

**Emergency Response
For Giant Sequoia Groves
Sequoia National Forest (Giant Sequoia National Monument)
and Sierra National Forest
July 2022**

The Pacific Southwest Region is seeking alternative arrangements for NEPA compliance to conduct fuels reduction treatments within Giant Sequoia groves pursuant to 36 CFR 220.4(b)(2). Of the thirty-seven Giant Sequoia groves or grove complexes found on National Forest System lands in California, all but five have burned or partially burned in recent wildfires, and an unprecedented number of giant monarch trees (ancient trees > 4 ft. diameter) have been killed - twenty percent of fire tolerant monarch Giant Sequoia trees were killed by severe wildfires during the last two years alone. This trend is alarming and drought conditions have intensified. The emergency facing Giant Sequoias requires urgent and immediate action.

In an effort to increase the pace and scale of fuels treatments to protect Giant Sequoia groves, the Forest Service is developing proposals and conducting environmental analysis focused on the Giant Sequoia groves at greatest threat from severe wildfire. Two Environmental Assessments (EAs) and Finding of No Significant Impacts (FONSI) have been initiated, including the Castle Fire Restoration and Hume Basin Restoration projects on the Sequoia National Forest. Additionally, proposals are being developed for five other projects (one EA and four Categorical Exclusions), including the Windy Fire Restoration Project (Sequoia), Alder Re-Burn Project (Sequoia), Black Mountain Grove Fuels Reduction Project (Sequoia), Abbott and Grant Groves Fuels Reduction Project (Sequoia), and Nelder Grove Fuels Reduction Project (Sierra). These projects are at various stages in the planning process with the earliest decisions not anticipated until spring 2023, leaving these Giant Sequoia groves highly vulnerable during the next several wildfire seasons.

The specific Giant Sequoia groves proposed for emergency action were identified based on high fuel accumulations and ladder fuels which make them highly susceptible to severe wildfire and the ability to immediately begin implementation of emergency fuels treatments. The unburned groves and portions of groves that did not burn in recent wildfires are at greatest risk. Emergency response actions would accelerate treatment work by up to 9-12 months in most groves to several years in others.

This document outlines the background and rationale for the requested emergency response and includes the following topics: Emergency Response Requested; Summary of Hazards, Threats, and Risk Associated with the Emergency; Proposed Emergency Actions (including summary of the project areas); Implementation Timeline; Consultations with Regulatory Agencies; External Involvement; References; and Appendices with Maps and Photos.

Emergency Response Requested

- 1) Approve the implementation of emergency fuels reduction treatments within or adjacent to select Giant Sequoia groves (approximately 13,377 acres) prior to completion of the four Categorical Exclusions and three Environmental Assessments and FONSI.
- 2) For the four Categorical Exclusions, exclude these emergency actions from the requirement under 36 CFR 220.6(e), which requires the responsible official document a decision to proceed with an action in a Decision Memo for certain Categorical Exclusions.

- 3) For the three Environmental Assessments and FONSI, exclude these emergency actions from the requirement under 36 CFR 220.7(c), which requires the responsible official document a decision to proceed with an action in a Decision Notice if an EA and FONSI have been prepared.

The locations where an emergency response would apply are summarized below¹ and can be found in maps in Appendix A. In summary, the emergency response would implement fuels reduction treatments on **approximately 13,377 acres** to reduce risk to **12 Giant Sequoia groves** (approximately 9,433 Giant Sequoia grove acres).

In accordance with 36 CFR 220.4(b)(2), these actions are not likely to have significant adverse environmental impacts (40 CFR 1501.3(b)). This preliminary assessment is based on 1) the proposed actions' consistency with each respective forest's land management plan, including the Giant Sequoia National Monument Plan (Sequoia); 2) preliminary analysis used to develop the proposed actions for the Castle Fire Restoration and Hume Basin Restoration projects, and 3) experience implementing similar projects. Standard design features outlined for the Castle Fire and Hume Basin Restoration projects to protect resources and ensure that effects do not approach any thresholds for significance will be applied to these emergency actions. In addition, protection measures from the Southern Sierra Nevada Fisher Conservation Strategy will be applied within fisher denning habitat, and standard protection measures of the 2018 Programmatic Agreement for cultural and historic resources will be applied to ensure protection of archaeological sites and historic properties, and culturally sensitive areas.

