GIANT SEQUOIA
LANDS COALITION

# 2024 Giant Sequoia Lands Coalition Progress Report

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Cover photo: South Grove of Giant Sequoias during a prescribed burn at Calaveras Big Tree (CBT) State Park. Photo Credit: CBT Marketing team.

# Introduction

## Giant Sequoias

Giant sequoias (*Sequoiadendron giganteum*) are iconic and beloved trees that can grow to more than 300 feet tall and dozens of feet wide, making them the world's most massive trees and one of the largest organisms on earth. Their forests span over 260 miles across California's Sierra Nevada mountain range, storing more carbon from the atmosphere than any other forest ecosystem and supporting biologically diverse plant and animal communities found nowhere else.

The health and persistence of these magnificent mixed-conifer ecosystems are threatened by destructive and stand-replacing high-severity wildfires caused by past fire exclusion practices that resulted in unnatural accumulation of fuels, combined with climate change-driven prolonged drought. Extreme wildfires over the last decade have killed up to 20% of giant sequoias and severely limited their ability to reproduce. And, while historically not a cause of giant sequoia mortality, bark beetle attacks are an emerging secondary threat. Today, remaining giant sequoia trees are contained within roughly 80 groves covering approximately 26,000 acres.

Northern Lights over Mud Springs at Black Mountain Grove on the Tule River Indian Tribe Reservation. Photo Credit: William Garfield.

## About the Giant Sequoia Lands Coalition

The Giant Sequoia Lands Coalition (GSLC) is a landscape-scale, multi-partner collaboration dedicated to the conservation and stewardship of the remaining giant sequoia grove ecosystems. The Coalition is composed of federal, tribal, state, and local agencies and organizations that directly manage giant sequoia groves in public, tribal, or private nonprofit ownership, known as GSLC Members. In addition, GSLC's Affiliate Members include select federal and state conservation agencies, nongovernmental organization conservation groups, and academic research partners with a shared commitment to protect giant sequoias and their ecosystems from emerging threats associated with climate change and the extended absence of natural, low-severity wildfire processes on the landscape.

This 2024 Progress Report highlights the Coalition's progress over the past three years. In 2024, the GSLC achieved a significant milestone by hiring its first Partnership Coordinator, Alaina Kuhlman, who began her role in October 2024. This key position was made possible through the financial and administrative support of Save the Redwoods League (The League) and a grant from the Sierra Nevada Conservancy. Kuhlman's appointment addressed a critical need identified by the Coalition earlier in the year, enhancing the GSLC's capacity for coordination and collaboration. Her contributions have already proven valuable, as she played a major role in compiling this report.

The following organizations represent the GSLC:

**GSLC Members:**

- California Department of Forestry and Fire Protection
- Calaveras Big Trees State Park
- Sequoia and Kings Canyon National Parks
- Yosemite National Park
- Tulare County
- Tule River Indian Tribe of California
- University of California, Berkeley
- U.S. Department of the Interior, Bureau of Land Management
- Sequoia National Forest
- Sierra National Forest
- Tahoe National Forest

**GSLC Affiliate Members:**

- American Forests
- Ancient Forest Society
- Giant Sequoia National Monument Association
- Save the Redwoods League
- Sequoia Parks Conservancy
- Southern Sierra Conservancy
- Stanislaus National Forest
- US Geological Survey—Western Ecological Research Center
- Yosemite Conservancy

## A Letter from the Giant Sequoia Lands Coalition Co-chairs

This past year, in 2024, the Giant Sequoia Lands Coalition has continued to make strides in science, education, and resource management—essential elements of good stewardship for the iconic giant sequoia ecosystems. We are proud to highlight our coordinated efforts through this report. The challenges we face, from intense wildfires to emerging ecological threats and extreme weather, remain daunting. Through these challenges, our coalition has only grown stronger, more connected, and more determined to safeguard these iconic trees and the extraordinary ecosystems that depend on them.

What began as a shared commitment in the face of crisis has evolved into a deeply rooted collaboration, built on trust, expertise, and a deep love for the giant sequoias. Our work extends beyond conservation—it is a testament to the power of partnership. Through every research initiative, every restoration project, and every new alliance formed, we are protecting these ancient forests while also inspiring the next generation of stewards to continue this vital mission.

Looking ahead, we remain both grateful for the progress we have made and motivated by the work still to come. With dedication and commitment to our shared vision, we will continue to stand tall—just like the sequoias we are working so hard to protect.

With gratitude,
**Kevin Conway & Clay Jordan**

Kevin Conway
State Forests Program Manager
CAL FIRE

Clay Jordan
Superintendent
Sequoia and Kings Canyon National Parks

# Executive Summary

## Collective Impact of the Giant Sequoia Lands Coalition

| | 2022 | 2023 | 2024 | Totals |
|---|---|---|---|---|
| **Total sequoia grove treatment acres** | 4,257 | 8,526 | 5,960 | 18,743* |
| *Fuels Reduction and Forest Health Improvements* | 2,099 | 4,657 | 3,579 | 10,335 |
| *Broadcast Burning* | 1,719 | 874 | 1,558 | 4,151 |
| *Pile Burning* | 439 | 1,655 | 537 | 2,631 |
| *Reforestation (planting)* | Data not collected | 1,340 | 286 | 1,626 |
| **Total acres treated for fuels reduction in buffer areas around groves** | Data not collected | 4,651 | 3,851 | 8,502 |
| **Total number of groves treated** | 36 | 29 | 27 | 44^ |
| **Native trees planted within groves** | 248,000 | 294,293 | 74,838 | 617,131 |
| **Number of personnel** | 824 | 941 | 1,652 | N/A |

*Includes acres that have been treated across more than one treatment category from 2022-2024.
^Some groves have been treated across more than one treatment category from 2022-2024.

The 2020-2021 fire season included two large wildfires that burned into a large number of giant sequoia groves, catalyzing the creation of the Giant Sequoia Lands Coalition (GSLC). In the three years since the GSLC was created, the threats of climate change, extreme wildfires, and bark beetle have inspired collective action by coalition members and affiliates, demonstrating tremendous progress in protecting the world-renowned giant sequoia groves from existential threats.

In this current progress report, the GSLC presents its collective ecosystem wide achievements for 2024. The following are some of the highlights:

- Completing restoration treatments on 5,960 priority acres, covering 27 groves and planting 74,838 locally sourced native trees, increasing the wildfire resilience of forests and communities, improving giant sequoia grove health, and expanding the pace and scale of treatments to reduce forest fuels through prescribed burning and restoration to more natural conditions.
- Expanding seed collection efforts.
- Hiring the first GSLC Partnership Coordinator, Alaina Kuhlman, who began her role in October 2024.
- Educating members and partners, including offering six Cone Camps where 36 foresters were educated on cone surveying and collection management and a Learn and Act field trip to Nelder Grove.
- Addressing stewardship and emergency actions, including thinning and piling of ladder fuels and conducting prescribed and cultural burns. Save the Redwoods League produced a video of one of its cultural burns.
- Conducting scientific research and monitoring to better understand the long-term persistence of giant sequoias, tree hydrology, and the impact of wildfires and bark beetles on the health of giant sequoias. Coalition members published a peer-reviewed scientific research paper in *Forest Ecology and Management* (Stephenson et al 2024) on wildfire's influence on giant sequoia regeneration in experimental gaps and a paper in *Environmental Entomology* (Foote et al 2024) documenting sequoia bark beetle occurrence and distribution, flight timing, and genetics.
- Strengthening interagency collaboration to improve funding access and enable faster implementation of landscape restoration projects, engaging 1,652 people to conduct the work.

