United States Department of Agriculture

Land Management Plan Monitoring Report for the San Bernardino National Forest (2019 – 2020)

A composite photo depicting Banning Canyon in the San Bernardino NF after the 2020 Apple Fire.

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I am pleased to present the San Bernardino National Forest's Monitoring and Evaluation Report for your review. The purpose of the Monitoring and Evaluation Report is to share our determination of the effectiveness of the Land Management Plan and whether changes are necessary to the Plan, or in program or project implementation.

The 2006 Record of Decision for the San Bernardino National Forest Land Management Plan identified the monitoring requirements as the cornerstone of our program emphasis for the future. In 2014, the Forest Plan was amended to incorporate changes to land use zones and Forest Plan Monitoring. This report is completed under the newly revised monitoring strategy; however in 2015, the Forest completed the transition to the new monitoring program as required under the 2012 Planning Rule, and this transition includes new processes for monitoring that will continue to be used in this biennial FY19-20 monitoring report as well as future reports. The lessons we learn from monitoring help improve our programs and projects. We continue to find ways to increase efficiency and effectiveness of our monitoring and evaluation efforts. It is my commitment to keep you informed of the monitoring results by providing this report. If you would like to participate in future monitoring, please contact the Forest.

We have evaluated the monitoring results presented in this report and we do not recommend changes to the monitoring program or the plan components contained within the 2006 Land Management Plan and management activities.

Your continued interest in the San Bernardino National Forest Land Management Plan is just one way for you to stay current with activities on your public lands. Additional information can be found on our website at **http://www.fs.usda.gov/sbnf/.**

Sincerely,

March 31, 2023

DANELLE D. HARRISON — Date

Forest Supervisor

San Bernardino National Forest

About our Plan Monitoring Program

Purpose

The purpose of this monitoring report is to describe the evaluation of information gathered through Part 1 (effectiveness monitoring) of the Southern California land management plan monitoring program. The first half of this report (monitoring questions 1 to 9 or "Part 1a"), were answered collectively for fiscal years 2019 & 2020 for the Angeles and San Bernardino National Forests and fiscal year 2020 (only) for the Cleveland National Forest.

The remaining monitoring questions (monitoring questions 10-21) were answered specific to the San Bernardino National Forest in Part 1b. The San Bernardino 2018 biennial monitoring evaluation report was posted online in 2019.

This report is not a decision document. Rather, this report has been developed in compliance with the National Forest Management Act policy 36 CFR 219.12. This report is a vehicle for disseminating to the public timely, accurate monitoring information as well as recommended changes and adaptive management responses.

How Our Plan Monitoring Program Works

Forest plans are required to have plan monitoring programs that inform the management of resources in the plan area by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress towards achieving plan components like desired conditions and objectives (36 CFR 219.12). The monitoring results help the Forest Supervisor determine whether a change is needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area, management activities, the monitoring program, or whether a new assessment is warranted.

The Angeles, Cleveland, and San Bernardino National Forests share the same plan monitoring program, which is divided into three parts, under the Southern California land management plan (2006). This report includes the results for Part 1 monitoring which evaluates plan effectiveness and occurs every two years (biennial). The results of monitoring conducted for parts 2 (program implementation) and 3 (project-level implementation and effectiveness) are described in separate Forest-specific reports.

Part 1a effectiveness monitoring for the three Forests includes 8 monitoring questions, and the Cleveland National Forest has one additional question. Combined, the Part 1a and 1b monitoring questions cover the eight required topics under the 2012 planning rule, in addition to social, economic, and cultural sustainability (see box below). Some questions cover more than one topic. The monitoring questions are grouped by the seven goals in

the land management plans: (1) community protection and restoration of forest health; (2) invasive species; (3) managed recreation in a natural setting and Wilderness; (4) energy and minerals production; (5) watershed function and riparian condition; (6) rangeland and biological resource condition; and (7) natural areas in an urban context. The monitoring questions, indicators, and results you'll read about in this report address these goals.

The Southern California Land Management Plan monitoring program covers these eight required topics, in addition to social, economic, and cultural sustainability.

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a).

Opportunity for Public Engagement and Partnerships

We welcome your questions, suggestions, and feedback. We also welcome opportunities for partnerships to implement this plan monitoring program. Please reach out to the environmental coordinators on the relevant Forests to share your ideas and feedback. This monitoring report describes the key results from our monitoring; in depth results, including additional graphics and tables, are described in a supplemental report and is available upon request.

What Comes Next

The global pandemic not only influenced our ability to produce this report promptly, but also influenced data availability and may have influenced data integrity. Data typically collected in the field by the Forest Service, other agencies, and partners were either not collected or collected only partially. Future biennial monitoring reports will evaluate results in the context of possible pandemic effects.

Monitoring reports should include relevant information from the regional broader-scale monitoring strategy. The Pacific Southwest Region broader-scale monitoring strategy (version 1) was published in June 2020. Results from this strategy will be made available to the Forest and the public at five-year intervals. We will include applicable results from the broader-scale monitoring in a future biennial monitoring evaluation report.

The next reporting cycle for Part 1 of the Angeles, Cleveland, and San Bernardino National Forests plan monitoring program will cover monitoring activities conducted during fiscal years 2021 and 2022.

Part 1 - Results

Monitoring results for Part 1 indicate that, in general, all three forests are making progress at achieving the goals set forth in the 2006 Land Management Plan (Table 1). Based on the monitoring trends, we believe the plan components and management activities continue to be effective in trending the landscape towards achieving the goals and desired conditions described in our land management plan. We do not see the need for changes or for a new assessment. However, all three Forests are facing extended drought conditions, climate change, threats from newly introduced invasive pests such as the Goldspotted oak borer. These challenges coupled with landscapes that continue to remain departed from historic fire frequency in many cases make the urgency of forest management and fuels reduction even more pressing.

Table 1. Summary of key findings for the Southern California land management plan monitoring and recommendations for action, adaptive management, or change. Monitoring results for the Angeles and San Bernardino cover fiscal years (FY) 2019-2020 and results for the Cleveland cover FY 2020.

Monitoring Questions	Summary of Key Findings	Recommended action, adaptive management, or change
Goal 1: Community protection and restoration of forest health		
MQ1. Has the forest made progress in reducing the number of acres that are adjacent to development within Wildland Urban Interface (WUI) defense zones that are classified as high-risk?	The Angeles, Cleveland, and San Bernardino conducted 136, 1131, and 2750 acres of treatments in the WUI defense zone, respectively.	All three forests have made progress in reducing the baseline number of acres in the WUI defense zone classified as high risk. However, treatment must continue in order to prevent recurrence of high-risk classification within previously treated WUI defense zone. Recommendation is to continue to treat high risk zones within the WUI defense while monitoring previously treated areas to ensure they are being treated prior to re-entering a high-risk classification.
MQ2. Are wildfires becoming larger, more frequent, or more severe, and is there a seasonal shift in fire activity?	Wildfire size has fluctuated over the last century/half century. The proportion of wildfires burning at high severity has been increasing. Fires have burned in every month.	Continue fuels treatment within montane forest ecosystems to return the fire frequency to the natural range of variation which will in turn reduce the likelihood of severe

Monitoring Questions	Summary of Key Findings	Recommended action, adaptive management, or change
		fire behavior. In chaparral ecosystems, continue to focus on the management and maintenance of fuel breaks, particularly in the WUI defense zone to protect vulnerable communities and reduce fire frequency.
MQ3. Are fire frequencies becoming more departed from the natural range of variation?	Although each Forest's landscape is trending towards the natural range of variation for fire frequencies (condition class 1 has *increased* since 2006), a large proportion of each Forest is moderately and highly departed from historic fire frequencies.	Continue fuels treatment to move more of the landscape into condition class 1, particularly within montane forest landscapes (Fire Regime I) where frequent low severity burns thin stands, keep fuel loading low and encourage the regeneration of shade-intolerant plant species.
MQ4. Is the forest making progress toward increasing the percentage of montane conifer forests in Condition Class 1?	Although each Forest's montane conifer zone (Fire Regime I) is trending towards the natural range of variation for fire frequencies (condition class 1 has *increased* since 2006), the largest proportion of this zone on each Forest is highly departed from historic fire regimes, burning far less frequently than historically. The Forests continue to emphasize treatments in areas moderately and highly departed to improve resilience.	Continue fuels treatment to move more of the montane conifer forest into condition class 1. Complete NEPA documentation for additional montane forest ecosystems to allow additional fuels treatment beyond what has been analyzed currently in existing NEPA documents.
MQ5. Is the forest making progress toward maintaining or increasing the percentage of vegetation types that naturally occur in Fire Regime IV in Condition Class 1?	Although the proportion of Fire Regime IV (shrubland and chaparral) in condition class 1 *increased* since 2006, a large proportion of these landscapes on each of these Forests are still burning more frequently when compared to historic conditions.	Explore opportunities to reduce anthropogenic fire starts in high-risk areas such as roadsides and fuel breaks to ecosystems in Fire Regime IV to reduce burn frequency and return to Condition Class I.
MQ6. Has the forest been successful at maintaining long fire-free intervals in habitats where fire is naturally	The Angeles and San Bernardino experienced a decrease in the acres (and proportion of the landscape) that are within (or slightly departed) from the historic fire regime. The majority of	Continue and expand fuels treatments in and adjacent to habitat where fire is naturally uncommon, in order to reverse current trends and decrease

Monitoring Questions	Summary of Key Findings	Recommended action, adaptive management, or change
uncommon?	the Fire Regime V landscape on these Forests is highly departed from the historic fire regime, burning with far more frequency than historically.	likelihood of fires starting in or spreading through these areas.
MQ7. Is tree mortality increasing across the landscape, and is it distributed evenly across elevations?	All Forests experienced a peak in mortality between 2015 and 2017, coinciding with a drought period. The dominant conifer species affected include white fir and yellow pine (Jeffrey and ponderosa pines). The lower and higher elevations (rather than middle) experienced greater change in mortality from 2006.	Continue and expand fuels treatments within montane conifer forests (Fire Regime I). By treating montane forest to decrease stand density and increase forest health, forests will be more resilient and less susceptible to mortality from drought and disease.
MQ8 (CNF only). Is coast live oak mortality increasing across the landscape?	The number of dead oak trees increased substantially during the most severe drought years (2015-2017). The number of dead oak trees remained elevated in 2018 but was much lower in 2019. The greatest concentration of annual dead oak trees tends to be on the leading edge of an area infested with goldspotted oak borer.	Continue to actively manage infestations on the Trabuco Ranger District, utilizing an early-detection rapid-response (EDRR) approach. Strategy may include proactive surveys, removal of infested trees and treatment of trees with targeted insecticides. Additionally, educating the public of the role firewood can play in facilitating infestations is crucial.
MQ9. Are chaparral and coastal sage scrub vegetation communities type converting to non-native annual grasslands?	There has been an increase in the acres and percent of the shrubland landscape that has type converted to non-native annual grasslands between 2009 and 2018. However, the proportion of non-native annual grasslands measured is low (1%) and San Bernardino saw a decrease between 2017 and 2018.	Combat type conversion by focusing on returning chaparral and coastal sage scrub communities (Fire Regime IV) to Condition Class I by reducing the risk of anthropogenic fire starts and containing fires to prevent type conversion within communities that are currently burning at higher frequencies than the natural range of variation.

Monitoring Questions	Summary of Key Findings	Recommended action, adaptive management, or change
Goal 2: Invasive Species		
MQ10. Are the national forests' reported occurrences of invasive plants/animals showing a stable or decreasing trend?	Acres of invasive plants continue to increase across the Forest although Arundo and Tamarisk are treated through partnerships in Cajon Wash and Palm Canyon.	Initiate a Forest Wide Invasive Weed EA and continue treating priority invasive species while simultaneously monitoring for the introduction of any novel invasives, where a rapid response could be effective in eradicating the species locally prior to any ecological degradation.
Goal 3: Managed recreation in a natural setting and Wilderness		
MQ11. Are trends in indicators and visitor satisfaction surveys indicating that the forest has provided quality, sustainable recreation opportunities that result in increased visitor satisfaction?	National Visitor Use Monitoring continues to show increased demand for sustainable recreation experiences, although the urban interface is limiting for new opportunities and putting stress on existing recreation sites and open space.	Maintain developed and dispersed recreation sites to standard, increase field going personnel staff, and work with partnerships to restore and enhance existing recreation sites that are impacted from overuse.
MQ12. Are trends in indicators and visitor satisfaction surveys depicting the forest has provided solitude and challenge in an environment where human influences do not impede the free play of natural forces?	Wilderness areas continue to be highly sought and utilized by the recreating public and provide vast open spaces for solitude.	Maintain a robust wilderness permitting system that allows users an appropriate wilderness experience unlike urban centers and population bases.
Goal 4: Energy and minerals production		
MQ13. Has the forest been successful at protecting ecosystem health while providing mineral and energy resources for development?	There have been low-no submissions for plans of operations to prospect or develop new mineral materials or energy sources. The food grade limestone mines in Big Bear continue to operate sustainably under the guidelines of their current environmental analysis.	Continue monitoring the activities at the Omya and Mitsubishi limestone mines.

