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Route To:

Subject: Supplemental Information Report - Rancheria Project, Updated Vegetation Information

To: Rancheria Forest Restoration Project Record

Forest Service handbook 1909.15 Section 18.1 provides direction for considering new or changed information after a decision has been made.

If new information or changed circumstances relating to the environmental impacts of a proposed action come to the attention of the responsible official after a decision has been made and prior to completion of the approved program or project, the responsible official must review the information carefully to determine its importance.

If, after an interdisciplinary review and consideration of new information within the context of the overall program or project, the responsible official determines that a correction, supplement, or revision to an environmental document is not necessary, implementation should continue. Document the results of the interdisciplinary review in the appropriate program or project file.

If the responsible official determines that a correction, supplement, or revision to an environmental document is necessary, follow the relevant direction in sections 18.2 - 18.4.

In accordance with FSH 1909.15, section 18, this supplemental information report documents the interdisciplinary review of updated vegetation information and the potential impacts of tree mortality and large wildfires in the southern Sierras on the Rancheria Forest Restoration Project. It also documents my determination that a correction, supplement, or revision to the project Environmental Assessment is necessary. This report will be added to the project file.

Background

A Decision Notice and Finding of No Significant Impact (DN/FONSI) for the Rancheria Forest Restoration Project were signed July 5, 2013. Based upon review of the Rancheria Forest Restoration Project Environmental Assessment (EA), the decision was to implement Alternative 2. The EA evaluated the potential impacts of the project based on vegetation as it existed at that time. Since then, the southern Sierras have been affected by drought, insect outbreaks, and large wildfires which have altered forest structure both within the project and more broadly across the landscape.



The EA describes the purpose of the Rancheria Project as promoting a healthy, diverse forest ecosystem that is resilient to the effects of wildfire and other threats, and environmentally, socially, and economically sustainable. The intent was also to reduce fuels and stand density to reduce the risk to people, property, and wildlife habitat from uncharacteristically severe wildfire.

The changes in vegetation from recent tree mortality and large wildfires in the southern Sierras reinforce the need for forested stands that are resilient and illustrate the threats to forest health. Stand density (number of trees per acre) influences mortality due to insects, water stress, and other factors, and reducing tree density is considered one of the most effective approaches to reducing tree mortality in fire suppressed forests, like those in the Rancheria project area.

Analysis

Fisher (Pekania pennanti)

The 2013 *Rancheria Forest Restoration Project Supplemental Biological Evaluation for Fisher* (Fisher BE) examined the direct, indirect and cumulative effects of this project on fishers. A determination was made that the Rancheria Project “may affect individuals, but is not likely to contribute to the need for Federal listing or result in loss of viability for fisher in the planning area.” The analysis supporting that determination was documented in detail in the Fisher BE and summarized in Rancheria Forest Restoration Project EA (page 37).

The analysis in the Fisher BE was based on the Forest Service Existing Vegetation GIS data (EVEG) available at that time. Existing acres of California Wildlife Habitat Relationships (CWHR) vegetation type were determined using a GIS layer published by the USDA Forest Service, Pacific Southwest Region Remote Sensing Lab. Treatment acres relative to existing vegetation were based on mapping, field visits and stand exams conducted in 2011 by Forest Service Staff. These field visits refined the base vegetation layer, corrected habitat types as needed and refined the net acres of treatment.

Data collected in stand exams were entered into the most current version of the FVS with the Fire and Fuels extension, to model existing stand conditions, and project growth, mortality and fire effects into the future under the three alternatives. Simulation modeling is a process of analyzing existing environmental conditions, including fuel loads, to provide information when comparing the relative risks of no action versus the action alternatives.

