February 28, 2015

Sequoia ForestKeeper ® (SFK), the Kern-Kaweah Chapter of the Sierra Club (the Club), and Western Watersheds Project (WWP) thank you for the opportunity to comment.

On June 6, 2013, SFK and the Club provided our initial scoping comments. On October 17, 2014, SFK and the Club submitted a second set of scoping comments, which are mostly restated below and continue to be relevant to the updated FEIS scoping content. We are also providing additional comments, located throughout this document, as well as those now provided by WWP. We support the decision to prepare an Environmental Impact Statement (EIS) for this project due to its impact on various resources, and especially the Pacific fisher, the Chico Roadless Areas, and the Baker Point Botanical Area.

1. **Scoping Should be Redone When the Forest Service Can Provide Sufficient Information**

Sequoia ForestKeeper ® obtained geospatial data from the Sequoia National Forest on September 8, 2014 and Western Watersheds Project on February 11, 2015. The two data sets correlate to maps provided in the Tobias Project scoping documents, except for the fuel breaks, mastication areas, and hand treatment layers. Tobias Project Scoping Map 1 is now somewhat improved, but it still shows larger hand-treatment areas and areas of mastication not provided with the geospatial data. These treatment layers were not included in the geospatial data provided to the Sequoia ForestKeeper ® (see Figure 1 below) or to Western Watersheds Project. We request an updated dataset, which includes all of the proposed treatment areas. Although the scoping map reveals where units are located and where all treatments are proposed, the maps continued to suffer in quality. By contrast, SFK and WWP project (see Exhibit C) were able to create high-quality maps of the project with the data provided and additional data on botanical and roadless areas. We expect the kind of mapping quality provided in Figure 1 below and Exhibit C for the analysis, which we know the Forest Service is capable of generating. We continue to be disturbed by the facsimile-like, poor quality maps that are provided by the Forest Service with nearly every project.

NEPA requires that the agency analyze impacts in comparison to an accurate determination of baseline data, such that the Forest Service adequately and accurately describes the “affected
environment.” 40 C.F.R. § 1502.15. We suggest that the necessary baseline data to justify a proposed action must first be provided in a meaningful form to the public before the Forest Service can actually craft its proposed action. Without this level of accurate information, we are having a difficult time providing meaningful comments or suggesting viable alternatives that could meet the scope of the purpose and need for the project.

Figure 1 – Display of geospatial data provided to Sequoia ForestKeeper © on Sept. 8, 2014
2. Stormy Fire Salvage Effects Must Be Analyzed

The original 2013 scoping document mentioned that much of the project is located in the area burned by the Stormy Fire. However, neither the 2014 nor the 2015 scoping document or notice of intent in the Federal Register provide this information. In response to the original 2013 scoping notice, we wrote that the notice did not disclose that much of the fire area was logged after the fire, causing additional damage to soils and recovering vegetation. This is evident from historic aerial photography, available on Google Earth from 1994, provided on the next page in Figure 2, which shows the extensive logging road and skid trail network constructed during that time. Some of this logging damage is still visible in the recent 2012 image, provided in Figure 3 below for comparison. Even though the fire and the salvage logging may have occurred over 20 years ago, effects from logging after a fire are long-lasting, and in its analysis the Forest Service must discuss the effects on soils and vegetation recovery from the post-salvage logging that was done after the Stormy Fire. See Exhibit A – Beschta et al. (2004) (“Forest ecosystems are especially vulnerable to postfire management practices because such practices may influence forest dynamics for decades or centuries.”). **THESE LINGEREING CONCERNS ABOUT POST-FIRE SALVAGE LOGGING MUST BE DISCUSSED IN THE Draft EIS.**

![Figure 2. Google Earth Image from 1994, showing post-fire logging road network](image-url)
Figure 3. Google Earth Image from 2012, with post-fire logging road network still visible.
The following is another depiction of the damaged done from logging after the Stormy Fire.
Figure 4. Aerial Photograph of Roads and Skid Trail from Stormy Fire Salvage.

The following image, taken from the eastern edge of the project area, provides an overview of the effects from the Stormy Fire and salvage logging, 21 years after the fire.

Figure 5. Panorama of Tobias Project area, looking to the West. Photograph from 2011.
3. The Frog Project and Cumulative Effects from Other Projects

In addition to the past cumulative effects from salvage logging after the Stormy Fire, the analysis must discuss this project in relation to other past, present, and future projects, such as the Frog Project, which is located nearby to the north and west of the Tobias Project area. This should also include the White River and Saddle projects, also located to the north and west of the Tobias Project area, which remain under contract to be logged in the future, and therefore are reasonably foreseeable future actions, in addition to other past and foreseeable future actions.


The Tobias Project should strive to use and implement the same restoration principles that will be used in the adjacent Giant Sequoia National Monument, limiting thinning for fuel treatments to small diameter trees. Because the policy enacted in the Monument Proclamation shows that ecological restoration can be done by severely restricting tree removal, this principle should also
guide management in this area of the Sequoia National Forest. At the very least, the management principles from the Monument should be studied as an alternative in the analysis.

The Tobias Project should not place too much reliance on mechanical methods for ecological restoration and maintenance. Instead, fire should be used as the primary tool for restoration. Moreover, the proposal should not overstate the need for ecological restoration to create resiliency from drought, and native insects and diseases, which are natural processes that should be preserved rather than eliminated.

Thinning of medium and large diameter trees (10-30” dbh) should not be permitted for the purpose of ecological restoration to prevent natural stresses from competition. Tree competition, caused primarily by increases in stand density, is a natural process which induces other natural processes that deal with this density, such as native insect and disease caused tree mortality. These processes, in turn, produce structural forest elements that are vital for wildlife—snags. While the removal of trees to reduce this natural competition may prevent the death of a small number of large trees, it would also prevent the creation of some of the most important elements in the forest ecosystem—snags—for the perpetuation of certain wildlife species, including California spotted owls, various woodpeckers, and countless other species. It is well-documented that these species need abundant large snags at a certain densities in order to thrive. Even the artificial method of increasing the number of snags by girdling trees will not create as diverse a variety of snags for these species as natural snag recruitment. And while the cutting or removal of trees to prevent competition-induced stresses may be good for the remaining trees, it prevents natural snag recruitment that helps perpetuate a number of key wildlife species.

The proposed action promotes resilience as a goal. But it is important to understand that resilience is not a process. Instead, it is a characteristic, which results from the continued perpetuation of natural processes, including competition. The perpetuation of the forest ecosystem is not the same as the perpetuation of the lives of all of the larger trees in that ecosystem. This means that we need some of these large trees to die at a rate that can sustain certain wildlife species. Competition mortality will result in large snag recruitment beyond what silviculturalists may want in a forest that is managed to produce the maximum growth.

Even if the project allows tree cutting of larger trees for ecological restoration or to reduce safety hazards along roads, the tree boles should be retained in the forest as large down woody material. Ecological restoration provides an opportunity to restore forest areas with large down woody material for wildlife (especially for Pacific fishers), soils, and to maintain ecological functions.

