

Comments on the Kings River Project, Sierra National Forest

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I am the Goertz Distinguished Professor of Wildlife Management in the Department of Environmental Science, Policy and Management at the University of California, Berkeley. I have conducted research on the Pacific fisher, American marten, and other forest carnivores for over 20 years. I have done extensive research on forest carnivores in the Sierra Nevada, including research on fisher and marten distribution, demographics, and habitat selection in national forests in the Sierra Nevada. I have also participated in numerous workshops and meetings relating to forest carnivores, including some related to the Sierra Nevada forest plan amendment process.

This critique is based on a review of the Draft Environmental Impact Statement (DEIS) and the Final EIS and ROD for the Kings River Project ("KRP"), with terrestrial wildlife sections ("BE"), as well as my prior review of the Forest Service's final supplemental environmental impact statement ("FSEIS") and record of decision ("ROD") for the revised Sierra Nevada Forest Plan Amendment (Barrett 2004b) and DSEIS, (Barrett 2003), and my review of the Giant Sequoia National Monument Management Plan FEIS (Barrett 2004a). I have previously submitted comments on the DEIS, dated March 26, 2006, which are incorporated into these supplemental comments.

The Forest Service has adopted proposed Alternative Three for the Kings River Project, which proposes to conduct fuel reduction logging as part of adaptive management research on an area comprising 131,500 acres in the Big Creek and Dinkey Creek Watersheds in the Sierra National Forest ("Forest"), an area that provides critical habitat for the Pacific fisher. The Kings River Project is proposed as a research project for establishing a fire-resistant, old forest within the Southern Sierra Fisher Conservation Area ("SSFCA").

Alternative 3 of the Kings River Project allows logging of large trees up to 30" dbh and significant overall canopy cover reductions at the stand and landscape scale. The final project includes several mitigation measures intended to reduce the adverse effects of logging on fisher. In addition, the Forest Service states in the FEIS and ROD that it intends to conduct research on the fisher according to the study design and methodology developed by the University of California as part of the Sierra Nevada Adaptive Management and Monitoring Project. The FEIS and ROD state that the primary objective of this proposed fisher study is to obtain measurements of habitat use, survival, reproduction, and dispersal for fishers living in a study area subject to a spectrum of vegetation treatments, timber harvest, and natural disturbance events.

Despite these changes, my review indicates that the Kings River Project is still likely to have significant adverse impacts to fisher in the project area, which in turn pose great risks to this fisher sub-population located between the San Joaquin and Kings River drainages. Although the Forest Service claims it is proceeding cautiously, the ROD still allows for Phase I of the Project to go forward on approximately 13,847 acres within eight management units,

including the removal of over 23,000 medium-large trees between 20"-30" dbh. As discussed in my prior comments, all available research shows that this level of intense logging and fuel reduction treatments can have significant impacts on fisher by reducing suitable habitat, eliminating pockets of high quality forest and cutting off connective corridors. The Forest Service does not have sufficient information to gauge the significance of these impacts, yet still intends to go forward with treatments.

In my opinion, the Forest Service's approach does not insure viability for the fisher in the planning area. In making this conclusion, I incorporate by reference my prior comments which set forth in some detail the present status of the fisher in the Southern Sierra, its habitat needs and the reasons the KRP will have significant and potentially irreversible impacts on this species. In addition, my conclusion is based on three points that need to be emphasized about the KRP as it has now been approved.

1. The Fisher's Critical Condition Requires More Cautious Forest Management

The KRP planning documents still do not acknowledge the critical condition of the fisher in the Southern Sierra, and in the planning area for the project. This omission renders the KRP's analysis of environmental effects and risk to the fisher inherently flawed.

The Forest Service's failure to acknowledge the precarious population status of the fisher is demonstrated by the project documents. The initial DEIS and BE for the project stated that fisher numbers were "increasing" and that the local population "appears on an upward trend." My initial comments to this assertion were 1) recent tracking of fisher in the Project area shows that total fisher sightings were declining; and 2) an assessment based on the number of individual fisher detected is flawed because this measure is likely more a function of the increased research effort than any increase in population.