Zielinski et al. 2013 Tolerance to forest management intensity on the landscape

This study, which was published after the Rancheria Project Fisher BE was prepared, examined fishers’ tolerance of management-related disturbance. The study found that areas with the highest rate of use by fishers were places where an average of 2.6% of the area has been disturbed per year. It also concluded that fisher occupancy was highest in areas where restorative forestry activities occurred and suggested that if these activities “are applied at rates that do not exceed about 13% of an area in 5 years and individual,

critical structures are identified and retained on the landscape fishers should occupy areas with this extent and rate of disturbance.” The authors’ recommendations for limits on mechanical treatments were incorporated into the Southern Sierra Nevada Fisher Conservation Strategy and are discussed below.

Southern Sierra Fisher Conservation Strategy (Version 1.0, February 2016)

The Southern Sierra Fisher Conservation Strategy was developed after the EA was prepared for the Rancheria Project and the DN and FONSI were signed. We evaluated the consistency of the Rancheria Project with the goals, objectives and recommendations in the new Conservation Strategy. The Rancheria project area is within what the strategy labels as Fisher Core Area 2, which includes the southwestern tip of the Sierra Nevada and Greenhorn Mountains. There are no linkage areas near the project area.

The Southern Sierra Nevada Fisher Conservation Strategy lists the following goals and objectives to increase the resiliency of suitable hexagons:

- **Goal 3.** Restore and maintain high quality and resilient fisher habitat conditions.
 - Objective 3.1.** Improve fisher habitat resiliency and restore fire as a key ecological process.
 - Conservation measures.** Reduce hazardous fuel conditions and increase habitat heterogeneity patterns that reflect how topography, soil, and other factors affect vegetation characteristics and fire behavior; implement ecological restoration concepts described in GTR 220/237 to promote conditions that allow fire to serve its natural ecological role in maintaining resilient and heterogeneous forest conditions; maximize use of prescribed fire or wildfire managed for resource benefits at large scales and under conditions that promote resiliency and fisher habitat values.
 - Objective 3.2.** Maintain or increase important fisher habitat elements.
 - Conservation measures.** Retain and promote recruitment of large trees, coarse woody debris (large snags and logs), trees with cavities and other defects, large black oaks, dense tree clusters and gaps at fine (<0.5 ac) resolution, and clumps of multi-storied tree canopies.

The Rancheria Project meets these goals and objectives by adhering to the design features set forth to improve fisher habitat resiliency while retaining key fisher habitat characteristics. These design features include guidelines for retaining sufficient levels of coarse woody debris, large snags, and promoting stand heterogeneity.

The conservation strategy, modified by the “Changed Circumstances and Implementation of the Southern Nevada Fisher Conservation Strategy Note from the Authors, March 2017” also proposed the following guideline where mechanical treatments are planned in and around remaining high value reproductive habitat (CWHR 4D, 5M, 5D, and 6):

- Design treatments to limit disturbance from mechanical treatments to <13% of each affected cell within a 5-year period (Zielinski et al. 2013b) providing resilience goals for remaining high value reproductive habitat are achievable. Where

remaining high value reproductive habitat is at significant risk of loss or isolation due to lack of resilience, design treatments to limit disturbance from mechanical treatments to less than <30% of each affected cell within a 5-year period (Zielinski et al. 2013b, Spencer et al. 2015). Where remaining high value reproductive habitat is at significant risk, and resiliency goals cannot be met while limiting treatment disturbance to these rates, conduct a cost-benefit assessment to determine if benefits to fisher habitat conservation in the long-term are likely to outweigh short-term costs....

Hexagonal grid cells about the size of an average female breeding home range or territory (10 km², ~4 mi²) were overlaid on the Rancheria Project analysis area. The project area overlaps three individual hexagons within Core Area 2. A new analysis of cumulative effects for these hexagons was conducted using the Sierra Nevada Fisher Conservation Strategy guidelines shown above (*Revisions to the Rancheria Project Fisher Biological Evaluation-2017*).

A series of five-year moving windows were used to assess the percentage of each hexagon treated, with the last year in the first sequence (2013-2017) being the year the Rancheria Project is expected to recommence and the last year in the last sequence (2019-2023) being the year the Rancheria Project is expected to be completed. The five-year moving windows account for all past vegetation treatment activities in addition to the Rancheria Project within each hexagon for each designated time frame.

