Comments on Castle Fire Restoration Project

submitted by Barbara Brydolf, Ph.D

Thank you for the opportunity to comment on this proposed revegetation project. I want to commend the SQNF on the quality of the Vegetation Analysis. It did a good job of supporting its proposals with science and evenhandedly weighing the pros and cons of various approaches. I'd like to see more treatments like that!

General comments from the Preliminary EA and Vegetation Analysis

Revegetation

1. Sourcing seedlings

   BMP VE-5 in the Preliminary EA states:

   "Utilize seedlings from the appropriate tree seed zone. Plant an appropriate species mix in order to promote desired conditions and silvicultural objectives of the planting area and vegetation type." C-15

   The Vegetation Analysis states:

   "Seedlings are grown from past seed collections at similar elevation in local seed zones." p.35

   I don't know exactly what "local seed zones" are, but seedlings for replanting should be locally sourced (within 10 miles of restoration activity). As stated in the analysis, they should be of the appropriate species for the elevation, exposure, and area.

2. Revegetation in plantations

   The Vegetation Analysis has the following things to say about plantations:

   "There are approximately 195 previously planted stands over 2,932 acres that burned high severity. Planting in the old plantations that burned high severity is essential because of the large areas burned that lack live cone bearing trees. The plantations that did not burn need thinning to increase structural diversity and reduce the possibility of high severity wildfire." p.13

   "Reforest some gaps in partially burned plantations and leave some gaps no larger than 0.5 acre to regenerate to shrubs to promote a greater mix of conifer and shrubby vegetation composition and heterogeneity." p.19

   "Plantations that burned with high or moderate severity and that need reforestation would be reforested to increase spatial and species diversity. Pockets of high severity burn generally less than 5 acres in size will be left to create gaps in the canopy and larger openings would be planted with a clumpy distribution." p.20

Plantations are monocultures. They provide little to no ecosystem function, and many of them are planted with elevation inappropriate species (such as Ponderosa pine in the Red fir zone). If plantations are to be revegetated, it should be to to restore the area to the appropriate species composition and size and age range for the area.

3. Species composition for revegetation

   The Vegetation Analysis gives elevational appropriate species suggestions:

   Table 12: Potential Tree Planting Species by Elevation Range
   Elevation Range (feet) Species Mix
   5,000 to 7000' Sugar pine, ponderosa pine, Jeffery pine, white fir, giant sequoia
   7001 to 9,000' Sugar pine, Jeffery pine, red fir, lodgepole, western white pine. p.19

   This puts Ponderosa and Jeffery pine in the appropriate Mixed Coniferous elevation belt. Yet later in the Vegetation Analysis, it states:

   "Openings of at least 0.5 acre in size with bare mineral soil may be planted with a mix of sugar, Jeffery and ponderosa pine; incense cedar; and white or red fir based on the elevation." p.35

   Ponderosa and Jeffery pine do not belong in the red fir belt above 7000'. They should not be planted there.

Comments concerning Botany BEBA

1. Project maps are not fine-grained enough to determine if plant species are in the project area. I cannot determine if there are inaccuracies in the analysis of an individual species because the information given is too coarse-grained. Highly accurate and detailed maps are needed to assess the vulnerability of a rare plant species. They need to be made available.
2. For plant species with a determination of NFA ("not further addressed in this analysis"), the rationale is given as: " Project area outside elevational, geographic, &/or soil type range of species." If a plant was not found in the project area historically nor in the 2021 survey, that is a reasonable rationale for eliminating it from further consideration. However, elevational and soil type range of species is much less precise. Often, precisely because rare plants are rare, the elevational and soil range of the species is poorly known. Elevational and soil range of a rare species is not sufficient grounds for its elimination from further consideration.
3. Surveys were conducted for Threatened and Endangered Species and for Species of Conservation Concern in 2021. However, no information is given about these surveys- when they were conducted and where, or the methods or expertise of those conducting the surveys. According to the Botany BEBA report:

   > **"No occurrences** of Springville clarkia, Bolander's woodreed, field ivesia, Greenhorn fritillary, Hall's daisy, The Needles buckwheat, pygmy pussypaws, rose-flowered

larkspur, Tulare County bleeding heart, Yosemite bitterroot, tree of heaven, Italian plumeless thistle, Maltese star-thistle, yellow star-thistle, broom spp., Scotch broom, perennial pepperweed, black locust, and Spanish broom were **found within the project area** during 2021 botany surveys so there are **no direct effects to these species** as a result of the proposed action." p.36-37.