Leaving a large number of downed logs will not increase fire risk. The Forest Service’s own science clearly concludes that large logs (defined by the 2001 Sierra Nevada Forest Plan Amendment as being over 12 inches in diameter) are essentially irrelevant to fire behavior. And tree boles over 10-12 inches in diameter that the agency needs to fell for ecological restoration would not create any significant fire hazard. Operability for prescribed fire management should not be an issue when leaving these large tree boles as down logs. In fact, the 2001 Framework standards takes large down logs into consideration if managed fire is considered. It states: “design prescribed burn prescriptions and techniques to minimize the loss of . . . large down material.” 2001 Framework ROD, Appendix A, p. 28.
The Forest Service should use the reintroduction of fire as the primary tool for ecological restoration and prohibit the thinning of larger trees to reduce fire risk (see more discussion about the science of fuel reduction below). The agency should limit manual or mechanical methods that prepare the forest for the reintroduction of fire to the cutting of only some trees 8-10 inches dbh and smaller. As the adjacent Sequoia and Kings Canyon National Parks (“SEKI”) has found, “cutting trees up to and including 8” in diameter has proven effective in fuels reduction in SEKI.” After fire is reintroduced into these stands, natural processes can perpetuate, making future thinning applications for ecological maintenance unnecessary.

Although we prefer a diameter limit below 8-10 inches, the Forest Service must also consider an alternative that limits tree cutting to 12 inches in diameter, which the Western Divide Ranger District has found to be effective in reducing fuels and increasing resiliency in the Giant Sequoia National Monument with the Tule River Reservation Protection Project. That project has a similar-enough purpose and need to require the district to study a 12-inch diameter limit alternative for the Tobias Project.

Moreover, restoration to restore resilience must take a different approach, and should not repeat the mistakes of the past where thinning for fuel reduction and removal of timber or biomass have driven project design. Here, only smaller trees need to be removed to restore resilience.

5. **A Priority for the Tobias Project, as a Principle of Ecological Restoration, Should be to Maximize Improving Pacific Fisher Habitat**

Snags and downed logs are some of the most important habitat elements for Pacific fishers. Zielinski et al. (2006 [Table 2]) found that fishers selected sites with 15.4 large snags (over 38.1 cm in diameter, or over 15 inches in diameter) on average per 0.5 hectares, or about 12.5 large snags per acre, within Sierra and Sequoia National Forests, including within the Giant Sequoia National Monument. Using the U.S. Forest Service’s own Forest Inventory and Analysis (FIA) fixed plots to determine the average snag density across the forested landscape within the fisher’s range in Sequoia and Sierra National Forests, Zielinski et al. (2006) found that there were only about 8.7 large snags per acre on average—well below the level selected by fishers.

But the proposed action includes heavy thinning, including canopy thinning, which would eliminate the very habitat elements that fishers need over the long term. The EIS and Wildlife BE must analyze the impacts of repeatedly thinning for the express purpose of preventing medium/large snag recruitment from fire and insects. Moreover the EIS and BE must divulge whether the current basal area levels of medium/large snags in the Tobias Project area meets the levels selected by fishers, or whether they may be lower than optimal. Given the importance of medium/large snag basal area to fishers, this must be carefully analyzed in the EIS.

Furthermore, the Wildlife BE and EIS must analyze the impacts of proposed forest thinning on large downed log levels, and whether sufficient downed logs of a certain size are available for fishers. Zielinski et al. (2006) found that fishers selected sites with 65 large downed logs (over 25.4 cm in diameter) per hectare, or about 26 logs over 10 inches in diameter per acre. Using the U.S. Forest Service’s own Forest Inventory and Analysis (FIA) fixed plots to determine the
average large downed log density across the forested landscape within the fisher’s range in Sequoia and Sierra National Forests, Zielinski et al. (2006) found that there were only about 19 large downed logs per acre on average within the fisher’s range—well below the level selected by fishers. Zielinski et al. (2006) also found that fishers selected sites with 169 cubic meters of large down logs per hectare (2,427 cubic feet per acre), relative to only 118 cubic meters per hectare at FIA plots in general (1,690 cubic feet per acre).

These same habitat elements are also important for the California spotted owl, which benefit from and prefer an abundance of large snags and downed logs.

6. Alternatives to the Proposed Action

a. Develop a Non-Commercial Alternative, as Required by SFL v. Rey

The analysis must include a “non-commercial alternative” based on the requirements of the Sierra Forest Legacy (SFL) v. Rey permanent injunction. That ruling required that “the Forest Service [] include a detailed consideration of project alternatives, including a non-commercial funding alternative, for all new fuel reduction projects not already evaluated and approved as of the date of this Memorandum and Order.” SFL v. Rey, 2:05-cv-00205-MCE-GGH, 2:05-cv-00211-MCE-GGH, 2009 WL 3698507 at *5 (E.D. Cal. Nov. 4, 2009) (permanent injunction order). Because the Tobias Project includes fuel reduction treatments and has not already been evaluated and approved as of Nov. 4, 2009, this alternative must be considered in detail. We suggest that both the 8-10 inch and 12 inch diameter limit alternatives (discussed below) be evaluated under this requirement.

Moreover, there is scientific evidence that suggests eliminating commercial logging from our National Forest is the fastest and most effective way to sequester carbon to mitigate the effects of climate change. See Depro et al. (2008); see also Mitchell et al. (2009) (indicating that fuel reduction thinning reduces mean carbon storage).

An alternative that fully complies with the SFL v. Rey injunction order must be developed.

b. Develop an Alternative that Does Not Include Crown Thinning/Spacing

Because this project is billed as an ecological restoration project, the Forest Service should include an alternative that can achieve the purpose and need of the project without crown thinning or spacing, which only serve as a strategy for pure fire risk reductions in extreme conditions to prevent a crown fire. Forest restoration projects should not be designed to fire-proof a forest, to prevent something that only occurs under extreme fire conditions, except possibly in the 200 feet immediately adjacent to homes.

In fact, opening up the canopy could have the opposite effect. Tree removal reduces canopy cover, which increases temperatures and dries soil and flammable materials, prompts brush growth, and increases surface wind in the forest, all of which increase the fire danger. See Fire_Weather_Handbook_(USFS_1970) (on FTP). These types of treatments often open the
understory so that midflame windspeed will increase and fine fuel moisture will decline (van Wagendonk 1996, Weatherspoon 1996).

c. **Develop an Alternative with an 8-10 Inch DBH Limit**

Recent scientific studies have found that pre-commercial thinning of only some sapling and pole-sized trees (up to 8-10 inches in diameter) effectively reduces fire severity. Therefore, the Tobias project should include an alternative with an 8-10 inch dbh limit. For more support for this alternative, see the next section.

d. **Develop an Alternative with a 12 Inch DBH Limit**

As discussed above, the Sequoia National Forest has found that a 12 inch diameter limit was sufficient in the Tule River Reservation Protection Project, and because the Tobias Project is similar enough in its goals and purpose and need, the Forest Service must provide a detailed analysis of this alternative here.