Summary of Hazards, Threats, and Risk Associated with the Emergency

Twenty percent of fire tolerant monarch giant sequoia trees have been killed by unrepresented high severity fires in the last two years. Prior to 2015, the last known wildfire to kill monarch Giant Sequoias was in 1217. Fire exclusion over the last 150 years has led to extreme fuels accumulation in these Giant Sequoia groves that were accustomed to frequent low severity fires. An additional pulse of fuels accumulation came during the 2017 drought when approximately 50 percent of the mature trees across the forest died. Additionally, recent wildfires have burned through some of these groves at moderate and high severity leaving behind more dead trees and other accumulating fuels. This coupled with the lack of fire to burn fuels as they accumulate, the increasing temperatures and increasing wind events has left the groves extremely vulnerable to high severity fires that have been occurring across the Sierra Nevada's in the last couple of years. The majesty of the trees led to protection and preservation. In 1992, President George Bush signed a proclamation removing all Giant Sequoia groves from the suitable timber base. In 2000, President Clinton created the Giant Sequoia National Monument on the Sequoia National Forest. Both actions had the unintended consequence of creating a hands-off approach to Giant Sequoia management. Giant Sequoia trees are extremely fire tolerant and therefore were thought to survive all fires. In 2015, a few monarch Giant Sequoias were killed in a high severity wildfire, and in 2017, a few more were killed. Then in 2020, approximately 17 percent of all monarch Giant Sequoias were killed in the Castle Fire (Brigham 2020). At that time the agency began to understand what the extreme fuels buildup and drought could do to Giant Sequoias and began environmental analysis to start addressing the problem. Then in 2021, the Windy Fire and the KNP Complex burned another five percent of the monarch Giant Sequoias. The remaining unburned groves (Bearskin, Indian Basin, and Landslide) and unburned portions of burned groves (e.g., Belknap Complex within Castle Fire area and Long Meadow within Windy Fire area) are under severe threat to wildfire due to fuel and drought conditions. Lightning strikes threaten the groves daily and immediate action is needed to remove fuels from around these trees to limit further mortality.

¹ Of note, with respect to the Castle Fire, Hume Basin, and Windy Fire Restoration projects, this request to conduct emergency fuels treatments is limited to a specific portion of these project areas.

Proposed Emergency Actions

A summary of the Giant Sequoia groves and proposed emergency treatments is provided in Table 1. Maps are provided in Appendix A. The objective for emergency response is to provide for long term survival of Giant Sequoias by reducing the likelihood and effects of high severity wildfire before it occurs in previously unburned or moderately burned Giant Sequoia groves. Proposed urgent treatments include removal of green and dead surface and ladder fuels from immediately around large Giant Sequoias to prevent trees from torching. Emergency fuels treatments include hand cutting of small trees, with piling or lop-and-scatter of debris; mechanical removal of trees $\leq 20''$ dbh; application of borate on green stumps; pulling duff away from the base of large Giant Sequoias; and prescribed burning. Standard design features outlined for the Castle Fire and Hume Basin Restoration projects will be applied.

- On the Sequoia National Forest, proposed emergency treatments include manual and mechanical treatments, including prescribed burn prep work on up to 11,945 acres. Work on eight groves could be initiated immediately (summer 2022) and work on three additional groves could begin in fall 2022.
- On the Sierra National Forest, proposed emergency treatments include manual and mechanical treatments on up to 1,432 acres in one grove. This work could be initiated immediately (summer 2022).

