Thoughts on the fisher component of the Kings River FEIS

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[Disclaimer: These thoughts were generated by an incomplete reading of the fisher section of the document; I have only read thoroughly pages 15 – 46, yet the account continues for about 10 more pages. Also, I did not read any other portion of the larger FEIS. Please consider my comments in light of this shortcoming. Thanks.]

1. This version is generally better written than previous versions.

2. Re: Rick Truex's (and others) observations about the status of the southern Sierra population. I think the document puts an overly optimistic spin on Rick's opinions. Yes, fishers can be conceived as "well distributed" on Sequoia NF however, they only occupy 25% of the sample units. A realistic view of well distributed would probably be justified if half the sample units had detections. In addition, any comments about the status of the population are speculation and are premature. The whole point of the population monitoring program that is in place is to determine whether the population is decreasing or not (i.e., stable) *but the results of this monitoring have not yet been analyzed*, so any speculations are premature and likely to change when the quantitative results are in. The prudent approach would be to refrain from making any conclusions about the status of the population until we have quantitative information (from either the monitoring program results or the forthcoming adaptive mgmt study). The most ironclad conclusion re: this population is that by common standards it is small and isolated from the rest of the California and North American range – these risk factors are well established and appreciated by the field of conservation biology. Speculations about the population's size and stability are unnecessary to either magnify or mitigate the risk facing this population.

3. Breadth of density classes. It is difficult to assess the impact of future scenarios with such broad density classes. This is especially problematic when a category ranges from 60 -100% and our data indicates that fisher resting and denning habitat occupies the extreme upper end of this range, no matter how canopy density is measured. There are untested effects of targeting residual cover at 50-60% when important fisher sites (resting) are typically associated with much higher canopy cover. This is why I prefer the analysis of plot data that Romero conducted, using modified versions of our predictive models. These, by the way, are well done – although I have not had a chance to chat with Romero about the assumptions he had to make to fit the stand exam data into the model we developed which used slightly different variables (collected in a different way). I was impressed with the initiative taken by Romero and Kim to adapt our models for use in a management context. I'd like to see more NEPA analyses tap into recent science in this fashion (i.e., "use it, don't just cite it"). Returning to my main point, however, it concerns me to read, on pg. 23: "*This goal should ensure the maintenance and recovery of fisher foraging and dispersal habitat, however, because rest and den sites in the Sierra Nevada average > 70 to >90% canopy cover its effect on these uses* (presumably "these uses" refers to resting and denning?) *cannot be evaluated*". This means that the FS does

not have the tools to evaluate the projected change, and future availability of the highest canopy cover areas – precisely those most important to fishers.

I also think that protective measure #1 should be compared against the characteristics of female fisher home ranges that are known and published. For example, the document states: "Measure #1 states that the long-term project goal is to maintain >50% of the landscape in CWHR type 4 or greater with at least 50% canopy cover, or to maintain 50% of lands outside of WUI with canopy density >60%. Instead, if fisher conservation is the goal why not use the data on the composition of female fisher home ranges as the guideline? This would result in goals that:

- areas maintain *an average* of 71% in Dense CC (60-100%)
- areas have *no more* than an average of 0.5% in Sparse CC (10-24%) and *no more* than and average of 4.73% in Poor CC (25-39%).

Again, if fisher conservation is an important goal, then these standards should be considered.

4. Assumptions in Table 3-31.

A. I'm not sure where the authors got the idea that multi-storied and multi-species coniferous forests are preferred by fishers. There is no citation provided, and I'm not aware of any of our work that came to this conclusion. I don't have A. Mazzoni's thesis handy; is this conclusion from her work?

B. More importantly, it is unsupportable to state that "*Fisher prefer to spend most of their time within 100 feet of water*". This is not true, yet the OF Linkages seem to be predicated on this assumption. Fishers have large home ranges and use most of the area for various purposes; both riparian and upland areas. This exaggeration probably comes from an interpretation of our work that found that the *probability* that a rest structure is used increases if there is water within 100 m. This is but one variable in a multivariate function; technically interpretations based on single variables in this fashion can be spurious. Thus, rest structures have a statistically higher chance of being found near water, *given the other variables in the predictive equation*. This is VERY different, however, from concluding that fishers spend most of their life within 100m of water; this is an upland species – not a mink. Thus, a system of land allocation that is designed to connect habitat for fishers needs to be built from upland *and* riparian areas. A riparian-based OF Linkage system should not be considered a sufficient way to connect habitat for this species. It may be a necessary component of such a system, but it should not the sole component of a spatially explicit linkage system. Protecting connectivity for fishers will most likely require more than redefining streamside buffers as a fisher network.

C. Where did the "fishers prefer conifer cover >20% come from"? This is a no brainer, but it implies that 20% is all that is needed. Producing forests that have >20% canopy cover is NOT a fisher protective measure, or even a habitat requirement (as the table implies) in a strict sense. Seems like a 'straw man'.

