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March 26, 2010

California Fish and Game Commission
1416 Ninth Street
P.O. Box 944209
Sacramento, CA 94244-2090

Dear Commission:

As a citizen, a sportsman, an educator, and a Certified (TWS) Wildlife Biologist, I am hereby providing you with additional information regarding the proposed listing of the fisher (*Martes pennanti*) under the California Endangered Species Act, and the California Department of Fish and Game (DFG) "Status Review of the Fisher" (SR) dated March 2010. I have been involved with fisher in one way or another for several decades, beginning with DFG's Gordon Gould's "Carnivore Study Group" in 1978. January 23rd of this year I was asked by Esther Burkett, DFG Nongame Wildlife Program Biologist, (and recipient of the Dasmann Professional Wildlife Biologist of the Year Award for her high standard of professional ethics), to review her draft Status Review of the Fisher (DSR). My January 29th response letter is included in the final document (SR Appendix B, Item 2).

I have a number of comments, but the most serious one is that the DSR I reviewed is so different in content and tenor from the final SR that I recommend you request a re-analysis by the panel of reviewers, as would normally be done when a manuscript is substantially modified. I will detail most of the changes below; additional comments will follow. Quotes from the DSR indicate sentences omitted from the SR and quotes from the SR indicate sentences added to the SR by someone other than the original author.

DSR 6 omitted: "If fisher movements were constrained even under pre-European settlement conditions, it is likely that constraints are now multiplied given the anthropogenic changes that have occurred in the forested landscape over the last 200 years or more."

SR 6 added: "A substantial amount of genetic analysis of California's fisher populations is ongoing in 2009-10. As of this report, there are some interesting preliminary results that would have implications for conservation and management, but the Department is reluctant to consider these as facts until the studies are complete. To fully inform the Commission, the cases are mentioned in the following two paragraphs."

DSR 18 omitted: "Thus, approximately 43% of historic range no longer has fisher present, or fisher are extremely rare. The range loss is best explained as the result of habitat loss due to timber harvest, along with overtrapping. On page 15 of the petition,

loss of fisher in the northern Sierra Nevada is attributed to a combination of factors along with timber harvest and trapping. The other factors noted from various publications include: road building concurrent with logging, rapid population growth, and development. The Department concurs with this assessment, and these other factors are discussed in more detail in the Threats section of this report."

SR 18-19 added: "Finally, for clarification, the review here on the fisher has been more comprehensive and thorough than that used as the basis for the case study in the California Wildlife Action Plan [produced by UC Davis]. As such, the plan's identification of logging as the reason for extirpation of fisher in much of the Sierra Nevada (page 301 of plan) did not have the benefit of the consideration and evaluation of the information involved in this review. Therefore, the conclusion in the wildlife action plan regarding the reason for extirpation of fisher in much of the Sierra Nevada must be qualified in this respect."

"Overall, the Department concludes that there has not been substantial change in fisher distribution since the Grinnell period of the 1920's, and that natural recolonization of fisher to this believed historical range in any detectable number has not occurred."

"Understanding of the reasons for the Sierra Nevada "gap" in fisher distribution are now confounded by the preliminary genetic analysis indicating separation of the northern and southern populations for thousands of years. This would suggest that some portion of this range was not continuously inhabited by fisher (K. Aubry, 2010, App B)."

"However, use of a specific habitat as a surrogate to infer a species trend risks being incorrect if new information is advanced that the relationship may not be as direct or specific as originally believed. In the case of the fisher, there are now increasing examples of fisher occupying other forest habitats that are not considered late seral, but that do contain late seral elements."

DSR 21-24 omitted: "The following discussion of rest sites is taken from Zielinski et al. (2004a): 'Because large trees had such a prominent influence on resting-site selection in each of the top models, managers can have direct effects on the resting habitat of fishers by favoring the retention and recruitment of trees that achieve the largest sizes possible. These are the trees that host most resting structures, and also characterize the vegetation near the structure. We discovered infrequent reuse of the same resting structure, which indicates that fishers use and may require many large trees, snags and logs distributed within home ranges. The resting trees, and in many cases, the trees in their immediate vicinity were among the largest standing live and dead trees within fisher home range. The objective of recruiting and retaining large trees should not overshadow, however, the goal of encouraging structural diversity; standard deviation of dbh was included in the Sierra model.'"

"It is clear that fisher need late seral elements for rest and den sites, and that such elements need to be recruited for future use. It is also clear that high canopy cover and complex forest structure should be maintained, but in landscapes managed for timber production, it is not known exactly how to manage the forest landscape to allow high timber production while simultaneously protecting and enhancing fisher populations. This is complicated by the fact that large live trees are among the most slowly renewing

elements of the forest and are dominant elements in forest communities. Conifers and hardwoods may take hundreds of years to develop the size and the decadence necessary to be used by fishers for resting (Zielinski et al. 2004a)."