7. **Fuel Reduction Science**

Scientific reports have found that pre-commercial thinning of only sapling and pole-sized trees (up to 8-10 inches in diameter) effectively reduces fire severity. See, for example:

a) Omi, P.N., and E.J. Martinson. 2002. Effects of fuels treatment on wildfire severity. Final report. Joint Fire Science Program Governing Board, Western Forest Fire Research Center, Colorado State University, Fort Collins, CO. Available from [http://www.cnr.colostate.edu/frws/research/westfire/finalreport.pdf](http://www.cnr.colostate.edu/frws/research/westfire/finalreport.pdf) (found that precommercial thinning of trees under 8 to 10 inches in diameter reduced potential for severe fire (email communication with the authors confirmed that trees removed were of this small size class)). More specifically, the Omi and Martinson (2002) study, found that precommercial thinning reduced stand damage (a measure of fire severity generally related to stand mortality) in both of the two thinned study sites, Cerro Grande and Hi Meadow (the authors reported that the Hi Meadow site was marginally significant, p<.1, perhaps due to small sample size), each with several plots.

b) Martinson, E.J., and P.N. Omi. 2003. Performance of fuel treatments subjected to wildfires. USDA Forest Service Proceedings RMRS-P-29 (found that non-commercial thinning of submerchantable-sized trees, generally followed by slash burning or removal, in several areas across the western U.S. greatly reduced fire severity, and that this result held true regardless of post-thinning basal area density).

in seven different sites dramatically reduced fire severity, resulting in post-fire basal area mortality of only about 28% (low severity) in non-commercially thinned areas versus post-fire basal area mortality of about 86% in untreated areas).

The Proposed Action summary suggests that thinning, as proposed, will reduce potential for severe fire. There is ample evidence to contradict this claim. Research that Dr. Hanson recently conducted in the Sierra Nevada found contradictory evidence to the claim stated in the original scoping summary. See Hanson and Odion 2006. In their study, an area of the Eldorado National Forest that was mechanically thinned very shortly before the fire, and was masticated (material <10” diameter) mere months before the fire, had higher combined mortality from thinning and fire than the adjacent unthinned area (Hanson and Odion 2006). Another recent study found the following:

Compared with the original conditions, a closed canopy would result in a 10 percent reduction in the area of high or extreme fireline intensity. In contrast, an open canopy [from fuel treatments] has the opposite effect, increasing the area exposed to high or extreme fireline intensity by 36 percent. Though it may appear counterintuitive, when all else is equal open canopies lead to reduced fuel moisture and increased midflame windspeed, which increase potential fireline intensity.

Platt et al. 2006 (Annals of the Assoc. Amer. Geographers 96: 455-470). The EIS must analyze this type of evidence from actual wildland fires burning through thinned areas rather than rely upon modeling results, which are based upon assumptions that may not reflect actual real-world fire behavior. Increased fire severity could result from: a) increased mid-flame windspeeds due to a reduction in the buffering effect of mature tree boles; b) slash debris (even if you make efforts to reduce slash, this is never totally effective, and much slash remains—enough to perhaps increase overall surface fuels relative to current levels, something the Forest Service generally fails to adequately discuss); c) accelerated brush growth due to increased sun exposure; and d) desiccation of surface fuels due to increased sun and wind exposure.

Moreover, recent research provides evidence that seriously questions the very basis for thinning and its assumed effectiveness. Rhodes and Baker (2008) found that, based upon the fire rotation interval for high severity fire, and assuming an effectiveness period of 20 years for a mechanically-thinned area (i.e., before it would need to be treated again to maintain effectiveness from a fire/fuels perspective), the probability of a thinned area encountering a high severity fire patch during the 20-year effectiveness period (assuming for the sake of argument that the thinning actually does reduce fire severity during this period) is only about 3.3% in California’s forests. It would be less than 2% if an 11-year thinning effectiveness period is assumed (Rhodes and Baker 2008). This means that, in order to have a 50% chance of having the thinned area reduce the severity of a fire patch that would have otherwise been high severity, the thinned area would have to be re-thinned every 20 years for about 300 years (see Rhodes and Baker 2008).

Please fully analyze the implications of this data, and please also fully divulge whether you intend to re-thin this area over and over again every couple of decades or so for the next three
centuries or so in order to have a reasonable probability of having the thinning area actually prevent high severity fire from occurring in the thinned area. If so, please fully analyze the cumulative environmental impacts on wildlife, soils, and watersheds from such repeated mechanical activities on this site. If not, please divulge the fact that the probability that the thinned area will NOT encounter a high severity fire area is about 97% or greater, and that your thinning activities are extremely unlikely to be effective in any tangible or meaningful way for fuels/fire management.

In 2008, the Forest Service published a paper about the effects of the American River Complex fire on forest stands in the Tahoe National Forest resulting from various treatments. One of the main findings of this study was that mastication without the subsequent treatment of fine fuels could have severe effects that may result in 100% mortality of the remaining trees in a subsequent fire. It explained:

Mastication does not remove fuels from the site, but redistributes them (Figure 19). By design, mastication reduces the ladder fuel effect but increases surface fuels. Until the masticated fuels decompose, they are also much drier and more easily ignited than live fuels. The American River Complex burned early in the fire season, and primarily under moderate weather conditions, when fuel moistures were still relatively high. As a result, live shrubs and hardwoods were resistant to burning, and even masticated units may have provided some resistance to fire (although this was probably at least partly due to the shrubby live fuels on site). However, under the more severe fire weather conditions encountered on July 9, masticated fuels proved no barrier to fire spread and tree mortality in the masticated stands was 100%. The fact that these masticated units performed so poorly under early season conditions suggests that caution should be used in their implementation, especially in areas of long summer drought like the Sierra Nevada. It is recommended that readers consult Stephens and Moghaddas (2005, *For. Ecol & Mgt.*, vol. 215:21-36) and Knapp et al. (2008, Final Report, Joint Fire Science Program Project 05-2-1-20) for results of scientific trials and fire modeling which call into question the advisability of using masticated treatments alone (i.e., without further treatment) in Sierra Nevada mixed conifer forest. In the Stephens and Moghaddas (2005) study, a comparison of different treatment techniques showed that masticated treatments supported the highest rates of spread, fireline intensities, flame lengths, and levels of tree mortality (even higher than or equal to the untreated control) under 80th and 90th percentile weather conditions. In the Knapp et al. (2008) study, modeled wildfire in 10 different masticated units in northern California resulted in >95% tree mortality under only 80th percentile weather conditions.

Safford et al. (2008) at 20.

In the adjacent Giant Sequoia National Monument (GSNM), the DEIS for the draft Management Plan generally admits that the removal of trees over 10-16 inches in diameter is unnecessary and ineffective with regard to reducing the intensity/severity of wildland fire, and that, if trees larger than 10-16 inches in diameter are proposed for thinning, “reasons other than” fire/fuel
management should be provided (DEIS, p. 459, citing North et al. 2009). Thus, the Forest Service in the GSNM DEIS admits that thinning of mature trees over 10 to 16 inches is done primarily for economic reasons and is unnecessary for fire management or ecological restoration.