Table 1. Summary of Projects and Giant Sequoia groves identified for emergency fuels treatments

Proposed Emergency Response Activities	Sequoia Groves	Fire	NEPA Status	Acres²
Alder Fire Re-Burn CE (Sequoia)				
Rx Burn	Burro Creek, Silver Creek, and Wishon	2016 Alder Fire	Developing Proposal	4,500 (556 Sequoia grove acres)
Black Mountain Grove Fuels Reduction CE (Sequoia)				
Mechanical/Rx Burn	Black Mountain	2017 Pier Fire / 2021 Windy Fire	Developing Proposal	2,614
Abbott and Grant Groves Fuels Reduction CE (Sequoia)				
Mechanical/Rx Burn	Abbott and Grant	2015 Rough Fire	Developing Proposal	317
Nelder Grove Restoration CE (Sierra)				
Handwork	Nelder	2017 Railroad Fire	Developing Proposal	1,432
Castle Fire Restoration EA (Sequoia)				
Mechanical / Handwork	Belknap Complex	2020 Castle Fire	Scoping initiated January 2021	3,084 of the 40,000-acre project area
Hume Basin Restoration EA (Sequoia)				
Mechanical / Handwork	Bearskin, Indian Basin, Landslide	Unburned	Scoping initiated September 2021	862 of the 6,700-acre project area
Windy Fire Restoration EA (Sequoia)				
Mechanical / Handwork	Long Meadow	2021 Windy Fire	Developing Proposal	568 of the 13,000-acre project area.
TOTAL Project (Emergency Action) Acres				13,377
TOTAL Giant Sequoia Grove Acres Within Project (Emergency Action) Area				9,433

Implementation Timeline

With emergency response, implementation of these emergency actions, starting with hand treatments to remove ladder fuels and duff from around monarch Giant Sequoia and other old growth trees in the three unburned groves at greatest risk of severe wildfire, would begin immediately. Fuels treatments in nine groves would be initiated this summer (2022) and work on three additional groves would begin this fall 2022. In sum, implementation in the twelve groves would begin in 2022. This work would focus on reducing the risk of mortality to monarch Giant Sequoias during the next wildfire. Emergency response

² Project area acres overlap with (or are the same as) Giant Sequoia grove acres, except as indicated for the Alder Fire Re-Burn project. A larger project area footprint is necessary to effectively conduct prescribed fire operations.

actions would accelerate treatment work by up to 9-12 months in most groves and several years for others.

Without emergency response and assuming wildfire doesn't burn through the groves, implementation could not begin on four groves until next year (summer 2023) and the remaining eight groves could not be treated until 2024 at the earliest.

Some of the planned treatments have NEPA initiated and two of the three EA/FONSIs (covering four high priority groves) are expected to be completed by April 2023. The other environmental analyses (one EA and four CEs covering the remaining eight groves) are anticipated by November 2023, six to nine months behind the first two EAs. Implementation for those projects would not begin until summer of 2024 at the earliest (assuming no wildfires). The estimated timeline in Table 2 provides an example based on the Castle Fire Restoration and Hume Basin Restoration EAs, for which NEPA has been initiated and represent the soonest possible decisions (best case scenario for implementation timelines without emergency response).

Large high severity wildfires have burned through Giant Sequoia groves two years in a row and killed thousands of Giant Sequoia trees. The Sequoia National Forest, for example has spent five out of the last seven years fighting large high severity fires. Last year the Sequoia had three large incident fires on the forest. When these fires are burning all resources are diverted to fire fighting and project work gets delayed.

Table 2. Estimated project timelines with and without Emergency Response

Action	<u>Administrative Timeline with Emergency Response</u>	<u>Administrative Timeline without Emergency Response</u>
Final EAs prepared (Castle and Hume Basin)	February 2023	February 2023
Draft Decision Notices - 45-day objection period begins	N/A	February 15, 2023
90-day objection process ends (45-day objection period; 45-day objection review and response <i>(may be extended up to 30 days)</i>)	N/A	May 15, 2023 (assumes no extension)
Signed Decision Notices	N/A	May 2023
Implementation	Immediately (July/August 2022)	June 2023
Completion of emergency fuels reduction treatments ³	December 31, 2023 (manual and mechanical treatments)	December 31, 2024 (manual and mechanical treatments)

³ Implementation of prescribed burning is highly dependent on fuel and weather conditions ("burn windows"). Prescribed burning will be implemented as soon as feasible, however may be beyond the estimated timeline provided in the table.