"Two literature reviews of fisher habitat associations were submitted as comments on the petition by the California Forestry Association (Mader 2008, Gorham and Mader 2008). The Mader (2008) report in particular characterizes the petition's statements about the fisher's reliance on "late successional forest" as incorrect and misleading. Both review papers appear to conclude that fishers are typically associated with dense canopy forests and rely upon relatively large and decadent trees for resting and denning, while pointing out that some studies have also observed fishers in more open habitats. The Department does not believe the petition is materially misleading in its characterization of the habitat associations of fishers. As has been noted in other reviews of habitat requirements of forest carnivores (e.g. Ruggiero et al. 1994), use of terms like "old-growth" and "late successional" forest has been inconsistent. The Department believes the fisher's association with late successional forest attributes is a key factor in the management of the species."

"Several comment letters (e.g. Carr 2008, Tomascheski 2008, Ewald 2008) disagreed with the petition's characterization of fishers as associated with forests with late seral characteristics, such as dense canopy and abundant large snags, decadent trees, and logs. Most of the studies cited in the petition to support this premise are peer-reviewed publications or Master's theses and do, in fact, suggest that fishers select areas with these older forest characteristics. And, in balance, the petition also cites Klug's (1997) thesis project on Green Diamond Resource Company (formerly Simpson Timber Company) lands which did not find a stand age-effect on fisher detections at track plate stations."

"The aforementioned comment letters cite several unpublished reports submitted during the evaluation period (Self et al. 2008, Diller et al. 2008) as demonstrating fishers lack a strong association with late seral forests. Most of these studies (see Self et al. 2008) simply indicate fishers occur on industrial timberlands without a quantitative discussion of habitat conditions at the site, stand, or landscape scale. An exception is the Green Diamond occupancy model prepared for fisher foraging habitat, which indicated increasing use by fishers of patches with increasing amounts of forest in the 21-40 year age class within 800 m of track plate stations. In general, track plates in stands classified as "redwood" (versus all other stand types) had a lower probability of detecting fishers in this study. Other variables such as stand age, slope position, tree height, and stand interior area, among several others, did not affect the probability of detecting fishers. The results related to amount of 21-40 year old stands do not contradict the characterization of fishers as preferring dense canopy forest; in the coastal forest types where the study was conducted high canopy closure can be achieved within about 20 years of regenerating a stand."

"Likewise, the unpublished study of fisher den sites in the Sacramento Canyon and Hayfork Summit study areas submitted by SPI (Reno et al. 2008) does not contradict the notion that fishers use large hardwoods and conifers for den sites. Mean diameter at breast height (dbh) for conifer den sites in the two study areas was about 41 inches. Mean dbh for hardwood den sites was about 24 inches. The range in conifer and hardwood den tree dbh was not provided by Reno et al. (2008), but these average values are well above

the average dbh reported for trees surrounding the den sites (near vicinity of the den trees)."

"Other quantitative habitat information from SPI cruise plots provided by Self et al. (2008, "Case Study 1", tables 3 and 4) is intended to show that habitat conditions on SPI lands are similar between areas occupied by fishers and areas within the extirpated range in the Sierra Nevada. However, it is unclear how the areas identified as "occupied" were determined to be occupied, or in fact whether these plots simply fall within the portion of the historic range considered still occupied. If the latter, then habitat associations with these plot data would have limited value."

"In general, Private Industrial and Private Non-Industrial timber lands have 40 percent fewer snags of all size and decay classes than are found on National Forest reserve lands (3.7 per acre versus 6.2 per acre). The relative abundance of large snags across ownerships and management emphasis is also noteworthy. Private Industrial and Private Non-Industrial ownerships possess 70 (0.3 snags per acre) and 80 (0.2 snags per acre) percent fewer snags of greater than 30 in dbh, respectively, than do National Forest reserve lands (Calif. Dept. of Forestry and Fire Protection 2003)."

"This lack of one essential habitat element that is affected by timber harvest practices, coupled with other threats described later in this report, probably contributes to fisher population persistence in only 2 distinct geographic areas in California at present, with no indication that dispersal is occurring at the edges of these populations."

DSR 25 omitted: "For the Sierra Nevada, Campbell et al. (2000) noted the following: 'Logic dictates that fisher must be adapted to the natural frequent fire pattern historically common in lower- to mid-elevations due to long-term persistence in these habitats. However, the present situation is unique in all of the fisher's evolutionary history: individuals and their habitat are, and have been, impacted by many human-caused changes within a very short period of time (just over a century), with which they have not evolved. These changes have been made by activities including timber harvest, livestock grazing, roads, predator and pest control, recreation, mining, and urban development in a State with 32 million human inhabitants. Each of these factors acts in a yet-to-be quantified manner upon individual fisher, populations, and habitat, and may combine in a negatively synergistic fashion. Added to those stressors, potential effects of rapid-rate, large-scale reintroduction of fire into the ecosystem are unknown.'"