Indeed, the authors of North et al. (2009), on page 24 of that report, specifically discuss the potential removal of trees over 10-16 inches in diameter “for socioeconomic purposes” such as “generating revenue” or “providing merchantable wood for local sawmills.” Nowhere do the authors of North et al. (2009) specifically recommend removal of mature trees (as opposed to snag creation or downed log creation) for strictly ecological purposes, or offer a single citation to any ecological study concluding that some mature trees must be removed from the forest ecosystem, as opposed to being left as live trees, converted into large snags, or converted into large downed logs.

Finally, there is a fundamental shortage across the landscape in the Sierra Nevada of what scientists now refer to as “Complex Early Seral Forests” (CESF) or CESF habitat. See Exhibit B – DellaSala et al. (2013). CESF habitat is “created by stand-replacing fire, or lower intensity disturbances such as fires, insects, and windthrow, are underappreciated for their unique biodiversity (Swanson et al. 2010), and, as such, CESFs are not even included as a habitat type in any current vegetation mapping used by the Forest Service (e.g., California Wildlife Habitat Relations).” Id., p. 4; see also id., p. 5 (describing this habitat in detail). Some of the unlogged portions of the Tobias Project area, after the Stormy Fire, may still exhibit characteristic of CESFs and should be identified in the project area.

Moreover, thinning to reduce fire risk has the potential to eliminate stand-replacing fire throughout the Tobias Project area, which will also eliminate creation of CESF habitat, important for Black-backed Woodpecker (Picoides arcticus), a Species of Conservation Concern exemplary of these forests (id., p. 4) and even California Spotted Owls (Strix occidentailis occidentalis), which “preferentially selects high-severity fire areas for foraging (Bond et al. 2009).” The project analysis must account for any remaining CESFs and must disclose the potentially adverse effects from fuel reduction thinning on creating CESFs in the future, as well as the indirect effects on Black-backed Woodpeckers and California Spotted Owls.

8. The Tobias Project should Focus on Removing Only Small Diameter Trees

This project is similar to a Healthy Forest Restoration Act (HFRA) project; so, the Forest Service should apply the same principles about small tree removal from that legislation. Another similarity to an HFRA project is the Sawmill Ridge Project Planning Forum, which is akin to the collaborative requirements in the HFRA.

Section 102(e)(2) of the HFRA states:

In carrying out a covered project, the Secretary shall fully maintain, or contribute toward the restoration of, the structure and composition of old growth stands according to the pre-fire suppression old growth conditions characteristic of the forest type, taking into account the contribution of the stand to landscape fire
adaptation and watershed health, and retaining the large trees contributing to old growth structure.

Moreover, Section 102(f) states that

the Secretary shall carry out a covered project in a manner that—(A) **focuses largely on small diameter trees**, thinning, strategic fuel breaks, and prescribed fire to modify fire behavior, as measured by the projected reduction of uncharacteristically severe wildfire effects for the forest type (such as adverse soil impacts, tree mortality or other impacts); and (B) **maximizes the retention of large trees**, as appropriate for the forest type, to the extent that the trees promote fire-resilient stands.

(emphasis added). The Tobias project should describe how its treatments focus largely on small diameter trees, and what the Forest Service considers “small diameter trees,” and how it will maximize the retention of large trees, what it considers large trees, and which large trees it will maximize. These sections must be distinguished from the diameter limits provided in the 2004 Framework, which discuss cutting up to 30 inch diameter trees for the purpose of providing funds to pay for the thinning projects.

A lower diameter limit that focuses largely on some small diameter trees would achieve the purpose and need for the project, which does NOT include the need to pay for the treatments with a timber sale of larger trees (over 10-20 inches in diameter) as envisioned by the 2004 Framework’s increase in diameter limits to 30 inches in diameter. In fact, the purpose and need make no mention of using larger trees to pay for the small diameter thinning, so the Forest Service should mimic the HFRA guidelines and not those used in the 2004 Framework.

9. **North et al. (2009) Comments and Concerns**

The North et al. (2009) or GTR-220 report is an unpublished and non-peer-reviewed report cited in and relied upon for the proposed action. It is used to justify most of the proposed activities, including the removal of biomass. But the North et al. (2009) report did not mean to use the word “remove” to suggest commercial logging of mature trees up to, or over, 20 inches in diameter—as opposed to simply “removing” a given mature live tree from competition with other larger trees by turning it into a large snag or downed log.

Indeed, the authors of North et al. (2009), on page 24 of that report, specifically discuss the potential removal of trees over 10-16 inches in diameter “for socioeconomic purposes” such as “generating revenue” or “providing merchantable wood for local sawmills.” Nowhere do the authors of North et al. (2009) specifically recommend “removal” of mature trees (as opposed to snag creation or downed log creation) for strictly ecological purposes, or offer a single citation to any ecological study concluding that some mature trees must be removed from the forest ecosystem, as opposed to being left as live trees, converted into large snags, or converted into large downed logs.
The environmental analysis must also discuss how the Tobias project will potentially emit CO2 that may contribute to climate change or what efforts will be taken to mitigate these emissions, by disclosing and analyzing the carbon emitted from fuel reduction treatments, slash treatments, and biomass collection, hauling, and burning or prescribed burning.

A recent article by Mitchell et al. (2009) describes tradeoffs for managing for carbon storage (a valid goal in any forest management action) versus fuels reduction. That study suggests that, with the exception of some xeric ecosystems (not present in the current project area), “fuel reduction treatments should be forgone if forest ecosystems are to provide maximal amelioration of atmospheric CO2 over the next 100 years.” Id. at 653. For that reason, each alternative should discuss and analyze carbon emissions from implementation, and the no-action alternative should also provide information about the potential for carbon storage from foregoing project implementation.

Depro et al., 2007, found that eliminating logging would result in massive increases in Carbon sequestration. “Our analysis found that a “no timber harvest” scenario eliminating harvests on public lands would result in an annual increase of 17–29 million metric tonnes of carbon (MMTC) per year between 2010 and 2050—as much as a 43% increase over current sequestration levels on public timberlands and would offset up to 1.5% of total U.S. GHG emissions.” (Depro et al., 2007 abstract)

Moreover, Mitchell et al. (2009) found the amount of net carbon released into the atmosphere, on an acreage basis with small diameter thinning for fuel reduction (if used for biomass), puts more carbon into the atmosphere than an average fire, on an acreage basis:

Our simulations indicate that fuel reduction treatments in these ecosystems consistently reduced fire severity. However, reducing the fraction by which C is lost in a wildfire requires the removal of a much greater amount of C, since most of the C stored in forest biomass (stem wood, branches, coarse woody debris) remains unconsumed even by high-severity wildfires. For this reason, all of the fuel reduction treatments simulated for the west Cascades and Coast Range ecosystems as well as most of the treatments simulated for the east Cascades resulted in a reduced mean stand C storage. One suggested method of compensating for such losses in C storage is to utilize C harvested in fuel reduction treatments as biofuels. Our analysis indicates that this will not be an effective strategy in the west Cascades and Coast Range over the next 100 years.