Consultations with Regulatory Agencies

- In compliance with the Endangered Species Act (ESA), emergency consultation will be employed to ensure compliance with ESA specific to the emergency actions.
- In compliance with the National Historic Preservation Act, we will be implementing the emergency undertakings provision in the State Historic Preservation Office programmatic agreement and Section 106 of the National Historic Preservation Act.
- In compliance with the Clean Water Act, we are consulting with the Regional Water Quality Control Boards. Required permits will be obtained prior to implementation of emergency actions.

External Involvement

The affected National Forests are working closely with local citizens and governments, tribes, and interested organizations. Public involvement (scoping) has been completed for the Castle Fire Ecological Restoration Project and the Hume Basin Restoration Project.

For the Castle Fire project scoping was initiated on January 26, 2021, with a scoping letter announcing the proposed ecological restoration activities, including sequoia grove fuel reduction activities. The scoping notice was sent out by email or postal mail to approximately 250 people, agencies, and organizations, and posted to the Sequoia National Forest Schedule of Proposed Actions web page. We received 17 comment letters which were used to modify or clarify the proposed action, consider alternatives to the proposed action, and focus the environmental analysis.

For the Hume Basin Restoration project, scoping was initiated on September 21, 2021, with a scoping letter announcing the proposed ecological restoration activities, including sequoia grove fuel reduction activities. The scoping notice was sent out by email or postal mail to approximately 130 people, agencies, and organizations, and posted to the Sequoia National Forest Schedule of Proposed Actions web page. We received 2 comment letters which were used to modify or clarify the proposed action, consider alternatives to the proposed action, and focus the environmental analysis.

The ecological restoration projects have been discussed with tribal partners at quarterly tribal forums in 2021 and 2022.

References

Brigham, Christy 2020. Initial estimates of sequoia mortality in the 2020 Castle Fire. Sequoia and Kings Canyon national parks. Version: May 25, 2021.

USDA 2018. Programmatic Agreement among the USDA Forest Service, Pacific Southwest Region (Region 5), the California State Historic Preservation Officer, the Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forest of the Pacific Southwest Region.