In the FEIS document, I note that the Forest Service subsequently changed its prior findings to state that the fisher population was "stable." In the ROD, however, the Forest Service acknowledged that this assertion was "incorrect." Instead, the ROD now states that the "correct interpretation is that the data do not suggest a significant trend, either increasing or decreasing." The ROD states that this change did not alter the Forest Service's intent to proceed with the KRP.

In my opinion, the Forest Service is still missing the point that the southern Sierra fisher population is in danger of extinction and that management of fisher habitat should proceed with extreme caution. In my prior comments, I referred to Lamberson *et al.* 2000, which remains the best available demographic analysis of fisher in the southern Sierra Nevada. This study states:

"If female survival and fecundity are medium and all other parameters high, a steady decline toward extinction occurs. Theoretical implications of the effects of stochastic phenomenon on small populations suggest that unless fishers in the southern Sierra Nevada can maintain high vital rates (reproduction and survival), the population may face imminent extinction."

The study shows that with low or even medium female reproductive success, fisher will likely disappear within the next 20 to 30 years (*See Lamberson et al. 2000, Figures 2-3*).

The findings in this study, and my own experience, indicate that a key for fisher preservation are high rates of female fisher survival and reproductive success. However, as I have previously noted, the KRP planning documents have not considered the meaning of research showing low rates of reproductive success for female fisher in the area, only 18% in 2003 and 36% in 2004. These numbers indicate to me that fisher are not thriving under current habitat conditions and could disappear from this area in the near future. Given the timeframes discussed in Lamberson 2000, I do not agree that the Forest Service can ensure fisher viability by promising improvements in habitat 30 years from now. If present trends continue, fisher are likely to be gone by that time, thereby continuing the downward trend observed in the Sierra Nevada over the past 60 years.

Because of its imperiled condition, the Forest Service must manage habitat to maximize the survival of fisher in the southern Sierra now, in the short as well as the long term. Yet the KRP still proposes significant logging in fisher habitat without knowledge of how such logging will affect the estimated 13 fisher home ranges that intersect the planning area. The Forest Service does not have information as to how fisher live in the planning area, nor which areas of high quality or connective corridor habitat in the project area are most critical for fisher survival. Lamberson 2000 notes that the loss of a few reproductive females could lead to a downward population spiral that culminates in extirpation. In my opinion, the proposed reductions in habitat quality in the Kings River Project could lead to such loss or, at a minimum, a reduction in reproductive success, which is key to fisher survival. As discussed in my prior comments, the disappearance of fisher from the Kings River project area would create a bottleneck in the already imperiled Southern Sierra population, similar to the central and northern Sierra bottleneck that has led to the fisher's current isolation and endangered status.

Given these facts I continue to question the Forest Service's approach on this project. In my opinion, the KRP violates the precautionary principle to avoid taking action with high risk until there is enough information to ensure that the action will not result in irreversible impacts. The KRP does not meet this standard because it has not collected the information necessary to assess how this project will affect fisher. As discussed below and in my previous comments, the removal of dense canopy forest, including areas that may currently function as critical resting and denning sites and movement corridors, has the potential to reduce habitat quality below minimum thresholds below which fisher cannot survive much less reproduce successfully.

In light of this fact, it is incumbent upon the Forest Service to manage fisher habitat in the most cautious manner possible while also controlling for fire risk. The KRP documents acknowledge that the treatments pose risk to fisher but assert that the existing risk of stand-replacing fire justifies the proposed action. I agree that fire is a concern given the decades of fire suppression in this area. However in my experience, there is no need to harvest 20" to 30" dbh trees to reduce fire risk to a manageable level. Fire is in fact a natural process in the Sierran mixed conifer forest, which creates habitat elements such as snags and cavities that are important for long term fisher survival. It is the misguided policy of fire exclusion by the Forest Service

over the past 60 years, despite calls for an extensive prescribed burning policy by research foresters such as Harold Biswell, which has brought us to the current crisis.