Monitoring Questions	Summary of Key Findings	Recommended action, adaptive management, or change
MQ14. Has the forest been successful at protecting ecosystem health while providing renewable resources for development?	The Forest continues to have some interest in wind energy development, although challenged by the urban interface and competing interests for open space.	Continue screening wind energy and solar proposals through the special use permitting process when submitted.
Goal 5: Watershed function and riparian condition		
MQ15. Is the forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds?	Disturbance events have not occurred that would trigger a watershed condition class change.	Continue monitoring condition classes, disturbance events, and drought monitoring for overall watershed health.
MQ16. How do stream flows compare with historical records?	Prolonged drought has been occurring since 2017, which has caused significant reductions in overall stream flows and riparian health. This has been compounded by overgrowth of forested stands, which is reducing the hydrologic function across the landscape.	Increase thinning and prescribed fire across the landscape to increase the hydrologic function and riparian response.
MQ17. Is the forest increasing the proper functioning condition of riparian areas?	Drought has impacted riparian areas by reducing overall availability of water.	Protect riparian areas and reduce the impacts of invasive species that consume water, such as Arundo and Tamarisk.
Goal 6: Rangeland and biological resource condition		
MQ18. Is forest rangeland management maintaining or improving progress towards sustainable rangelands and ecosystem health?	Annual compliance monitoring showed allotments were within forage utilization standards.	Continue implementing the range allotment plans for rotational grazing that protects resources.
MQ19. Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend?	The results of annual monitoring required by USFWS for threatened & endangered wildlife species and plant species indicate that habitat conditions are in a stable trend for FY19-20.	Continue to monitor habitat conditions, identify trends and work collaboratively to brainstorm feasible solutions that can improve resource conditions and are based on best available science.

Monitoring Questions	Summary of Key Findings	Recommended action, adaptive management, or change
Goal 7: Natural areas in an urban context		
MQ20. Is the forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions?	The urban interface continues to pressure the forest with high rates of visitation and unauthorized roads and trails. Unmanaged recreation continues to be a challenge although the recreating public has become more amenable to designated roads, trails, and campsites.	Continue working with partners to rehabilitate and reclaim unauthorized roads, trails, and dispersed camp sites.
MQ21. How many of each type of special use authorization, mining permit, and forest product permit are active on the forest?	There are numerous special use permits issued across the forest, including firewood permits and gathering permits. The volume of firewood permits issued does not meet the public demand or the volume of dead and downed wood.	Authorize more firewood cutting permits and gathering areas.

Part 1a Monitoring: Questions 1-9

Community Protection and Restoration of Forest Health

The first goal of the Southern California National Forests Land Management Plan emphasizes the need to improve resilience of our communities and ecosystems to wildfire. Goal 1.1 highlights community protection and the ability of southern California communities to recover from wildfire and limit the loss of life and property from wildfire. Goal 1.2 focuses on the need to restore forest health where alteration of the natural fire regime has put human and natural resource values at risk.

Wildland fire is a natural ecological process. However, many communities and ecosystems in southern California are experiencing uncharacteristic fire regimes. Many communities are built in remote areas leading to a relatively large amount of Wildland Urban Interface (WUI) that needs protection from wildfire. The desired condition is to have vegetation treated to enhance community protection and reduce the risk of loss of human life, structures, improvements, and natural resources from wildland fire and subsequent floods. Additionally, firefighters should have improved opportunities for tactical operations and safety near structures, improvements, and high resource values.

The present condition of the vegetation on the four southern California national forests has been influenced by a century of fire management (mostly fire suppression), as well as by other land-use practices such as logging, grazing and mining. The structure, function, and species composition of nearly all southern California plant communities is under the direct control of recurrent fire. The long-term goal of vegetation management is to perpetuate plant communities by maintaining or re-introducing fire regimes appropriate to each type while at the same time protecting human communities from destructive wildland fires.

Monitoring Questions

MQ1. Has the forest made progress in reducing the number of acres that are adjacent to development within Wildland Urban Interface (WUI) defense zones that are classified as high risk? The indicator associated with this question includes acres of high hazard and high risk in the WUI defense zone.

MQ2. Are wildfires becoming larger, more frequent, or more severe, and is there a seasonal shift in fire activity? The indicators associated with this question include total and mean fire size, ignition density, fire severity, and monthly area burned.

MQ3. Are fire frequencies becoming more departed from the natural range of variation? The indicator associated with this question includes the proportion of landscape in departed fire frequency.

MQ4. Is the forest making progress toward increasing the percentage of montane conifer forests in Condition Class 1? Indicators for this question include (1) departure from desired fire regime and (2) acres by Fire Regime I.

MQ5. Is the forest making progress toward maintaining or increasing the percentage of vegetation types that naturally occur in Fire Regime IV in Condition Class 1? Indicators for this question include (1) departure from desired fire regime and (2) acres by Fire Regime IV.

MQ6. Has the forest been successful at maintaining long fire-free intervals in habitats where fire is naturally uncommon? The indicators for this question include (1) departure from desired fire regime and (2) acres by Fire Regime V.

MQ7. Is tree mortality increasing across the landscape, and is it distributed evenly across elevations? The indicators associated with this question include mortality risk assessment and Forest Health Protection Mortality Surveys.

MQ8 (CNF only). Is coast live oak mortality increasing across the landscape? (Cleveland National Forest only) The indicator for this question includes Forest Health Protection Mortality Surveys.

MQ9. Are chaparral and coastal sage scrub vegetation communities type converting to non-native annual grasslands? The indicator for this question includes extent of non-native annual grasses.

Key Results

Progress in the Wildland Urban Interface (WUI)

The Forests continue to prioritize fuel reduction treatments within the WUI defense and threat zones, including areas that have not experienced wildfire within the natural return interval and may have high fuel densities. More work is needed to bring the landscape, including the WUI defense zone, to within the Natural Range of Variation (NRV) and improve resilience.

All three Forests conducted fuel reduction treatments within and outside of the WUI during the monitoring period despite the constraints imposed by the global pandemic, widespread regional closures during two prolonged wildfire seasons, and a regional pause on prescribed burning (Table 1a). About one third of the treatments were conducted in the WUI defense zone and two thirds (or more for the Angeles) were conducted in the WUI threat zone. The different types of treatment activities are described in the supplemental report.

The Forests continue to emphasize treatments within and adjacent to areas that are outside the natural fire return interval (red color in Figure 1a, Figure 2a, Figure 3a), especially in the montane conifer zone (Fire Regime I, brown color). These treatments help reduce unnaturally high fuel densities and improve resilience. Montane conifer ecosystems are typically characterized by frequent, low intensity wildfire. Without regular fire, stands may become overly dense with high fuel loading in forest understories.

Table 1a. Fuel reduction treatment acres in the WUI defense and threat zones and Environment zone of the Angeles, Cleveland, and San Bernardino National Forests during fiscal years (FY) 2019 and 2020.

Strategic fire management zone	Treatment Acres[1]		
	Angeles (FY19-20)	Cleveland (FY 20)	San Bernardino (FY 19-20)
WUI defense	136	1131	2750
WUI threat	8416	3073	8193
WUI Environment	353	22	219
Total Treatment Acres	**8905**	**4226**	**11,162**

[1] Some treatments may have overlapped the same project footprint (acreage). Therefore, acres may be greater than those unique acres (footprint acres) treated on the ground. Figures 1a – 3a show the footprints of fuel reduction treatments between 2015 and 2020 for one district on each of the three Forests. Figures for the other districts, and details of the treatment activities, are available in the supplemental report.

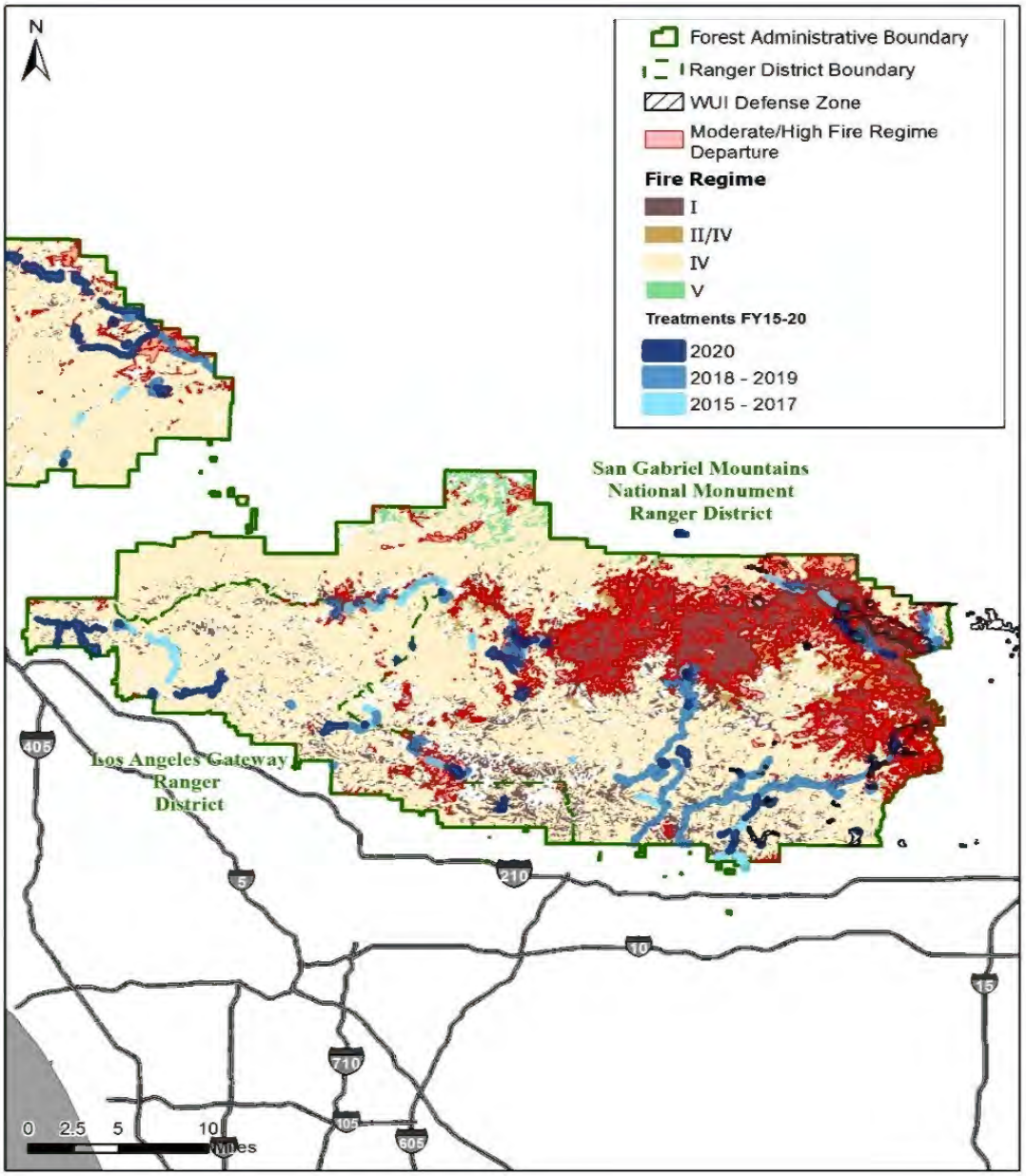


Figure 1a. Fuel reduction treatments in the San Gabriel Mountain NM Ranger District on the Angeles National Forest between 2015 and 2020. Red colored areas are moderately and highly departed from the historic fire intervals, burning far less frequently than they would historically. Fire Regime I: burn interval 0-35 years and low severity (typically montane conifer); Fire Regime II/IV and IV: burn interval 35-100+ years and high severity (typically chaparral, coastal sage scrub, serpentine, gabbro, closed cone conifer, lower montane forests); Fire Regime V: burn interval 200+ years and high severity (typically alpine/subalpine, desert woodland, forest, scrub, bigcone Douglas fir).