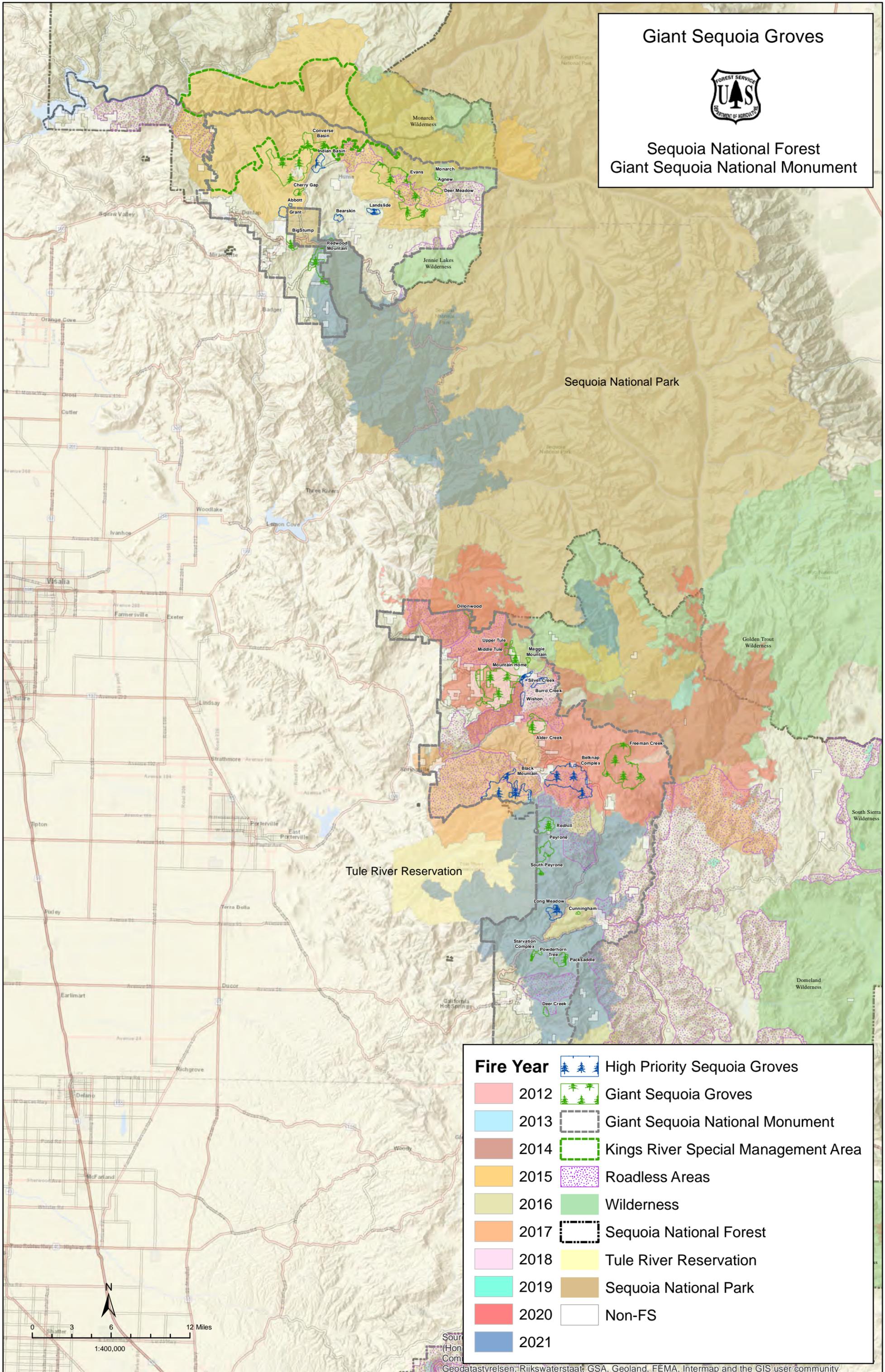
Appendix A. Maps

- Giant Sequoia Groves – Sequoia National Forest
- Giant Sequoia Groves – Sierra National Forest