5. The logic of cutting potential rest trees so as to make growing space for potential rest trees. I fail to understand the logic that defends the removal of large (but intermediate-sized; 20-30" or 20-35") trees simply to provide growing space so that smaller trees can

then enter this same size class in the future (?). Why, then, remove these relatively large trees in the first place, if they are the size class you are trying to increase as part of the long-term goal? Fishers rest in conifers that *average* about 40", however, this means that many of the trees they use are in the 20- 35" class (take a look at the standard deviations around the mean conifer resting structure dbh in Zielinski et al. (2004)). Thus, a plan that purports to protect fishers is, in fact, removing trees of the size class that they use. I have no problem with this if it can be justified that these trees will increase fire risk, and hence increase the risk to losing fisher habitat. However, if the only reason to harvest trees this size is to fund the restoration aspects of the project, please say so. The authors will not convince skeptical readers that *harvesting* 20-35" will achieve the goal of increasing trees in this same size class in the future.

6. Hardwoods. I'm pleased to see an appreciation for hardwoods as habitat components throughout the document. This is consistent with the fact that all the published literature in California identifies hardwoods (particularly black oak) as a key habitat element in mixed conifer forests.

7. Unsubstantiated conclusions.

E.g., regarding 'return of fishers to area when activities have occurred'. Whenever the authors have the opportunity, they seemed to minimize the magnitude of the effects of the proposed activities on fishers or, in some cases, made unsubstantiated (and sometimes unverifiable) claims. An example is on page 21 where they state, in regard to the rest site probability models that "*An analysis has been conducted to determine the probability of fisher using the area overtime and it shows they do return to the area when activities have occurred*". Nobody can know this yet, and the model results do not address the issue of fishers reusing treated areas. This comes across as unfettered advocacy/optimism and is one of several examples where the authors make clear their bias against the magnitude of the potential negative effects and in favor of the conclusion that everything will be ok. Neither the quality of the total analyses, nor the way the results are described, have convinced me that the analysis was objective. Sometimes I wish the authors would simply state the obvious: that the large intermediate-sized trees need to be harvested to pay for the operations. Is that so bad? If they started with this assumption, rather than try to convince the reader that removing these large intermediate-sized trees was part of a fisher habitat restoration plan (which is unsupportable), I'd be in a much more open-minded about considering the entirety of their analysis.

E.g. regarding reference to anecdotal data. The following statement is included: "Moreover, district records show fisher being detected in areas that have previously received underburning or vegetation treatments". This is being used to convince the reader that fishers tolerate the very manipulations of vegetation being proposed, but there is no reference to any analysis of these data or even the number of observations. And, these observations, to have any meaning whatsoever, need to be compared against the number of observations where fishers were detected in areas that have NOT been recently treated. Only then can the information help decision-makers determine the effects on fishers. This is another example of the use of one-sided and anecdotal information to try to convince the readers that the proposed activities will have no affect. The document should be reviewed to eliminate these.

8. Subtle bias in presentation of information: short term risks vs long term benefits. A great deal of evidence that is presented points toward short term problems for fishers (see for e.g., pg. 24), but language is unjustifiably optimistic in favor of the future long-term benefits. I did not find, in the portion of the document that I read, any type of formal analysis of tradeoffs between short-term detriments and long-term benefits. We are simply told that big fires will happen and I get the impression that whatever is necessary to minimize their negative effects must be done. There is no analysis, for example of the outcomes when only small trees (i.e., < 20") are harvested, nor does there appear to be analysis that varies the number and size of wildfires against the habitat loss that will result from increasing the maximum size of trees allowed to be cut. With inadequate analyses of trade-offs between size class of trees harvest and risk of loss of habitat by fire (at least in the portion of the document that I read), I become skeptical that the FS will be able to address the first 8 proposed units, much less the remaining units that will be proposed in the future. I have not read an argument that convinces me that the full implementation of Kings River projects will not cause significant loss in fisher habitat value in the short term, and perhaps long term (however, I admit to not having read the complete cumulative effects section of the document). My consolation is the fact that if the analysis of plot data conducted by Romero is sound, our empirical models of fisher resting habitat (tested using the data from other researchers) suggest that fisher resting habitat will increase over time, particularly in the presence of fire. But still, what is absent is a quantitative analysis that looks at risk to loss of fisher habitat (i.e., the predicted *severity* of fire) against the *intensity* of vegetation management (i.e., the maximum allowable tree dbh size). Lacking this analysis, I tend to weigh more importantly the activities that I *know will happen* (i.e., the harvest of trees up to 30 or 35" and the reduction of dense canopy forest) when compared to activities that someone tries to convince me *may happen* (i.e., the loss, in the future, of a lot of fisher habitat via catastrophic fire).

8. Plan relies on adaptive mgmt/research program that has not yet been formulated or tested. The FEIS assumes that 'adaptive management' will help determine the effectiveness of the proposed management activities and, presumably, will be sensitive enough to recognize when the plan is having unacceptable negative effects on fishers or their habitat. I think it is clear to all involved that PSW has not yet identified a monitoring/research strategy that will be capable of identifying effects on fisher behavior or demography. This is a VERY challenging task and one for which only a few ideas have been discussed and even fewer tested on the ground. Until the research community determines that they can, indeed, learn from this 'experiment' represented by Kings River, it is inappropriate to claim that an adaptive management safety net is in place.

I've run out of time and steam, and I know my comments are long overdue. So I'll conclude here.