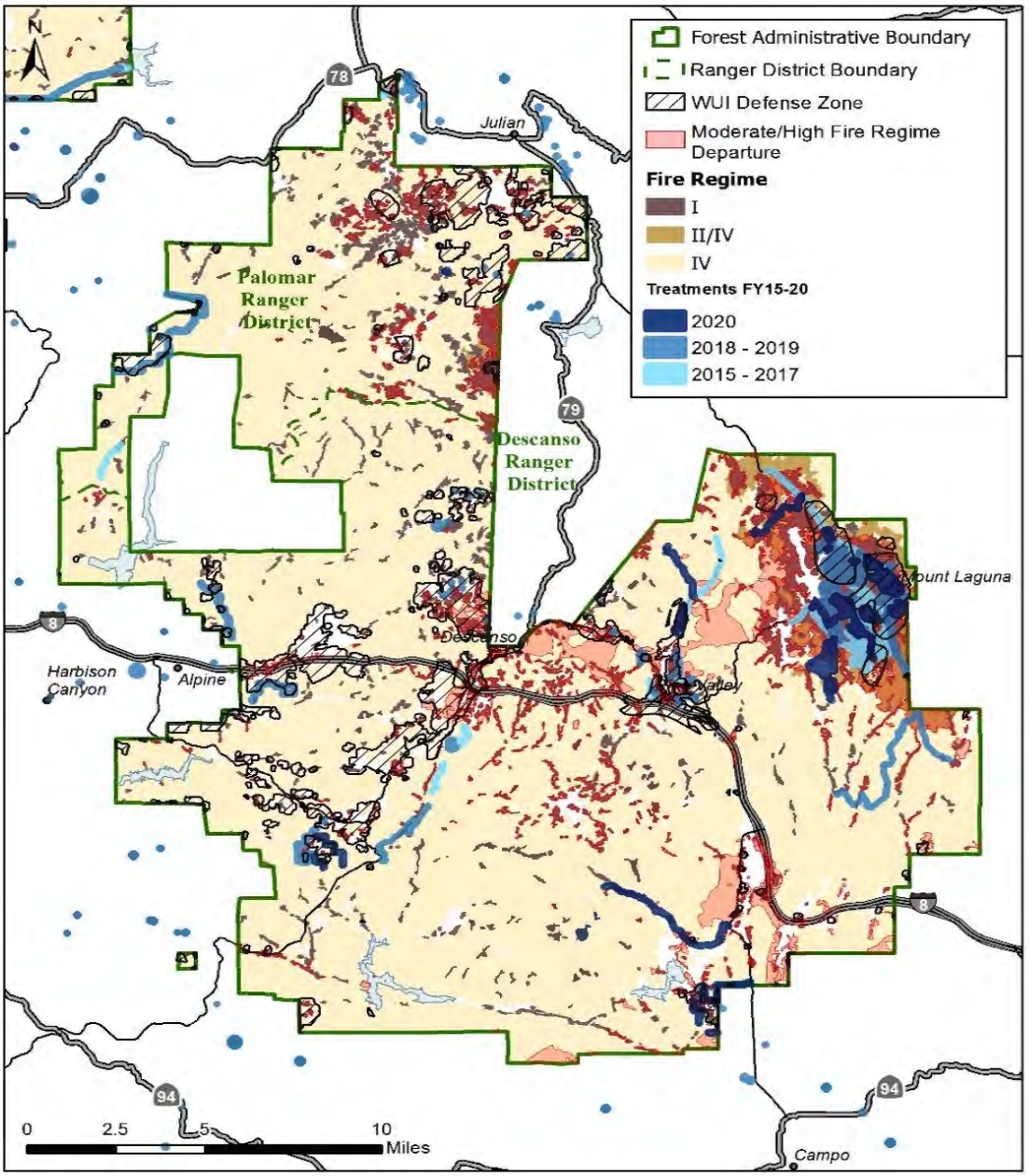


Figure 2a. Fuel reduction treatments in the Descanso and Palomar Ranger Districts on the Cleveland National Forest between 2015 and 2020. Red colored areas are moderately and highly departed from the historic fire intervals, burning far less frequently than they would historically. Fire Regime I: burn interval 0-35 years and low severity (typically montane conifer); Fire Regime II/IV and IV: burn interval 35-100+ years and high severity (typically chaparral, coastal sage scrub, serpentine, gabbro, closed cone conifer, lower montane forests).

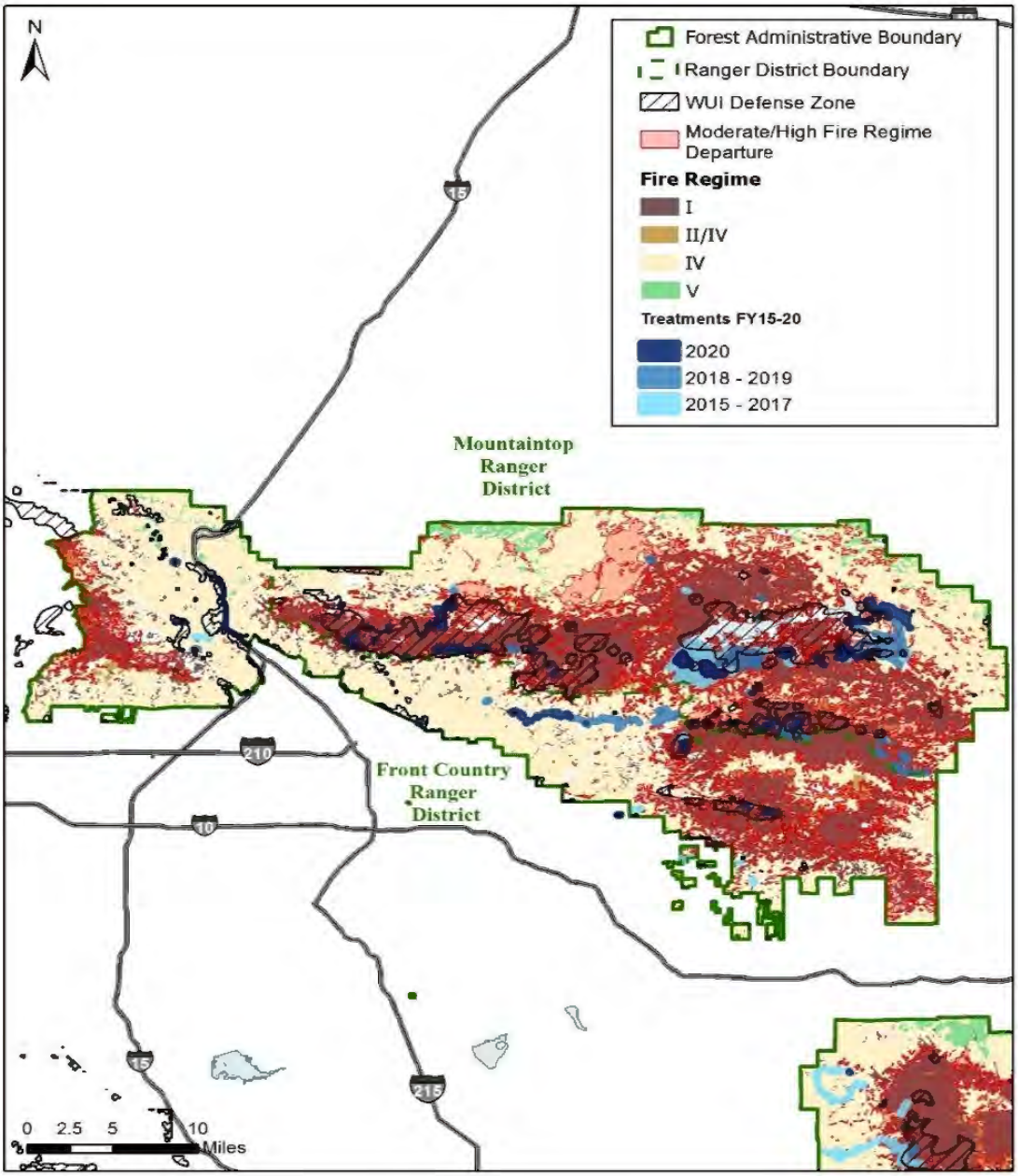


Figure 3a. Fuel reduction treatments in the Front Country and Mountaintop Ranger Districts on the San Bernardino National Forest between 2015 and 2020. Red colored areas are moderately and highly departed from the historic fire intervals, burning far less frequently than they would historically. Fire Regime I: burn interval 0-35 years and low severity (typically montane conifer); Fire Regime II/IV and IV: burn interval 35-100+ years and high severity (typically chaparral, coastal sage scrub, serpentine, gabbro, closed cone conifer, lower montane forests); Fire Regime V: burn interval 200+ years and high severity (typically alpine/subalpine, desert woodland, forest, scrub, bigcone Douglas fir).

Wildfire and fire regime changes

Fire is a natural process in these landscapes. However, the conditions on the ground and the trends in fire activity together pose risks to ecological function and natural recovery. The monitoring results suggest that wildfire size is fluctuating, severity is increasing, and fires can occur in any month of the year. The Forests are making progress in moving these landscapes towards the natural range of variation (NRV), but a large proportion of each Forest continues to be in a moderately and/or a highly departed state, especially in the montane conifer zone where fires are burning much less frequently than historic fire return intervals. The Southern California LMP provides direction to protect natural resources, including by building in resilience to the landscape and decreasing the gap between current conditions and NRV, particularly for wildfire. These results suggest that decades of fire suppression and climate change continue to challenge the Forest efforts to restore resilience and work is needed, especially in the montane conifer zone, to move ecosystems toward NRV at a more rapid pace. These management actions would encourage resilience to future fire and prime these ecosystems for adapting to changes in the fire regime driven by past management and climate change.

For all the Forests, collectively, wildfire size has fluctuated since 1900 with an uptick in acres burned in the last 20 years (Figure 4a). The acres of montane forest burning at high and very high severity (stand replacing) has dramatically increased over the past 40 years (Figure 5a). Most recently the trend in high severity fires burning in forested areas was highlighted by the Apple and El Dorado fires (2020) on the San Bernardino NF. Since the 1970s, the start of our evaluation, fires have burned in nearly every month of the year (Figure 6a). There is not a major, discernable trend in the wildfire season except that the season started to become more active in May beginning in the 1990s. Before the 1990s, the wildfire season appeared to show increased activity beginning in June.

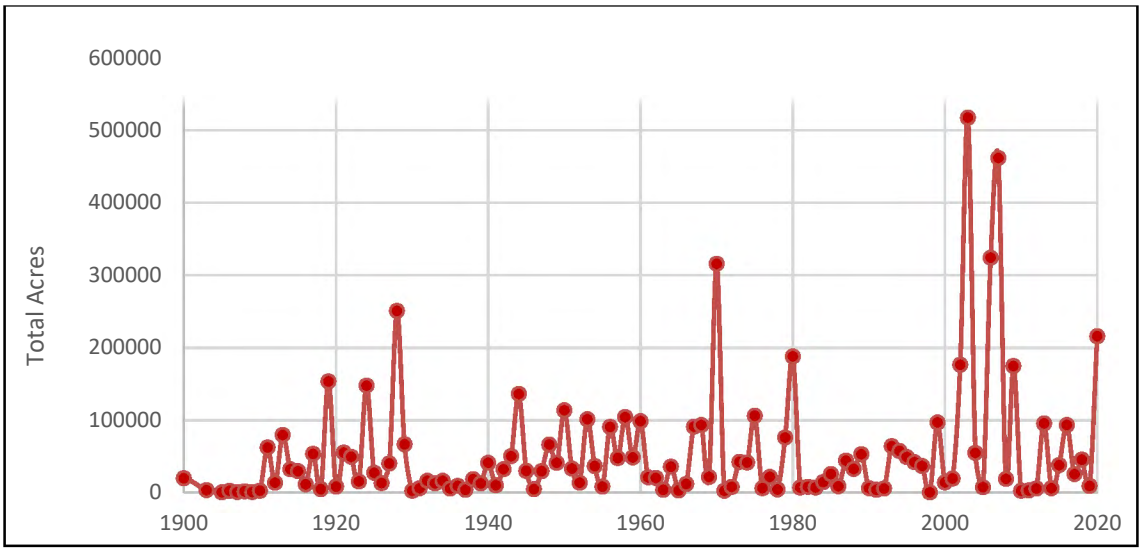


Figure 4a. Trend in total wildfire size on the Angeles, Cleveland, and San Bernardino National Forests since 1900.