If fisher conservation is really a management priority, factors that do not contribute to conservation should not be considered in determining management direction. I am aware that the Forest Service is attempting to manage the natural thinning process of the forest based on an inverse J-Curve model. As I have stated previously, the inverse J-curve model does not correspond to the size and age distribution of forest stands in this area since it is based on a 200 year – as opposed to 600 year – cycle and because it does not consider fire-disturbance as a central component of mid-elevation forests in the Sierra Nevada. In my opinion, any thinning model must take into account the current deficit of larger trees and Class 5 habitat in the planning area and should therefore make every effort to retain the mid to large size class of trees between 20” to 30” dbh, which will grow into large trees over the next few decades.

The Forest Service justifies its approach by assuming that more high quality habitat will be protected in the long term, but this ignores the significant immediate impacts to fisher that will occur. As I have previously stated, the first step in a sound conservation strategy is to protect the fisher's currently occupied habitat. The 2001 Framework addressed this objective, in part, by protecting medium and large diameter trees, by establishing a southern Sierra fisher conservation area within which large portions of each watershed would be managed for >60% canopy cover, and by protecting old forest emphasis areas and smaller old growth stands. In my opinion, the Forest Service's intent to rely on the artificial inverse J curve as a justification for implementing treatments with undisputed immediate adverse impacts to fisher habitat is contrary to sound science and is likely to have unnecessary adverse effects on fisher.

2. The KRP Has the Potential for Significant Adverse Effects on Fisher

The Kings River Project still does not adequately account for effects on the fisher of removing medium-large trees, reducing canopy cover, and removing large snags and large down logs from within fisher denning and resting habitat. The Project assumes that fishers may productively use habitat with canopy cover down to 40 percent and thus counts this habitat as “suitable” for purposes of assessing impacts to fisher. The ROD now proposes to retain 50% of the landscape outside the WUI with canopy cover (“CC”) > 60%. This level of protection is well below the findings of research showing that reproductive female fisher home ranges have over 70% in >60% CC. The Forest Service does not have information about the location of these home ranges including how much of the ranges may occur in the WUI where canopy cover may be reduced even lower.

Further, the retention of even 60% CC habitat does not account for fisher resting and denning habitat, which average around 80% CC. Truex et al. (1998) found that the mean CC of known fisher rest sites was over 90%, and the mean diameter at breast height of the four largest trees surrounding the rest sites was approximately 36 inches. Similarly, Mazzoni (2002) found that fisher rest sites had significantly higher canopy closure, crown volume, log cover, basal area, canopy layering and large snag abundance than random sites, and that trees and snags selected by fishers for rest sites were large and frequently had mistletoe infections.

In response, the Forest Service proposes to mark and preserve potential rest site structures according to a point scheme set forth in Appendix D of the BE. The problem with this approach is that the Forest Service has no information about the location of fisher resting and denning sites in the planning area and thus lacks adequate information regarding the appropriate spatial layout of these sites in relation to how fisher use habitat across the landscape. Further, no information is given regarding how many rest structures currently exist, how many are proposed for protection, nor where such rest structures will be preserved for experts such as myself to review for adequacy. I see no indication that the “marking” of these areas will be done by a trained wildlife biologist and no assurance that the areas preserved will occur in and complement the actual home ranges used by fisher in the planning area.

The KRP documents also do not provide any information about the actual size of the “rest” area or surrounding habitat that might be preserved. The research shows that a rest site offers value to fisher where it is part of an already dense habitat structure (*See* Zielinski et al. 2006, showing that habitat around the actual rest site structure is also critical). In my experience, isolated patches of dense habitat surrounded by forest with 40% CC will not likely offer rest site habitat for fisher. Without information as to which areas fisher actually use for resting, the Forest Service is essentially guessing about the adequacy of its habitat protections. This is even more true regarding denning sites, which are of course critical to successful reproduction. The Forest Service does not know the location of any fisher denning site in the planning area, yet still proposes to eliminate almost 1,000 acres of dense (4D and 5D) habitat. Based on my review, it seems possible and even likely that the Forest Service will be eliminating already scarce fisher denning sites without any knowledge that it is doing so.

