

The State of the Sierra Nevada's Forests Update: Spring 2015



This update was released by the Sierra Nevada Conservancy on May 5, 2015

BACKGROUND

In the fall of 2014, the Sierra Nevada Conservancy released the first edition of the State of the Sierra Nevada's Forests Report, detailing the urgent need for restoration in the Sierra Nevada Region. Since that report was released, California has entered a fourth consecutive year of drought, and is experiencing record-low snowpack. The Sierra Nevada Region, the source of more than 60% of California's developed water supply, is now in a state of even greater distress. This update details the risks those conditions pose to resources valued by the entire state.

KEY POINTS

CALIFORNIA'S WATER SUPPLY AT RISK

- High-intensity wildfires can denude a landscape, dramatically increasing runoff and sediment that degrades water quality, damages infrastructure, and reduces reservoir storage capacity. Following a late-April storm, the Rubicon River ran brown with soil that had washed down from the King Fire burn area, impacting Placer County Water Agency's water supply and hydropower infrastructure.
- The Nature Conservancy recently published research on the nexus between fuel reduction and water yield, and concluded that an increase in forest restoration activities would result in an increase of streamflow. In the Feather River Watershed, the primary water source for the State Water Project, an increase in streamflow of up to 285,000 acre-feet could be realized as a result of increased forest restoration in that watershed.¹ That volume of water could serve more than 500,000 households for a year.

INCREASED AIR POLLUTION AND GREENHOUSE GAS EMISSIONS

- Trees store carbon, but a recent study shows that from 2001 to 2010, California lost live carbon storage equal to the amount of carbon found in 29 billion gallons of gas.² That carbon is now more likely to be emitted into the atmosphere as trees begin to decay, adding to the emissions we are already experiencing from increasingly active fire seasons.
- Surveys recently completed show that more than ten million trees have died in the southern Sierra Nevada in the last six months from drought and insect-related causes. This unprecedented amount of tree die-off will add massive amounts of new fuel to the forest ecosystem.³
- The King Fire and the Rim Fire released emissions equal to what 3.1 million cars produce in a year. Recent research suggests that total emissions from these two fires represent only a fraction of the total emissions that will come from their burn scars over the next few decades as the trees begin to decay.⁴
- Prescribed burning, managed wildland fire, and mechanical fuel reduction treatments can augment carbon storage in the long term by shifting stored carbon from many small trees to fewer large, old trees.⁵
- According to the American Lung Association's State of the Air Report, many western states experienced more high-particle air pollution episodes between 2011 and 2013 due to drought and wildfires.⁶

BIOMASS UTILIZATION

- Biochar, a byproduct of some bioenergy production processes, can sequester carbon in the soil for hundreds to thousands of years, and improve water retention and plant growth.⁷
- Removal and utilization of woody biomass for energy generation, when coupled with the production of biochar, results in a carbon-negative energy production process. Utilization of biochar in soils has the potential to offset over 10% of our current emissions.⁷

NEXT STEPS

The Sierra Nevada Conservancy, in partnership with the U.S. Forest Service, has established the Sierra Nevada Watershed Improvement Program (WIP) to address the conditions that currently exist. Through the WIP, federal, state, and local partners will work together to analyze restoration needs at the watershed level, with the goal of matching funding and addressing policy barriers in order to complete projects that restore the Sierra Nevada to a healthier condition.

CITATIONS

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