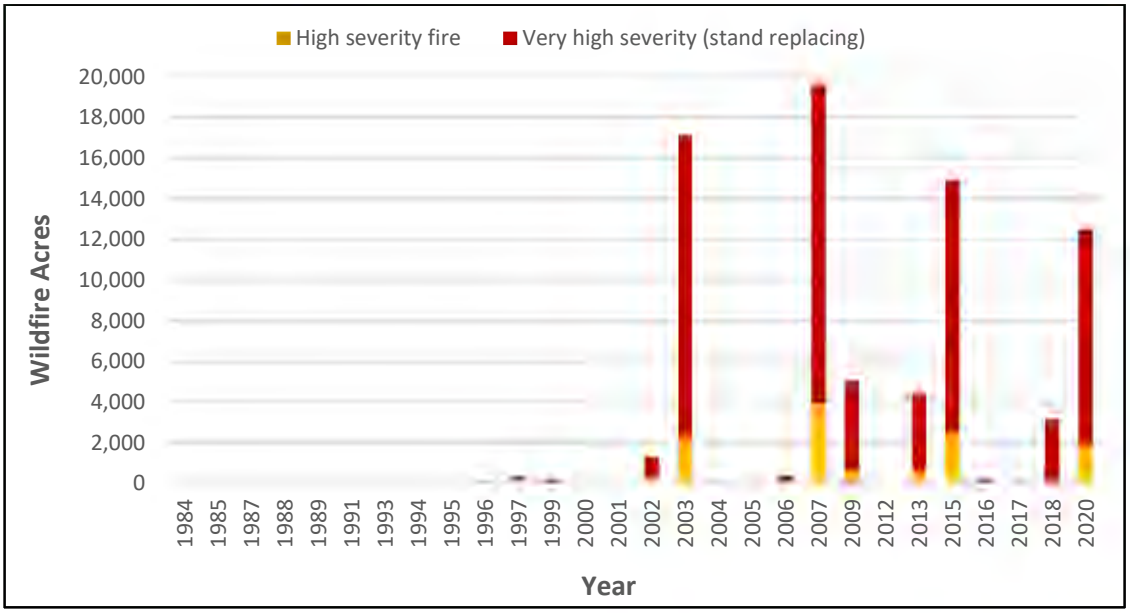


Figure 5a. Acres of wildfires burning at high severity and very high severity on the Angeles, Cleveland, and San Bernardino National Forests between 1984 and 2020. High severity is measured as a loss of more than 75% tree basal area and very high severity is measured as a loss of more than 90% tree basal area. Basal area represents the density of trees in an affected stand.

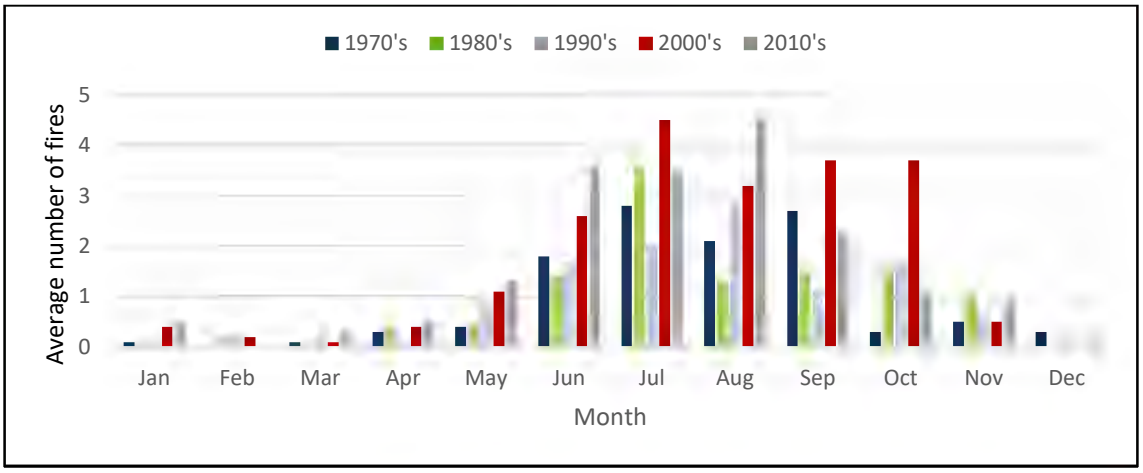


Figure 6a. Average number of wildfires each month on the Angeles, Cleveland and San Bernardino National Forests from 1970-2020.

We examined the extent of fire departure from the natural return interval to get a sense of whether the landscapes, and their representative ecosystems, are experiencing more frequent or less frequent fires than historically. Overall, there have been some positive trends on each of the Forests. Between 2006 and 2020, the Angeles National Forest has seen an increase in the proportion of the Forest experiencing fire cycles within or only slightly departed from the natural fire return interval and a decrease in the proportion of the Forest that is moderately and highly departed from the natural fire return interval (Figure 7a). Overall, the Cleveland and

San Bernardino trends are similar to the Angeles except the Cleveland has seen a very slight (1%) increase in the proportion of the Forest that is highly departed from the natural fire return interval, burning far more frequently than historically, and the San Bernardino has experienced a slight decrease (1%) in the proportion of the landscape within the natural return interval (Figure 7a).

Despite the positive trends, a large proportion of each Forest continues to be moderately and/or highly departed from the historic fire return intervals (Figure 7a). Figure 8a, Figure 9a, and Figure 10a illustrate the locations on each Forest where fire return interval is within or departed from the historic cycle. This finding is especially true for the San Bernardino National Forest where a large proportion is burning far less frequently than the natural return interval (Figure 7a). There is a need to continue (and increase the pace and scale of) management intervention, including prescribed fire and wildfire management for resource benefit, in these areas that are burning less frequently than historically. Such management can reduce fuel loadings, restore structure, and improve resilience. In areas burning far more frequently, there is an opportunity to evaluate ecosystem condition after fire to determine recovery actions and priorities. The Forest Service recently released the *Postfire Restoration Framework for National Forests in California* (Meyer et al. 2021) that is currently being applied to the Bobcat fire on the Angeles National Forest. Moving forward, the Forests may identify guidelines that trigger when a post-fire restoration evaluation is needed.

Montane Forest (Fire Regime I)

Although there was a positive trend between 2006 and 2020 in the acres of montane conifer that are experiencing fire intervals within or slightly departed from the historic fire frequency, the data overwhelmingly indicate that the montane conifer zones of these Forests are burning far less frequently than historically. Approximately 64%, 64%, and 91% of the montane conifer forests on the Angeles, Cleveland, and San Bernardino National Forests, respectively, are *burning less frequently* when compared to historic fire frequencies. Forests departed from the natural range of variation for fire typically have altered forest structure and composition (e.g., unnaturally dense conditions). All Forests prioritized treatments in those areas highly departed (burning much less frequently) from the historic fire return intervals.

Table 2a. Treatment acres in the montane conifer (Fire Regime I) zone. Treatments were focused in areas that are highly and moderately departed from the historic fire regime, burning less frequently than historically. Please note that treatment acres (e.g., mechanical thinning, broadcast burning) may be different from footprint acres (unique acres treated on the ground) because some acres may have received more than one treatment activity.

National Forest	Treatment Acres in areas burning less frequently than historically		
	High departure	Moderate departure	Within or low departure
Angeles (FY19-20)	1201	489	318
Cleveland (FY20)	2083	119	31
San Bernardino (FY19-20)	5406	188	36

Shrubland and Chaparral (Fire Regime IV)

For each Forest, we observed an increase in the proportion of the Forest shrubland and chaparral zones that are within or low departure (≤ 33%) from historic fire frequencies. Indeed, as of 2020, most of this fire regime is now within (or only minimally departed from) the historic fire regime. However, a large proportion of the shrub and chaparral-dominated landscapes on each of these Forests are still burning more frequently when compared to historic conditions.

Scrub (Fire Regime V)

For Fire Regime V, dominated by alkali desert scrub, desert scrub, desert wash, Joshua tree, and desert mixed shrub, areas that typically burn very infrequently (200+ years) and at high severities, most of this ecological zone on the Angeles and San Bernardino is highly departed from the historic fire regime, burning with far more frequency than historically. The Cleveland NF contains only four acres of Fire Regime V.

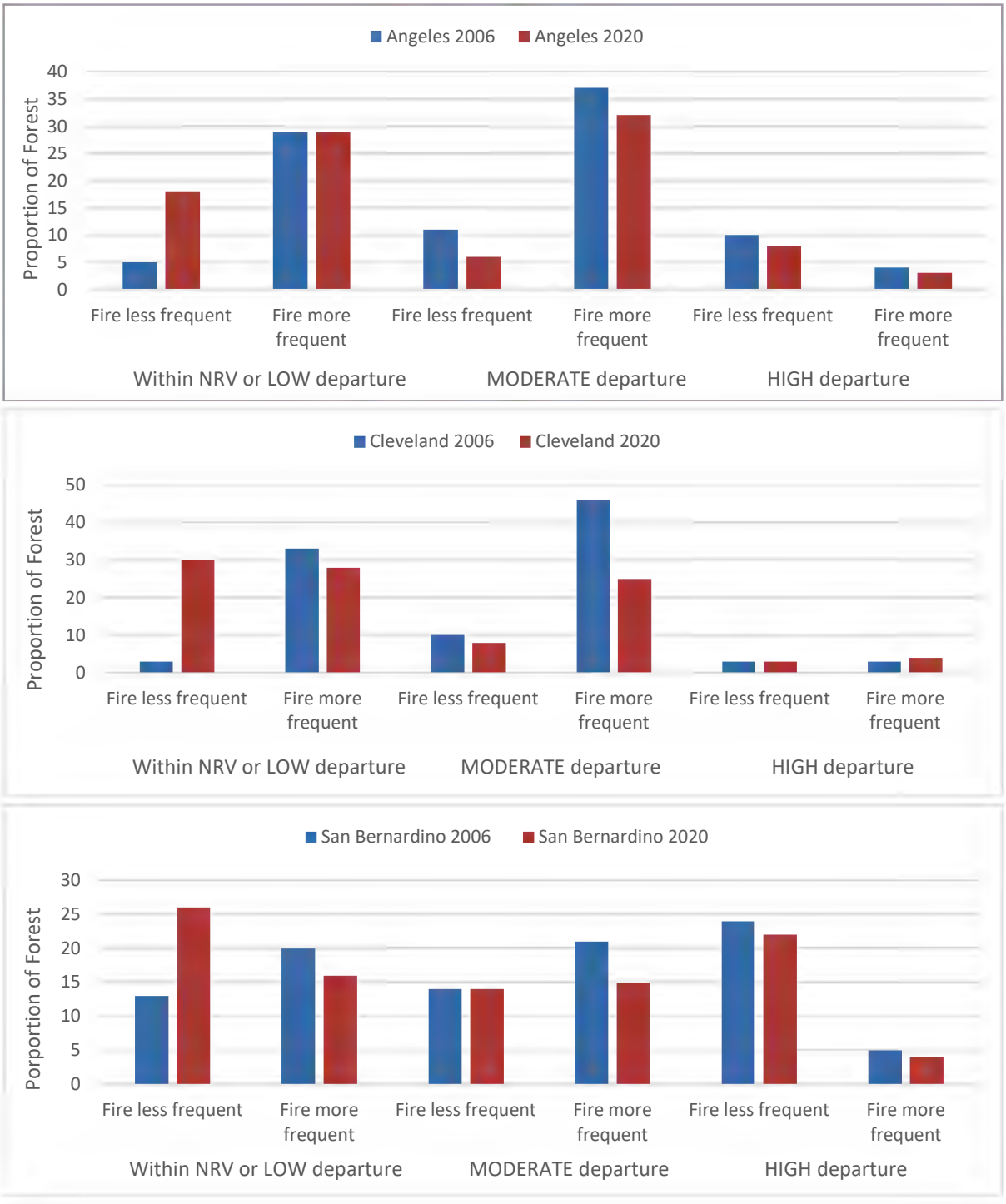


Figure 7a. Proportion of the Angeles (top), Cleveland (middle), and San Bernardino (bottom) National Forests that are within (or low departure), moderately departed from, and highly departed from historic fire return intervals in 2006 and in 2020. Within each departure category, bars indicate if the proportion of the forest is burning more or less frequently than historic fire return intervals.

