	12%	873,425	9%	9,253,146
Other	508,144	51%	299,268	30%	191,451	19%	998,863
Total	17,479,105	68%	5,110,773	20%	2,971,554	12%	25,561,432



Impacts of Fuel Treatments on Threat Class

As part of their 2010 Strategic Plan, CAL FIRE is developing programs to track fuel reduction and fuel modification treatments throughout the state. Some tracking is being done now, but not comprehensively and across all landowners in all areas. The CAL FIRE effort will collect data on area treated and type of treatment (whether prescribed fire or mechanical) for a comprehensive GIS database.

Over time, CAL FIRE threat class mapping is adjusted as relevant factors, including forest conditions, change. The hope is that strategically implemented forest treatments will improve forest conditions such that significant land will be reclassified from higher threat classes to lower threat classes over time. Tracking the extent of fuel treatment projects, and comparing the treatment areas to existing and future threat class maps, will indicate the effectiveness of the treatments in making forest and other lands safer and healthier.

Having this information will help landowners and funders understand landscape scale conditions and coordinate on where to strategically implement projects to maximize benefits. Tracking fuel reduction and installation of other fire suppression structures, like fuel breaks, can also be used in fire suppression actions during active fire situations.

There are complicating factors to lowering fire threat beyond fuels treatments. Threat levels may change in areas that convert from wildland to expanding WUI. People play a part in the threat level due to higher fire frequency from human caused fires, both accidental and intentional, especially in the WUI. But WUI areas also have expanded access for responding to fire.

Potential Future Impact of Climate Change on Fire Threat

Weather conditions have a major effect on the occurrence of fire and its behavior. The likelihood of hotter, drier summers, and perhaps higher winds, in a warming climate is of great concern. These kinds of conditions would certainly increase fire threat in the Sierra Nevada, as well as making already difficult fire-fighting efforts even more challenging.

Large fires are controlled when either weather conditions change to be more favorable for fire fighters, or the fire runs out of fuel to burn. Warmer high elevation temperatures are leading to earlier snow melt and earlier drying of the landscape, potentially allowing for a longer fire season. If late winter and spring precipitation continues to shift from snow to rain, this trend would only be strengthened. Warmer spring temperatures and available water may also lead to an increase in the lighter fuels that tend to lead to more severe fire seasons, as well as faster growth rates for all the vegetation. All these factors could lead to higher fuel loading and the need for more frequent maintenance on fuel reduction projects than we have seen in the past.

The concern is not only the potential for more 'bad' fire years, but also the potential for changes in the timing of fires within each year and the pattern of fires over time. Many of the ecosystems in California are fire dependent and require some kind of fire to either regenerate or rejuvenate the landscape. Timing of seed production or offspring has evolved over the centuries to align with traditional timing of more historic natural fire occurrence. Significant

shifts in average fire timing could disrupt these processes significantly and threaten the survival of some species. Creating an environment where fire can be used more widely as a management tool is a longer term goal for many.