SR 25 added: "In the southern Sierra Nevada there potentially could be a broader use of habitat types than in Northern California (Davis et al. 2007); this is also supported by the varied diet reported in the petition (citing Zielinski work) that included reptiles and mule deer, species not regarded as late successional dependent species."

DSR 28-29 omitted: "While there is reason to be cautious about the absolute validity of these estimates, this is the best available scientific information available at this time, and they all point to a population small enough to be significantly impacted by stochastic events."

SR 29-30 added: "There is not yet adequate empirical data to accurately estimate the population of fisher in the southern Sierra Nevada. The Department understands that

comprehensive and objective surveys of the fisher population throughout their southern Sierra Nevada are underway through the U.S. Forest Service (R. Truex, pers. Comm., Jan 2010; K. Aubry, 2010, App. B). Population estimates that do exist rely on models that are derived from short-term studies of fisher using telemetry and/or detection methods. Particularly missing in the analyses of populations are surveys/studies in the Kings Canyon-Sequoia and Yosemite national parks, and their contribution to the population."

SR 31 added: "From the Department's perspective, some of the methodology and assumptions used in the Spencer et al. (2008) analysis (as well as the author's statements about limitations) limits reliance on it although it currently represents the best analysis available and points to a population that is small enough that it could be impacted by substantial events affecting fisher range."

SR 32 added: "Based on such information, the Department considers it reasonable to believe that there are at least as many fisher in California now, and likely more, than at the time Grinnell et al. (1937) were "alarmed" about the reduction in trapped fisher in 1924 when licensed trappers reported a total of 34 fisher trapped compared to 102 animals reported taken in 1920."

DSR 33 omitted: "Though a trend has not emerged from the USFS monitoring effort, the small population size of fisher in the southern Sierra is cause for concern, especially when coupled with the threat to fisher habitat by catastrophic and severe wildfire (Spencer et al. 2008). The high fisher mortality from road kill will likely not be resolved easily in the vicinity of Yosemite National Park due to the popularity of the park. Thus, a constraint on population growth for fisher will remain in the Merced River watershed."

DSR 34 omitted: "The description of the degree to which late-seral forests have been impacted is based on published literature and is not disputed."

SR 35 added: "Spencer et al. (2008) wrote on the predicted rapid population decline and extinction model of Lamberson et al. (2000) that to the contrary: '…the southern Sierra Nevada fisher population has actually persisted, despite its small size and isolation, for many decades, and with no apparent declines in occupancy, and some evidence of expansion, since systematic monitoring was initiated in the mid 1990's' (R. Truex and W. Zielinski, pers. comm.)."

DSR 36 omitted: "Though the science of fisher habitat management has not yet reached a stage where a simple prescription can be easily given on each THP, it appears the current system is not working favorably for fisher given 43% range loss and apparent lack of natural recolonization of formerly occupied habitat. Most fisher biologists agree that fisher range loss and population isolation is not caused just by historic or existing timber harvest practices, but those impacts are now acting in combination with a series of other threats that are described below. Timber harvest effects have a strong influence on fisher population persistence and viability though, given the long time frame needed for trees to reach the decadence stage necessary for den and rest sites (100 years or more)."

SR 36 added: "For northern California, only information for the Hoopa area is available and indicates stable to slightly increasing numbers in the area since 2006 (Higley and Matthews 2009). In the Southern Sierra Nevada, the preliminary analysis suggests no

decline in the index of abundance across the population during the monitoring period of 2002-08 (Truex et al. 2009)."

DSR 37 omitted: "The Department has on several occasions requested CALFIRE to consider the potential for significant impacts associated with plans under review. On such occasions, we have not received support to acknowledge the effects and identify appropriate mitigation measures to reduce or offset the effect."

SR 37-38 added: "However, there is not substantial empirical evidence to indicate that timber harvesting, availability of denning or resting structures, or the long-term decline in late successional forest acreage is limiting fisher populations in California."

"There is no dispute that there has been a reduction in acreage of optimal, high quality fisher habitat in California, but that does not necessarily mean that there is not adequate suitable plus optimum fisher habitat remaining now, or planned for the future, to sustain populations."

SR 39 added: "Thus, fisher were found to occupy both higher quality as well as lower quality habitats, as affected by timber harvesting, in northern California."