Further, in my opinion, the KRP also still does not account for the need for fisher to have connective corridors of high quality habitat across the landscape. Despite the research showing that fisher do not limit their activities to the riparian corridor, the project review documents state that fisher habitat will not be fragmented because habitat in 100-meter stream zones will be protected as “old forest linkages.” I stand by my previous statements that this limited protection is inadequate to ensure that fisher movement will be assured across the landscape. By limiting connectivity to stream channels, fisher must travel long distances downstream, then reverse direction and travel upstream in a different stream corridor to connect to a different sub watershed. In my opinion, it is unlikely that fisher will travel in such a manner and if forced to do so, this would put greater stress on the population as a whole. I believe any fisher researcher would agree that a minimum standard for ensuring habitat connectivity includes preservation of habitat corridors at the headwaters of streams, over ridges and saddles, and ones allowing for direct north-south (as opposed to strictly east-west) movement. This pattern more accurately represents the manner in which fisher use the landscape where habitat is available.

The KRP’s failure to delineate and/or provide for adequate habitat corridors across the landscape is symptomatic of the Forest Service’s approach on this project. In my experience, fisher movement across the landscape is typically associated with quality habitat sufficient for foraging and resting, not minimal corridors surrounded by unsuitable habitat. However, the Forest Service has no information about how fisher use this area, and has not taken the steps to map high quality habitat in a manner that would even approach the type of carnivore networks that have been established by some other National Forests in the Sierra Nevada.

The KRP also does not address what I believe to be a critical issue for fisher, which is the effects of the Forest Service's fuel reduction activities on understory vegetation through repeated mechanical, fire and herbicide treatments. Understory vegetation, including shrubs, hardwoods and multiple canopy layers of the mixed conifer forest may form the protective canopy for fisher resting and foraging, yet the Forest Service has not assessed the impacts of eliminating this understory on the fisher. I do not believe the potentially significant effects on fisher of eliminating such habitat based on the need to reduce fuel loads or competition with growing conifers have been addressed in the project documents.

3. The Fisher Study Proposed in the FEIS Will Not Ensure Fisher Viability

Based on my review, the KRP ROD proposes unnecessary high risk to the fisher population in the planning area. The Forest Service attempts to rationalize this risk by referring to the longstanding and central research component of this project as a means to gather crucial information about the effects of treatments on wildlife, including fisher. As a research scientist, I am in favor of sound scientific experiments that shed light on the impacts of fuel reduction treatments on fisher, which are currently poorly understood. However, for a number of reasons, it is my opinion that the research component of the KRP does not justify the immediate and potentially drastic impacts on fisher from this project.

First, it is not clear to me why the Forest Service is researching the effects on fisher of intense treatments that by the Forest Service's own admission are unnecessary to reduce fire risk. Given the precarious state of the fisher population, why would the Forest Service choose to research the effect on fisher of fuel reduction techniques involving the removal of medium to large trees and intensive herbicide applications? Neither of these components is necessary to reduce the threat of stand-replacing wildfire. Thus, I do not agree with the fundamental premise of this project, in light of the need to proceed as cautiously as possible in adversely affecting fisher habitat.

Second, the research proposed in the FEIS has in fact not yet occurred, yet the Forest Service is prepared to commence logging treatments anyway. This approach is contrary to basic principles of science, which require the establishment of baseline conditions in order to measure meaningful effects as the result of treatments. Here, the only information the Forest Service has is a statistically questionable sample of fisher track plates, which provide information about fisher distribution, but little else. When units are logged, the only information forthcoming will be whether or not fisher are still present in the area. This information provides little to no insight into the potential causes of disappearance. Only an intensive, long-term aerial radio-tracking study will provide the necessary information.