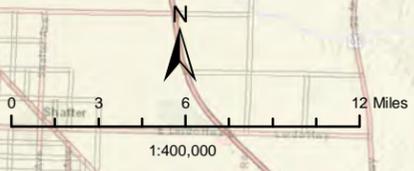
Giant Sequoia Groves



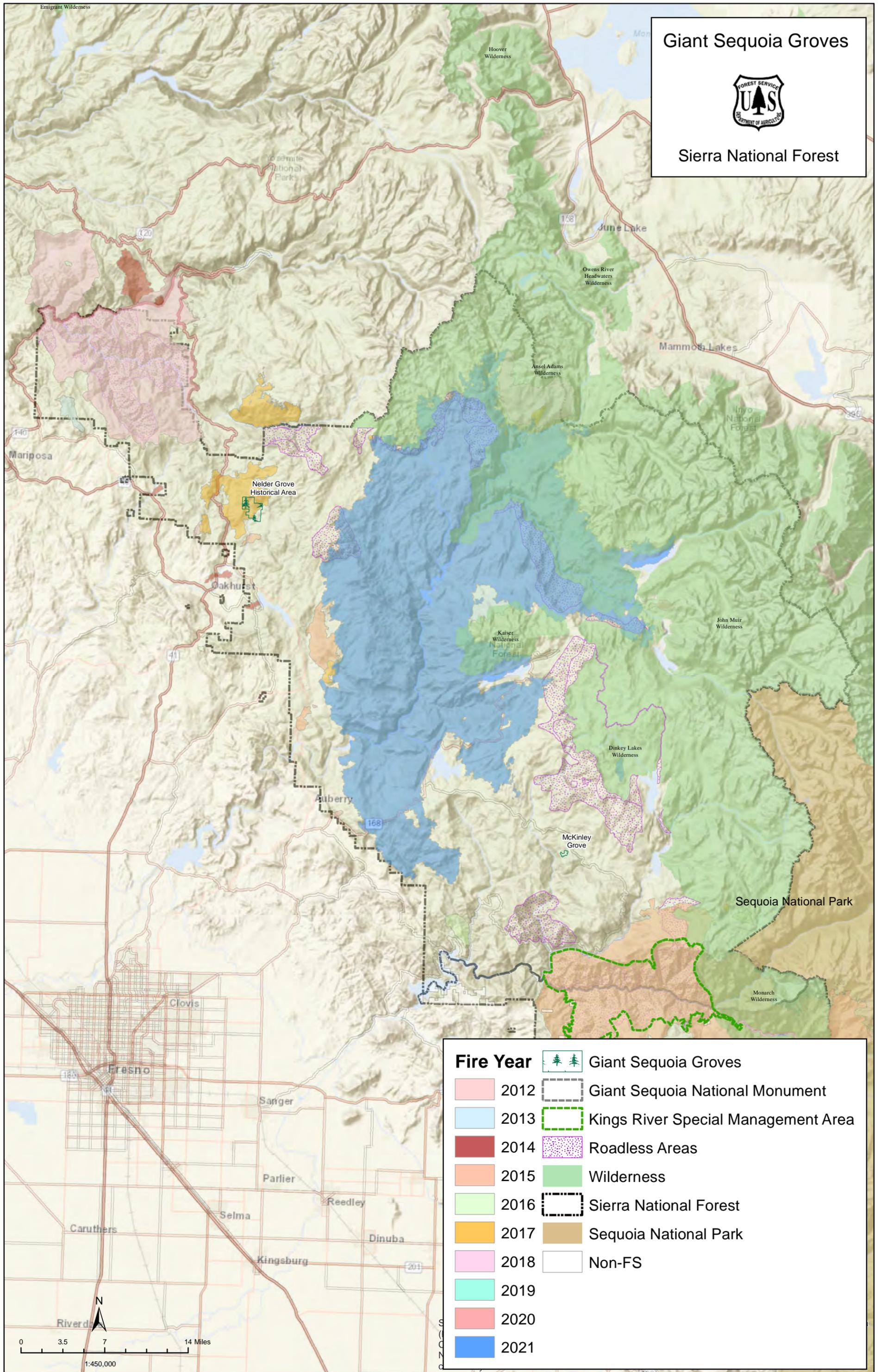
Sequoia National Forest
Giant Sequoia National Monument



Fire Year	Symbol	Description
2012	Light Red	High Priority Sequoia Groves
2013	Light Blue	Giant Sequoia Groves
2014	Brown	Giant Sequoia National Monument
2015	Orange	Kings River Special Management Area
2016	Yellow-Green	Roadless Areas
2017	Green	Wilderness
2018	Light Green	Sequoia National Forest
2019	Yellow	Tule River Reservation
2020	Light Brown	Sequoia National Park
2021	Blue	Non-FS



Source: (Hon) Com Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community



Giant Sequoia Groves



Sierra National Forest

Fire Year		Giant Sequoia Groves	
	2012		Giant Sequoia National Monument
	2013		Kings River Special Management Area
	2014		Roadless Areas
	2015		Wilderness
	2016		Sierra National Forest
	2017		Sequoia National Park
	2018		Non-FS
	2019		
	2020		
	2021		



Appendix B. Photos

Appendix B. Photos Demonstrating Emergency Giant Sequoia Grove Fuels Treatment Needs
July 2022

Figure 1. Example from a Giant Sequoia grove without recent burn history. Bearskin Grove extensive mortality in 2018, stand exams in summer 2021 result in an estimate an average of 38 snags (dead trees) per acre. Bearskin Grove is proposed for emergency fuels treatments.



Figure 2. Bearskin Grove 1980s Research Harvest Unit with advanced mixed conifer regeneration in 2021 that can become ladder fuels. This portion of the grove is at least risk (currently) of a wildfire killing the large sequoias, though without fuels treatments surface and ladder fuels will continue to accumulate.



Figure 3. Bearskin Grove fuels in 2021 from roadside hazard tree felling in 2017, the material on the ground and trees surrounding the large sequoia would allow fire to burn it severely.