The GSLC's essential restoration work has significantly enhanced the wildfire resilience of giant sequoia groves through a multi-faceted approach. The primary focus has been on reducing the unnatural accumulation of hazardous and combustible plant

material, commonly referred to as fuels. Since 2022 fuels reduction has been conducted on 10,335 acres using various methods that include the following:

- Manual and mechanical fuels removal
- Prescribed fires
- Managed wildfires
- Cultural burning practices

This restoration work focused on areas that experienced uncharacteristically high wildfire intensity where overstory seed trees have died, burned seeds were not able to develop, and insufficient regeneration has occurred naturally.

For 2025, the Coalition is primed to address the longer-term needs of the giant sequoias at a landscape scale.

## Groves Treated in 2024

Salt Creek Ridge
Lady Bug
Monache Tubs
Nutmeg
Case Mountain Grove
Mountain Home
Calaveras South
Big Stump East
Grant Grove
Sequoia Creek
Merced
Mariposa
Alder
Parker Peak
Black Mountain
Redhill
Redwood Mountain
Belknap Complex
Freeman Creek
Packsaddle
Cherry Gap
Converse Basin
Evans Complex
Indian Basin
Long Meadow
McKinley
Nelder

A Field Crew Conducts a Seedling Census in Partnership with the National Park Service in Sequoia and Kings Canyon National Parks to Assess Giant Sequoia Regeneration Following Recent Extreme Wildfires. Photo Credit: Cole Diemer, USGS. .

## Scientific Studies Guide Restoration Work

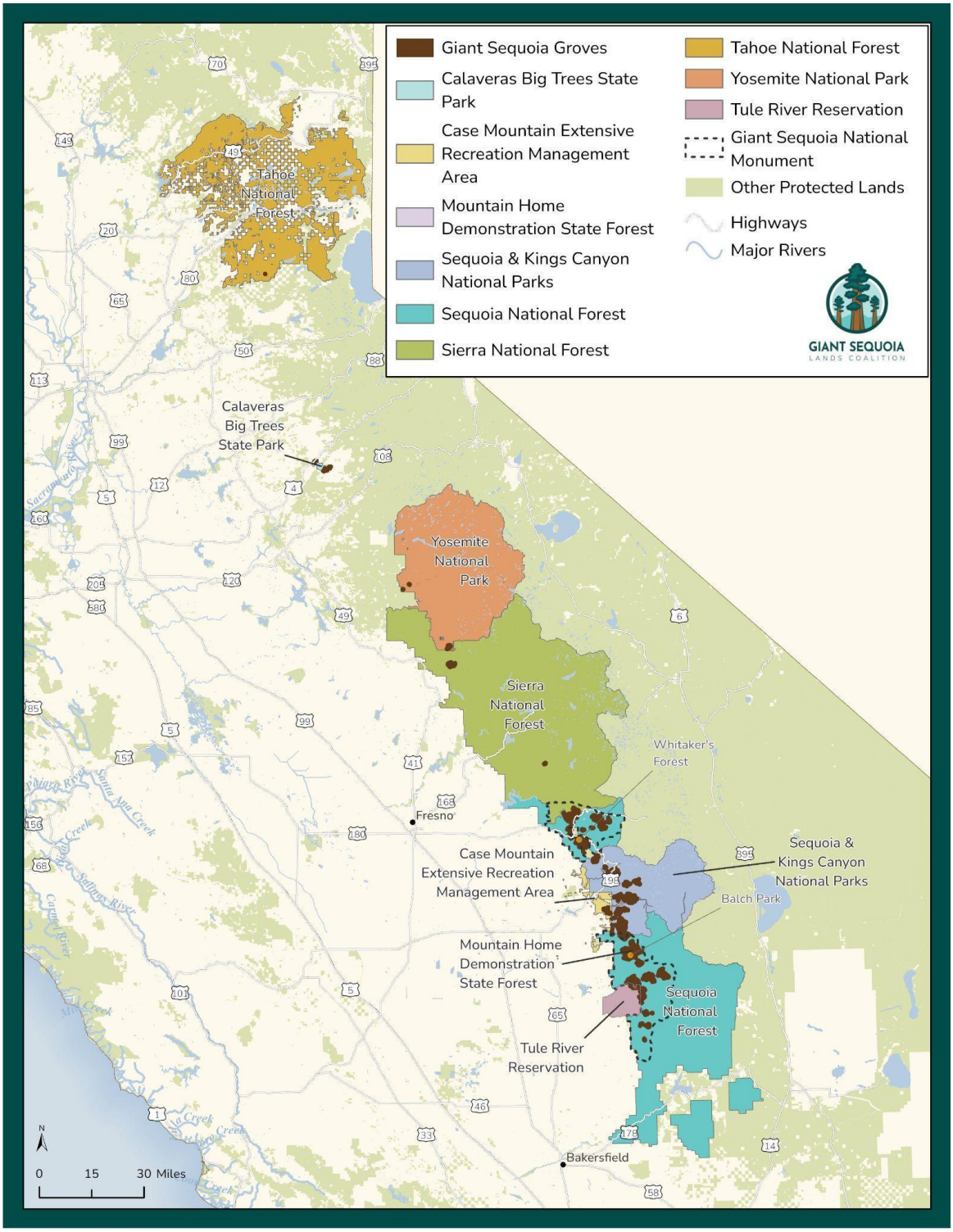
Scientific research, combined with Traditional Ecological Knowledge, plays a vital role in shaping restoration efforts across the giant sequoia range. For generations Indigenous communities used cultural burning to maintain healthy forests, reducing fuel loads and promoting resilience. Today, science reaffirms the importance of these practices, alongside other strategies, in addressing major threats—such as the absence of beneficial fire, the rise in high-severity wildfires, and the shifting conditions driven by climate change. Though land managers operate under different mandates, there is strong agreement on the need for proactive restoration. Decades of research and real-world experience continue to guide the Coalition's conservation work, ensuring that the lessons of the past inform the restoration efforts highlighted in this report.

Teams of scientists and partners also continue to collect, analyze, and share data pertaining to the giant sequoia range to further advance the GSLC's knowledge and

inform land management activities. This includes ecologists and professionals from the following organizations, institutions, and agencies:

- Ancient Forest Society
- California State Parks
- Colorado State University
- National Park Service
- Save the Redwoods League
- Tule River Indian Tribe of California
- University of California, Berkeley
- University of California, Los Angeles
- University of California, Santa Barbara
- University of Nevada, Reno
- U.S. Department of Interior, Bureau of Land Management
- U.S. Geological Survey—Western Ecological Research Center
- USDA Forest Service

# Giant Sequoia Grove Locations



# 2024 Highlights

## Coffee Pot Fire - Collaborative Efforts in Practice

The 2024 Coffee Pot Fire. Photo Credit: National Park Service.

The Coffee Pot Fire (CPF) was a significant wildfire that burned nearly 14,100 acres in August 2024 in Tulare County, primarily affecting Sequoia National Park. Its containment was largely due to the successful partnerships working to mitigate the destructive force of the fire. Many successes came out of the fire response; however, there were challenges and lessons learned for future management of fire within sequoia groves. During the CPF, the GSLC demonstrated that its mission to accelerate the protection of giant sequoias and their ecosystems is succeeding.

The Coalition rose to the occasion to connect a network of giant sequoia professionals who are familiar with various perspectives on managing, researching, and

communicating about these complicated landscapes. It also provided the opportunity to have conversations as a collective to establish general consensus on management approaches and research needs. The GSLC has fostered collaboration, shared knowledge, and a mutual respect for the expertise found throughout the Coalition, leading to a foundation of trust between members.

The collaboration of the GSLC was key to the successful CPF response. There was immediate action from the Coalition, providing timely guidance, assistance, and support. Multiple members were able to spend a full assignment (or multiple assignments) working on the fire, and it was helpful to have a team of experts to develop the prep plan, implement treatments, work through challenges, and assess the impacts of the fire on the groves. The familiarity and trust between coalition members meant no time was wasted, which allowed for more giant sequoias to be prepped and protected before burning.

