

Inyo National Forest Monitoring Report

Are we meeting our goals?

SNAPSHOT

State of the Forest— In the last two years (2020-2021), Inyo National Forest staff have faced a global pandemic, increasing frequency and intensity of wildfires, and extreme drought. In spite of these challenges, we continued to protect the incredible ecosystem diversity of our Forest and to deliver culturally and economically important resources. Here are some important findings:

- **Over 80% of our roads and motorized trails are in good condition**, maintained sufficiently to prevent soil erosion or water quality impacts.
- **Forests have large trees and snags** within the natural range of variation, but there is a deficit in very large (> 40 inches diameter) trees in Jeffrey pine and red and white fir forests.
- **Pinyon-juniper woodlands and sagebrush communities are stressed**; recent pinyon-juniper mortality may indicate a future decline due to drought, insects, climate change, and wildfire. Sagebrush communities are growing old and are showing patchy recovery in wildfire footprints.
- **Whitebark pine mortality has been relatively minor over the last decade and regeneration is occurring in affected stands**. Limber pine mortality has been more substantial and with little known regeneration. We will continue to watch for climate change impacts on our high elevation white pines.
- **Fires are burning far less frequently than the natural range of variation**, particularly in the Sierra montane zone where 64% of this zone is highly departed from the historic fire regime. The Forest was unable to complete much prescribed burning in 2020 and 2021, but we expect prescribed burning to increase in 2022.
- **Special habitats are being protected**; disturbance is within manageable levels.
- In 2021 we performed **maintenance on 40% of non-motorized trails and 46% of motorized trails** to help provide safe, public access.
- We **significantly increased our partnerships**; the value of contributed time by partners nearly tripled from \$0.8 million in 2019 to an estimated \$2.4 million in 2021.

Recommended changes— Monitoring from 2020-2021 revealed that there are no areas where Forest Plan component changes should be considered. Our monitoring plan needs some clarification and updates to reflect new scientific information and lessons learned from this first forest wide monitoring effort, such as adding or removing indicators.

Summary of monitoring results

Watershed conditions

Fewer than 10% of monitored roads had major soil erosion, and those with serious problems are prioritized for repair. Fuels reduction projects, while causing short-term soil disturbance, have not led to long-term detrimental soil impacts that would affect vegetative growth. Major effects to watershed condition continue to be uncharacteristic wildfire, though the Inyo National Forest has not had large, uncharacteristic fires during this monitoring period.



Status of Select Ecological Conditions



Our forests have large trees and snags within the natural range of variation, but there is a deficit in very large (> 40 inches diameter) trees in Jeffrey pine and red and white fir forests. This deficit is consistent with documented patterns across the southern Sierra Nevada where long-term fire exclusion and historical logging impacts are being felt.

Pinyon juniper woodlands are experiencing interacting stressors, especially drought and wildfire. Stands showed a slight loss in canopy cover and concentrated pockets of more severe tree mortality, with a peak in mortality during the drought (2014-2016). Wildfires burned over 3000 acres between 2015-2018.

Sagebrush communities (inset showing change over time in a sage brush stand from 2005-2020) are growing older and we don't yet know if regeneration is keeping pace with mortality. Recovery after wildfires is patchy and the species is replaced at times by fire-following herbs and re-sprouting shrubs.

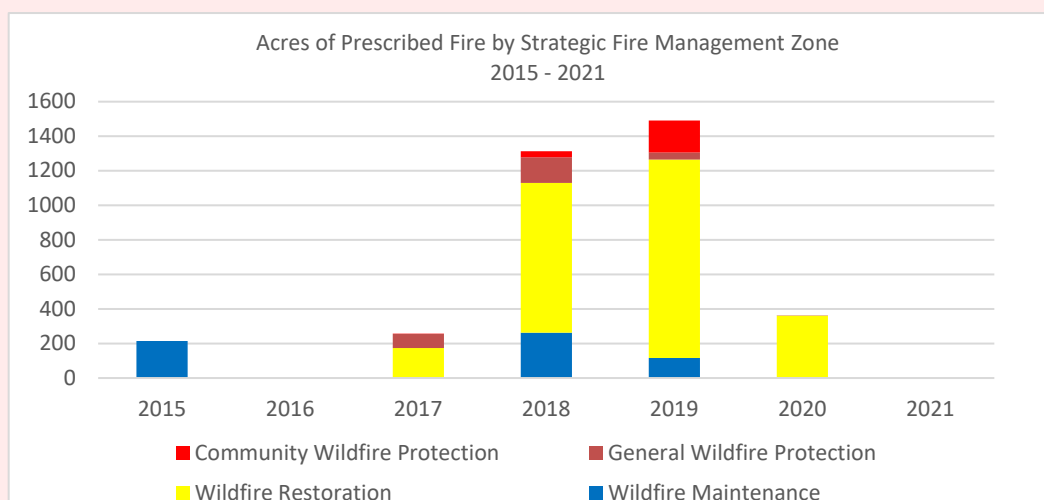
The 2019 land management plan calls for increased pace and scale of ecological restoration, knowing that many ecosystems across the Forest have been affected by climate change, fire suppression, uncharacteristic wildfire, and invasive species.