Figure 4. Bearskin Grove plantation in 2021 from 1980s research on sequoia regeneration is at risk of a wildfire due to the density of the stand, creating ladders into the crowns of all the young trees.



Figure 5: Indian Basin Grove ladder fuels in 2022 which reach into the crowns of the sequoias. Many of the dead trees have already fallen and are adding to the surface fuels that can burn at high intensity and kill the sequoia roots. This is another example of a Giant Sequoia Grove with no recent fire history. Indian Basin Grove is proposed for emergency fuels treatments.



Figure 6: Example from the Cherry Gap Grove extent in 2022 following the 2015 Rough Fire. This is in similar condition to Abbott Creek and the portion of Grant Grove on National Forest System land. These groves were cut in late 1800s, so protecting the second growth sequoias that are just reaching cone bearing age is very important to retain the groves into the future. Abbott and Grant Grove are proposed for emergency fuels treatments.



Figure 7: Example from the Cherry Gap Grove in 2018 with abundant snags after the 2015 Rough Fire and subsequent bark beetle attacks.



Figure 8. Example from the Cherry Gap Grove of seedlings in 2018 and in 2022 growing with shrub competition. As of 2022 most of the seedlings have already died.



Figure 9. Boole Tree, largest sequoia on NFS land in Converse Basin Grove in 2016 and 2020. Comparison photos show several of the snags one year after the 2015 Rough Fire that have fallen and become surface fuels by 2020, and a continual threat to this iconic tree. Fuels treatments are already occurring under an existing NEPA decision.



Photo from 2016.

Photo from 2020.

Figure 10. Example from the Converse Basin Grove near Boole Tree in 2020 showing the numerous dead trees across the grove following the 2015 Rough Fire that is elevating fire risk. Fuels treatments are occurring in the Converse Basin Grove to mitigate this fire risk under an existing NEPA decision.



Figure 11. Example from the Converse Basin Grove showing sequoia regeneration competing with shrubs, with extensive fuel loading similar to the situation in all the groves that survived the 2015 Rough Fire. There is a need to reduce fuels in these areas to protect the regenerating sequoias, especially since many of these areas have no cone bearing sequoias left to reseed again. This also represents an example of a portion of the grove that burned at high severity. Photo from 2022.



Figure 12. Fire-killed Giant Sequoias in the Converse Basin Grove from the 2015 Rough Fire. Photos also show sequoia regeneration in 2018 and 2022. As an example, fuels treatments that allow these sequoia seedlings to reach maturity is critical as all the overstory sequoias are gone and there's no viable seed source at this site.



Figure 13. An example from the Evans Grove complex in 2022 showing the mix of stand conditions from the low, moderate, and high intensity fire behavior in the 2015 Rough Fire.



Figure 14. Western portion of Evans Grove complex in 2022 showing the high levels of dead trees that will soon become surface fuels that threaten the surviving sequoias and other mixed conifer forest.



Figure 15. Abundant sequoia regeneration under snags in Evans Grove complex in 2022. As the snags fall, they will add to the surface and ladder fuels that can threaten these young sequoias.



Figure 16. Oct. 14, 2021 condition of sequoias near Eshom Creek immediately after the 2021 KNP Complex fire burned into Redwood Mtn Grove. Crews were able to backfire in portions of the grove on NFS land in this area to moderate fire behavior.



Figure 17. View of the high severity fire that burned from the North Fork Kaweah River into Redwood Mtn Grove in Kings Canyon National Park (bald spot on the ridge was the Sugar Bowl stand of almost pure large sequoias), June 2022.



Figure 18. Dead Giant Sequoias killed in the Castle Fire. Due to the dry conditions following the Castle Fire, there has been extremely limited Giant Sequoia regeneration further demonstrating the substantial long-term impacts to these groves from severe wildfire.



Figure 19. Deer Creek Grove, before and after the Windy Fire which demonstrates the surface and ladder fuel conditions before the fire and the severe impacts to these Giant Sequoia groves.