SR 40 added: "That fishers inhabit managed forests indicates that suitable habitat elements are present at levels adequate to sustain the animals."

DSR 48 omitted: "In northern California, the Department is aware of the following projects and development activities within fisher range:

Dyer Mountain Resort: All-season community and ski area near Lake Almanor.

McCloud Springs Ranch and Abbot Ranch (Siskiyou County): both are large residential developments with 50+ lots each.

Sierra Pacific Industries (SPI) TPZ conversions: near Shingletown and Viola, and also between McCloud and Mt. Shasta; lot sizes and number unknown. TPZ conversions tend to set the stage for development or other land uses (e.g., rural residential or vineyards).

TPZ conversions planned in Humboldt County by Green Diamond Resource Company (30 projects) and contemplated by the Pacific Lumber Company: the Department has not fully quantified all TPZ conversion projects in fisher range at this time.

Tehama General Plan update: includes recreational developments at the headwaters of Deer Creek on Highway 36.

McCoy development, near Salyer (Trinity County): Relatively small project (45 lots).

A number of semi-rural lot splits in the Weaverville area.

In Sonoma, Mendocino, and Lake Counties, TPZ conversions are usually from timber production to vineyards. There has been an acceleration of conversions of oak woodlands to vineyards on lands zoned for agricultural, which are largely exempt from environmental review and permitting.

DSR 63 omitted: "The Department, based on its experience as a member of the interagency review team for the timber harvest review process, believes the petition's conclusions about the lack of specific protections for the fisher in the [Forest Practice Rules] FPR are correct. While the Department disagrees with some of the petition

statements about the FPR and their implementation, the overall conclusion that regulation of private timberlands is not adequate to ensure the persistence of fishers and their habitat on private timberlands appears sound. The Department also recognizes that fishers do occur on some private timberland ownerships and that voluntary policies of some timber companies may ameliorate the potential for timber management to degrade the quality or diminish the quantity of fisher habitat on these lands. The following summarizes the petition's major points and the Department's view regarding them."

"In general, the petition is correct to suggest the FPR allow for the management of private and State forests in a condition of relatively young-aged stands isolated by openings created by regeneration harvests and with low densities of trees and snags suitable for denning fishers. As described in the petition and as summarized in literature reviews, such as Powell and Zielinski (1994) and Powell et al. (2003) a forest managed in such a condition would not provide the habitat requisites of fishers."

DSR 64 omitted: "In a petition comment letter submitted to the Department, Self (2008b) discusses several of the aforementioned FPR sections and their contribution to protection of fishers and fisher habitat. Based on the Department's experience, the FPR sections dealing with mitigation measures, exemptions and large old trees, late succession forest stands, and WLPZ tree retention do not provide adequate assurance that fishers or their habitat will be conserved in the timber harvest review process. Mr. Self suggests the FPR intent language under 14CCR897(b)(1)(B) provides an over-arching protection mechanism for all wildlife, including fishers. This rule section states forest management shall 'maintain functional wildlife habitat in sufficient condition for continued use by the existing wildlife community within the planning watershed.' While meeting this intent would provide for the viability of fishers, at least where they exist, the FPR's do not provide specific direction on how to manage timberlands for fishers. In practice, and contrary to Mr. Self's comments regarding 14CCR897(b)(1)(B), the analysis of, and mitigation for, potentially significant impacts to fishers in the timber harvest review process has relied largely on standard ("boilerplate") language developed by foresters for inclusion in proposed plans."

DSR 66-68 omitted: "there is no assurance of adequate supplies of snags for fishers in the future."

"After harvest using an even-aged regeneration method such as clear cutting, a forest stand will not develop sufficiently dense canopy cover for fishers to travel and forage in for a period of a few to several decades, depending on the forest type. If several such harvests occur in close proximity on the landscape, the risk of predation or energetic cost of traveling between remaining suitable habitat patches might be too great to allow fishers to use the area. Even-aged regeneration methods also can be expected to remove habitat elements essential for denning, such a large old trees and snags, and downed logs, which would lower habitat suitability of the stand for an even longer period (many decades to centuries)."

"Relative to even-aged methods, uneven-aged regeneration methods, such as selection, tend to provide a more stable habitat condition in terms of canopy cover, although the canopy cover after harvest may be less suitable for fishers for a period of some years. But as discussed in the petition, uneven-aged methods would likely result in a reduction

in the number of suitable den trees, either through harvest of existing den trees, inadvertent felling of unmerchantable den trees during logging operations, or by managing forest stands so trees are harvested before they develop suitable den structures."

"Under either silvicultrual category, the emphasis on economic return and maximum sustained production promotes the harvest of trees before they reach the age, size, and condition conducive to fisher denning needs."