Mitchell et al., 2009 abstract.

In any case, the environmental analysis must disclose the emissions from fuel reduction treatments, associated slash treatments, and biomass collection, hauling, and burning or prescribed burning for each action alternative. For this, the Washington Office of the Forest
Service has generated specific direction on how to discuss climate change effects in a NEPA analysis. See Climate Change Considerations in Project Level NEPA Analysis (Jan. 13, 2009) (attached as Exhibit B). That document specifically mentions fuel reduction projects in the types of projects that should disclose direct effects on climate change:

- **The effect of a proposed project on climate change** (GHG emissions and carbon cycling). Examples include: short-term GHG emissions and alteration to the carbon cycle caused by hazardous fuels reduction projects, GHG emissions from oil and gas field development, and avoiding large GHG emissions pulses and effects to the carbon cycle by thinning overstocked stands to increase forest resilience and decrease the potential for large scale wildfire.

*Id.* at 2. To assist in disclosing these effects, the Forest Service provides tools that can help managers determine the direct contributions of GHG emissions from project burning or treatments. *Id.* at 5 (FOFEM 5.5, Consume 3.0, and the Forest Vegetation Simulator). Because the Forest Service has tools or models to effectively calculate emissions, it must disclose these emissions for each of the action alternatives. In addition, the guidance document suggests that the NEPA document include a qualitative effects analysis. *Id.* Such an analysis should include the cumulative effects, quantified in an “individual, regional, national, global” context. *Id.* at 6.

Finally, the guidance suggests that NEPA provides direction on how managers should respond to comments raised during project analysis regarding climate change:

1. Modify alternatives including the proposed action.
2. Develop and evaluate alternatives not previously given serious consideration by the Agency.
3. Supplement, improve, or modify the analysis.
5. Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the Agency’s position and, if appropriate, indicate those circumstances that would trigger agency reappraisal or further response.

*Id.* at 8. At the very least, because this project includes fuel reduction treatments and burning that will contribute GHG emissions, the EIS must include an acknowledgment of carbon emissions and must provide a response to this issue.

Moreover, the analysis should account for and quantify (as part of the cumulative effects analysis) not only the emission from prescribed burning on-site and the emissions from any biomass that is removed from the project area and later burned off-site, but also the contribution of emissions from transporting this material for off-site burning, and the contribution of emissions from planning and implementing the project by a contractor and by the Forest Service.

This holistic approach to account for GHG emission is necessary to provide managers and the public with the kind of information under NEPA to make informed choices between alternatives.
and to mitigate for climate change, and to consider and assess the larger picture of GHG contributions from all projects on the national forests that may contribute GHG emissions.

11. Disclose the Impact from Mechanical Equipment Use on Project Area on Soils, Streams, and Watersheds

Mechanized fuel treatments incur ecological costs by damaging soils, vegetation, and hydrologic processes, as proponents of fuel reduction treatments have acknowledged (e.g., Allen et al., 2002; Graham et al., 1999; 2004; Agee and Skinner, 2005). Mechanical fuel reduction treatments typically involve the same suite of activities as logging, with the same set of impacts to soils, runoff, erosion, sedimentation, water quality, and stream structure and function. These effects, their mechanisms, and their aquatic impacts have been extensively and repeatedly documented across the West (e.g., Geppert et al., 1984; Meehan, 1991; USFS et al., 1993; Rhodes et al., 1994; CWWR, 1996, USFS and USBLM, 1997a; c; Beschta et al., 2004). Watershed damage ultimately translates into aquatic damage.

The collateral impacts of fuel treatments are of considerable concern due to the existing aquatic context. Across the West, aquatic systems are significantly and pervasively degraded (Rieman et al., 2003; Beschta et al., 2004). As a result, many populations of aquatic species, including most native trout and salmonids, have undergone severe contractions in their range and number and remaining populations are now imperiled and highly fragmented (Frissell, 1993; USFS and USBLM, 1997a; Kessler et al., 2001; Behnke, 2002; Bradford, 2005). Additional damage to watersheds and aquatic systems reduces the prospects for the protection and restoration of imperiled aquatic species (USFS and USBLM, 1997c; USFWS, 1998; Karr et al., 2004).

These impacts to soils, streams, and watersheds will be added to the damage done after the 1990 Stormy Fire from salvage logging. Impact from this project must be added to the existing damage and foreseeable future damage to provide an accurate assessment of the adverse effects.

12. Further Information Should be Provided to the Public and for the Environmental Analysis

Information provided as part of scoping is so limited that it is difficult to comment adequately on the proposal. Please provide us with further information that could help us understand the scope of the project:

- Please provide data in the DEIS about the existing conditions for each unit, including:
  - tree density
  - the range of tree sizes and basal area
  - % of current canopy cover
  - the number and size of snags
  - the number or size of large down logs (>12 inch at midpoint)
  - information about the understory for each unit, such as the % of area with shrub cover or in montane chaparral patches

- Please provide specific information in the DEIS about what the Forest Service plans to leave after implementation for each unit by action alternative, including:
- tree density
- the range of tree sizes and basal area
- % of canopy cover after thinning
- the number and size of snags (here’s an opportunity to increase the number of snags by girdling trees rather than felling or removing them)
- the number or size of large down logs (>12 inch at midpoint) (here’s also an opportunity to increase the number of large down logs rather than removing them)
- information about the understory for each unit, such as the % of area with shrub cover or in montane chaparral patches after thinning

- The scoping summary has insufficient information to comment on nests, detections, or home ranges for spotted owls, where old forest emphasis allocation are located, and where any condor roosts are located. Please provide more detail about these.

- The scoping summary does not include any information about the extent and quality of Pacific fisher habitat in the project area. Please provide information about any fisher habitat capability in the treatment units or in areas adjacent to treatment units.

13. The Forest Service must use the “best available science” standard

Current Forest Service regulations require that projects that implement forest plans consider the best available science in their analysis. 36 C.F.R. § 219.35(a), (d) (2000); 69 Fed. Reg. 58055 (Sept. 29, 2004). To correctly apply this standard, the Forest Service “should seek out and consider all existing scientific evidence relevant to the decision and it cannot ignore existing data. . . . The Forest Service must determine which data are the most accurate, reliable, and relevant, and that will be reviewed deferentially, but it still must be good science-that is reliable, peer reviewed, or otherwise complying with valid scientific methods.” Ecology Center v. U.S. Forest Service, 451 F.3d 1183, 1194, n. 4 (10th Cir. 2006).

This also means that, in the final analysis, the Forest Service must disclose and discuss any science that it rejected as less accurate, reliable, or relevant than the science it actually applied to the project.