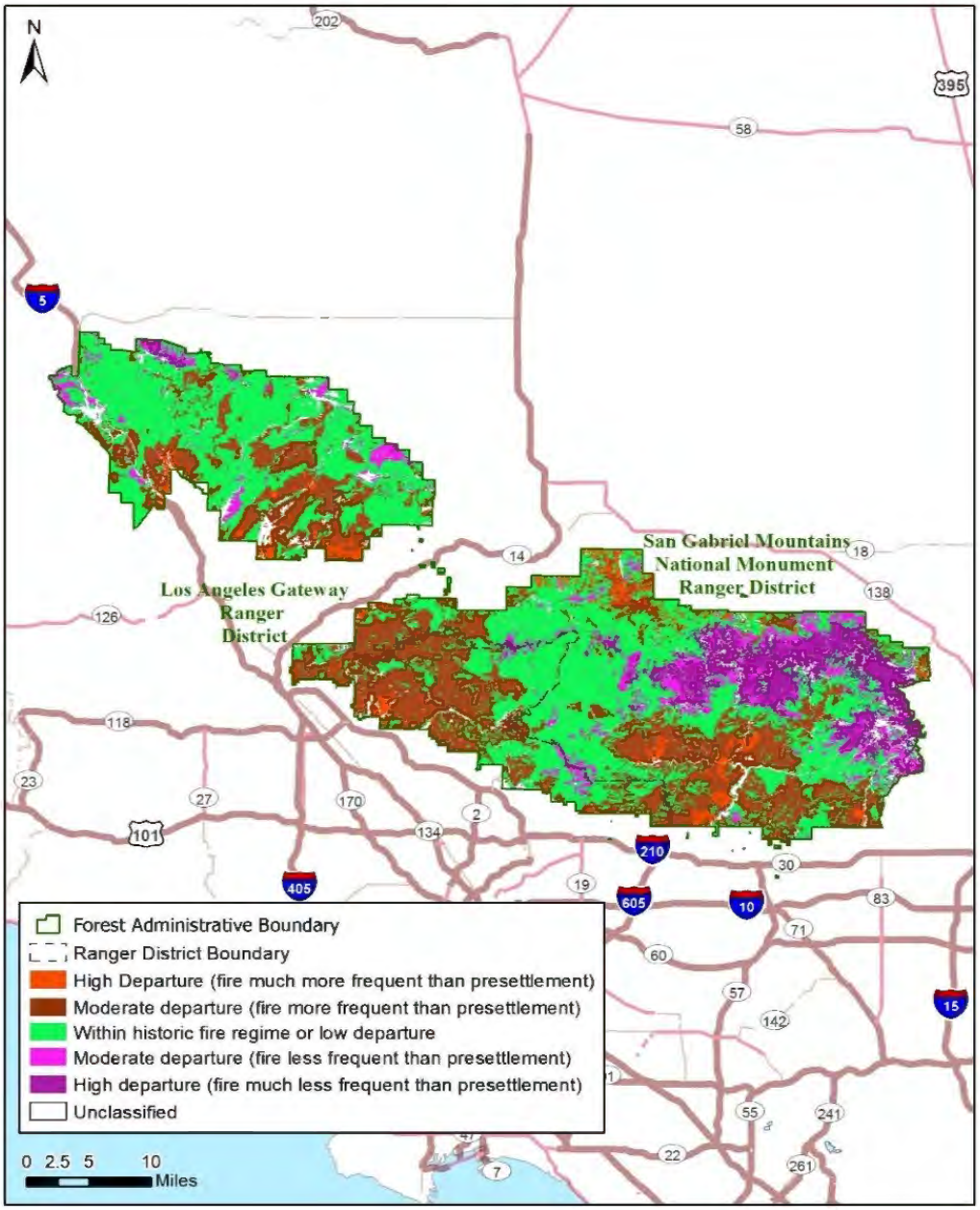


Figure 8a. Fire Return Interval Departure for the Angeles National Forest. Red and brown areas are those that are burning much more frequently than historically. Purple areas are those that are burning much less frequently than historically. Green areas are within or only slightly departed from the historic fire return interval.

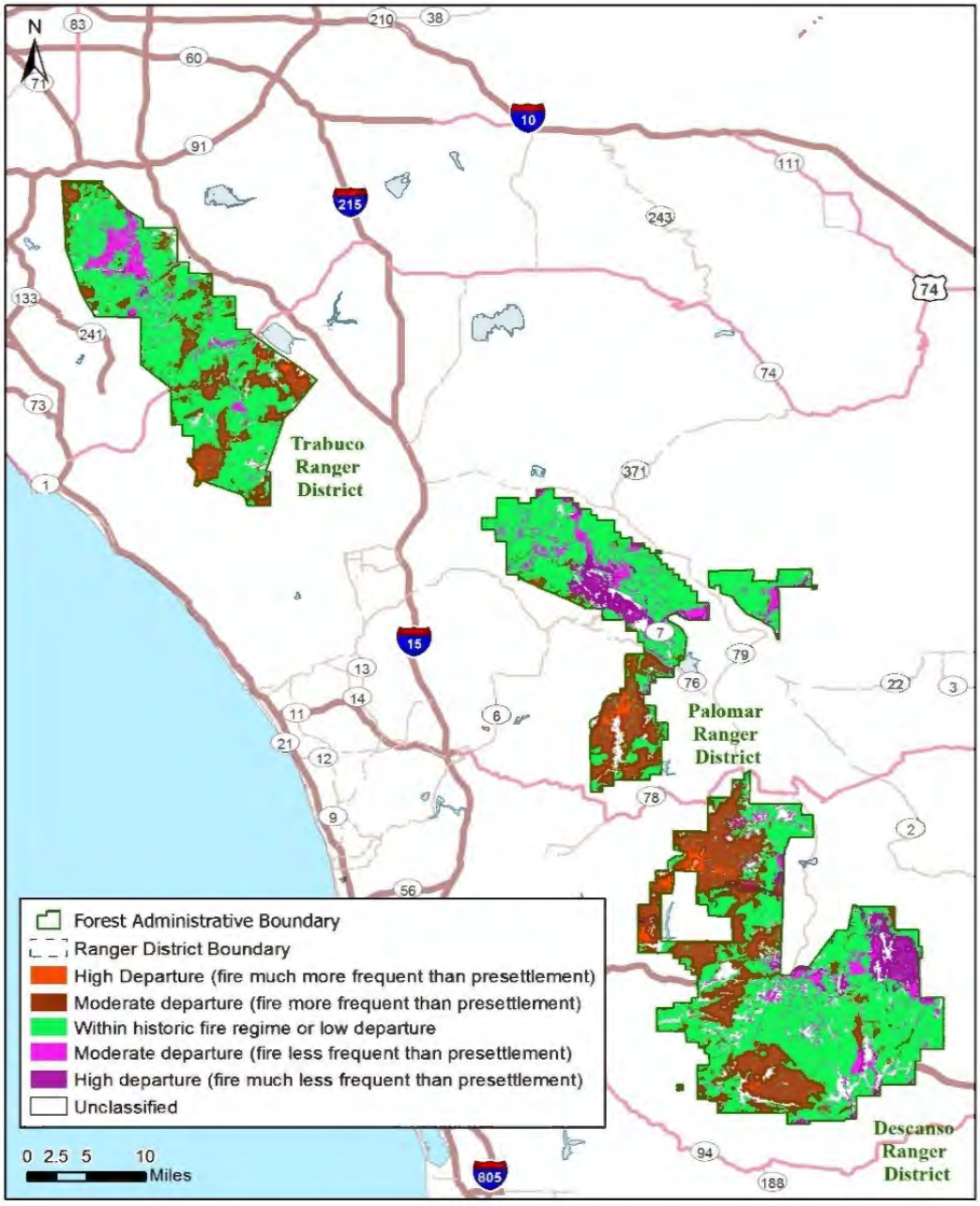


Figure 9a. Fire Return Interval Departure for the Cleveland National Forest. Red and brown areas are those that are burning much more frequently than historically. Purple areas are those that are burning much less frequently than historically. Green areas are within or only slightly departed from the historic fire return interval.

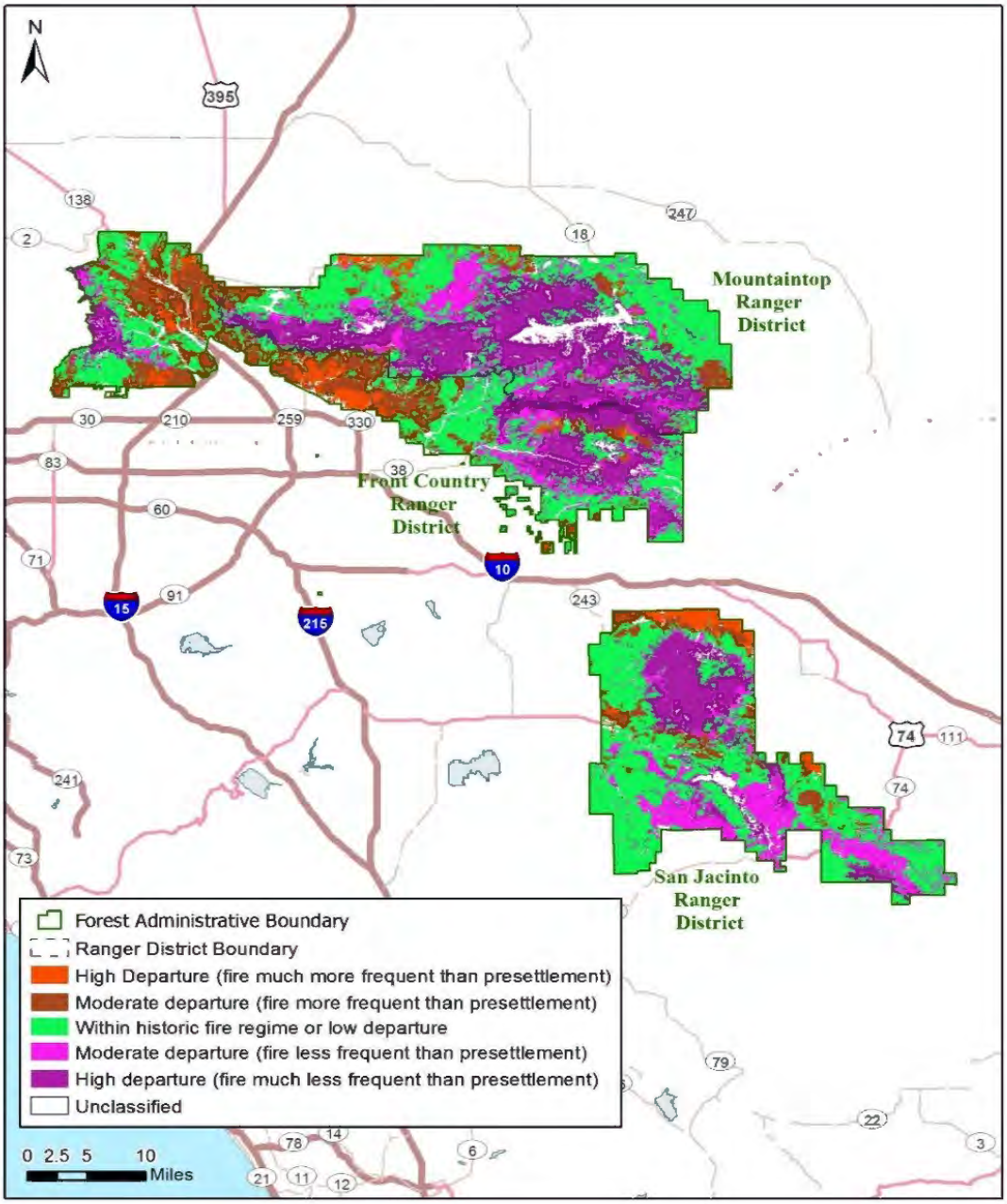
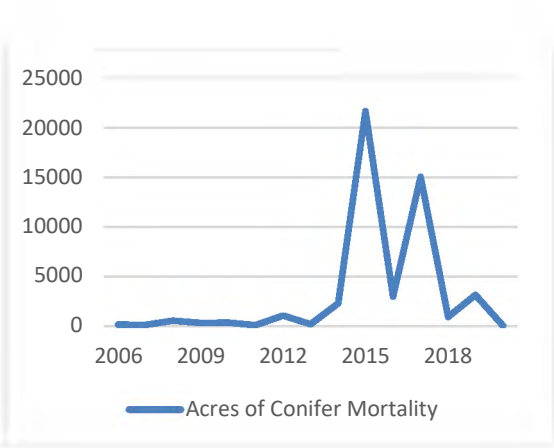


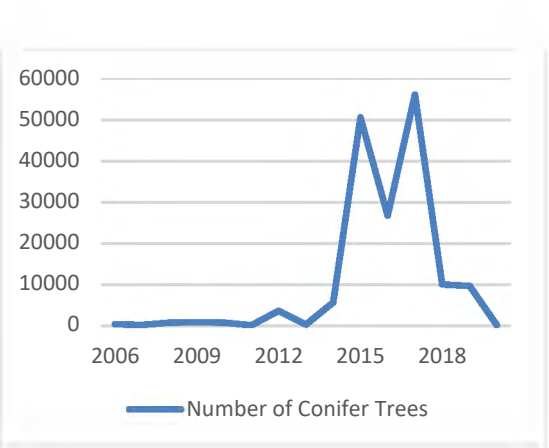
Figure 10a. Fire Return Interval Departure for the San Bernardino National Forest. Red and brown areas are those that are burning much more frequently than historically. Purple areas are those that are burning much less frequently than historically. Green areas are within or only slightly departed from the historic fire return interval.