"emergency harvests exempted from preparation of a timber harvesting plan under FPR 1052 may not include measures needed to retain fisher habitat elements."

"Generally, the Department believes current silvicultural practices can degrade fisher habitat quality across the species' current and historic range in California. Although difficult to quantify, it is very likely management of private timberlands in California has resulted in reduced habitat suitability for fishers by reducing forest structural complexity and by creating a mosaic of forest openings. The Department believes timber management consistent with maintaining or improving fisher habitat quality is possible but would require modification of current silvicultural practices."

"The Department believes the petition's discussion of mitigation measures for non-listed species to be correct. The petition discusses the role of the FPR (14CCR919.4, 939.4, and 959.4) in the development of mitigation measures for significant impacts to non-listed species. It also discusses the cumulative impacts assessment process in the FPR. In the Department's experience, neither of these processes has resulted in the development of significant mitigation measures for the fisher, in part because of the lead agency's narrow interpretation of FPR 1037.5(f)(1). This rule section states, in part, 'the director (of CALFIRE) may only require incorporation in the plan of mitigation measures that are based on rules of the Board.' In other words, where the plan submitter does not agree, for example, to retain specific trees that could be used by fishers for denning, because there is no specific rule section requiring retention of such trees, CALFIRE sometimes finds that such mitigation cannot be made part of the timber harvesting plan."

SR 68-69 addition: "To the extent the Department believes that these plans are not sufficient to ensure habitat needs of species like fisher, the Department can identify the impacts as significant under CEQA, and recommend avoidance or other measures to mitigate significant impacts to below a level of significance. The Department's view is that the FPRs and CEQA can provide necessary protection for fisher if applied appropriately and consistently. The Department intends to continue working with CALFIRE to ensure that existing laws are appropriately and consistently implemented for the benefit of the fisher."

DSR 70 omitted: "In summary, the Department believes the FPR do not provide adequate protection to ensure the persistence of fishers on private and State timberlands in California. The protections offered fisher and other non-listed wildlife species in the FPR are minimal. Some improvements to timber harvesting plans have been achieved when the Department has had adequate time to review proposed plans and to provide recommendations for fishers. Also, the FPR do provide latitude to willing landowners to manage for fisher habitat, but the FPR do not explicitly require such management.

Particular weaknesses in the current FPR with regard to fisher include a lack of a significance threshold for cumulative impacts to fisher habitat and habitat elements, no provision for recruitment of snags and live conifers suitable for fisher denning, and no provision for retention or recruitment of hardwoods suitable for denning."

DSR 71 omitted: "It is also unclear why, if current forestry practices on private lands are sufficient to maintain fishers (as purported in the comment letters from timber companies), the species has not expanded back into the private and public lands where it is currently extirpated."

"The variety and complexity of approaches taken by the companies, and the lack of specific information provided for some of the policies, precludes an adequate analysis of their efficacy. The Department acknowledges that, on their face, many of these policies should result in better conservation of fisher habitat elements than are afforded by the FPR. However, whether such policies are adequate to ensure persistence of fishers on these lands is unclear."

"In the Department's experience, these plans are not sufficient to ensure the habitat needs of species like the fisher, which relies on older hardwoods and conifers not typically modeled in growth and yield projections, are met."

DSR 74-75 omitted: "Based on the information in the CCAA, it appears only one potential den tree is needed for an entire stand, regardless of its area, and there need be no direct evidence of use or suitability for use of the tree by fishers. The petition points out 22 inches dbh is about half the average diameter for fisher den trees in conifers, which is generally consistent with the values reported in scientific literature. However, more than one study of fisher den sites has indicated hardwoods as small as 22 inches dbh may be used for denning. It is also not clear from the CCAA whether the 22-inch or greater trees may be included in WLPZ. If so, then this retention standard may not provide any real benefit in terms of habitat retention above the FPR standard."

"The Department believes stands meeting the Lifeform 4 criteria might be suitable fisher habitat, but whether a landscape containing 20% to 33% such habitat could sustain a fisher population is unclear and would depend on the spatial arrangement of the retained trees and the Lifeform 4 stands, as well as whether the retained trees are mostly hardwoods. If conifers comprise a significant portion of the retained trees, then it is likely a much larger dbh standard would be needed for the conifers because of the typically much larger size of conifers used as den sites (for example, see Reno et al. 2008). Moreover, the Department notes Powell and Zielinski (1994) calculated the minimum area in California needed to support a fisher population to be about 150,000 acres. If only about 32,000 to 53,000 acres of the Stirling Management Area is comprised of suitable fisher habitat, then it would not appear to be capable of sustaining a fisher population without a substantial area of suitable habitat on other nearby lands. Also, as modeled by Davis et al. (2007), the Stirling Management Area appears to provide low habitat suitability for fisher. The Department believes the SPI CCAA has limited benefit to the fisher over current management practices."