This new guidance has not yet resulted in much change in management. However, Forest staff are actively working on planning and approving projects to address these ecological conditions. For example, a Forestwide Prescribed Burn project and a 55,000 acre forested ecosystem improvement project (ESCCRP) are currently under analysis and if approved, could begin implementation within the next few years.

Fire Conditions

Wildfires in 64% of the Sierra montane ecological zone are burning far less frequently than historically. Most subalpine and alpine zone and arid shrubland and woodland zone are not departed or moderately departed from historic fire frequencies. Wildfires burned and were suppressed in all three ecological zones; however, we were successful in managing some wildfire in the Sierra montane zone to improve ecological conditions, especially where mixed severities occurred.

From 2015-2021, the Inyo National Forest implemented nearly 4,000 acres of prescribed fire, with substantial variation year-to-year (see inset graph). From 2020-2021, we implemented relatively fewer acres (360) of prescribed burning primarily due to the pandemic and a regional pause on prescribed burning. The Forest completed about 11,000 acres of thinning treatment to improve forest health from 2015-2021. The Forest is planning to increase prescribed fire and fuel reduction treatments to facilitate a return to fire frequencies closer to the natural range of variation.



Social and Economic Sustainability

The Inyo National Forest plays a large role in supporting the local travel and tourism industry with a wealth of natural settings to enjoy and attractions like Mammoth Lakes ski resort. The 2016 National Visitor Use Monitoring (NVUM) Report found that 83% of visitors came to the Inyo National Forest to recreate. According to this 2016 report, which was before our new Plan, the average total trip spending for each party visiting the National Forest is \$1,361 (median \$800) and nearly 80% of visits involved an overnight stay, with about 45% of stays renting a private home. The worldwide pandemic caused major impacts to local tourism and jobs as well as other economic sectors the Forest supports. Those effects, whether temporary or leading to a more long-term change, will be reflected in our next monitoring report.

Climate Change and Other Stressors

Climate change has the potential to drastically alter our ecosystems on the Inyo National Forest, and some measurable changes are already occurring.

Preliminary data for high elevation white-pine ecosystems and stream flow indicate a warming climate. Some white-pine ecosystems are experiencing increased mortality and reduced regeneration. Stream flows are beginning earlier. Neither measure shows extreme changes currently, but we believe longer-term data sets will help us understand trends.

Between 2010 and 2020, 4% of whitebark pine stands have experienced >20% canopy cover loss and 38% have experienced <10% loss. In many areas affected by mortality, we have found regeneration! This means the stand should persist even with tree loss. Limber pine, already limited on the Inyo, has shown more drastic declines without substantial regeneration. Future monitoring will help us better define and understand the trends so we can adapt our management to increase climate resilience in this important ecosystem. Importantly, white pine blister rust is not killing white pines on the Inyo National Forest as severely as in other, wetter areas such as the west side of the Sierra Nevada mountains and Colorado, and we hope to increase management actions to prevent further loss or improve regeneration.



Visitor Use, Satisfaction, and Progress on Recreation Objectives



The Forest, with help from our partners, conducted maintenance on 40% of non-motorized trails and 46% of motorized trails to help provide safe, public access.

The Forest has been able to increase its partnerships, despite the ongoing effects of the pandemic on travel and hiring. Partnership value of contributed time almost tripled from 2019 to 2021, with an estimate of \$2.4 million value of contributed time in 2021, compared to about \$0.8 million in 2019.

Partners included California Conservation Corps Backcountry Trails Program, Eastern Sierra Conservation Corps, JMT Wilderness Conservancy, Friends of the Inyo, Town of

Mammoth Lakes, Mono County, Pacific Crest Trail Association, June Lake Trails Committee, and Student Conservation Association