The CPF also presented learning curves. Training non-sequoia Resource Advisors and Evaluators in Fire (REAFs) on prepping the groves came with challenges. Though the REAF team assigned to the CPF was exceptional, it was more effective for a GSLC representative to determine the scope of work required at each monarch tree and brief the REAFs and crews than it was to train each REAF to identify them on their own. As a result, this meant the coalition's members were often stretched thin, and crews were left waiting for additional work. Thus, in future efforts, more representation from the Coalition would be helpful on REAF crews.

Additionally, it was challenging to communicate the nuanced relationship between sequoia ecosystems and fire. It was important to educate fire personnel about the need to protect the groves from high-intensity fire and the reason so many resources needed to be dedicated to prepping the groves. However, the Coalition found the message became misconstrued, and the viewpoint that sequoias are fragile and need to be protected from all fire prevailed. This became evident when the land managers and sequoia experts (GSLC Members) encouraged the Incident Management Team to let the prepped groves burn during favorable conditions. This issue goes beyond the CPF, as it has been a range-wide challenge to communicate sequoia-specific information related to fire and active management.

There are lessons learned from the CPF response that can be integrated to streamline protection efforts for sequoias in anticipation of the next wildfire. However, it is vital to acknowledge how far the GSLC has come and how much it has achieved since its inception. The Coalition's support during the CPF was hugely impactful. There were many successes for these remarkable ecosystems, and there is no doubt that, with its

members working together, the Coalition will make an even stronger impact during the next wildfire.

## Cultural Burning - Rekindling Land Management Traditions

In June 2024, elders and representatives from three Tribes with ancestral and cultural ties to the giant sequoias gathered at the Alder Creek Grove in Tulare County. The Tule River Indian, North Fork Mono, and Tübatulabal Tribes came together to lead a small cultural burning demonstration, the first ever cultural burn on land managed by Save the Redwoods League.

For millennia, Tribes have used fire to help manage the ancient sequoia groves. The practice typically involved lighting small, controlled fires to clear overgrown shrubs, small trees, and dead leaves. These low-intensity fires promoted the growth of plants for food, materials, and medicinal purposes. They also helped manage habitat for wildlife and maintained the health of the giant sequoias, which were adapted to thrive in a fire-prone environment. Though the positive outcomes may be similar to the impact of prescribed burns, cultural burning is often tied to spiritual beliefs and cultural rituals. “Yes, we’re restoring the landscape and restoring our resources,” said Chairman Ron Goode of the North Fork Mono Tribe. “But when we do that, we’re restoring our culture.”

Cultural burning is also firmly rooted in Traditional Ecological Knowledge—a deep connection to the land developed over generations. “The cultural burn works because our people have been doing it for centuries and centuries,” said Shine Nieto, Vice Chairman of the Tule River Indian Tribe. Nieto described the protection of the giant sequoias as a way of life for his people. “Those trees mean a lot to us. They’re actually our ancestors.”

October 2024 Cultural Burn at Alder Creek. Photo Credit: Evan-Marie Petit Photography, Courtesy of Save the Redwoods League.

A second cultural burn was held at Alder Creek Grove in October 2024, and additional burns are planned for

future years. Support for both burns came from the USDA Forest Service (USFS), California Department of Forestry and Fire Protection (CAL FIRE), and the Tule River Tribe's Fire Department, as well as the Sierra Nevada Conservancy.

In the past decade, up to 20% of the world's mature giant sequoias died in extreme wildfires, most during the catastrophic fires of 2020 and 2021. Cultural burns are part of the solution. By reducing fuels, they can positively change the behavior of future wildfires, slowing their spread, lowering their intensity, and reducing smoke.

## Bark Beetles - An Emerging Threat

An emerging threat of concern to sequoia managers and scientists is the mortality of mature giant sequoias that appears to be due to the interaction of a native sequoia bark beetle and other stressors such as drought and fire damage. During the 2012-2016 hotter drought in the southern Sierra Nevada, scientists observed a small number of large sequoia trees that died from the top of the tree down with needles turning red on the tree. Prior to these observations, the National Park Service (NPS) and United States Geologic Service (USGS) scientists could find no record of this pattern of large giant sequoia death (dying standing from the top down, not immediately post-fire and with foliage not showing fire damage).

Dying Giant Sequoia with Bark Beetle Exit Holes in a Large Branch in Mountain Home Demonstration State Forest, August 2024. Photo Credit: Wendy Baxter.

Since 2016, NPS and USGS have been working with a wide variety of partners, including Ancient Forest Society (AFS) and the Davis Lab at Colorado State University, to begin investigating this emerging type of sequoia death. Although only a small

number of sequoias have been found with this pattern of death, and much is still unknown, scientists are concerned for two primary reasons.

First, many groves have not been systematically inspected to look for this type of sequoia death, so the GSLC may be underestimating how many trees are affected. Second, as temperatures increase and fires expand, this type of death may become more common. Therefore, the Coalition is working on an aggressive research and monitoring campaign to document and understand this native bark beetle and develop methods to mitigate their impacts on sequoias. This campaign aims to better understand where, when, and how bark beetles impact giant sequoias;  identify methods to reduce stressors that make giant sequoia trees vulnerable to beetle attack; and develop tools to protect individual trees immediately prior to or once under attack.

In 2024 three significant achievements occurred in this arena. First, a scientific paper was published in *Environmental Entomology* summarizing the Davis Lab and AFS findings to date. It is the first paper documenting sequoia bark beetle occurrence and distribution, flight timing, and genetics. Second, AFS obtained significant funding from NPS and CAL FIRE to expand beetle survey and study efforts. AFS is leading a two-year bark beetle study that is taking place in five giant sequoia groves in collaboration with the Davis Lab. In 2024, AFS inspected 154 giant sequoias across 11 different groves and found beetle activity in 96% of the trees climbed, the vast majority of which appeared healthy from the ground.

Finally, a public and press event was held to raise awareness of this issue, inspect the world's largest tree (General Sherman) for beetle activity and overall tree health, and test three different methods for detecting beetle activity in large sequoias (direct observations by AFS scientists who climbed into the tree crown, UAS visual inspection, and imagery capture and analysis from remote sensing). The GSLC looks forward to learning and reporting more on these efforts in the coming years, and it hopes to have a better understanding of management solutions to help keep sequoias healthy far into the future.

## Vulnerability Assessment Project - Furthering Sequoia Protection

In 2023, Plumas Corp secured funding from the Sierra Nevada Conservancy to assist the GSLC in the development of a giant sequoia data access portal, a grove resilience assessment, and a five-year management strategy with a priority project workplan for the GSLC region.

This past year, Plumas Corp and the Conservation Biology Institute (CBI) worked closely with coalition members and scientists to develop the GSLC Data Portal and a set of three Grove Vulnerability Models. The three models rank the relative vulnerability of giant sequoia groves based on three key threats to the species – severe wildfire, drought, and lack of recruitment. The GSLC Data Portal, which is an online resource, includes the GSLC Maps and Spatial Data Gallery; an interactive Grove Assessment Map containing the Grove Vulnerability Models; a Giant Sequoia Data Catalog; and a Resource Publications Library. All of these resources are available to GSLC Members and Affiliate Members.

Developing the vulnerability models entailed meetings with GSLC Members and science advisors to discuss metrics and datasets to be used, acquiring data, and processing data to input into the models. Several drafts were created with direction given by several GSLC science advisors: Marc Meyer, Adrian Das, Kristen Shive, and David Soderberg. A Grove Vulnerability Model Methods document was developed, describing the models, data, and premises upon which the vulnerability models were built.


Photo of the Giant Sequoia Lands Coalition Data Portal on Data Basin. Photo Credit: Deanne DiPietro, Conservation Biology Institute.

# Member Organization Reports

## California Department of Forestry and Fire Protection

CAL FIRE manages restoration projects for the Mountain Home Grove within Mountain Home Demonstration State Forest. In 2024, CAL FIRE began another post-fire re-inventory of the old-growth giant sequoias (OGGS) after discovering that more OGGS had experienced delayed mortality during the 2022-2023 inventory following the 2020 Castle Fire. During June and July of 2024, CAL FIRE administered the application of triclopyr/glyphosate on 1,000-acres of post-fire regeneration units.