SR 74-75 added: "The FPRs lack of specific protections for the fisher could reduce fisher habitat suitability. However, information submitted during our reviews of the petition,

and of the fisher status, indicated fisher do use and inhabit industrial timber lands to meet all or some of their life requisites. The degree to which current FPRs and timber management of the landscape affects fisher habitat suitability and the fisher population remains unknown in the absence of both fisher population monitoring and sufficient compliance monitoring of the FPRs. Lack of retention of late successional stands could reduce local habitat suitability and the cumulative effect could reduce suitability over large areas, however, lacking sufficient monitoring, there is no evidence assessed during this review that current practices have reduced, or will imminently reduce, long-term population viability."

SR 76 added: "The information received from several private timber companies indicated substantial fisher use of intensively managed forests. Stand characteristics in terms of tree age and canopy closure being inhabited were typically lower than those reported in the literature from researchers working largely on public lands and lower than that reported in the petition. The U.S. Forest Service in its Conservation Assessment has similarly indicated that contrary to the long-held perception that fisher specifically inhabit late successional forest, fisher are using forest systems that are not considered old growth. Still, these studies on private timberlands do indicate that old elements that were retained in these stands, such as large, old oak trees, are important attributes of the habitat for the fisher whether for resting or denning."

"Although modeled by Davis et al. (2007) as an area of apparent low habitat suitability for fisher based on their input variables, some of the recent information on fisher inhabiting industrial timberlands indicated that less than optimally-predicted habitats are inhabited by fisher—indicating the models do not represent the entire breadth of suitable habitat characteristics."

DSR 78-79 omitted: "Exemption harvesting is potentially a significant source of impacts to fishers and their habitat. The unregulated aspect of exemptions makes this harvesting option an attractive alternative to participation in the often rigorous timber harvest review process. Important late-seral habitat elements are often the specific targets of exemption harvesting, making recovery of the habitat, and by extension, recovery of the species more difficult. Exemption harvesting is discussed in the petition under the California Practice Rules section (beginning on page 61), that properly describes the potential impact to fishers resulting from the high number of acres harvested through this method. Here the absence of adequate regulatory oversight by CALFIRE in not considering the potential impacts to non-listed species, nor the potential take of listed species, and not applying the mandatory finding of significance provided in CEQA Guidelines Section 15065, is inadequate regulatory oversight."

"Another area of concern pertaining to the regulatory process for timber harvest plan review is the required analysis of cumulative effects and alternative analysis. Cumulative impacts are those impacts that when considered individually may not be significant but when considered with many other similar projects, the resulting incremental impact, may be or become significant when considered together. The Department has on several occasions requested CALFIRE to consider the potential for significant impacts associated with our review of individual timber harvest plans. On those occasions, CALFIRE has concluded that without specific significant impacts on an individual THP, the likelihood

of cumulative impacts was unlikely (see official response for THPs 2-01-128 BUT, 2-01-197YUB, 4-02-12CAL)."

"Alternative analyses in THPs do not meet this guideline on a regular basis. Feasible alternatives in an area with fisher or fisher habitat would be to retain more hardwoods, snags, large trees and downed logs, or to modify the time of entry to avoid critical denning seasons. These are alternatives that would benefit fishers and be supported by the Department."

DSR 80 omitted: "The Department generally agrees with these suggested management actions, with the following caveats: Items 2 and 6 recommend retention of medium and large confer and hardwood trees and snags greater than 15 inches dbh. The Department believes emphasis should also be on retention of larger trees covering the size classes that fisher have been documented to use. Additionally, maintaining trees of various sizes (and species) in perpetuity, to provide replacement habitat in the long term should be a goal."

DSR 83 omitted: "Fisher populations at both the north and south ends of the state have not been detected expanding naturally back into the Sierras or central coast redwood ecosystems despite the fact that legal trapping ended in 1946. Natural recolonization does not appear likely given the land use changes that have occurred, and that are ongoing, e.g. timber harvest, habitat fragmentation, catastrophic wildfires, roads, housing developments, and recreational development."

"If fishers in California currently have robust and increasing populations, and if they truly thrive in managed and fragmented forest landscapes that exist today, one would expect natural recolonization of the Sierras and central coast redwood range."

"The same highly-reduced quantity, and fragmented nature of late seral forest habitat that led to the federal listing of the northern spotted owl and the marbled murrelet (*Brachyramphus marmoratus*), and to the demise of the Humboldt marten (*Martes american humboldtensis*), has probably contributed to the inability of fisher to naturally recolonize their historic range, and constrains fisher population growth to this day."