In addition:

> "**No occurrences** of Springville clarkia, Bolander's woodreed, field ivesia, Greenhorn fritillary, Hall's daisy, The Needles buckwheat, pygmy pussypaws, rose-flowered larkspur, Tulare County bleeding heart, Yosemite bitterroot, tree of heaven, Italian plumeless thistle, Maltese star-thistle, yellow star-thistle, broom spp., Scotch broom, perennial pepperweed, black locust, and Spanish broom were **found within the project area** during 2021 botany surveys so there are **no indirect effects to these species** as a result of the proposed action." p.38

If a species was not located during the 2021 surveys, despite documented occurrences in the project area, the project was determined to have no direct or indirect effects on them, and as far as I can determine, no further surveys or action concerning these species is proposed. The Best Management Practices calls for surveys for threatened, endangered, and sensitive plants but does not specify whether the already conducted 2021 surveys are considered sufficient to address this requirement.

The fact that the 2021 surveys were unable to locate these species with documented occurrences in the project area does not mean that those species are not there. If the surveys were conducted at the wrong time of year, were misidentified, or if conditions were not conducive to the growth of those species in that particular year or at that time, they could easily have not been documented. For example, bulb forming species do not flower every year. Species like Greenhorn fritillary have very little above ground vegetation if they are not in flower and can easily be missed. Annual species may not be growing the year or at the time that the surveys were conducted; however that does not mean that the population will not reappear during project activities.

The lack of specificity of the project maps, combined with the uncertainty of the plant surveys, leads to uncertainty about the status of these species within the project area. The proposal should call for another round of surveys to be conducted before any action is taken, targeted at locations where these plants have been documented previously.

4. How will the project workers flag and avoid geophyte species? (Calochortus westonii, Erythronium pusaterii, Fritillaria brandegeei). Surveys to identify areas for avoidance should take place once plants are known to have emerged and areas where bulbs are present should be avoided for the duration of the project implementation even if the plants are not emergent.

Comments on Individual Species

1. Shirley Meadows star-tulip

Shirley Meadows star-tulip (*Calochortus westonii*) is found in the project area. The USFS has a species management plan for this one, but this isn't mentioned in the Botany BE/BA. Are the design features in the restoration plan in alignment with the management plan? This species is nearly endemic to SQNF so it is important it be managed properly.

2. **Greenhorn fritillary**

The BE/BA says no occurrences of Greenhorn fritillary (*Fritillaria brandegeei*) were found during 2021 surveys, but it looks like there are historical occurrences here (EOs 2, 3, and maybe 33). Once again, it can't be determined if those occurrences are in the project area without better map data.

The BE/BA doesn't report on the timing of the surveys. Assuming the surveyors revisited the *Fritillaria brandegeei* occurrences, it would be good to have detailed information as to possible reasons that plants were not relocated (or it's possible I am misreading the map and these occurrences aren't actually in the project area).

3. **Kaweah fawn lily**

According to the Botany BEBA:

> "Trampling from humans, machinery, and cattle are the primary threats to *E. pusaterii*. Because they are a bulbiferous species, **above ground vegetative structures are only present for 1-2 week**s out of the year, reducing damage done to individuals, however, heavy compaction from machinery will still affect bulbs under the surface and identification of individual and population location becomes more difficult. While transplanting *E. pusaterii* is possible and has been done on some of the population located at Jordan Peak, it is not a reliable method and should only be used when absolutely necessary. All activity in and near occurrences would follow all applicable Botany TESP Project Design Features and BMPs (pages 16-17) to reduce direct effects to *E. pusaterii*." p.37

This must be a mistake. I find records for two ***months*** out of the year and Jepson eflora lists the flowering time as April-June, so this argument is not valid. The account needs to be corrected and the effects to the species re-evaluated.

4. **Pierpoint Springs Dudleya**

Pierpoint Springs Dudleya is mis-labeled. It is listed as *Dudleya abramsii* but this is not the correct name. The correct name is *Dudleya cymosa ssp. costatifolia,* or the more recent nomenclature- *Dudleya cymosa ssp. costifolia*. *Dudleya abamsii* is not a CNPS listed rare plant, whereas *Dudleya cymosa ssp. costifolia* is CNPS rank 1B.2. The species account should be reviewed to make sure that it is correct and not mischaracterized as a result of being mislabeled.

The Rationale for its characterization as NFA is as follows: "Known occurrence(s) &/or project area is within species range but species only in carbonate outcrops that will not be affected by

proposed action." However there are some plants in this population that occur lower in the carbonate outcrop that could be affected by fertilizer runoff or pesticide overspray that may be used in the area. Therefore, it should not be categorized as NFA

5. **Field Ivesia**

   Field Ivesia (*Ivesia campestris*) does not appear in Table 1 of the Botany BEBA report, so it is not possible to know its determination or the rationale.

6. **Shevock's Rockcress**

   Shevock's rockcress (*Boechera shevockii*) is a single-site endemic so could easily go extinct if mismanaged. This species occurs within the fire footprint. It is unclear why this species was labelled NFA, especially as The Needles buckwheat (*Eriogonum breedlovei var. shevockii*), also a rare species, occurs in the same area as *Boechera shevockii*, and is categorized as MII. This species should be reevaluated.