Additionally, 448 acres within those units were further treated with imazapyr to control hardwood sprouts. These units were planted with mixed conifer seedlings in 2022. Mountain Home Demonstration State Forest harvested 2.8 million board feet (MMBF) of dead and dying timber from 346 acres that were under attack from beetles. These trees were weakened from the 2020 Castle Fire and were also succumbing to a variety of beetle species, primarily *Scolytus ventralis*.

Approximately 39 thousand board feet (MBF) of OGGS were harvested from the forest floor and sold to a local buyer. Approximately 40 acres were broadcast burned in the Upper Moses unit following herbicide treatment to prepare the site for planting in 2025. Approximately 20 landing piles were burned in the fall and winter of 2024. A dead OGGS tree threatening a county road and state forest campground was partially mitigated with fire. A Forest Health Research Grant was awarded to AFS to further study bark beetle activity in selected OGGS. Sierra Nevada Adaptive Forest Management Experiment (AMEX) crew installed three signs describing the experiment and performed some brush control/maintenance in their respective progeny study sites. All state forest campgrounds were open to the public from May through October.

## California State Parks

California State Parks manages the North and South Groves at Calaveras Big Trees State Park. In 2024, crews completed 1,317 acres of restorative treatments through prescribed burning and manual fuels reduction, including 1,145 acres within the boundary of the South Grove Natural Preserve. State Parks' Central Valley District team spent years organizing interagency collaboration to bring fire to the South Grove, removing over 16,000 tons of biomass and preparing the area for a large-scale prescribed burn. Staff hosted a spring hybrid town hall style meeting to help the local community learn more about restorative treatments and took to social media and

digital platforms to provide information about forest management and prescribed fire. Broadcast ignition in the South Grove lasted five days and utilized aerial ignition and drone technology as well as hand ignition to meet objectives.

During the South Grove prescribed burn, CAL FIRE collaborated with State Parks and produced a short video about giant sequoia stewardship, good fire, and interagency collaboration. With CAL FIRE's Resource Assessment Program (FRAP), joint crews installed prescribed fire monitoring plots in the groves to monitor fire effects and regeneration and to inform future management actions. Beyond the groves, work in buffer areas continued in the park, and crews broadcast burned 157 acres along the Walter W. Smith Parkway and the park's eastern boundary near the neighboring community of Big Trees Village. Crews burned 174 piles in old-growth sugar pine forest near the South Grove and 77 piles as well as 50 cubic yards of material in the air curtain burner from around the North Grove.

In 2024, California State Parks spent more than $180,000 on restoration work completed by more than 150 people, and work was funded by the State of California through the Wildfire and Forest Resiliency Program (WFRP). WFRP expands on critical land management that California State Parks has been carrying out for decades and supports increasing the pace and scale of fuels treatments so that California's State Park System can become an example of resilient ecosystems maintained through active stewardship.

Calaveras Big Trees State Park is part of the multi-grove AFS Giant Sequoia Beetle Study funded by CAL FIRE. This study aims to better aid in conservation strategies in giant sequoia groves.

## National Park Service

### Sequoia and Kings Canyon National Parks

Sequoia and Kings Canyon National Parks contain 37 giant sequoia groves, ranging from a few to tens of thousands of giant sequoia trees per grove. In 2024 several fuels reduction activities were completed, including pile burning in Big Stump, Sequoia Creek, and Grant Groves, as well as unit preparation for a prescribed burn in Grant Grove. These efforts help reduce the risk of high-severity wildfires and promote forest health.

Post-fire assessments of natural sequoia regeneration were conducted in the four groves that experienced high-severity burns during the Castle Fire or KNP Complex Fire: Dillonwood, Suwanee, New Oriole Lake, and Homer's Nose. These assessments measure sequoia mortality to determine how many mature trees remain to provide

seeds for future generations and evaluate post-fire seedling densities. The findings detail efforts to restore tree seedlings in these severely burned areas and are available on the NPS website. Due to high mortality and low seedling densities in contiguous areas of Dillonwood, Homer's Nose, and New Oriole Lake, NPS is working with partners to grow and plant seedlings in April 2025. Initially planned for fall 2024, planting was postponed due to a lack of precipitation followed by freezing temperatures.

In collaboration with Dr. Kristen Shive's lab at the University of California, Berkeley, first-year survivorship of planted seedlings in Redwood Mountain Grove and Board Camp Grove was assessed. Overall, conifer survivorship in Redwood Mountain Grove was 73.6% as of June 2024, though certain areas showed much lower survival rates and will be targeted for replanting in April 2025. In Board Camp Grove, overall conifer survivorship was significantly lower at just 10.2%, requiring a full replanting effort. Sequoia seedling survivorship was particularly poor, likely due to a combination of planting delays, extreme heat during planting, and challenges in keeping seedlings cool prior to planting. Adjustments to planting protocols have been made, including better refrigeration and cooling strategies at this remote site. Additionally, Sequoia and Kings Canyon National Parks partnered with the GSLC to host a Sherman Tree Health Inspection Event, which received media coverage from 13 regional and national outlets and international interest following Associated Press syndication.

Throughout the year, fire education and outreach remained a priority. During annual prescribed burns in Ash Mountain, fire information tables were set up outside the visitor center, engaging with over 150 visitors. The CPF also created an opportunity for extensive fire education outreach, with daily operational reports reaching an average of 31,733 people per post. Incident teams held biweekly community meetings, which were well-attended, streamed, and shared online. Field education efforts included fire information officers stationed at multiple board locations, where they engaged an average of ten visitors per location each day. These initiatives helped inform the public about fire management efforts and the role of fire in maintaining healthy sequoia ecosystems.

### Yosemite National Park

Yosemite National Park contains three giant sequoia groves: Mariposa, Tuolumne, and Merced Groves. In 2024 mechanical work was completed in the Merced Grove with funding provided by Yosemite Conservancy, the Wildlife Conservation Board, Mariposa County Resource Conservation, and NPS Bipartisan Infrastructure Law funding, treating 35 acres within the Merced Grove. Around 15,000 cubic yards of wood were transported to Ackerson Meadow to aid in restoring an eroded gully system. An additional 1,872 tons of wood were sent to the mill. After three years of work, the Merced Grove is now ready for prescribed fire. Additionally, two Tribal crews

completed 34 acres of manual thinning and piling around the buffer of the Mariposa Grove, supported by funding from California Climate Investments.

## Tulare County

Tulare County manages Balch Park, which includes a section of the Mountain Home Grove, home to a significant population of large, mature giant sequoia trees. Portions of the park suffered severe damage from the SQF Complex Fire in 2020, and then again in 2023 from extreme flooding caused by record rainfall and snowfall.

In 2024, Balch Park officially reopened to the public for the season after addressing the substantial damage caused by previous events. CAL FIRE, which manages the Mountain Home Demonstration State Forest, partnered with AFS to study bark beetles affecting these old-growth trees. This research has expanded to include collaboration with Tulare County to explore the complex relationship between beetle biology, tree health, and the overall giant sequoia ecosystem in Balch Park, with evaluations running intermittently between June 30, 2024 and October 31, 2025.

In May 2024, the County was granted a Regional Forest and Fire Capacity Grant for the Upper Grouse Valley Project by the Sierra Nevada Conservancy. The project will support forest inventory, stand examinations, timber cruising, and layout across 981 acres. It is part of a broader effort to reduce fuels within the Giant Sequoia National Monument of the Sequoia National Forest. The project is pending inclusion in the USFS Supplemental Project Agreement and is expected to commence in 2025. In addition, the County has received funds from the USFS and the Sierra Nevada Conservancy to remove hazard trees along M216 (Redwood Drive and Alder Drive) and 20S03 (Fox Farm Road) in 2025. Additionally, the County has teamed up with the Federal Emergency Management Agency (FEMA) to address hazardous trees along state and county transportation corridors in forested landscapes as part of a broader road maintenance initiative.

