

### **Background**

The Sierra Nevada Conservancy (SNC) 2006 Strategic Plan identifies the need to develop System Indicators to measure progress in improving the environmental, economic, and social well-being of the Sierra Nevada Region. Since that time, staff has worked diligently to overcome data limitations and other obstacles in order to develop a set of Indicator Reports that include all of the nineteen Board approved Indicators. While staff previously reported to the Board that there would be five Indicator reports, further analysis suggested that a sixth report - the one presented today - was needed to deal comprehensively with data related to fire threat within the entire Region. Therefore, the six reports are:

- Demographics and the Economy
- Land Conserved and Habitat
- Water and Air Quality and Climate
- Forest Health and Carbon Storage
- Fire Threat
- Agricultural Lands and Ranches

The first report on Demographics and the Economy was presented at the September, 2011 Board meeting. The second report on Land Conservation and Habitat was presented at the December, 2011 Board meeting. The third report on Water and Air Quality and Climate was presented at this September, 2012 Board meeting. The fourth report on Forest Health and Carbon Storage was presented at the December, 2012 Board meeting. This fifth report on Fire Threat is being presented at this September, 2013 Board meeting.

### **Current Status**

There is important linkage between this Fire Threat report and the previously produced Forest Health and Carbon Storage report. Therefore, some fire-related information is included in the report on Forest Health, while references to the Forest report is contained in this Fire Threat report. This report extends the discussion beyond forest to provide a comprehensive set of data on fire threat that addresses the threat not only to forest lands within the Sierra, but agricultural lands and communities as well.

### **Fire Threat Indicators Report**

This fifth report includes Indicators related to Fire Threat on all lands within the 25 million acre SNC Region. Three Indicators have been developed for this report, two of which utilize already established data and methodology, and one (burn severity) for which data is not yet available but is in the process of being developed. The three Indicators are:

- Number of Acres by Fire Threat Class
- Number of Acres that Burn Annually
- Acres Burned by Severity

These indicators will be tracked for the entire SNC Region, plus as a subset for the Wildland Urban Interface (WUI) lands.

### Report Highlights

#### **Fire Threat**

For purposes of this report the SNC is using the definition of fire threat developed by CALFIRE's Forest Resources Assessment Program (FRAP): "Fire Threat is a measure of fire hazard that includes components for both probability (chance of burning) and the nature of the fire (fire behavior). Taken collectively, these two features assess the basic threat features of periodic wildfires and their capacity to drive fire effects. It is important to understand that fire threat carries no direct measure of fire effects and associated value change associated with fire risk." Fire threat is categorized from extreme to low. 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 low classes separate.

- The threat of major fire events is a constant in the Sierra Nevada and its foothills. More than two-thirds of the SNC Region (17.5 million acres) is classified as High and Above fire threat, compared to just less than half of the state as a whole.
- All Subregions have at least two-thirds of the area in the High and Above fire threat, with the exception of the East Subregion which has just under half of the area in that category. The North Subregion has the most amount of land in High and Above fire threat – 4.8 million acres (76 percent of the land area), while the North Central Subregion has the highest percentage in the High and Above category, with 78 percent.
- Sixty-four percent of federal land is in High and Above fire threat, while 78 percent of private land is classified as High and Above.

#### **Fire History**

The number of large fires, and the acreage burned, varies greatly from year to year, primarily due to specific weather conditions. Nonetheless, tracking this information over time will provide important trend information.

- To meet the tracking criteria of this System Indicators report, fire data only extending back to 1998 was used. This short time frame can't substantiate a clear trend of increasing number acres burned annually, though 2008 and 2012 were two of the biggest fire years in recorded history. Other studies do support increasing high-severity fire size and increasing acres burned annually since 1980.
- While about 60 percent of the SNC Region is in federal management, 75 percent of area burned between 1998 and 2012 was on federal land.

#### **Fire in the Wildland Urban Interface**

The majority of human occupation and development within the SNC Region is classified as Wildland Urban Interface (WUI). For this report, the definition of WUI comes from FRAP: WUI is based on housing density where there are no more than 2 homes (units) per acre and no less than 1 house per 40 acres.

- Six and one-half percent of the SNC Region land area (1.65 million acres) is classified as WUI. The Central Subregion accounts for 39 percent of the Region's WUI, and 25 percent of the Central Subregion land area is WUI.
- Eighty-four percent of the WUI is in High and Above fire threat, ranging in a north-to-south trend from 66 percent in the North Subregion to 94 percent in the South Subregion. Only 49 percent of East Subregion WUI is in High and Above fire threat.
- Wildfire in the WUI accounts for a small proportion of total fire in the Region, about one to three percent of total area burned in most years since 1998. In most years, 90 to 99 percent of WUI fire is on land classified as High and Above fire threat. Particularly in years where WUI experiences a large amount of fire, much of that fire is in oak woodland.

### **Fire Severity**

Complete elimination of severe wildfire is not desirable, but current forest conditions lead to large fires dominated by high severity burning with unwanted consequences. Varying levels of burn severity within a fire help create or maintain a mosaic of ecosystem habitats and corridors, but when large areas burn with high severity it not only destroys or eliminates critical habitat but creates erosion and water problems as well, and provides for the introduction of non-native and invasive species further changing the habitat from the pre-fire regime. Low intensity fires tend to remove fuel and thin vegetation and generally reduce competition for nutrients and water and reduce insect and disease populations.

- It would be hugely useful to comprehensively document the severity of fire in the Sierra and foothills. Methodology is being developed to be able to characterize and track fire severity in the future.

### **Next Steps**

The data in this report, along with the methodologies and frameworks that have been, and will be, developed, will allow consistent tracking of wildfire threats and impacts over time. Information relative to these indicators will be available on the SNC Web site and will be updated periodically as the underlying data is updated.

In addition to providing information relevant to the administration of SNC's programs throughout the Sierra Nevada Region, we hope that this information will also be useful to others located in or working in the Region, including other State agencies, as they develop and implement their own projects and programs.

### **Recommendation**

**Staff recommends the Board approve the Fire Threat System Indicators Report after making any revisions resulting from its review.**