Drought and insect – related tree mortality

Based on data for the USFS Forest Health Protection Aerial Detection Surveys, all Forests experienced a sharp increase in the acres of conifer mortality and estimated number of dead trees between 2015 and 2017. The dominant conifer species affected include white fir and yellow pine (Jeffrey and ponderosa pines). Conifer mortality since 2017 has been comparatively low. Lower and higher elevations, rather than middle elevations experienced a higher percent change in acres of mortality compared to baseline conditions but it is unclear if that is a result of higher relative mortality rates or the effects of tree densities (low and high elevations may have fewer trees). On the Cleveland National Forest, where the goldspotted oak borer is killing live oak trees, oak mortality also peaked between 2015 and 2017, and continued into 2018. The greatest concentration of dead oak trees radiates from existing goldspotted oak borer infestations. The peak in conifer and oak mortality coincided with a major drought event in the region. As drought is expected to increase over time due to climatic changes, there will be an increasing trend in either gradual or drought-induced punctuated mortality.

The Angeles National Forest conifer mortality pattern peaked in 2015 and again in 2017, 2016 mortality was relatively low (Figure 11a). In 2015, yellow pine, white fir and Bigcone Douglas fir were affected by the drought but yellow pines died in the greatest numbers and largest acreage. White fir mortality lagged behind, with a small peak in 2015 and greater peak in 2017. The greatest percent change in acreage and estimated dead trees occurred at the high elevation band (8,000 feet) on the Angeles National Forest in 2015.





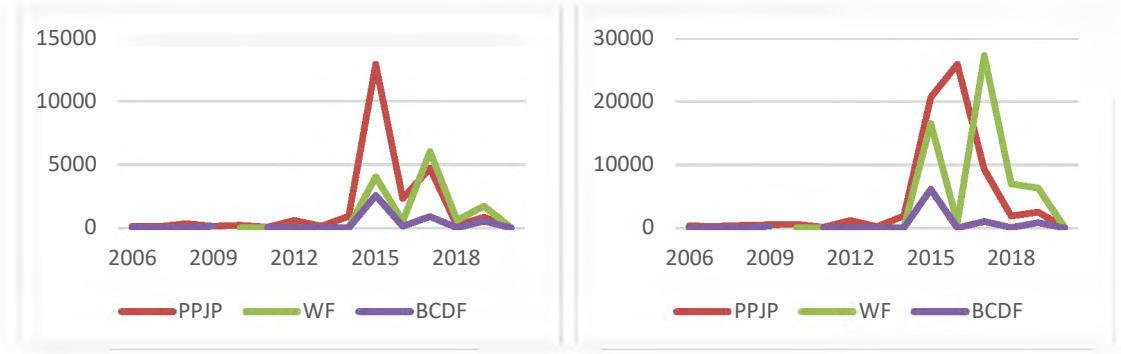
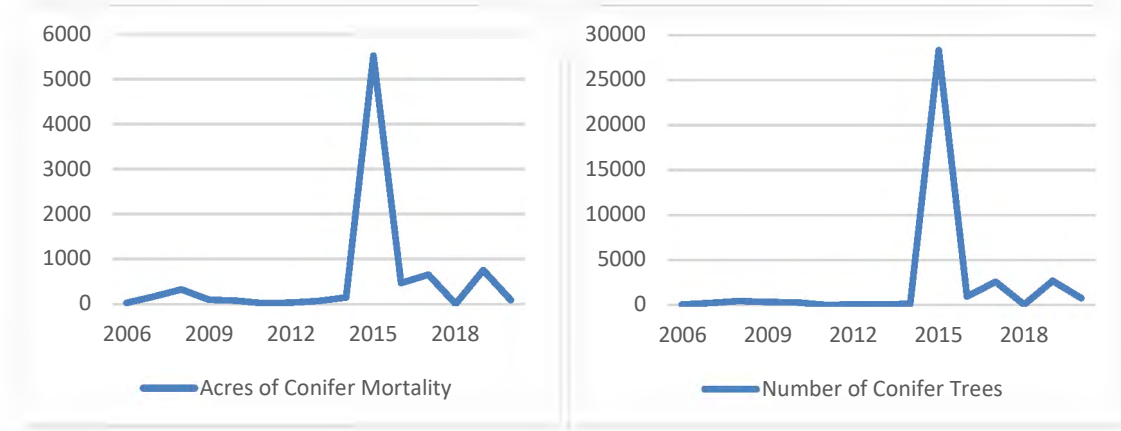


Figure 11a. Acres of conifer mortality (top left) and estimated number of dead conifers (top right) on the Angeles National Forest (USFS Forest Health Protection Aerial Detection Surveys). Acres (bottom left) and estimated number of dead (bottom right) white fir (WF), yellow pine (PPJP = pinyon pine, Jeffrey pine), and Bigcone douglas fir (BCDF) trees on the Angeles National Forest.

The Cleveland National Forest conifer mortality spiked in 2015 and ended earlier than the other two Forests (Figure 12a). The mortality event also affected far fewer acres and trees compared to the other two Forests. However, of the three Forests, the Cleveland National Forest had the highest percent change in tree mortality from 2006 numbers. Yellow pine trees were more affected by the mortality event than any other species group. In fact, Bigcone Douglas fir mortality affected fewer than 120 acres and 60 trees. Unlike the Angeles National Forest, the peak mortality on the Cleveland occurred at the lower elevation band (2,000 feet).



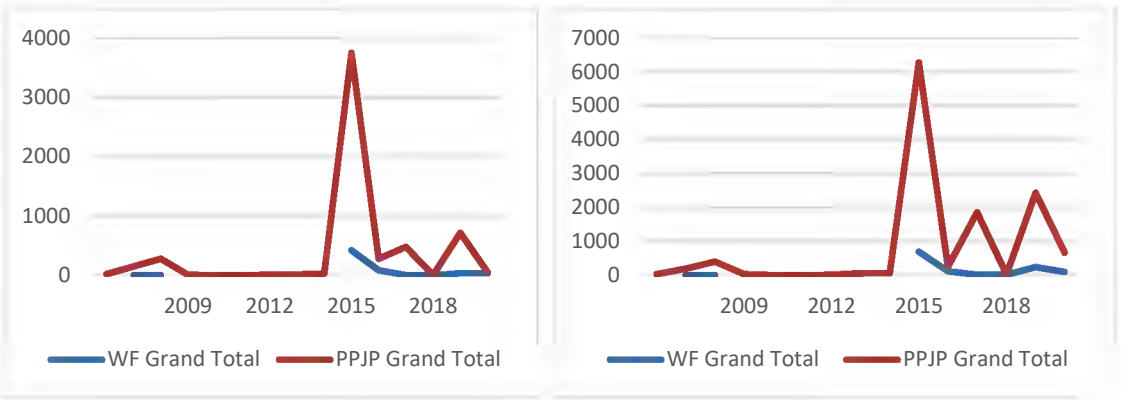


Figure 12a. Acres of conifer mortality (top left) and estimated number of dead conifers (top right) on the Cleveland National Forest (USFS Forest Health Protection Aerial Detection Surveys). Acres (bottom left) and estimated number of dead (bottom right) white fir (WF) and yellow pine (PPJP = pinyon pine, Jeffrey pine) trees on the Cleveland National Forest.

The Cleveland National Forest experienced a peak in live oak mortality also during the drought period (2015-2017). The estimated number of dead oak trees also remained elevated in 2018 (Figure 13a). The greatest concentration of annual dead oak trees tends to be on the leading edge of the goldspotted oak borer (GSOB) infestation as the beetles kill the most susceptible trees first adjacent to those already affected. On the Descanso Ranger District, GSOB-caused tree mortality was greatest from 2006-2017. By 2015, oak mortality began to increase on the Palomar Ranger District. GSOB was introduced to the Trabuco Ranger District through infested firewood and was first detected on National Forest lands in 2017 within Blue Jay and Falcon campgrounds. Active management within those campgrounds included removing GSOB-infested trees to reduce local population levels and preventative insecticide sprays to limit further infestation of trees. As a result, GSOB-related oak mortality has been limited on the Trabuco Ranger District. In 2019, oak mortality was concentrated on the Palomar Ranger District near Palomar Mountain.

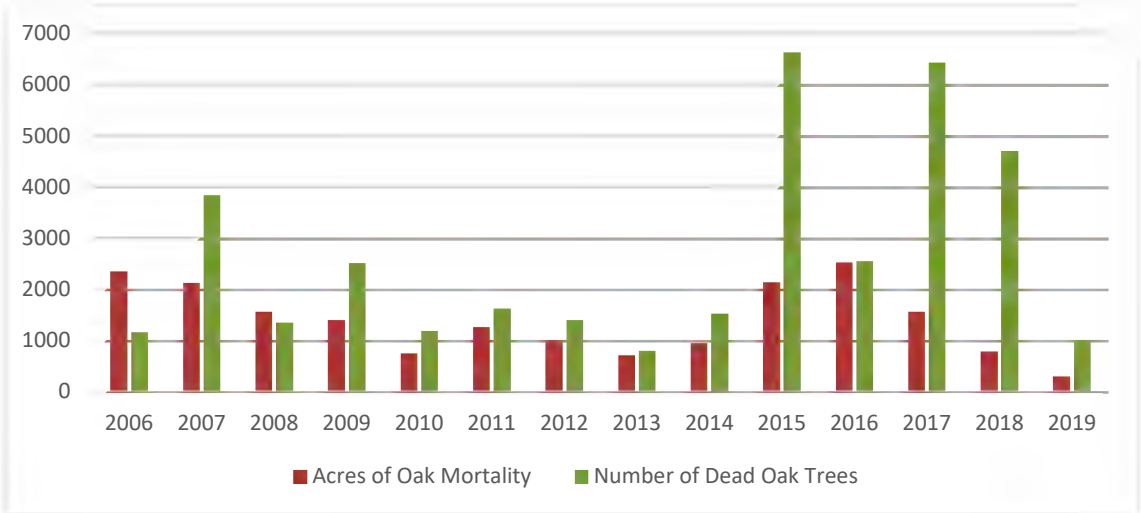


Figure 13a. Annual estimates of acres of new oak mortality and number of dead oak trees on the Cleveland National Forest from 2006 to 2019 (USFS Forest Health Protection Aerial Detection Surveys).

Conifer mortality on the San Bernardino National Forest spiked the most in 2017 compared both to previous years and the other two Forests (14a). This Forest had the most mortality (acres and numbers of trees) of the three Forests, but this result may reflect the fact that the San Bernardino has more conifer trees. Acres of Jeffrey pine and Ponderosa pine peaked in 2015 and then again in 2017 and a smaller peak in 2019. White fir experienced greater mortality than the pines showing one strong peak in 2017. Bigcone Douglas fir mortality also peaked in 2017 but in numbers far below the other species (< 2500 acres, < 4000 trees). Like the Cleveland National Forest, the elevation band that has experienced the most change in tree mortality is the lower elevation (3,000 feet).

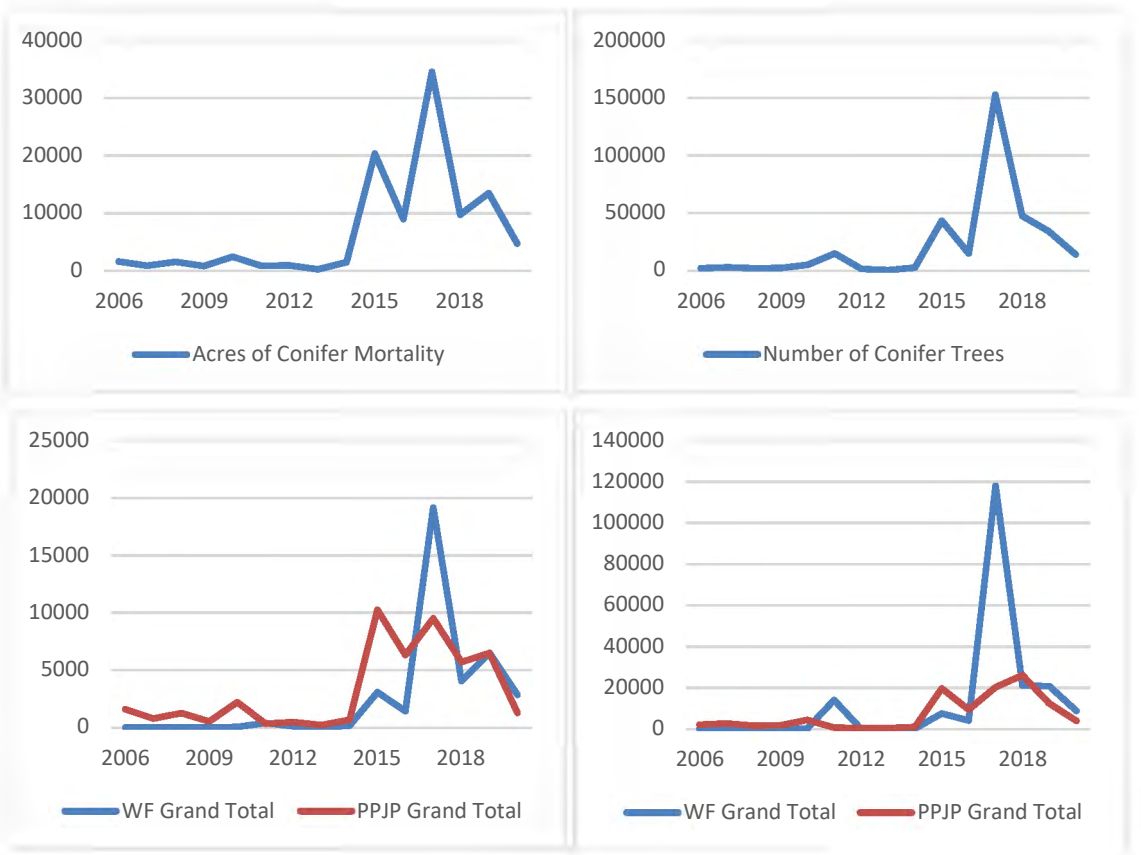


Figure 14a. Acres of conifer mortality (top left) and estimated number of dead conifers (top right) on the San Bernardino National Forest (USFS Forest Health Protection Aerial Detection Surveys). Acres (bottom left) and estimated number of dead (bottom right) white fir (WF) and yellow pine (PPJP = pinyon pine, Jeffrey pine) trees on the San Bernardino National Forest.