## Tule River Indian Tribe of California

The Tule River Indian Tribe of California stewards portions of five giant sequoia groves. These groves include the Black Mountain, Red Hill, Peyrone, Parker Peak, and Cold Springs Groves. The 2024 season began with tree planting on about 200 acres within the footprint of the Windy Fire, including 1,500 giant sequoia seedlings within the Black Mountain Grove. Salvage logging and hazard tree removal took place on approximately 125 acres around Miner Creek and Crawford Road through June. Also in June, the Windy South Fire Stewardship Contract was implemented, achieving 450 acres of salvage logging, hazard tree removal, and hand and machine piling within the

Parker Peak Project Area. These efforts focused on areas between the Parker Peak and Cold Springs Groves that were severely burned during the Windy Fire.

Tribal crews conducted fuels reduction work within the Parker Peak Giant Sequoia Grove. A reservation-wide pile burn plan, along with a broadcast burn plan covering 130 acres within the grove, was submitted to the Bureau of Indian Affairs (BIA). The broadcast burn plan was approved, and approximately 200 acres of logging slash piles were burned in December. A post-fire giant sequoia re-inventory of more than 1,500 monarchs across five groves found a mortality rate of about 14% since the last survey, due to uprooting, direct fire damage, and unknown causes. The Tribe is collaborating with AFS to study grove health and potential beetle-related tree mortality within the Parker Peak Grove.

The Tribe is managing grants from the Sierra Nevada Conservancy, CAL FIRE, and the National Fish and Wildlife Foundation to support grove restoration and post-fire recovery efforts. Through the Tribal Forestry Protection Act, the Tribe is overseeing stewardship and post-fire restoration in the Red Hill Grove, which spans the SQF Complex Fire and Reservation boundaries. In November 2024, Tribal Natural Resources and Wildland Fire crews began fuels reduction work on approximately 15 acres.

Forest Silviculturist and Giant Sequoia Specialist Marianne Emmendorfer supervising a burn pile during the October 2024 Cultural Burn at Alder Creek Grove. Photo Credit: Evan-Marie Petit Photography, Courtesy of Save the Redwoods League.

## University of California, Berkeley

The University of California, Berkeley stewards Whitaker's Forest Research Station within Redwood Mountain Grove, an area affected by the 2021 KNP Complex Fire. In 2024, projects continued to enhance wildfire resilience and leverage the fire's impact for long-term research and giant sequoia stewardship. Approximately 25 acres were masticated to reduce mid-story density and prepare for prescribed burns. In the fall, 12 of these acres underwent the first UC-led prescribed burn at Whitaker's in 50 years, conducted in collaboration with Reedley College and with assistance from CAL FIRE. Housing at Whitaker's supported ongoing research on NPS lands in Redwood Mountain Grove, with Dr. Kristen Shive as lead principal investigator.

Experimental point protection of individual large trees continued, with Reedley College assisting in constructing and burning protective piles around selected trees. These treatments vary in extent and include control areas, with ongoing monitoring of their impact on giant sequoia regeneration. A meadow received a cut-and-broadcast burn treatment, complementing a pile-and-burn demonstration. Additionally, a peer-reviewed paper on wildfire's influence on giant sequoia regeneration in experimental gaps was published in 2024 in *Forest Ecology and Management* (Stephenson et al 2024). This work was supported by a CAL FIRE grant and resources from Berkeley Forests.

## U.S. Department of the Interior, Bureau of Land Management

The U.S. Department of the Interior, Bureau of Land Management (BLM) manages the Case Mountain Extensive Recreation Management Area, which includes six giant sequoia groves totaling about 444 acres. In 2024, fuels reduction work took place as part of the ongoing Case Mountain Forest Health Improvement Project, but it was significantly disrupted by the Coffee Pot Fire (CPF), which began in August. During the fire, fuels reduction and prep work focused on protecting the groves and individual giant sequoias. Since the Case Mountain groves are largely accessible by road, Resource Advisors assigned to the CPF worked alongside hand and engine crews to prepare the largest trees for wildfire, primarily those with diameters greater than four feet. In total, 88 large sequoias and 21 smaller ones (<4' in diameter) were prepped, with fuels reduction around each tree covering an estimated 16 acres.

Ultimately, five of the six Case Mountain groves burned: two groves experienced natural burns (~112 acres), while three groves (~220 acres) were burned intentionally using hand crews and drones. Initial post-fire assessments suggest that the CPF was largely restorative; however, experts estimate that at least 11 large sequoias were lost in moderate-to-high severity burn areas, with another 13 trees remaining vulnerable.

BLM staff spent the remainder of 2024 surveying fire impacts on individual giant sequoias and other sensitive species, such as the Pacific fisher. It also planned Emergency Stabilization and Burned Area Response treatments and revised midstory canopy thinning plans to include newly burned areas while mitigating bark beetle infestation risks. Additionally, in November, a nine-person BLM crew completed 20 acres of pile burning in the only grove unaffected by the CPF, at a cost of $18,794.

## USDA Forest Service

The USFS manages Sequoia National Forest and Giant Sequoia National Monument, Sierra National Forest, and Tahoe National Forest (TNF). Sequoia National Forest contains 33 giant sequoia groves, Sierra National Forest contains two, and TNF contains one. Twenty-three giant sequoia groves suffered high-severity fire within the last five years. The USFS has increased its focus and active management in all of its groves.

### Sequoia National Forest

In 2024, Sequoia National Forest personnel focused on layout and implementation of multiple grove health and fuels reduction projects with the help of several partners. Work was conducted in Alder, Belknap Complex, Black Mountain, Cherry Gap, Converse Basin, Evans Complex, Freeman Creek, Indian Basin, Long Meadow, Redwood Mountain, Packsaddle and Redhill Groves, encompassing over 1,855 acres in the groves and 779 acres in the groves' ecological zone of influence (ZOI) and removing more than 4,300 tons of biomass and 393 MBF of sawlogs from the groves and ZOIs.

Forest personnel continued fuels reduction through burning previously piled material and implementing contracts in four of the 11 groves listed as high risk of wildfire in Giant Sequoia National Monument under the 2022 Giant Sequoia Emergency Response declaration issued by the Forest Service Chief. Pile burning continued in Indian Basin Grove (30 acres burned [100 piles] and five acres of piles remain) and in Black Mountain (126 acres burned [1,602 piles] and approximately 1,608 acres of piles remain). Mechanical and manual treatments began in Belknap Complex in partnership with Great Basin Institute (GBI), with 70 acres of hazard tree abatement and 203 acres of biomass removal completed to date. Pile burning is still planned in Abbott, Grant, and Landslide Groves as soon as feasible. Plans are being revised to conduct the Alder burn in fall 2025, which encompasses portions of Wishon, Silver Creek, and Burro Creek Groves in the Western Divide Ranger District.

Also, in partnership with GBI under the Castle Fire Restoration Project, 42 acres of biomass was removed from the ZOI of Freeman Creek and 439 acres of mechanical

piling was completed in Converse Basin and Cherry Gap Groves (264 acres) and ZOIs (175 acres). GBI contractors began hazard tree abatement and biomass removal in and around Evans Grove Complex, totaling 11 acres in the grove and 54 acres in the ZOI to date under the Rough Plantation Maintenance and Restoration Project.

In partnership with The League, fuels reduction was completed on 116 acres in the USFS portion of Alder Grove (71 acres of manual piling in the grove and 45 acres in the ZOI). The League also completed 792 acres of hazard tree abatement and fuels reduction work in (509 acres) and around (283 acres of ZOI) Packsaddle Grove and Powerhorn Tree under the Windy Fire Restoration Project. USFS and Save the Redwoods League staff are collaborating on allowing League contractors to conduct the follow-up pile burning in these project areas.