14. The Specified Need Statement for the Tobias Project Conflict with the Project Purpose

Statements in the Scoping Letter for the Tobias Project conflict with the purpose of the project because logging incense cedar and white fir will decrease and not increase diversity:

The purpose of the project is to restore and maintain the forests throughout the project area to promote a healthy, diverse forest ecosystem that is resilient to the effects of wildfire, drought, disease, and other disturbances. There is a need to increase diversity in age, density, and stand structure; modify tree species composition to favor oaks and pines (Jeffrey and sugar) over incense-cedar and white fir . . .

15. Soil Surveys have not been provided

The August 7, 2014 cover letter for the Notice of Intent that began the scoping process for the EIS for the Tobias Project states that since the 2013 scoping the Forest Service has performed “further field surveys for soils.” However, no soils information or a soils report has been provided with the more recent January 30, 2015 scoping notice. As suggested above in item 1, this information should be provided early so we can provide meaningful comments. **PLEASE MAKE AVAILABLE THE FIELD SURVEYS FOR SOILS ON THE PROJECT WEBSITE, AND NOTIFY US WHEN THOSE SURVEYS ARE AVAILABLE.**

16. The Project’s Proposal to Allow Any Additional Erosion is Unacceptable

The Tobias Project proposes to use both commercial and non-commercial activities to thin ladder fuels, restore species composition to those present before fire suppression and logging, and increase the resiliency of stands of trees to drought, insects, and fire. And while commercial activities would use rubber-tired skidders or log forwarders on slopes up to 35%, skyline yarding on slopes between 35 - 60%, and allow tractor use when there is no acceptable risk of soil erosion, and loss of soil to erosion is unacceptable, especially in an area such as Tobias, which is still recovering from the damage caused by salvage logging and associated roads after the Stormy Fire.

No additional erosion or sediment flow into down-stream watersheds would be considered acceptable. All sediment flows into streams is cumulative and eventually contributes to causing reservoirs like Lake Isabella to fill with sediment, as it has. The U.S. Army Corps of Engineers is now spending millions of taxpayer dollars to restore the Isabella Reservoir because the Forest Service considers soil erosion and sedimentation from its various projects that cumulatively impact the Kern River watershed to be “acceptable.”

17. Project Scoping is too Vague and Fails to provide specifics about the end result of thinning

As discussed in item 1., there is insufficient information to provide meaningful comments with regard to the proposed action because the scoping letter does not provide enough detail about the end result of the thinning proposed. Much of the information provided in the scoping notice is too vague.

As already discussed in item 12. above, the EIS must not only provide baseline information about the conditions of stands proposed for treatments, but it should also disclose how many trees would be removed and how many would be retained in each size class in the commercial and hand treatment areas and what the current canopy cover is and what the resultant canopy cover would be following treatment.
18. Project Scoping Fails to provide specifics about Meadow Protection and Improvement

The Scoping Letter fails entirely to mention how meadows would be protected and/or improved. The Forest Service must first assess the damage that a meadow has sustained, then make a determination as to the cause or causes of the damage, and then recommend alternative methods of preventing future damage, and finally it must recommend alternative methods of improving the degraded meadow such that the historic meadow sediments remain intact as well as discontinue any activities that are the causes of the damage. We consider bulldozing historic meadow sediments to not be a proper way to protect or improve a meadow.

19. Project Scoping is Vague and Fails to provide specifics about Fuel Breaks

IT IS UNCLEAR WHETHER THE PROJECT STILL INCLUDES FUEL BREAKS. PREVIOUS SCOPING LETTERS INCLUDED PROPOSALS FOR FUEL BREAKS. IF THOSE ARE STILL INCLUDED IN THE PRESENT PROPOSAL, THIS SHOULD BE CLARIFIED IMMEDIATELY. The Scoping Letter fails to specify the width and type of fuel break that would be implemented. Scoping fails to specify any particulars about how many trees in each size class would remain in the 3,300 acres proposed for hand thinning of immature trees less than 10 inches dbh.

20. Fuel Breaks are Segmented from Previously Proposed Forest-Wide Ridgeline Treatments

Shaded fuel breaks are proposed to be located along ridges and in strategic locations to give fire managers more options for controlling either human or naturally ignited wildfires.

The cumulative impacts of various fuel breaks the Forest Service created (as DFPZs and SPLATs) on the Sequoia National Forest to manage wildfires have never been analyzed. The Tobias Project is just one more in a series of previous projects, which has been segmented from other large projects that never analyzed the cumulative impacts from these various fuel breaks on the landscape and resulting fragmentation of wildlife habitat, especially on habitat for the Pacific fisher.

21. Tobias Project would reduce Fisher Habitat Canopy Cover next to the Giant Sequoia National Monument Boundary

Treatments in the Tobias Project, like those in the Frog Project, are directly adjacent and right up against the Giant Sequoia National Monument line. This was acknowledged in the 2006 court order that stopped the Frog Timber sale, also directly adjacent to the Monument boundary. The Court acknowledged that the Pacific fisher does not recognize the artificial Monument boundary, and projects on the adjacent fisher habitat should be updated to consider the latest scientific findings on fisher. Since the US Fish and Wildlife Service intends to list the Pacific fisher in the near future, which may include designating critical habitat for fisher, the Forest Service’s Tobias project EIS must consider and analyze impacts to the fisher and its critical habitat, or it must delay the project until it can do so.
22. Tobias EIS must consider all existing Water uses and resources

If the project is to restore and maintain the forest ecosystem so it is resilient to the effects of wildfire, drought, disease, and other disturbances, the EIS must include an assessment of and documentation to show all water diversions, withdrawals, and developments that utilize water in the watersheds involved in the project area in order to establish a baseline of available water for making a decision as to what can be done to protect the forest ecosystem from drought and whether commercial thinning would be effective, since thinning would cause the forest understory to become hotter and dryer, and would allow moisture-robbed surface winds to increase.

Managing forest ecosystems and clearing fire prone vegetation runs counter to common sense by exposing soils and understory vegetation to desiccating conditions. Removing forest biomass to supposedly reduce fire danger runs counter to making the forest resilient to climate change because opening the forest canopy to winds or the drying heat of the sun results in drying out the layers of moisture-holding duff, small trees, and down woody material, especially in the Sequoia National Forest, which receives relatively little moisture due to geography and prevailing weather patterns.

Water vapor in the air comes almost entirely from three sources: Evaporation from any moist surface or body of water, evaporation from soil, and transpiration from plants. Plants have large surfaces for transpiration; occasionally they have as much as 40 square yards for each square yard of ground area. Transpiration from an area of dense vegetation can contribute up to eight times as much moisture to the atmosphere as can an equal area of bare ground.

