

LAND CONSERVATION

Prescribed Burning and Thinning Save Yosemite's Giant Sequoias



Fire Crew Preparing Sequoias For Fire

INTRODUCTION

Yosemite National Park (YNP) has diverse flora and fauna, including the Pacific fisher (*Martes pennanti*), an endangered mustelid, and giant sequoias (*Sequoiadendron giganteum*), a fire adapted tree species. Giant sequoias survive natural fires with low temperatures and small flame height, but unnaturally high-severity fires can kill the trees. Fire suppression practices have decreased fire frequency, increasing fuel loads and the risk of high-severity fires. Climate change further increases the risk of high-severity wildfires. Repeated prescribed burns and forest thinning allowed YNP to reduce the size and severity of the 2022 Washburn Fire, preventing giant sequoia deaths, preserving Pacific fisher habitat, and protecting the town of Wawona.

KEY ISSUES ADDRESSED

YNP sustained severe fires because of unnaturally large amounts of ground fuels resulting from fire suppression.

Additionally, a build up of small trees that act as ladder fuels in a fire threatens more dangerous high-severity crown fires. Climate change further increases the already high wildfire risk via hot, dry conditions and dead vegetation.

Wildfire has killed one fifth of the giant sequoia population in just three years, and the rest of the population remains at risk.

With the forests also providing habitat for Pacific fishers and containing the vulnerable community of Wawona, improved fire management offers an opportunity to support these critical species, protect communities, and increase forest resiliency.

PROJECT GOALS

- Use prescribed burning to decrease ground fuels
- Thin small trees to decrease ladder fuels and protect important species
- Suppress wildfire in dangerous conditions to support giant sequoias
- Minimize fire footprint to preserve Pacific fisher habitat and the community of Wawona



PROJECT HIGHLIGHTS

Prescribed Burning Reduces Ground Fuels: YNP uses various prescribed burn strategies depending on conditions and goals. These burns reduce ground fuels that cause dangerous wildfire conditions. The park has used prescribed burns in over 1,800 hectares near the Mariposa Grove since 1970.

Thinning Reduces Ladder Fuels and Protects Sequoias: YNP removed small trees in the park to prevent a buildup of ladder fuels and reduce competition for giant sequoias.

Prescribed Burns and Thinning Moderate Fire Behavior: 50 years of prescribed burning and forest thinning slowed the spread and severity of the Washburn Fire in the Mariposa Grove. As a result, no giant sequoias were lost in the Washburn Fire. Prescribed burns and thinning successfully reduced ground and ladder fuels. Treatments reduced the Washburn Fire's severity by 28 percent on average.

Fuel Treatments Preserve Pacific Fisher Habitat and Community of Wawona: Fuel treatments allowed firefighters to reduce the Washburn Fire's footprint to below 5,000 acres. This protected large sections of Pacific fisher habitat, and the nearby community of Wawona was completely unharmed.



Backing Fire onto Wawona Road During Washburn Fire

LESSONS LEARNED

Repeated prescribed burning and thinning were crucial for firefighters to save the Mariposa Grove, its giant sequoias, Pacific fisher habitat, and Wawona from the Washburn Fire. YNP conducts multiple burns and thinning projects every year with the goal of replicating the 1 to 15 year natural fire return interval. Areas in the Washburn Fire footprint that were treated with burns and thinning survived post-fire, while untreated areas have a low chance of regenerating.

YNP mechanical thinning projects have been controversial, with a recent lawsuit halting thinning projects. The lawsuit alleged that the park hadn't considered fire risk during the project, but a court ruled that thinning could continue as the park was tactically removing fuels, not logging for profit. Even though YNP won, the lawsuit demonstrated the importance of communicating project goals and tactics to the community. Since the park is dedicated to protecting giant sequoias from the effects of climate change, mechanical thinning was necessary to restore fire-tolerant ecosystem conditions. By communicating project objectives and tactics, the community can understand the park's approach and build trust in their process.

NEXT STEPS

- Restore natural fire's role in the three giant sequoia groves in YNP
- Partner with cultural practitioners to reinstate cultural fire on the landscape
- Restore the relationship between fire, the environment, and the community

PARTNERS

- See online for full list of partners
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