Forest personnel with assistance from CAL FIRE staff underburned approximately 244 acres in the USFS portion of Redwood Mountain Grove (139 acres) and ZOI (105 acres) in 2024. In addition to continuing underburning for the Big Stump Redwood Fuels Reduction Project and finalizing the Alder prescribed burns, National Environmental Protection Act (NEPA) is in place for grove-wide burns in Abbott, Bearskin, Grant, and Landslide Groves. Each of these groves need the piled material burned and firelines refreshed or constructed before moving ahead with prescribed underburns.

Since 2021, approximately 634,940 trees have been planted on 3,028 acres in Sequoia National Forest with the support of American Forests, Save the Redwoods League, and other partners. An additional 245 acres were reforested in Converse Basin and Long Meadow Groves in 2024, with approximately 62,398 native trees, including 15,528 giant sequoia seedlings. Approximately 75 acres in ZOIs of the two groves and 1,279 acres of deforested habitat were also reforested with native species. American Forests is continuing to assist with reforestation through unit layout, planting and release contract oversight, and cone crop mapping and collection. American Conservation Experience (ACE) interns assisted with layout and stocking surveys, while gaining valuable natural resource experience. The ACE crew completed over 500 acres of stocking surveys in sequoia groves across Giant Sequoia National Monument, verifying whether their natural regeneration was adequate or if site preparation and reforestation was needed, in portions of the Belknap Complex, Black Mountain, Freeman Creek, and Redwood Mountain Groves that burned at high severity.

Public information officers facilitated one public meeting regarding old-growth management in Landslide Grove on Hume Lake Ranger District; created social media outreach, news releases, and flyers; and engaged with the public about the ongoing emergency work, reforestation, and fuels work in the groves. ACE interns were

instrumental in digitizing historical sequoia grove mapping, research, survey, and management records for all 33 groves on Sequoia National Forest.

Under the Moon Tree program, several sequoia seeds traveled on NASA's Artemis program mission around the moon before being sown. In partnership with Pacific Southwest Genetics and NASA staff, 12 sequoia seedlings in the Moon Tree program will be planted in 2025 in the vicinity of Converse Basin and Long Meadow Groves, six seedlings at each location. Sites were selected for good growing conditions and for public access for future educational opportunities focused on sequoia ecology and the Moon Tree program.

### Sierra National Forest

Fuels reduction work continued in Nelder Grove under the Nelder Grove Giant Sequoia Emergency Response (GSER) Integrated Resource Service Contract (IRSC) that was awarded in fall of 2023. Three separate contracts were awarded under a single solicitation: one aerial-based that is a combination of helicopter removal and hand work on steep terrain, one ground-based on machine operable terrain that also includes hand work, and one in the developed recreation area that is also quite sensitive for cultural resources and has extensive special protection measures. The developed recreation area contract was completed in summer of 2024.

On the helicopter contract, all helicopter removal and piling was completed in fall of 2024, although hand piling work continues. As of January 2025, about 10% of total work in the helicopter contract remained incomplete, but work continued through the month due to the dry winter. This work is anticipated to be completed in 2025. Approximately 60% of the work in the ground-based contract is completed, and the remaining is expected to be completed during the summer of 2025. All three of the contracts under the Nelder Grove GSER IRSC involve thinning and piling of ladder fuels, as well as standing dead and downed woody fuels. Final disposal of these fuels will occur via pile burning or removal from site over the next several years.

The Sierra National Forest was also awarded the Gigantea IRSC, which will conduct fuels reduction to reduce risk of loss of the McKinley Grove of giant sequoias. This project involves thinning, piling, and other fuels reduction treatments on 1,039 acres, within and near to the McKinley Grove Botanical Area containing the McKinley Grove. Work under this contract started in October of 2024, and approximately 20% of awarded work was completed before December 31, 2024. The contract also contains several optional work items that were not awarded due to insufficient funds. The Forest hopes to obtain funding and add several of these fuels reduction treatments to the contract in 2025 or 2026. These work items would do additional surface and

ladder fuels reduction in various units including specific treatments around individual monarch sequoias.

The Sierra National Forest also hosted a GSLC Learn and Act field trip to Nelder Grove in November of 2024 that included in-depth discussion regarding some of the challenges in the grove. Nelder Grove includes large areas of high-severity fire from the 2017 Railroad Fire and considerable acreage of fairly dense second-growth giant sequoia in the 18-36-inch+ diameter at breast height (DBH) range, following extensive railroad logging within the grove in the late nineteenth and early twentieth centuries.

### Tahoe National Forest

Tahoe National Forest (TNF) maintains a 160-acre Special Botanical Area for the Placer County Big Trees Grove, the northernmost and smallest grove of giant sequoias in the Sierra Nevada. For the last two years post the 2022 Mosquito Fire, the TNF has been focused on reducing downed fuels created during fire suppression. In 2024, the TNF hosted an AmeriCorps crew that continued ongoing efforts of hand thinning, piling, and prescribed pile burning within the Placer County Big Trees Grove. This eight-member crew was composed of young professionals from across the country. They were given a variety of professional development and natural resources experiences during their 12-week term on the TNF; however, working with the iconic giant sequoias was one of their favorite and most meaningful work experiences. When conditions allow, the TNF plans to implement prescribed burns on an additional 200 acres in the vicinity of the grove for fuels reduction.

## Affiliate Member Organization Reports

This section includes highlights from the impressive work completed in 2024 by GSLC Affiliate Members. The Affiliate Members are government agencies, conservation NGOs, or academic research institutes that play a critical role in the Coalition and in the protection of giant sequoias.

Giant Sequoia Lands Coalition Members and Affiliate Members at Nelder Grove on a Field Tour, November 2024. Photo Credit: Alaina Kuhlman.

### American Forests

In 2024, American Forests continued to expand their impact in the Southern Sierra and across the state through landscape-scale forest health projects, the Reforestation Pipeline Cooperative, and the California Cone Corps program.

Through a partnership with the Sequoia National Forest, American Forests led the planting of 337,941 locally-sourced seedlings, including 17,178 giant sequoias in spring 2024. Reforestation projects occurred in priority locations across four different wildfire footprints and all three districts of the Forest, including in Converse Basin and Long Meadow Groves. With the goal of improved reforestation planning, prioritization, and more site-specific implementation for future projects on the Sequoia National Forest,

American Forests created and piloted a new Survey123 for natural regeneration surveying. Data from these surveys was used to plan for approximately 2,000 acres targeted for planting in spring 2025, including in Pack Saddle, Belknap, and Converse Basin Groves. Additionally, American Forests partnered with GBI to provide funding for approximately 200 acres of thinning and piling in the Belknap Sequoia Grove following the Castle Fire near the communities of Cedar Slope and Camp Nelson.

This year, American Forests was awarded $6.5 million from CAL FIRE's Forest Health Program to support recovery and resilience treatments on sequoia groves that are co-stewarded by the Sequoia National Forest and the Tule River Indian Tribe of California. This collaborative work will occur on the footprint of the Windy Fire and in the Peyrone, Red Hill, and Deer Creek Groves over the next five years.

Recognizing that adequate seed supply and genetic diversity is paramount to future reforestation efforts, 23 Cone Corps members surveyed for cones and supported cone collection on public and private lands across the state, including four full-time members on the Sierra and Sequoia National Forests. To increase the pool of cone collection experts and trained 'eyes to the sky,' six Cone Camps were held including one at Mountain Home Demonstration State Forest. A total of 36 seasoned and early career foresters were brought together at Mountain Home to learn from experts about cone surveying and collection management, with the goal of ensuring that best practices are not lost and to help prepare for successful cone harvests. Learn more about Cone Corps, Cone Camps, and the Reforestation Pipeline Cooperative here: Reforestation Pipeline Partnership - American Forests.