The 30% treatment limit over a five-year period was used in this analysis because this area is at high risk of severe fire. The Fire Return Interval Departure (FRID) is listed as 'extreme' since more than five fire cycles have been missed. Since 1910, the majority of the Rancheria Project area has no recorded fire history. The 1970 Red Mountain Fire that burned adjacent to the Rancheria Project area was a stand replacing fire exhibiting extreme fire behavior (see Fuels report in the project record for more information). In 2016, the Cedar Fire burned over 29,000 acres immediately to the north of the project area; much of that area also burned at high intensity. When modeling the habitat conditions under 97th percentile conditions using forest vegetation simulator (FVS), the results show a stand replacing fire with a severe drop in canopy cover to 18%, a loss of 4,426 acres of moderate to high suitability habitat, a substantial reduction in the availability of suitable resting and denning structures, and fragmentation of habitat connectivity.

Hexagon	Total Treated Acres	% of Hexagon Treated	Total Treated CWHR 2.1 Acres	% of Hexagon CWHR 2.1 Treated	Total Treated CBI High Value Reproductive Acres	% of Hexagon CBI High Value Reproductive Treated
8269	478	19%	418	17%	240	10%
8344	740	30%	562	23%	158	6%
8421	733	30%	595	24%	214	9%

2017-2021

Hexagon	Total Treated Acres	% of Hexagon Treated	Total Treated CWHR 2.1 Acres	% of Hexagon CWHR 2.1 Treated	Total Treated CBI High Value Reproductive Acres	% of Hexagon CBI High Value Reproductive Treated
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2018-2022

Hexagon	Total Treated Acres	% of Hexagon Treated	Total Treated CWHR 2.1 Acres	% of Hexagon CWHR 2.1 Treated	Total Treated CBI High Value Reproductive Acres	% of Hexagon CBI High Value Reproductive Treated
8269	231	9%	197	8%	120	5%
8344	688	28%	453	18%	186	8%
8421	747	30%	563	23%	268	11%

2019-2023

Hexagon	Total Treated Acres	% of Hexagon Treated	Total Treated CWHR 2.1 Acres	% of Hexagon CWHR 2.1 Treated	Total Treated CBI High Value	% of Hexagon CBI High Value Reproductive Treated

					Reproductive Acres	
8269	0	0%	0	0%	0	0%
8344	228	9%	150	6%	62	3%
8421	327	13%	247	10%	117	5%

Across all five-year moving windows from initiation to completion of the Rancheria Project, the percentage of each hexagon treated ranges from 0-30% (Tables 1-7). When specifically looking at fisher habitat, the percentage of CWHR 2.1 suitable habitat and CBI high value reproductive habitat treated within each affected hexagon ranges from 0-24 and 0-11% respectively (Tables 1-7). The percentage of suitable denning and resting habitat (most limiting) treated within each hexagon is below the Conservation Strategy guidelines for areas at high risk of severe fire across all time periods.

When the original analysis of effects was conducted in the 2013 Fisher BE, these recommended limits on disturbance from mechanical treatments did not exist and therefore were not considered in the analysis. The Rancheria Project would meet the guideline of <30% of each affected cell mechanically treated within a 5-year period where “high value reproductive habitat is at significant risk of loss.” However, all three affected hexagons would exceed the lower <13% recommendation five times within moving window periods. This repeated disturbance was not considered in the 2013 Fisher BE and is a factor that may be significant and alter the conclusions of that original analysis.

Conservation Biology Institute (CBI) Modeling

The Forest Service did not rely on or apply results from the new CBI management grid system analysis at project level for the Rancheria project. The management grid system analysis is a landscape scale model based on vegetation that is not accurate at fine scales, so they were not used to evaluate the effects of these projects on fishers. The CBI management grid system analysis also lacks an accurate, up-to-date source of existing vegetation and is therefore generally of no value for project level analyses. The fisher analyses for this project was based on the CWHR 2.1 model and FAST methodology. This is in accordance with recent guidance provided by the authors of the Conservation Strategy, as discussed below.

