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Organization:
Title:
Comments: My background (the basis for these comments)
* BA Environmental Studies, Swarthmore College, with distinction. Jim Hickman, advisor, who later edited the Jepson Manual
* MA Biology (plant ecology concentration) CSU Humboldt, Rumble Award for Excellence in Botany, John Sawyer, advisor, who was lead author for A Manual of California Vegetation,
* More than 20 years experience as Botanist on the Mi-Wok Ranger District, most of those covering the Summit RD as well.

1. Annual grasses
My comment on DEIS
"the introduction and spread of annual grasses during the time frame after the presettlement conditions is something that will not be reversed by moving the canopy and shrub layers toward the reference condition. It is something that needs careful consideration because annual grasses burn at a relatively high relative humidity. This has the potential to lead to increasing frequency of fire which could eventual eliminate trees and shrubs. Soils and fuel conditions are very different with annual grasses compared to native perennial grasses. Annual grasses are particularly abundant below 4,000' but burning on Strawberry Ridge increased the cheat grass there moving toward a more continuous cover of annual grasses in an habitat that usually does not carry fire well. How have you considered this in your analysis and your predictions for how moving toward desired condition will affect fire?"

In addition, I had this as a critique of the use of historic reference conditons:
As Connie Millar has pointed out since at least 2005, using presettlement conditions as a goal is not a good fit with climate change. That time frame was during the Little Ice Age and is much cooler than what we anticipate or are even in now.

This applies to the purpose and need of "Reduce surface and ladder fuels.

From FEIS
The concept of restoring the landscape into closer alignment with historic reference conditions is rooted in the assumption that the structural composition of forests occurring in pre-settlement times, were, and would still be, more resilient to disturbances such as insects, disease, drought, and climate change, and less susceptible to large-scale, high severity wildfires. Pre-settlement reference conditions represent forests where ecological processes and adaptive capacity can continue to evolve together. Aligning the landscape with NRV is the first step towards an eventual resilient future range of variation (USDA Forest Service 2019).

This concept is flawed by not addressing the changes caused to the introduction of many annual grasses and the changes in temperature since when those conditions occurred. I have addressed this in scoping comments and DEIS comments with no response. As indicated in Table 6, there is a relatively low load of annual grasses in that area, although moderate for grass-shrub. With burning and a more open canopy, this has potential to increase.

Another purpose and need to to "increase management use of fire…" As mentioned in my comment fire has the potential to increase the cover and continuity of annual grasses. This still has not been considered in the analysis.

Suggested remedy
Use a simple photo point monitoring for before and yearly at the time when annual grasses are drying for 3 years

after any activities in the project below 4,000'. Monitoring is not necessary in bear clover; bear clover suppresses annual plants fairly effectively. I suggest monitoring all burn units initially since it is never known what time of year will provide a window with changing climate. Some timings may reduce the amount of annual grasses as they burn the seed and some may increase it. A sampling of the fuelbreaks, thinning, and shredding units on different aspects or other different conditions would likely be enough for those projects. The photo points could be located along roads as much as possible. I believe this monitoring could easily be done by fire prevention employees since they are out on the districts already. It would give them some participation with the project and in reducing the risk of fire.

Based on the results of this monitoring, determine if any increase in annual grasses is a concern and use the timing information for fires and other conditions for other treatments to determine if there are adjustments that can be made to reduce the increase in annual grasses. I suggest doubling of the cover of grasses or connections of patches to form a more continuous cover as a trigger for review. They may find something better in a review of the literature.

Changes in activities that could reduce the spread of grasses must be included in this specification: limiting the timing of burns, using targeted grazing to limit the increase of annual grasses, cleaning equipment before working in areas with few or no annual grasses, etc. There may be other options for other activities such as thinning, shredding, and fuelbreaks.

I believe this is an important step toward the long-term resiliency of the land in this project. If there is little increase in annual grasses, it will provide local documentation of that. If it is a significant increase in annual grasses, it will address that concern quickly.

Note: For these next comments on weeds, this is the basis:
Forest Service Manual 2903(4) requires the Forest to "determine the risk of introducing, establishing, or spreading invasive species associated with any proposed action, as an integral component of project planning and analysis, and where necessary provide for alternatives or mitigation measures to reduce or eliminate that risk prior to project approval."

The weed risk assessment did not address many of the most high risk activities that could spread weeds. Comments 2-4 address some of those. These were also not addressed or not entirely addressed in response to comments.