Relative humidity is most important as a fire-weather factor in the layer near the ground, where it influences both fuels and fire behavior. The relative humidity that affects fuels on the forest floor is often quite different from that in the instrument shelter, particularly in unshaded areas where soil and surface fuels exposed to the sun are heated intensely, and warm the air surrounding them. This very warm air may have a dew point nearly the same or slightly higher than the air in the instrument shelter, but because it is much warmer, it has a much lower relative humidity. Vegetation moderates surface temperatures and contributes to air moisture through transpiration and evaporation – both factors that affect local relative humidity. A continuous forest canopy has the added effect of decreasing surface wind speeds and the mixing that takes place with air movement. The differences in humidity between forest stands and open areas generally vary with the density of the crown canopy. Under a closed canopy, humidity is normally higher than outside (the closed canopy) during the day, and lower at night. The higher humidities are even more pronounced when there is a green understory. While temperature and moisture distribution in the layer of air near the ground are important in fire weather because of their influence on fuel moisture, the distribution of temperature and moisture aloft can critically influence the behavior of wildland fires.

approved for reprinting August 1977, Stock No. 001-000-0193-0 / Catalog No. A 1.76:360 (available at [http://tinyurl.com/pqeqhbj](http://tinyurl.com/pqeqhbj)).

If after thinning stands of mature trees smaller than 30 inches diameter at breast height (dbh) to increase heterogeneity and resilience and hand thinning stands of immature trees less than 10 inches dbh the temperature of the forest fuels and forest air increase, the moisture level of the forest fuels decreases, and the relative humidity in the understory decreases, does it stand to reason that surface and groundwater resources could also be impacted by the removal of these materials? Does it also stand to reason that the Forest Service should provide a comprehensive inventory of surface and groundwater resources in the watersheds of the Tobias Project area as a way to establish a baseline for assessing the impacts of the project on forest resources? These must be considered in the environmental analysis, especially now that we are in a prolonged drought period in California.

The Tobias EIS must consider how unlogged forests retain water before approving tree removal.

The EIS must consider whether commercial logging is an appropriate treatment since commercial logging would cause the forest to become hot and dry and allow surface winds to increase, all of which would exacerbate wildfire.

Congress recognized that managing natural resources in National Forests was “highly complex” and enacted the Forest and Rangeland Renewable Resources Planning Act (FRRRPA). The Act requires that the Forest Service develop an inventory of “present and potential renewable resources, and an evaluation of opportunities for improving their yield of tangible and intangible goods and services.” In addition the Act requires that all forest management activities to be preceded by a “comprehensive assessment” of environmental and economic impacts in order to create a management plan that is consistent with MUSYA and NEPA. Congress emphasized the “fundamental need” for the management plans to “protect and, where appropriate, improve the quality of soil, air, and water resources.” Developing an inventory of groundwater resources and an assessment of the environmental impacts on groundwater including potential impacts of groundwater use on surface water resources, is an integral step in ensuring that a management plan protects the water quality in Sequoia National Forest and the Giant Sequoia National Monument.

The 1988 Sequoia Forest Land and Resource Management Plan does not actually provide any direction about water resources and thus an inventory must be done for the watersheds that could be impacted by the implementation of the Tobias Project. The 1988 plan indicated that 32 percent of the available ERA’s have been consumed by that time. Consumed ERA’s must have increased considerably since the forest has been logged heavily in the past 25 years.

While BMP’s mitigate major project effects, minor effects of individual projects may accumulate to produce off-site Cumulative Watershed Effects downstream. A Forest-wide Cumulative Watershed Effects (CWE) analysis was done for Forest planning and individual project CWE analysis is done during
23. Tobias EIS must be specific about Mastication

The EIS must consider whether mastication would be appropriate and what the impacts to the remaining tree roots would be under wildfire conditions.

24. Tobias EIS must be specific about the reasons for Road Decommissioning

We support the proposal for road decommissioning and conversion of roads to non-motorized trails for foot travel and equestrian use, but we oppose the use of motorized OHVs on these trails.

The process of decommissioning roads must include all of the reasons for proposing the decommissioning of those roads as well as an analysis of how those roads will be restored to their natural hydrologic function with the proposed decommissioning.

25. Tobias EIS Must Provide Sufficient Justifications for leaving more OHV Trails open because of Negative Impacts of OHVs

OHV trails are damaged more than non-mechanical use trails. OHV trail maintenance is not adequately funded. Persons seeking quiet foot travel and equestrian experiences avoid OHV trails. The impacts to the environment from the noise and reverberating sounds of OHV’s are extensive and a deterrent to other forest users. OHV’s have been implicated in the ignition of many human-caused forest fires. ** THESE ISSUES MUST BE CONSIDERED AND**
ANALYZED IN LEAVING THE ROAD-TO-TRAIL CONVERSIONS OPEN TO OHVS.

26. Sequoia ForestKeeper ® Field Visit on Sept. 9, 2014

On Sept. 9, 2014, Sequoia ForestKeeper ® Ara Marderosian and Kate Rowe visited the US Forest Service’s Tobias Forest Ecosystem Restoration Project in the Greenhorn Mountains.

Figure 7. Sequoia ForestKeeper ® Survey Sites (see notes below)
Ara Marderosian and Kate Rowe recorded the following notes throughout the site visit:

**Unit 1**
High canopy composition: white fir and sugar pine; some cedar
Two meadows; Small amounts of understory and low canopy vegetation

**Unit 2**
High canopy composition: white fir and sugar pine; some cedar
Small amounts of understory and low canopy composition

**Unit 4**
Large white fir (mostly), Jeffrey pine
Piled woody debris along roadside; whitethorn and manzanita generally only along roadside
Small amounts of understory and low canopy vegetation
Cultural site for past logging and/or mining? Includes old outhouse, metal sheeting, old cabin, manmade ravine.

**Unit 5**
Large Jeffrey Pine and White Fir; Willow, corn lily, and ferns present = water source within site.
More whitethorn and Manzanita; Higher numbers of Pine and Fir seedlings

**Unit 6**
Large White Fir and Sugar pine; Very clear understory;
Patchy willow, whitethorn, western azalea

**Unit 7**
“Fir Country”; about 95% white fir; Many less than 30 inch DBH white fire; also large white fir present; Dense canopy cover

**Unit 8**
Hard to access – on top of ridgeline; Between road and unit, thick layer of plantation (less than 8 inch DBH), whitethorn and western azalea; No road or trail access to site = will harvesters use old skid trail near site 7 to access trees?; White Fir on top of ridge (within unit)

**Unit 12**
Large white fir, incense cedar, planted Ponderosa Pine; Some large snags; Local areas of whitethorn; Willow and corn lily near road; Large burned, hollowed, old stumps

**24S25B**
Road overgrown; looks like a landing site; No road signs

**Unit 13 (waypoint = Toby 13B)**
Pine plantation intermixed with large white fir stands;
Local whitethorn patches; Meadow used by cattle

**Unit 14**
Massive white fir (waypoint = GiantWhitefir); Large white firs and Jeffrey Pine
Old Skid trail going through site; red and white flagging; large burn pile-old

**Unit 15B**
Local clusters of dense willow/aspen stands; Overgrown road with fir saplings;
Near meadow; High canopy composition: white fir

**Unit 16A**
Bare dirt, steep slopes; clusters of fir seedlings and saplings; High canopy composition: white fir

**Unit 16B**
Large white fir, clear under

24S34A
Goes out to “a view” into an open and clear area; Possibly recommend to leave as trail

Unit 17
Abundant snags and woody debris; snags are marked as Hazardous
High canopy composition: white fir; Clusters of white fir seedlings and saplings

Unit 18
Thick with whitethorn, currant, and azalea; Small white fir saplings
Old timber sale – stump; A lot of “H” marked trees in white fir stand;
Small pine plantation

Unit 19
High canopy composition: white fir, incense cedar, and Jeffrey pine;
Clusters of whitethorn; overall open understory and low vegetation;
A lot of Black Oak (found in high and low canopies); found old, burned oak growing back.