CBI habitat modeling is based primarily on data from long-term studies on the Sierra National Forest. There are significant differences between habitat utilized by fishers on the Sierra National Forest and that utilized in the southern portion of the Sequoia National Forest. For example, according to the CBI modeling there should be no fishers on the Kern Plateau, even though it is known that there are fishers present.

2017 Note from the Authors of the Fisher Conservation Strategy

In March 2017, the authors of the Conservation Strategy released a document titled “*Changed Circumstances and Implementation of the Southern Sierra Nevada Fisher Conservation Strategy*.” That document stated that the recommendations in the

Conservation Strategy neither “anticipated nor account” for the “dramatic changes...in Sierra Nevada mixed conifer forests due to drought and extraordinary tree mortality.”

The author’s note also stated:

There is no available research or direct observations concerning how massive changes in tree cover due to drought and insect mortality, including death in even the largest tree classes, may affect fisher habitat use or population processes. There is also no direct evidence indicating how fishers will respond to management actions being implemented by land managers in response to this mortality event. It is therefore important to continue and expand on monitoring and research in these altered landscapes to characterize how fishers respond. In the meantime, *it is probable that maintaining, and increasing the resilience of the remaining patches of large living conifers will be important to providing for the long-term persistence of the fisher population.*

(Emphasis added.) The authors also “do not recommend applying the original management grid system to evaluate the changes to unsuitable, potentially suitable, and suitable cells at this time. We also do not recommend applying the conservation targets, nor the Strategy description of target cells, at this time.”

The Rancheria project was in compliance with the recommendations in the original 2016 Conservation Strategy, and therefore also meets these revised recommendations. However, the new recommendations for metrics to use in a project-level analysis of effects have been incorporated into the *Revisions to the Rancheria Project Fisher Biological Evaluation-2017* and are discussed below.

Recent Tree Mortality

To determine if the subsequent tree mortality and large wildfires have significantly altered existing vegetation, vegetation data used for the Fisher BE was compared to EVEG data updated in 2016. The complete analysis is found in *Revisions to the Rancheria Project Fisher Biological Evaluation-2017*.

Fisher Habitat Models

The CWHR 2.1 model predicts “high and moderate capability habitat” for fishers. This model is a derivative of the CWHR fisher habitat relationship model constructed by Davis et al. 2007 [CWHR2] and applied to southern Sierra Nevada forest vegetation types. A detailed explanation of the model is available in the 2012 Fisher BE, which is in the project record.

The habitat modeling in the Conservation Strategy by CBI focuses on a subset of the habitat considered suitable by CWHR 2.1 (see the Conservation Strategy for a detailed explanation of their methodology). This “high value reproductive habitat” is believed by the authors to be of particular importance to female fishers, based on known habitat use on the Sierra National Forest. A note from the authors in March 2017 titled “*Changed Circumstances and Implementation of the Southern Sierra Nevada Fisher Conservation*

Strategy” recommended including “high value reproductive habitat” in the analysis of effects at the project level. Therefore, this variable was included in the *Revisions to the Rancheria Project Fisher Biological Evaluation-2017*. Key points of that analysis are discussed below with references to both the CWHR 2.1 and “high value reproductive” (CBI model) habitat models.

Results of Updated (2017) Fisher Analysis

A new analysis of effects of the Rancheria project, based on updated vegetation was completed and documented in the *Revisions to the Rancheria Project Fisher Biological Evaluation-2017*, which is hereby incorporated by reference. The updated vegetation incorporated the changes caused by tree mortality and wildfires. Potential effects to fisher habitat were examined at three scales: the project area, 7th Order Watershed (female fisher home range scale), and fisher Core Area 2.