2. Weed spread post fire
My comments on the DEIS:
Fire increases the spread of weeds even further by creating nutrient rich ash as well as opening the canopy and increasing water availability. It also releases the seeds of many species that have been accumulating in the soil around an infestation. That can lead to dramatic increases in existing weeds.
What measures will prevent large increases in weeds?

This was not addressed or mentioned in response to comments.
The early detection, rapid response mentioned in the FEIS needs force in implementation. Otherwise it will remain on the shelf with little use. There is nothing in this document that would currently trigger surveys for weeds after burning so as to address this concern.

Suggested remedy
In the year after a prescribed fire, survey for weeds before the time that would be needed to treat them effectively before they go to seed. These surveys must be done by personnel who an recognize the weeds in early stages. Treat weeds found to prevent seed set unless it is a weed of low concern.

This quick response can also greatly reduce the weed seeds in the soil by treating those that are triggered to germinate by post fire conditions. This can be particularly helpful for weeds such as the brooms that have a long seed life.

3. Weed spread on fuelbreaks and shred units (high risk weed areas)
My comments on the DEIS:
The evaluation of the habitat alteration a result of the project does not evaluate the fuelbreaks and many other activities of the project that can have a high risk and does not mitigate spread for those activities it has not addressed.

There is a management requirement to clean equipment between units. This is some mitigation for the mastication/shred units. It may make the contracts much more expensive or harder to get bids. It does not mitigate fuelbreaks.
The lack of analysis on fuelbreaks means that the effects of specific details of weed species were ignored. Brooms have a long seedlife and their form and density can render fuelbreaks non-functional.

Suggested remedy:
Allow for specifying the order of treatment as another way of mitigating weed spread with low cost.
Allow treating weeds in advance of working in units as another mitigation. This could avoid problems with contract expense with the current weed cleaning requirement and would meet forest plan requirements for reducing weed spread better.
Treat broom where it is on or near fuelbreaks to ensure no seed set until it is eradicated.

4. The document is unclear on whether it includes treatment of weed species other than those currently known in the project area.

My comments on the DEIS:
In addition, neither the weed risk assessment nor the DEIS allow for the treatment of species other than those currently known in the project area. I suggest that at least all state-listed weeds and Cal-IPC weeds rated Moderate or higher be considered for treatment if found within the project area.

The comments include the suggestion of specifying the additional weed species that could be treated.
I uggest that at least all state-listed weeds and Cal-IPC weeds rated Moderate or higher be considered for treatment if found within the project area.

5. BE not analyzing enough
My comments on the DEIS:
The BE analysis section does not address Iris hartweggii ssp. columbiana even though all the known occurrences on the forest are in this project. It also does not address Erythronium tuolumnenese and Allium tribracteatum even though 80% of the occurrences are in the project. There is no indication why these and other species were not considered.

As an example
6a. Himalayan blackberry is one of the greatest threats to Erythronium tuolumnenese. It grows along drainages and smothers it by over topping and shading it out. This project covers most of the occurrences of Erythronium tuolumnenese and is an area of relatively low infestations of Himalayan blackberry Targeting Himalayan blackberry could really help the long-term viability of Erythronium tuolumnenese. As things are opened up, Himalayan blackberry may spread. Berries generally set more seed after fire. Forty three of the 158 infestations are in burn units.
Other threats include plant collection, cattle (who have eliminated at least three occurrences), mining, and to some extent fire suppression. Opening up the vegetation can increase impacts from cattle and collectors. This

species is on a downward trend with all of these impacts. Please include treatment of the blackberry as a mitigation for these potential increases in impact.

6b. A tribracteatum is on a downward trend from climate change, drought, and late season sledding. Lomatium stebbinsii is on a downward trend to for some of the same reasons.

These species are mentioned in the tables and the determinations. They, and many others of the species that could or do occur in the project are not addressed in the written analysis of direct, indirect, and cumulative effects. This does not constitute a careful look at the impacts of this project on rare plants.
My examples showed examples of species-specific indirect effects and cumulative effects analysis. None of that was included or addressed in response to comments.

The flagging of sensitive plants is a flexible buffer. I have permission to send the botanist my ideas of buffers that would incorporate indirect effects. However not all indirect effects can be compensated for by changing buffer sized.

Suggested remedy:
Target infestations of blackberry near Tuolumne fawnlily as a very high priority for treatment and the infestations in the burn units. Do this treatment as a mitigation for the project.

I offer these objections as a contribution toward a stronger project.