In response to critiques of its prior research proposals the Forest Service has now proposed to conduct a research study on fisher similar to the Adaptive Management program that I am conducting on behalf of the University of California at Fish Camp. The Forest Service lists a series of questions that will be addressed by the UC study, including 1) population size and structure (males, females, young) of fishers in the study area; 2) vital rates, including birth rates, death rates, and dispersal rates; 3) causes of mortality; 4) patterns of habitat use; and 5) which

types of areas within home ranges receive disproportionately greater and lesser use. What the Forest Service does not explain is that the UC Study first requires the collection of two years of baseline data before treatments can begin. As set forth in our proposal, this is because “before” measurements provide a means to quantify the differences in ecosystem function between the control and impact sites not related to the management impact since these measurements occur before the imposition of any activity. Based on my years of experience, the establishment of meaningful baseline data is critical to the success of the research design. For example, without information about fisher home ranges and patterns of habitat use, how can the Forest Service measure which aspects of treatment have caused the loss of a formerly reproductive female? Without any information about existing connective corridors, how can the Forest Service measure how treatments are potentially fragmenting fisher populations? Without information on the spatial delineation of rest site structures, how can the Forest Service assess how treatments affect the fisher’s use of this critical habitat element?

As set forth in the UC proposal, establishment of baseline measurements is the difference between deliberate experimentation and a passive trial-and-error approach. In my opinion it is too late in the day, and far too risky, to conduct *any* research in fisher habitat without deliberate research goals whose achievement justifies the potential adverse effects inherent in cause and effect experimentation. In contrast, if fisher are found to have disappeared from the area following logging treatments, the Forest Service will lack any cause and effect explanation that will provide meaningful guidance in determining future management corrections.

Third, I question whether the Forest Service will in fact ever follow through on a meaningful study of fisher as part of the KRP. In its initial DEIS, the Forest Service proposed only presence-absence monitoring, which, as discussed in my prior comments, would not provide meaningful information on how fisher use the KRP area and what might be limiting the fisher population. In response, in the FEIS and ROD, the Forest Service has simply incorporated by reference the objectives of the UC study proposal. However, at this time, the Forest Service still has no study plan of its own, no budget, and no team of wildlife biologists to carry out this work. Studying fisher in the manner necessary to produce meaningful data requires aerial telemetry monitoring of individual fishers, which is expensive. The UC study estimates that the fisher component of the research will cost over \$ 7 million. Based on my experience, I do not believe the Forest Service has anywhere near this level of funding for its study in Kings River. The Forest Service has had over a decade to establish baseline data and develop a research plan, but has not done so. I see no evidence that this situation is going to change once the KRP is approved.

Finally, I have yet to see any explanation of how data produced by a fisher study will translate to “adaptive management” in the field. In the past, the Forest Service stated that treatments in Phase II will be similar to Phase I, subject to monitoring and research results from treatment of the initial eight management units. This implies to me that the Phase I project, including over 5,000 acres of treatments in fisher habitat, will not in fact be altered by research results through an adaptive management process. As discussed in my prior comments, I question the Forest Service’s commitment to adaptive management given its general reliance throughout the project documents to benefits that will occur 30 years down the road. This approach suggests that “short term” impacts to fisher following treatments are expected but

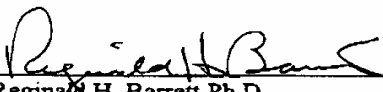
would not be inconsistent with project purposes and thus would not trigger any change in management direction. At the least, the Forest Service's failure to set forth the data thresholds that would trigger changes in management means that the "adaptive management" component cannot constitute reliable or meaningful mitigation for the likely significant impacts to fisher that will occur from this project.

Conclusion

The Kings River Project proposes substantial logging in an area where fishers are known to occur, which will eliminate existing high quality and other suitable habitat at levels that I do not believe the fisher can sustain. The Forest Service lacks both local and landscape level information regarding how fishers exist in the Project area, in the Kings River drainage, and across the SSFCA as a whole. I believe that the Forest Service's fuel reduction and stand thinning policies presented in this Project pose serious risks to the continued viability of the fisher, which the Forest Service has not adequately analyzed. Given that the southern Sierra fisher population is imperiled and vulnerable, I believe that the Forest Service's fuel reduction and stand thinning approach, as described above and implemented in the Kings River Project will likely contribute to the current trend towards extinction of the fisher in the Sierra Nevada.

I declare that the foregoing is true and correct to the best of my knowledge.

DATED: February 5, 2007


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