Project Area Scale

At the project area scale, available moderate and high suitability habitat as defined by the CWHR 2.1 model has declined by about 14 percent since the 2013 analysis in the Fisher BE. FVS modeling in 2017 projected that all the habitat currently considered suitable in the Rancheria project area would remain so following treatments. However, habitat quality would decline on 1,279 acres following project implementation.

Within CBI high value reproductive habitat only, available habitat in this category has declined by about 56 percent since the 2013 analysis in the Fisher BE. FVS modeling in 2017 projected that 926 acres in the Rancheria project area currently considered CBI high value reproductive habitat would drop out of this category following treatments. All these acres would still be considered suitable habitat using the broader CWHR 2.1 definition, but would be reduced in quality.

The 2013 Fisher BE concluded that implementation of the Rancheria Project would only slightly reduce the quality of fisher habitat in the project area. The conclusion was that (based on the CWHR 2.1 model), habitat would remain in moderate suitability condition for fisher post treatment. The updated analysis in *Revisions to the Rancheria Project Fisher Biological Evaluation-2017* confirms that conclusion is still valid, if considering only the CWHR 2.1 habitat. However, when considering CBI high value reproductive habitat, the reduction of over 50 percent of the habitat in this category may be significant and alter the conclusion of the analysis.

7th Order Watershed (fisher home range scale)

This scale considers the availability of suitable habitat within an approximate home range sized area. When examining the effects of the project on this scale, an eight percent shift from density class D (>60%) to density class M (40-59%) will occur if the Rancheria project is implemented. There would also be a shift of three percent from density class M to density class P (25-39%). The end result is that at this scale, habitat would still be in the range of habitat conditions considered suitable for fishers using the CWHR 2.1 model. Within CBI high value reproductive habitat, there would be a sixteen percent shift from density class D to class M. These changes, although reducing habitat quality, would not

significantly alter the availability or configuration of fisher habitat at the home range scale. Nor would the changes threaten connectivity or create a barrier to movement of fisher.

Future Tree Mortality

The analysis in this document was done using the best available vegetation information. Specific data for additional tree mortality after November 2016 and for 2017 are limited to estimates. For California in general, despite the end of drought conditions, one prediction is that trees will continue to die for at least 1 to 3 years. (Statement by Jeanne Wade Evans, Deputy Regional Forester, Pacific Southwest Region). The forecast range for the Sierras is for continued mortality rates above normal.

Ongoing tree mortality rates were considered qualitatively at the cumulative effects scale. While ongoing tree mortality is likely to further lower habitat quality, impacts to fisher habitat from this predicted future mortality is speculative at best. Core Area 2 covers a wide geographic area, encompassing a number of different habitat types at different elevations which are not impacted equally by the current mortality event.

The impact of further tree mortality on fisher habitat will continue to be monitored and addressed as necessary, as more quantifiable information (i.e., new vegetation data) becomes available. Any changes in circumstances may be evaluated as directed in Forest Service handbook 1909.15 Section 18.1.

The Rancheria project area has experienced declines in fisher habitat quality and quantity that may be significant.

2016 Cedar Fire

In August 2016, the Cedar Fire burned over 29,000 acres in the Greenhorn Mountains, including 18,370 acres in fisher Core Area 2. The fire effects resulted in a loss of about two percent of the CWHR 2.1 habitat and two percent of the CBI habitat available to the southern Sierra fisher sub-population. Within just fisher Core Area 2, this represents a loss of less than five percent of both CWHR 2.1 and CBI habitat. The effects of this fire alone are not likely to render the effects of implementation of the Rancheria project significant or cause it to threaten the viability of the sub-population, but the changes in vegetation caused by the Cedar fire have isolated the fisher population in the southern Greenhorn Mountains. Fishers south of the Cedar Fire, including in the Rancheria project area may be at greater risk in the long-term due to this isolation.

The Fisher Conservation Strategy identifies connectivity as “essential to sustaining and recovering the fisher population.” The habitat fragmentation and loss of connectivity caused by the effects of the Cedar Fire was not considered in the 2013 Fisher BE. This change in conditions may be significant and alter the conclusions made in the original determination for this project.