## Ancient Forest Society

2024 was a productive year for Ancient Forest Society (AFS) conducting giant sequoia research and collecting giant sequoia and sugar pine seeds for reforestation efforts. The fourth and final season of sample collections for the Giant Sequoia Fire and Water project was completed, critical work funded in 2024 by the Yosemite Conservancy. In collaboration with research partners, AFS studied 85 trees across wet and dry sites in Yosemite and Sequoia National Parks. Over the course of the project, AFS collected tree cores, soil, and water samples and monitored treetop water use in 20 trees, including three equipped with weather sensors. By comparing trees in wet and dry sites and measuring how fire impacts tree water use, this research will provide critical insights for park managers to protect vulnerable trees and ensure the health of sequoia forests in a changing climate.

AFS kicked off a two-year CAL FIRE-funded bark beetle study by inspecting the General Sherman, the largest tree in the world, for bark beetles. Over two days, they

rigged the 275-foot-tall giant sequoia and sent four scientists into the canopy. Concurrently, teams from NPS and Sequoia National Forest flew drones to test whether they could spot beetle activity remotely. While there were a few scattered beetle entry attempts, none were successful. Following this event, AFS made significant progress in their study examining bark beetle activity in giant sequoias, a collaboration with the Davis Lab at Colorado State University (CSU). At each of their five study locations (Calaveras Big Trees State Park, Yosemite National Park, Sequoia National Park, Mountain Home Demonstration State Forest, and the Tule River Reservation) they selected 18 trees for study and completed two rounds of surveys and sample collection, once in the spring and again in the fall. With sample processing now underway, they are beginning to uncover critical insights into the interactions between tree physiology, beetle behavior, and environmental stress.

AFS also embarked on two NPS-funded studies, one exploring giant sequoia tree hydrology and another exploring giant sequoia fire damage. The tree hydrology study is being conducted in Giant Forest, Sequoia National Park in collaboration with the Trugman and Anderegg Labs at UC Santa Barbara and the Williams Lab at UC Los Angeles. As part of this study, they installed solar-powered sensors in eight trees to monitor treetop water use and microclimate and soil conditions. This study will help identify sequoia water-use patterns, drought vulnerability thresholds, and landscape variations, while providing critical insights for forest management. In the first year of the fire damage study, the team focused on testing tomography equipment on large sequoias and learning advanced techniques from an expert in the field. This work is an essential first step in developing a standardized method to measure fire damage and assess its impact on tree health, water stress, and vulnerability to beetle attack. This tool will help forest managers evaluate fire damage, plan controlled burns, and guide post-fire restoration efforts to protect sequoia groves in a changing climate.

To better understand potential management tools to address the ongoing bark beetle threat, NPS provided funding for injection trials in giant sequoias. In collaboration with the Davis Lab at CSU and with training from Arborjet/Ecologel, AFS initiated the first test of emamectin benzoate injections in a giant sequoia tree showing signs of beetle attack and crown decline in Mountain Home Demonstration State Forest in November 2024.

With funding provided by NPS, AFS expanded seed collection efforts in 2024 to ensure the future of giant sequoias and sugar pines in the Sierra Nevada. They collected seeds from 83 trees across six groves in Yosemite, Sequoia, and Kings Canyon National Parks. For giant sequoias, they gathered 134.5 bushels of cones from 63 trees. For sugar pines, another species vital to these ecosystems, they collected 121 bushels from 20 trees. The

seeds, once processed and stored, will serve as a vital resource for future reforestation efforts and genetic banking.

## Save the Redwoods League

Save the Redwoods League (The League) continues its focus of restoring vulnerable giant sequoia groves throughout the giant sequoia range. Restoration work includes fuels reduction, reforestation, monitoring, and prescribed burning. A large portion of this work is through the continued partnership with the Sequoia National Forest (through a Master Stewardship Agreement). Collaboratively, the work completed through this agreement resulted in the restoration of approximately 840 acres of Sequoia National Forest land in both the Packsaddle and Alder Creek Groves.

The League continues its active stewardship and restoration of Alder Creek Grove, acquired by Save the Redwoods League in 2019, including fuels reduction, cultural burning, planting, and pile burning. It continues to implement its forest management plan, building on three years of holistic restoration work following the 2020 Castle Fire. In 2024, work started in the spring with the planting of approximately 8,499 seedlings that included 1,317 giant sequoia seedlings. That was followed by over 200 acres of manual fuels reduction completed across four separate units. Each unit varied in the amount of fuels removed and canopy retained based on prescriptions set forth in the Alder Creek Forest Restoration Plan. Fuels reduction work took place during the summer months and was completed by manual crews with chainsaws who felled smaller diameter trees and constructed them into piles. This work was then followed up by approximately 88 acres of pile burning within those units in the fall.

The League proudly continues to work collaboratively with the local Tribal communities in the region. In 2024, The League held two cultural burns within Alder Creek Grove, one in early summer and another in the fall. Save the Redwoods League partnered with the Tule River Tribe, North Fork Mono Tribe, Tübatulabal Tribe, and multiple other Tribes to plan and implement these culturally focused burns. Burns were led by The League's contracted Tribal Liaison, who worked with crews from multiple Tribes to prep burning locations and oversee lighting. There was also support from the USFS, Tule River Tribe and CAL FIRE in the form of engines and crews. The events opened with cultural ceremonies that focused on the importance of bringing fire back to these landscapes and on helping regenerate tribally recognized important plants such as elderberry. Approximately 70 people attended each cultural burn. The League developed a video recapping one of the events; you can watch the video here.

## Sequoia Parks Conservancy

In 2024, Sequoia Parks Conservancy (SPC) showcased the power of collaboration, working across organizational boundaries to protect and preserve the iconic landscapes of Sequoia and Kings Canyon National Parks. Through partnerships, scientific research, and community engagement, SPC achieved significant milestones, demonstrating how collective efforts can address shared challenges and create lasting benefits.

At the heart of SPC's work was its contribution to the GSLC. By granting $157,035 to Sequoia-Kings Canyon National Parks, SPC enabled critical research on threats to giant sequoias. This funding supported collaborative studies, including investigations into sequoia bark beetle populations, assessments of seedlings' resilience to high-severity fires, and the development of risk mitigation strategies for individual trees and groves. Working with scientists and cultural resource experts, SPC also facilitated surveys of archeological sites at risk during fuels reduction activities and explored the effects of prolonged drought on sequoia growth and canopy water content. These collective efforts bridged disciplines and expertise, creating a comprehensive approach to conservation.

Recognizing the importance of communication in fostering collaboration, SPC spearheaded a redesign of "The Grove" website, improving its functionality as a hub for GSLC members. This enhanced platform facilitated better coordination and document sharing among coalition members. Meanwhile, preparations for the GSLC's public-facing website 2.0 highlighted the importance of clear and unified messaging. By aligning the website's branding with the Coalition's mission and embedding calls to action, SPC worked to mobilize public support for conservation through donations, volunteerism, and advocacy.

SPC's commitment to working across boundaries extended to its participation in GSLC summits and committees, where it contributed to shaping coalition strategies. SPC also supported the General Sherman Tree Health Inventory event, collaborating with scientists and engaging the media to raise awareness of the challenges facing these ancient trees. SPC further amplified its impact by delivering interpretive programs that brought together park staff, community members, and visitors. These programs, attended by 808 participants over 1,313 hours, bridged gaps between science, education, and public outreach, focusing on sequoia ecology, climate change, and park management strategies.

Partnerships remained central to SPC's success in 2024. Collaborating with the National Park Foundation, SPC provided donors with direct experiences of the

challenges confronting giant sequoias, fostering a shared sense of responsibility and purpose. Within its own organization, SPC empowered board members with expert insights, strengthening their ability to advocate for the Coalition's work.

Through its collaborative approach, SPC's work in alignment with the GSLC fosters effective partnerships that drive meaningful progress in conservation. By working together across organizational boundaries, SPC, alongside Coalition member agencies and partners, protects extraordinary resources, ensuring an enduring experience and legacy surrounding giant sequoias for generations to come.