DSR 83-85 omitted: "[Additional factors affecting fisher conservation include:] 6. Small population size in the southern Sierra is at risk of catastrophic fire due to stochastic events. 7. No systematic or large=scale population monitoring is occurring in northern California, and the fisher is not a monitored species under the NW Forest Plan."

"The interaction of these factors, and their combined effects result in cumulative impacts that probably limit natural recolonization of former range and constrain the 2 existing fisher populations in California."

DSR 86 omitted: "Although fisher may occasionally receive consideration under CEQA 15380 (Endangered, Rare or Threatened Species) and 15065 (Mandatory Findings of Significance), the avoidance, minimization and mitigation measures tend to result in locally fragmented landscapes and a trend of cumulative habitat loss and fragmentation range wide. CEQA-imposed mitigation measures do not necessarily result in compensation habitat being secured or the completion of other actions that benefit the species. As a CESA-listed species, fisher would be more likely to be included in Natural

Community Conservation Plans (FGC 2800 et seq.) and benefit from large-scale planning. Further, the full mitigation standard and funding assurances required by CESA would result in mitigation for the species that in general does not usually occur under CEQA."

SR 86-87 added: "The Department does not believe that conclusions can be drawn regarding what would be limiting the fisher populations from increasing and expanding at a detectable rate in California. It is not known whether they are increasing or decreasing in population numbers at the present time, although preliminary information in the Hoopa area and in the southern Sierra Nevada indicate they are stable to slightly increasing. The conclusion that intensive timber harvesting has eliminated habitat, and therefore the fisher population is limited or is in decline, is a relationship that has not been clearly established. Reduction in late seral forest and fisher-preferred habitat elements has occurred in California, however, for that to be limiting fisher must assume the population was at carrying capacity such that they would be limited by harvest of such habitat features. That specificity of population level information does not exist."

"Study of the population trend is underway however, in the southern Sierra Nevada and preliminarily, it appears they are stable in number over the past few years. It does not appear they are expanding their range, at least not in the approximate twenty year time frame in which they have become a more frequently studied species; and there is no evidence they are expanding north of the Merced River in the Sierra Nevada as detections have been rare."

"Predictive models of extinction risk suggest the population is at risk, yet it has been a sustaining population compared to elsewhere in the Sierra Nevada since the intensive trapping era of the past. The fisher has likely benefited from the presence of the two national parks historically, although the huge number of travelers visiting Yosemite annually now, may be a factor leading to road kill and dispersal concern."

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My reason for including all these quotes is to make the case that there was a major modification of the DSR, both in content and in conclusions. It is evident that more emphasis was placed on timber industry input via personal communications and unpublished industry reports than the scientific literature.

I will comment on the nature of the scientific process generally accepted in today's world. In addition to the well-known aspects of hypothesis generation and testing, an essential aspect is the publication of research in readily available, peer reviewed outlets that are indexed in electronic data bases. The reasons this is important are 1) the full details of the research are readily available to all people, and 2) the conclusions are checked against the observed facts by multiple, unidentified peers. The "grey literature" produced as in house reports by agencies and corporations is not accepted by libraries such as those at the University of California Berkeley as scientific literature. I have not been able to review any of the timber industry reports to date. I have repeatedly recommended for decades that industry (and agency) wildlife staff submit their reports to peer reviewed journals if they wish to enhance their credibility with the public. The SR differs from the DSR in relying considerably more heavily on unpublished industry reports, yet it purports to be a review "informed by the scientific information available" (page viii).

The SR attempts to make the case that the fisher may not have inhabited the northern Sierra Nevada for thousands of years based on unpublished information. Since such unpublished information is apparently admissible, I would like to submit an anecdotal account of fisher in the Georgetown Ridge region. In 1975, as I was interested in the possibility of doing fisher research at Blodgett Forest, I interviewed an old logger-trapper (now deceased) in Georgetown, who clearly knew how to identify a fisher. He claimed to have trapped a fisher on Blodgett Forest about the time railroad logging was occurring there in 1913. He also recounted how he had felled a large tree, from which a fisher jumped out when the tree hit the ground. He believed fisher were now long gone from the Georgetown Ridge region due to trapping and clear cutting.

I will comment on the matter of the range of fisher habitat suitability across seral stages of forest habitat. The most common method of surveying for fisher is to use track plates or camera traps distributed across a landscape. Data obtained in this way indicate occupancy but not necessarily habitat quality in the sense of "source" versus "sink" habitat. Even documenting reproduction does not necessarily indicate better than sink habitat as survival may be too low to provide for successful population growth and dispersal. Low quality habitat may be sink habitat in that the fisher population will "wink out" periodically unless fisher dispersing from high quality, or source habitat, are available to re-populate the sink habitat. A large area of sink habitat is of minimal value to maintenance of a species relative to even a small area of source habitat. The scientific literature cited in the SR makes it clear that source habitat is forest land with late seral characteristics.