Updated Cumulative Effects, Including the 2016 Cedar Fire

To account for the changes in vegetation as a result of the Cedar Fire and recent tree mortality, a new analysis of cumulative effects for the area the Sierra Nevada Fisher

Conservation Strategy labels Core Area 2 was conducted (*Revisions to the Rancheria Project Fisher Biological Evaluation-2017*). A summary of that analysis is below.

Fisher Core Area 2 Cumulative Effects Analysis

Additional cumulative effects to fisher Core Area 2 from the Revised Frog, Summit CE and Bull Run Roadside Hazard Tree Mitigation projects were considered. Private or state vegetation management in non-suitable habitat and/or salvage harvest are not considered, since they do not affect habitat variables that would result in changes to the CWHR 2.1 habitat for fisher. Although the Spear Creek project is listed on the Forest's Schedule of Proposed Actions (SOPA), the project has not been sufficiently developed to describe the prescription or specific location of the acres to be treated. It is known, however, that the Spear Creek project will not overlap with the Rancheria Project suitable hexagons, and therefore the Spear Creek project will not contribute to the Conservation Strategy guideline thresholds for mechanical treatments within these hexagons. In addition, these projects would primarily fell hazard trees along roads and near structures, which are considered areas of lower quality habitat for fishers. Therefore, impacts at the fisher core area scale are expected to be minimal.

Since 2016 approximately 8,020 acres have been treated, or are proposed for treatment, within Core Area 2 on Sequoia National Forest lands. Changes in vegetation as a result of implementation of the projects listed in the original cumulative effects analysis table have been accounted for in the updated vegetation layer, and therefore are not included in this new analysis. Of the 8,020 acres, approximately 4,457 acres are suitable CWHR 2.1 habitat and 2,183 are CBI high value reproductive habitat, which equates to approximately 4% of the suitable CWHR 2.1 and 3% of the CBI high value reproductive habitat available within the Core Area 2 cumulative effects analysis area.

Cumulative Effects Conclusion

The cumulative effects of proposed vegetation management projects in Fisher Core Area 2 would impact 4% or less of the available suitable fisher habitat (using both the CWHR 2.1 and CBI high value reproductive habitat definitions). As such it is unlikely that there would be a significant cumulative effect on fishers at the Core Area 2 scale.

Validity of the 2013 Determination for Fishers

The determination in the 2013 Fisher BE is still valid at the Core Area 2 and HUC7 watershed scales as discussed above. However, based on current conditions, the project level scale changes in vegetation may be significant. CBI high value reproductive habitat, which was not considered in the original analysis, has been reduced by over 50 percent by tree mortality.

Recommended limits on areas treated mechanically did not exist prior to the completion of the Fisher BE. Repeated disturbance was not a factor considered in the 2013 Fisher BE, but may be significant and alter the conclusions of that original analysis.

Finally, the habitat fragmentation and loss of connectivity caused by the Cedar Fire occurred after the 2013 Fisher BE was completed. These changes may be significant and alter the original determination for this project that the Rancheria Project “may affect individuals, but is not likely to contribute to the need for Federal listing or result in loss of viability of fisher.”

Conclusion

I have carefully considered the information pertaining to vegetation changes from tree mortality and recent wildfires provided above. These changes present new information that was not previously addressed in the Rancheria EA, and for which supplemental NEPA analysis is needed to address the environmental concerns related to fisher, as these concerns have a bearing on the Rancheria Project’s impact on fishers. Therefore, in accordance with FSH 1909.15 Section 18.4, it is my determination that supplemental NEPA analysis must be prepared and the existing Rancheria Decision Notice and FONSI must be reconsidered in light of the new information. The suspension of the Rancheria timber sale contract shall remain in place while this supplemental NEPA analysis and reconsideration are being conducted, and all implementation of the existing Decision Notice is stayed until a further determination is made.



KEVIN B. ELLIOTT
Forest Supervisor