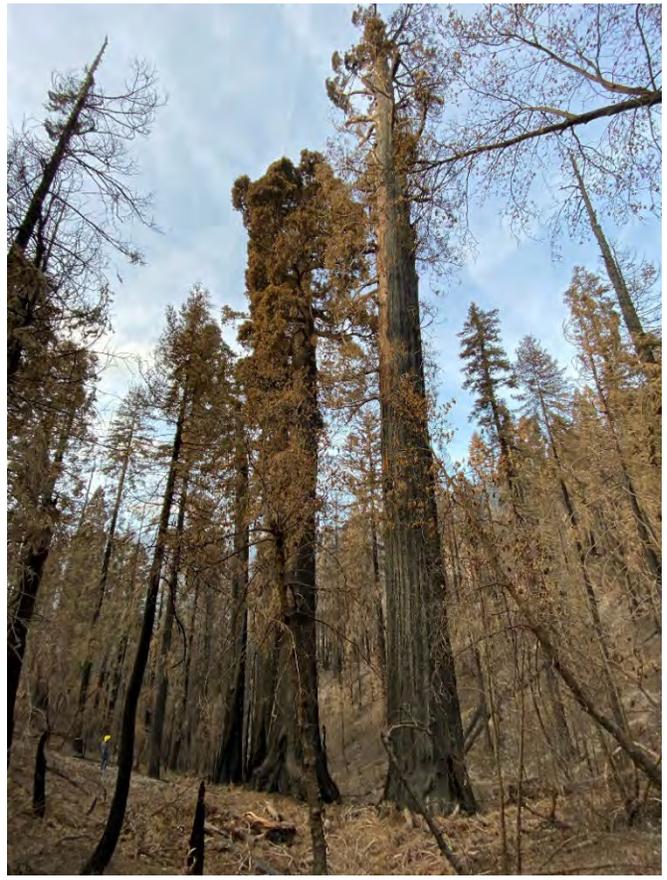


Figure 20. Monarch Sequoia in the Long Meadow Grove. The foreground has had fuels treatment and piles burned in proximity to Trail of 100 Giants in the past several years. Green ladder fuels are a threat as shown behind the tree in the interior portion of the grove. The Long Meadow grove is proposed for emergency fuels treatments.



Figure 21. Monarch Sequoia in Freeman Creek Grove shown as an example of dead ladder fuels surrounding the Giant Sequoia tree.



Figure 22. The two photos below are from the Black Mountain Grove which is proposed for emergency fuels treatments. Green and dead surface and ladder fuels surround the Monarch Giant Sequoia trees.

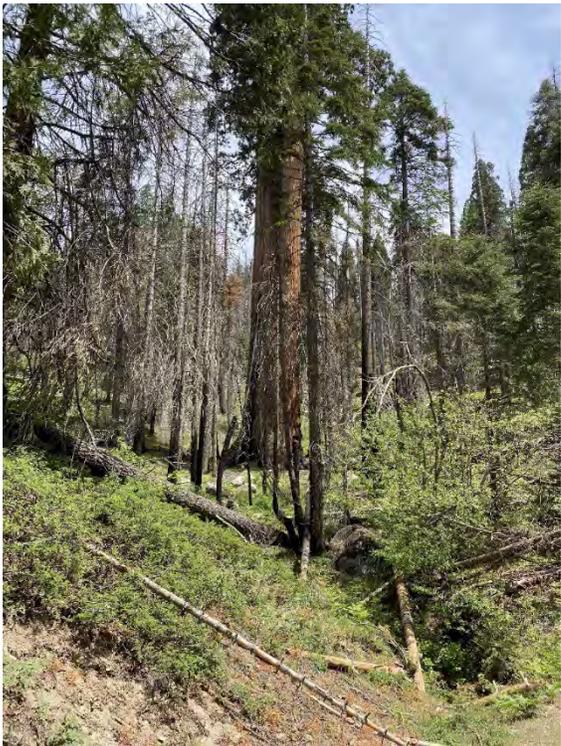


Figure 23. Landslide Grove in 2018 showing numerous newly dead trees from drought and bark beetles. Some of the snags have begun to fall. The Landslide Grove is proposed for emergency treatments.



Figure 24: Landslide Grove with ladder fuels growing into the canopy of mature, monarch, sequoias in 2018.