More specifically, in response to the addition made on SR page 25 regarding the diet of fisher in the southern Sierra consisting of reptiles and deer, which are "not regarded as late successional dependent species," I would comment that as an author on this paper (Zielinski et al. 1999), the lizard and deer were both found in late seral forests. The lizard was an alligator lizard and deer were eaten as carrion found in late seral stands. Our consensus was that the fisher diet we described was indicative of poor availability of preferred prey such as porcupines and snowshoe hares. Porcupines have been eliminated from the southern Sierra to enhance timber production. As I commented in my previous letter, an important management action to improve fisher viability in the southern Sierra would be to reintroduce porcupines to the region.

I will comment on the status of fisher population monitoring in California. As a professor of wildlife management I teach students that wildlife management must include an explicit management goal, have an ecosystem to manage, have the capability to manipulate the ecosystem (most often the people involved), and have an effective monitoring program to determine if manipulations result in the ecosystem approaching the management goal. The DFG does not have an effective program to monitor fisher in California and therefore is not currently managing this species. The U.S. Forest Service has been surveying the Sierra Nevada for fisher from 1996 through 2009. This effort will not continue in 2010. Furthermore, the survey design called for a sample size that was never achieved due to inadequate funding. The result is that confidence in the estimated fisher population trend over the years surveyed is quite poor, meaning that one cannot clearly determine whether the population is increasing or decreasing. The SR implies that the burden of proof lies with the wildlife interests rather than other interests. Given that

monitoring fisher is expensive and not likely to be done to the extent needed, the fisher will always lose in decisions requiring precise information on population trends. This is why some have proposed that decision makers consider the "precautionary principle" when dealing with public trust resources such as wildlife.

One can place more confidence in changes in distribution indicated by occupancy surveys. Chow (2010) surveyed Yosemite National Park for fisher in 1992-1994 and concluded there was a small population of fisher in the western portion of the park at that time. He also concluded that "The current fisher population is apparently lower in number and more restricted in distribution than in pristine times prior to heavy trapping and logging in the Park early last century." Since the Commission is apparently accepting unpublished information I will comment that the results of a survey of western Yosemite just completed by myself indicate fisher still occur south of the Merced River but not north, as was the case a decade or two ago. If this information is accurate it supports the hypothesis that the fisher population in the southern Sierra Nevada is continuing to shrink southward.

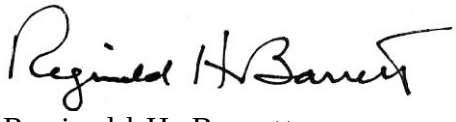
I will comment on the question of the size of the fisher population in the southern Sierra Nevada. My best estimate is 350 animals in five subpopulations. This is far below the 5,000 recommended for long-term sustainability for any population (Traill et al. 2010). In fact, I estimate the entire fisher population in California is below 5,000. Therefore, on this basis alone, I would expect the Commission to at least find the southern Sierra Nevada population threatened given that it is certainly not expanding and is susceptible to many stochastic, negative environmental factors.

On the other hand, I understand that the Fish and Game Commission is the body that must account for the political matters associated with any such decision--not an easy job! What I am concerned about is the fact that the Commission is being given a recommendation by DFG that has apparently gone beyond the expected biological, scientific information to include political and economic considerations. In effect, DFG has factored in the latter considerations before the Commission has had the opportunity to see the biological picture uncluttered by political influences. It is unfortunate the roles of the DFG and the Commission are thereby blurred and the transparency of the decision making process clouded.

I have used this case as one of those dealt with in my Case Histories in Wildlife Management course. We spend a lot of time on the various processes involved in the management of wildlife in North America. It is a seminar for seniors involving much discussion among the students. I asked them to imagine why there was such a big change in the DSR versus the SR. There were a variety of responses, but the class concluded that it was most likely because of political influence via the Governor's office as a result of donations from the timber industry. It appears the younger generation has become accustomed to such things.

This letter has become long enough. There are many other items in the SR I would comment on if there were another opportunity for a full review by all the previous reviewers. You might request the DFG to ask for such a re-review. I now will simply inform you that the letters in SR Appendix B do not represent reviews of the material in the final SR as implied.

Sincerely,



Reginald H. Barrett
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Attached:

Chow, L. 2010. A survey for fisher in Yosemite National Park 1992-1994. Transactions of the Western Section of The Wildlife Society 45:27-44.

Traill, L.W., B.W Brook, R.R. Frankham, and C.J.A. Bradshaw. 2010. Pragmatic population viability targets in a rapidly changing world. Biological Conservation 143:28-34.