## Yosemite Conservancy

The Yosemite Conservancy, the official philanthropic partner and cooperating association of Yosemite National Park, has collaborated with NPS for over a century to fund high-priority projects that preserve park resources and enhance the visitor experience. This work includes the stewardship of iconic giant sequoia groves within Yosemite National Park and across the Coalition's land base.

In 2024, the Yosemite Conservancy provided a grant of $406,056 to support scientific research on the health and long-term persistence of giant sequoias. Research conducted by park service scientists and partners from CSU and AFS focused on how giant sequoias acquire water and sustain life processes during prolonged drought. Over 20 scientists and numerous volunteers participated in collecting water samples from soil and vegetation to better comprehend how trees acquire, store, and utilize water and how these processes change in response to stress.

Additionally, the Yosemite Conservancy provided a grant of $190,000 (matched by the NPS, for a total of $380,000) to conduct mechanical fuels reduction work within and around the Merced Grove. The work treated 16.4 acres of overgrown vegetation and included the removal of 6,500 bone-dry tons of biomass. As a result of the treatment, the Merced Grove is better protected against risks associated with high-severity wildfires.

The Yosemite Conservancy also provided a grant of $231,604 to restore Moss Creek, a stream that traverses the heart of the Merced Grove. Over time, the stream channel had widened and deepened due to erosion caused by past development within the grove. Restoration plans were prepared to restore natural geomorphology and hydrology, including repairing erosion damage to the root systems of mature giant sequoias. Implementation of the restoration plan is scheduled to commence in 2025.

## What's Next in 2025

The GSLC faces unprecedented challenges in protecting the ancient giant sequoias, resilient icons in a rapidly changing world. Building on its past collaborative successes, the Coalition is intensifying efforts to restore and safeguard these irreplaceable ecosystems.

GSLC Members and Affiliates are partnering to amplify their impact and implement shared goals, secure vital funding for collaborative research and projects, and deepen partnerships to accelerate progress. The GSLC understands that collaborative action and scalable stewardship solutions are the key to ensuring the survival and health of these magnificent forests for generations to come.

The following is a sampling of what's to come in 2025:

- ### NPS and Sequoia-Kings Canyon National Parks
  A total of 20,000 sequoia seedlings and 45,000 other conifer seedlings that were grown in 2024 will be planted across five groves in 2025, including Redwood Mountain Grove and Board Camp Grove. This is just one example of expanded restoration efforts.

- ### USFS and Sequoia National Forest
  With help from partners, Sequoia National Forest will continue conducting fuels and forest health treatments in giant sequoia groves. Save the Redwoods League staff will oversee the final 44 acres of manual fuels reduction in Alder Grove. The League's staff is ready to award contracts for Freeman Creek Grove and ZOI in summer of 2025 on approximately 850 acres in the grove itself and 385 acres in the ZOI to reduce fuels and protect the existing sequoia and other conifer regeneration.

  In 2024, approximately $2 million in reforestation trust funds were allocated to site preparation, planting, and release activities in and around the groves mainly through contracts administered by partner agencies. Another $2.3 million was awarded in a Tribal Forest Protection Act agreement with the Tule River Indian Tribe and is already being used for contract layout and manual fuels reduction in Redhill Grove. Under the MOU for co-stewardship the Tribe will continue assisting with pile burning in Black Mountain Grove. American Forests and National Forest Foundation received a $6.5 million California Climate Investment grant to conduct more fuels reduction, site preparation, and reforestation work in Deer Creek and Peyrone Groves and around Redhill Grove.

- ### Vulnerability Assessment Project
  The Vulnerability Assessment Project will complete a preliminary Five-Year Priority Project Workplan and Sequoia Grove Health and Resilience Assessment. The GSLC has established a task force to oversee the project, acting as the primary liaison between GSLC Member organizations and the project partners, Plumas Corps and CBI. The task force will review milestone products and consolidate data, information, and input from each partner organization, as needed.

  The workplan will utilize the Grove Vulnerability Model along with input from individual grove managers, in conjunction with a grove prioritization decision-tree developed with the task force. In addition, data gaps for completion of the Giant Sequoia Health and Resilience Assessment will be identified and missing information gathered with assistance from the task force and GSLC scientists. The Assessment will be drafted by Plumas Corp, CBI, and the Lead GSLC Scientist assigned to the task force, with the Final Assessment scheduled for completion at the end of 2025.

- ### The Yosemite Conservancy
  The Yosemite Conservancy has awarded two additional grants totaling $967,974 to continue scientific and research endeavors in 2025 investigating the role of water in safeguarding giant sequoias from insect infestations and high-severity wildfires. Additionally, restoration of cultural fire practices and the application of traditional Tribal knowledge will be undertaken to restore and maintain the health of giant sequoias.

  ...and much more!

## Thanks to Giant Sequoia Lands Coalition Supporters!

The GSLC is grateful for the support of agencies and organizations who recognize the importance of the work to restore giant sequoia groves. Many of the accomplishments of 2024 were possible thanks to generous contributions from Sierra Nevada Conservancy, Save the Redwoods League, and many other donors and supporters.

A tiny sequoia seedling, standing tall in its first stages of growth, August 2024. Photo Credit: Karri Pearcey, California State Parks.

# Glossary

**Air curtain burner:** an incinerator designed to aid in combustion and reduce emissions by directing a flow of air (air curtain) across a contained fire of vegetative debris.

**Broadcast burning:** controlled applications of fire to fuels under specified environmental conditions that allow fire to be confined to a predetermined area, producing fire behavior and fire characteristics required to meet forest health objectives identified in a burn plan.

**Fuels:** combustible plant material such as grasses, shrubs, trees, and dead leaves.

**Fuel load:** the total amount of combustible material in a defined space.

**Hazard tree:** a tree with a structural defect from age, fire, or disease that makes it likely to fall in whole or in part, causing injury or death to people or damage to property.

**Manual treatment:** vegetation management relying on hand pulling or breaking to either remove plants from the soil or break the top from woody plants

**Mechanical treatment:** vegetation management using cutting tools ranging from chainsaws to mechanized forestry equipment such as feller-bunchers.

**Monarch tree:** a giant sequoia tree over four feet in diameter at breast height (4.5 feet above the ground).

**Overstory**: the top foliage from multiple trees that combine to create an overhang or canopy.

**Pile burning:** prescribed fire used to ignite piles of cut vegetation resulting from vegetation or fuel management activities.

**Prescribed fire (aka prescribed burn or prescribed burning):** the planned and controlled application of fire to the land under specified predicted weather conditions to accomplish the desired goals such as reducing fuel loads to prevent severe wildfires.

**Prescription:** a planned treatment of a forest site designed to change current stand structure or condition to one that meets management goals.

**Recruitment:** the process in which seeds establish in an area and grow into new, mature individuals.

**Reforestation:** the process of replanting an area with trees.

**Salvage logging:** harvesting activity consisting of recovering timber that can still be used, at least in part, from lands affected by natural disturbances.

**Sap flow:** the movement of fluid in the roots, stems and branches of plants. Sap flow is essential in maintaining the hydraulic connection between the soil and the atmosphere.

**Slash:** coarse and fine woody debris generated during logging operations or through wind, snow or other natural forest disturbances.

**Snag:** a standing dead tree.

**Stand**: a contiguous community of trees sufficiently uniform in composition, structure, age, size, class, distribution, spatial arrangement, site quality, condition, or location to distinguish it from adjacent communities.

**Stem:** a tree trunk.

**Thinning:** removal of some trees from a stand to give others more room and other resources to grow.

**Understory:** the vegetative layer and especially the trees and shrubs between the forest canopy and the ground cover.

**Watercourse crossing:** structures that cross natural watercourses such as rivers, ponds, creeks or other surface areas with running water. Their primary purpose is to get people, vehicles or utilities from one side of the crossing to the other.

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