The three Forests are part of a multi-jurisdictional, collaborative partnership with the Climate Science Alliance, Institute for Ecological Monitoring and Management at San Diego State University, and the Southwest Climate Adaptation Science Center to develop a scientific assessment and create a conservation strategy for southern California's montane forests. The Southern California Montane Forest Project is guided by stakeholder input and is intended to help identify vulnerabilities and challenges facing montane forests (conifers and oaks) and identify the opportunities and strategies for increasing forest resilience.

Shrubland conversion to non-native grasses and herbs

There has been an increase in the acres and percent of the shrubland landscape that has type converted to non-native annual grasslands between 2009 and 2018 (the most recent years data were available). However, the proportion of non-native annual grasslands measured is low (1%) and the San Bernardino saw a decrease between 2017 and 2018. All three Forests have experienced an increase in the acres and percent of the shrubland landscape that has converted to non-native annual grasslands. This pattern has not been continuous – the Forests experienced an initial decrease in converted acres generally between 2009 and 2013 before increasing again (Figure 15a). The Angeles and Cleveland National Forests mirror this trend, but the San Bernardino experienced a decrease in the acres of non-native annual grassland between 2017 and 2018, the most recent years of available data (Figure 16a). The percentage of non-native annual grassland measured remains relatively low (1%).

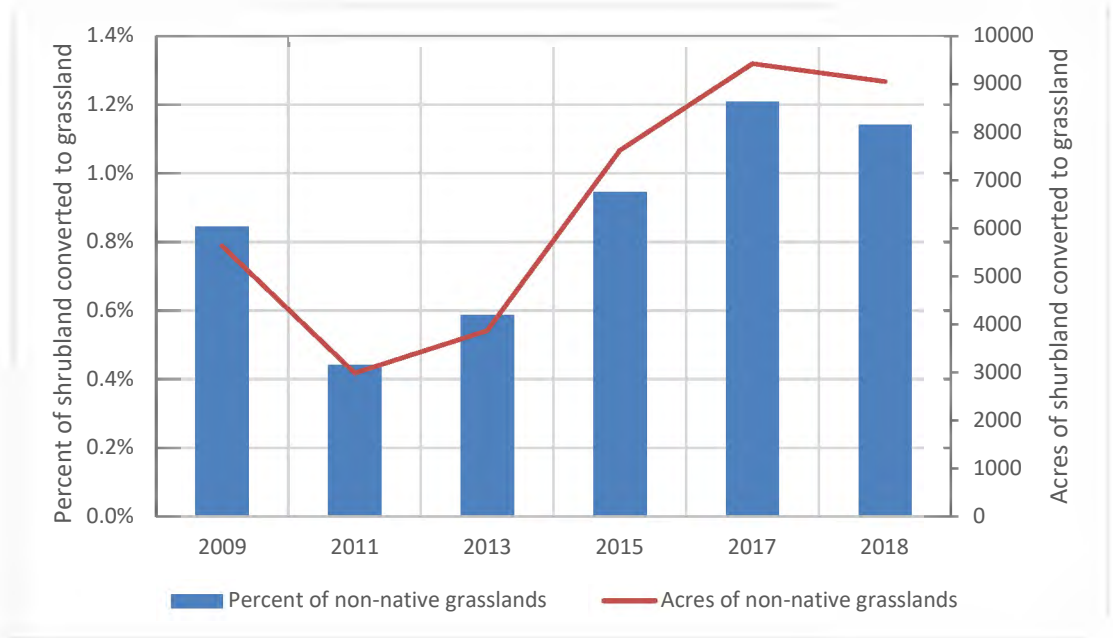


Figure 15a. Trend in acres and percent of shrubland converting to non-native annual grasslands on the Angeles, Cleveland, and San Bernardino National Forests between 2009 and 2018. Any areas burned in the last 10 years were not included in the analysis because of the potential to inflate conversion trends due to native fire-following grasses and herbs. The threshold for conversion was 50% meaning that any area that previously was considered shrubland (per Wieslander historic map) and is now >50% herb cover would be considered converted.

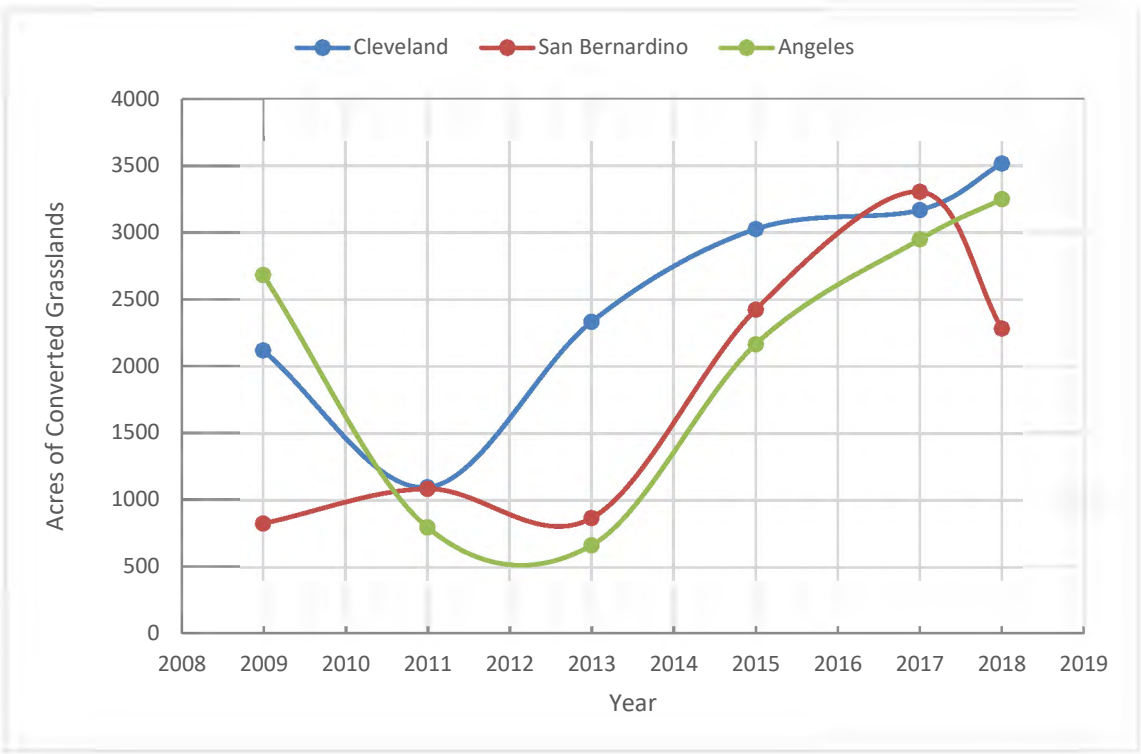


Figure 16a. Trend in acres of non-native annual grasslands on the Angeles, Cleveland, and San Bernardino National Forests between 2009 and 2018. Any areas burned in the last 10 years were not included in the analysis because of the potential to inflate conversion trends due to native fire-following grasses and herbs. The threshold for conversion was 50% meaning that any area that previously was considered shrubland (per Wieslander historic map) and is now >50% herb cover would be considered converted.

Part 1b Monitoring: Questions 10-21

Invasive Species

The second goal of the Southern California National Forests Land Management Plan emphasizes the desire to manage and/or eradicate invasive species on the southern California National Forests. Specifically, Goal 2.1 focuses on reversing the trend of a loss of natural resource values due to invasive species. Invasive plant and animal species, when unchecked, often demonstrate a capacity for spread at the expensive of endemic species. These species can cause extraordinary damage to ecosystem composition, structure, and function. Some invasives are already so prevalent that they are unlikely to be eradicated, therefore the objective is to control their spread into novel sites. There is also a continuous threat of the introduction of new invasive species. In these cases, the emphasis may be to eradicate them before they become ubiquitous as well as to prevent future introduction of invasives. Due to heavy use the recreating public, as well as a diverse suite of special uses on all southern California National Forests, the introduction and spread of invasive species will likely always be a primary management concern.

Monitoring Question

MQ10. Are the national forests' reported occurrences of invasive plants/animals showing a stable or decreasing trend? The indicator for this question is acres of treatments in reported occurrences.

Key Results

On the San Bernardino National Forest, invasive plant treatments consisted of approximately 96 acres treated during FY19 and 86 acres during FY20. There were invasive plants/weed treatments on all three Ranger Districts, with most of the acreage treated focusing on threatened and endangered plant habitat, wildlife habitat and riparian habitat.

Trends in annual indicators for Goal 2.1: Survey data was entered into the Natural Resource Information System (NRIS) corporate database and acres treated are recorded in the FACTS

database. Based on reported activities that have occurred from FY08 through FY20, approximately 2,003 acres have been treated or retreated for invasive plant species on the BDF. Invasive species that were removed include tree of heaven (*Ailanthus altissima*), giant reed (*Arundo donax*), Saharan mustard (*Brassica tournefortii*), spotted knapweed (*Centaurea stoebe ssp. micranthos*), yellow starthistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), Dalmatian toadflax *(Linaria dalmatica ssp. dalmatica*), tree tobacco (*Nicotiana glauca*), Spanish broom (*Spartium junceum*), and tamarisk (*Tamarix spp.*).

Because the Forest does not receive a level of funding sufficient to conduct a comprehensive inventory, we are unable to identify a trend based on change from total inventoried acres. It is possible for infestations we were able to treat that there is a decreasing trend, however, for all invasive plants it is stable or even increasing.

Managed Recreation and Wilderness

The third goal of the Southern California National Forests Land Management Plan emphasizes managed recreation and wilderness values. Goal 3.1 seeks to provide public use while simultaneously managing natural resource protection in the face of soaring demand for outdoor recreation from heavily populated southern California. This includes sustainably managed recreation facilities, conservation education, Tribal use, safe and well-designed roads and trails. Further, these recreational needs must be balanced with habitat protection, heritage site protection and other resource protection goals. Goal 3.2 is to retain a natural evolving character within wilderness. The desire condition for wilderness includes the maintenance of untrammeled ecological processes, vegetation and fire management, high air quality and opportunities for solitude for the recreating public.

Monitoring Questions

MQ11. Are trends in indicators and visitor satisfaction surveys indicating that the forest has provided quality, sustainable recreation opportunities that result in increased visitor satisfaction? The indicator for this question is visitor satisfaction.

MQ12. Are trends in indicators and visitor satisfaction surveys depicting the forest has provided solitude and challenge in an environment where human influences do not impede the free play of natural forces? The indicator for this question is Wilderness condition.

Key Results

Annual indicators are “recreation facilities managed to standard”, including natural resource protection as described in Goal 3.1. Implementation and effectiveness monitoring of resource

protection actions required by LMP standards S34 and S50 (including Part 3 Appendix D) help to measure the resource protection element of this goal.

Long-term indicators are visitor use trends by activity and overall satisfaction from the National Visitor Use Monitoring (NVUM) survey. The NVUM is produced every five years. The 2018 LMP monitoring reported on the 2014 NVUM. This 2019/2020 report reflects on the data collected for the 2019 NVUM. The current report summarized data which were collected in both 2014 and 2019 to demonstrate trends (see Table 1b).

Table 1b: Percent satisfied by site type.