Unit 20
High canopy composition: pine; Clustered pine saplings and whitethorn

Unit 21A
High canopy composition: white fir, incense cedar, and Jeffrey pine
Clusters of whitethorn; overall open understory and low vegetation

Other Observations:

The soils in the Tobias logging treatment units are erosive and subject to damage by any logging equipment. All erosion in these often steep units would be unacceptable because there is little in these units to hold the soil. Most of these logging units are the only remaining unburned forests in that area where the Stormy Fire was active. Logging these units will open them to the heat of the sun and increased surface winds, which will dry and make all forest materials more flammable. Most of the planned thinning units were open and had few fine fuels on the ground to carry fire through these stands, made up mostly of large diameter pine, white fir, incense cedar, and oak (see Figure 7, below). There were several units with stands of large sugar pines, but Jeffrey pine was the predominant pine. There were some wet areas in these units with willows, even on steep slopes. Fire would not likely carry through these areas because of the moisture and because most of the willow areas were not among the trees.

The west side of the fuel break starts at high elevation in what is now chaparral, which steeply drops to the meadow below. The east side of the fuel break rises from the meadow toward Baker Point and widens to encompass many large trees on the east side of the fuel break area. This area, despite its open characteristic, is proposed for logging, which appears unnecessary. While the Forest Service claims that they want to achieve the open characteristics present prior to European settlement, these logging units already exhibit this very open understory characteristic.

The penny pines plantations, evident throughout the area (see Figure 8, below), are flammable thickets where the Forest Service should be focusing all thinning efforts because the plantations are the tinder that could most likely carry embers into the canopy of the remaining unburned forest.
Figure 8. Open nature of some of the logging units

Figure 9. Pine Plantations that need to be treated (Photo by Ara Marderosian)
27. “The Tobias Project proposes to use both commercial and non-commercial treatments to thin ladder fuels, restore species composition to those present before fire suppression and logging, and increase the resiliency of stands of trees to drought, insects, and fire.”

Please provide a detailed description of the current species composition and the species composition “present before fire suppression and logging” in the DEIS. This is necessary data for NEPA’s baseline assessment.

28. Why does the project area include stands within a Roadless Area and the Baker Point Botanical Area? (see also map in Exhibit C)

The project area includes a vast swathe of the Chico Roadless Area covering about one third of the project area. Stands within or partly within the Chico Roadless area include stands 3, 4, 5, 6, 11, 37, 39, and 40.

The Forest must take a hard look at the effects of the proposed action and other alternatives on the Chico Roadless Area’s roadless character and wilderness values. “Roadless character” as defined in the Roadless Rule (36 CFR § 294.11) includes:

(1) Quality of undisturbed soil, water, and air;
(2) Diversity of plant and animal communities;
(3) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land;
(4) Primitive, semi-primitive nonmotorized and semi-primitive motorized classes of dispersed recreation;
(5) Natural appearing landscapes with high scenic values;
(6) Traditional cultural properties and sacred sites;
(7) Other locally identified unique characteristics.
Roadless Areas provide substantial water resource benefits (DellaSala et al., 20111), are important for conserving biodiversity (Strittholt and DellaSala, 20012), and are important climate change refugia for biodiversity (Olson et al., 20123) (scientific reports provided as Exhibits D-F). The Forest Service should review and explain its management guidelines for this IRA and explain how each alternative reviewed in the NEPA documents is compatible with maintaining roadless area qualities and values.

29. The project area includes multiple occurrences of *Calochortus westonii* (see also map in Exhibit C)

Multiple occurrences of the Shirley meadow star tulip, *Calochortus westonii*, have been reported within and adjacent to the project area.

Potential threats to the plant include mechanical equipment use and related activities, trampling, grazing, and competition from larger, more aggressive species.

The CNDDB records occurrences of *Calochortus westonii* in project stands 2, 4, 8, 10, 14, 17, 19, 20, 26, 36, 37, and 40.

Under the 1998 Draft Species Management Guide for *Calochortus westonii* the Forest will:
- Maintain and enhance viable populations of *Calochortus westonii*.
- Preserve or restore habitat conditions which will promote the geographic distribution and genetic

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diversity of the species.
• Minimize potential, negative effects of management activities.

The Forest should determine *Calochortus westonii* occurrences and population trends within the project area, take a hard look at the effects of the proposed action and prior treatments on *Calochortus westonii*, and analyze how the proposed action will achieve all the goals of the 1998 Management Guide including promoting the geographic distribution and genetic diversity of the species.

30. Livestock Use

The treatment area is almost entirely within the Dunlap Allotment. According to the scoping letter, “Areas selected for thinning and mastication would favor Jeffrey and sugar pines, oak, and other shade intolerant species, in order to restore the historic species composition.”

Livestock directly impact oaks by eating acorns, leaves, and young shoots. Livestock browsing is thought to suppress or kill many seedlings and saplings, as well as sometimes stressing older trees due to livestock congregating in the shade, compacting soils, trampling seedlings, and damaging mature trees through repeated contact, making them more susceptible to disease and environmental stresses. The Forest Service should explain how the treatment areas will be affected by the combination of thinning, burning, and grazing, how it will be rested from grazing to facilitate restoration and a return to “The historic species composition.” Forest Service policy is to control livestock grazing to achieve successful reforestation and to not permit livestock on a reforestation area until seedlings are capable of withstanding the type of grazing use intended. FSM 2472.33.

The EIS should analyze the effects of the proposed treatments on the use of Dunlap, Dry, and other meadows by cattle, including the cumulative effects of cattle and treatments on invasive weeds and sensitive resources.

31. Other Species

The CNDDB records occurrences of the endangered southern mountain yellow-legged frog, *Rana muscosa*, and proposed threatened Pacific Fisher, *Pekania pennanti*, just outside the project boundaries.

Other species that occur in and adjacent to the project area that may be directly, indirectly, or cumulatively impacted by the project include:

- Spotted owl, *Strix occidentalis*
- Northern goshawk, *Accipiter gentilis*
- Greenhorn Mountains slender salamander, *Batrachoseps altasierra*
- California wolverine, *Gulo gulo*
- Unexpected larkspur, *Delphinium inopinum*
- Muir’s tarplant, *Carlquistia muirii*
- The Needles buckwheat, *Eriogonum breedlovei* var. *shevockii*
For Sequoia ForestKeeper®, the Kern-Kaweah Chapter of the Sierra Club, and Western Watersheds Project,

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