Satisfaction Element	Satisfied Survey Respondents					
	Developed Sites		Undeveloped Areas (general forest areas)		Designated Wilderness	
Year	**2014**	**2019**	**2014**	**2019**	**2014**	**2019**
Developed Facilities	89.9%	82.2%	82.4%	77.6%	58.5%	79.2%
Access	91.6%	86.7%	92.6%	87.9%	95.7%	81.5%
Services	80.2%	87.6%	76.4%	73.9%	78.2%	73.7%
Feeling of Safety	99.1%	97.3%	99.0%	95.5%	100.0%	100.0%

The 2019 values are generally lower across the board than those determined in 2014. The three exceptions were services in developed areas, developed facilities in designated wilderness and feeling of safety in designated wilderness. The results also indicate that SBNF visitation has continued to increase substantially since 2014, with approximately 2,532,000 estimated visits in 2019 relative to 1,941,000 in 2014. The 2019 report is available online at: http://www.fs.fed.us/recreation/programs/nvum/.

For wilderness stewardship scores, preliminary reporting was initiated in 2015. Table 2b shows the WSP scores of all seven SBNF Wilderness areas from FY 2015 to 2020. These scores reflect the 10 core elements of wilderness condition. Each element has a 10-point score maximum with a combined maximum score of 100. Scores over 60 are considered "managed to standard". As of 2020, no Wilderness Areas were considered managed to standard, although Bighorn Mountain Wilderness Area is "approaching standard."

Table 2b: Wilderness Stewardship Scores

Year	Wilderness Area						
	Cucamonga	San Gorgonio	Bighorn Mountain	San Jacinto	South Fork San Jacinto	Santa Rosa	Cahuilla
2015	44	50	74	48	38	42	30
2016	50	54	64	44	30	38	30
2017	30	34	64	20	28	22	18
2018	32	30	54	28	26	18	14
2019	40	40	44	30	26	18	14
2020	44	40	52	38	32	28	26

The SBNF continues to strive toward visitor satisfaction despite ever increasing levels of visitation. Wilderness Condition scores between FY18 and FY20 are currently trending upward for most areas. If these trends continue, several wilderness areas could meet standards within the next few years.

Energy and Minerals Production

The fourth goal of the Southern California National Forests Land Management Plan emphasizes energy, renewable energy, and mineral production. The aim is to provide opportunities for mineral extraction and renewable and non-renewable energy resource development while continuing to sustain the land's productivity for other uses and its capability to support biodiversity goals and ecosystem health. The desired condition is approved mineral and energy developments are managed to facilitate production of mineral and energy resources while minimizing adverse impacts to surface and groundwater resources and protecting or enhancing ecosystem health and scenic values.

Monitoring Questions

MQ13. Has the forest been successful at protecting ecosystem health while providing mineral and energy resources for development? The indicators for this question include the number of mineral and energy development projects proposed and approved, and minerals and energy success at protecting ecosystem health.

MQ14. Has the forest been successful at protecting ecosystem health while providing renewable resources for development? The indicators for this question include the number of renewable resource projects proposed and approved, and renewable resources success at protecting ecosystem health.

Key Results

MQ13. Has the forest been successful at protecting ecosystem health while providing mineral and energy resources for development?

In fiscal year 2019 and 2020, insufficient staffing and Covid-19 prevented the Forest from monitoring the five operations on the San Bernardino National Forest that have plans of operation (Omya, Mitsubishi, Specialty Minerals Inc, Greg Paul gold mine, Belo Horizonte tourmaline mine). The expansions of the Omya Butterfield and Sentinel Quarries (June 2020) and the Mitsubishi South Quarry (Dec 2020) were both approved under Records of Decision. Both projects will develop large amounts of mineral resources over the next 40 years, and also provide substantial mitigation for affected natural resources, but neither have begun implementation as of the time of this report.

MQ14. Has the forest been successful at protecting ecosystem health while providing renewable resources for development?

Wind and solar projects are vetted through the special uses screening process, which considers a proposal's consistency with land management plan objectives, resource protection sufficiency and overall feasibility. The forest will continue to evaluate and consider renewable resource project proposals as they are proposed.

Based on projects and activities that have been analyzed and authorized via the National Environmental Policy Act process, the San Bernardino NF continues to meet the intent of both of these goals.

Watershed Function and Riparian Condition

The fifth goal of the Southern California National Forests Land Management Plan focuses on improving riparian and watershed condition. The watersheds throughout the southern California National forests are the headwaters and primary source areas for the majority of the rivers across southern California. They provide aquatic and riparian species habitat. Watersheds are quantitively assessed based on a variety of indicators and riparian areas are conserved through the establishment of Riparian Conservation Areas (RCAs) which offer additional protections and consideration, particularly through the project planning process. Ultimately, the desired condition regarding watersheds and riparian areas are properly functioning, healthy, dynamic and resilient, and capable of supporting healthy populations of desired native and desired nonnative riparian dependent species.

Monitoring Questions

MQ15. Is the forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds? The indicator for this question is the number of watersheds in each condition class.

MQ16. How do stream flows compare with historical records? The indicators for this question include monthly stream flows, timing and magnitude of peak flows, degree of variation.

MQ17. Is the forest increasing the proper functioning condition of riparian areas? The indicators for this question include the change in indicator score for aquatic habitat, aquatic biota and riparian vegetation.

Key Results

MQ15. Is the forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds?

Updating the watershed condition classification ratings is generally only done when a specific watershed has a disturbance event or when a previous disturbance event has mitigated through time. A voluntary reassessment occurred in FY21, which will be included in the next LMP monitoring report.

MQ16. How do stream flows compare with historical records?

Prolonged drought conditions in Southern California have had immediate short-term and more gradual long-term effects on surface water stream flows in the San Bernardino NF. Lower than average precipitation coupled with above-average temperatures in recent years has resulted

in diminished flows in streams across the landscape compared to historical records with average/above-average precipitation years and cooler temperatures.

MQ17. Is the forest increasing the proper functioning condition of riparian areas?

The indicators for this question include the change in indicator score for aquatic habitat, aquatic biota and riparian vegetation.

Updating the watershed condition classification ratings is generally only done when a specific watershed has a disturbance event or when a previous disturbance event has mitigated through time. A voluntary reassessment occurred in FY21, which will be included in the next LMP monitoring report.

Rangeland and Biological Resource Condition

The sixth goal of the Southern California National Forests Land Management Plan emphasizes the management of ecological conditions to improve rangeland and habitat for native and desired non-native species.

Goal 6.1 highlights a desire to move towards improved rangeland conditions as indicated by key range sites throughout the southern California National Forests. Sustainable rangeland management of livestock grazing areas requires moderate utilization in order to maintain forage cover, soil productivity, wildlife habitat, water quality and overall ecosystem health. Goal 6.2 focuses on providing sustainable ecological conditions for wildlife and plant species and uses Management Indicator Species (MIS) to monitor population and habitat trends.

These trends help in the management of federally-listed threatened and endangered (T/E) species on the southern California National Forests. Goal 6.2 is inseparable from other Land Management Plan (LMP) goals such as Goal 1.2 which aims to manage vegetation condition towards the desired condition identified for each habitat type, as well as properly functioning watersheds (Goal 5.1) that support riparian and aquatic habitat types that are essential for certain federally listed species, and properly functioning rangeland (Goal 6.1).

The desired condition for these two goals is that livestock grazing opportunities are maintained and are managed for sustainable, healthy rangelands that contribute to improving watershed conditions towards a fully functional and productive condition and that habitats for federally listed species are conserved, and listed species are recovered or trending towards recovery.

Monitoring Questions

MQ18. Is forest rangeland management maintaining or improving progress towards

sustainable rangelands and ecosystem health? The indicator for this question includes the percent of key areas in active allotments meeting or moving towards desired conditions.

MQ19. Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend? The indicator for this question is habitat condition of at-risk species.

Key Results

MQ18. Is forest rangeland management maintaining or improving progress towards sustainable rangelands and ecosystem health?

Annual compliance monitoring showed allotments were within forage utilization standards. At the forest level, no long-term monitoring plots were read in FY2019/FY2020. There are currently two active allotments within the San Jacinto Ranger District of the San Bernardino National Forest. The Rouse Allotment is currently inactive. The Wellman and Garner Allotments are active. Rattlesnake Allotment is shared with BLM and is on the Mountaintop Ranger District and is active. All are currently administered to standard. Data continues to be collected for annual monitoring of these allotments.

A term permit for 180 head, year-round, was issued in 2019. The term permit holder and the Forest Service have adjusted the number of cattle as needed depending upon adequate forage production, precipitation rates and personal use. Actual use by the term permit holder during the 2019 and 2020 grazing seasons was well below the permitted numbers in mutual agreement with the Forest Service, due to drought conditions.

In addition to the term permit, a temporary one-year permit was issued for several of the Garner Allotment subunits for the 2019 and 2020 grazing seasons. The temporary permit holder did not end up grazing in 2019 but did graze a total of 65 head in 2020 for part of the year.

The Wellman Allotment was authorized in a 2011 term permit for up to 50 head, year-round. Actual use by the term permit holder during the 2019 and 2020 grazing seasons was below the permitted numbers in mutual agreement with the Forest Service, due to drought conditions.

MQ19. Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend?

In calendar years 2019-2020, the San Bernardino National Forest reported to U.S. Fish & Wildlife Service (FWS) monitoring items from roughly 8 different LMP Ongoing Activities Biological Opinions (BO) for threatened and endangered (T&E) wildlife species and plant species.

There is an annual required monitoring report for the US Fish and Wildlife Service's (FWS) Biological Opinion FWS-05B0017-05F0009-R002 Programmatic Biological Opinion for the Revised Land Management Plans for the Four Southern California National Forests, California,

issued September 30, 2013. A summary of the monitoring results for the San Bernardino National Forest are in that table and they conclude that the habitat conditions for these species are in a stable condition for the Calendar Years 2019-2020. This report is available upon request.

Natural Areas in an Urban Context

The seventh goal of the Southern California National Forests Land Management Plan aims to retain the natural character of the southern California National Forests in the face of urbanization and a rapid increase in Wildland Urban Interface (WUI) areas. Specifically, goal 7.1 seeks to retain natural areas as a core for a regional network while focusing the built environment into the minimum land area needed to support growing public needs.

Goal 7 seeks to reduce ownership complexity, maintain habitat linkages and wildlife corridors with the desired condition that natural and cultural features of landscapes that provide their 'sense of place' are intact; that Back Country area retain their undeveloped character; facilities and infrastructure are high quality, well maintained and are clustered on existing sites or designated corridors.

Monitoring Questions

MQ20. Is the forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions? The indicators for this question include land ownership complexity, authorized and administrative infrastructure, and miles of unauthorized motorized routes.
MQ21. How many of each type of special use authorization, mining permit, and forest product permit are active on the forest? The indicator for this question is the number of special use authorizations and permits by type.

Key Results

MQ20. Is the forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions?

The San Bernardino NF is adjacent to densely populated areas whose residents frequently seek out opportunities to enjoy their national forest lands. This poses challenges that are unique to urban forests; NFS lands often serve as corridors for utilities that require frequent maintenance and upgrades. County and state highways wind through the national forest, bringing millions of recreators to the San Bernardino NF. There is a constant demand to modernize, improve and expand existing developed and dispersed recreation sites to

accommodate the ever-increasing number of visitors. Communications infrastructure plays an integral role in improving public safety in rural areas of the San Bernardino NF.

The San Bernardino National Forest employs a variety of resource specialists and subject matter experts who work as a team to identify and plan restoration projects across the forest. Forest Service staff work collaboratively with many different non-governmental organizations to fund and implement these projects, ranging from road decommissioning, trail maintenance, invasive species removal and replanting of native vegetation and trees.

MQ21. How many of each type of special use authorization, mining permit, and forest product permit are active on the forest?

Table 3b below shows the number and variety of special use authorizations (SUA) administered in FY18 compared to FY20 – a total of 1,386 permits were active on the SBNF during both fiscal years. While this does not reveal an increase in total number of active permits, the San Bernardino NF continues to make progress with respect to the administration of complex and controversial permits involving hydroelectric facilities, utilities, railroads and developed water.

Table 3b: Number and type of special use authorizations/permits in FY18 & FY20.

Permit Type	2018	2020	Explanation
Recreation Permits, Camps, Cabins, Concessionaires, Recreation Events & Other Recreation Permits (100s)	793	793	No change.
Agriculture (200s)	3	3	No change.
Community & Public Services (300s)	42	42	No change.
Feasibility, Research, Training, Cultural, Historical (400s)	49	49	No change.
Industry, Arts, Minerals, Timber (500s)	20	20	No change.
Hydroelectric, Wind, Fossil Fuels, Oil & Gas, Electric	29	29	No change.

Permit Type	2018	2020	Explanation
Transportation, Marine, Railroads, Federal Highways, Road/Trail, Pipeline, Cableway (700s)	129	129	No change.
Communications (800s)	103	103	No change.
Impoundment, Development, Measurement, Water Treatment (900s)	218	218	No change.
Total Permits	**1386**	**1386**	**No change.**