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PROTECTING NATURAL RESOURCES

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Public Comments Processing
Attn: Docket No. FWS–R8–ES–2018–0105
U.S. Fish and Wildlife Service, MS: BPHC
5275 Leesburg Pike
Falls Church, VA 22041–3803

Subject: Comments by Sequoia ForestKeeper re: Endangered and Threatened Wildlife and Plants; Threatened Species Status for the West Coast Distinct Population Segment of Fisher

To Whom It May Concern,

Sequoia ForestKeeper thanks the U.S. Fish and Wildlife Service (FWS) for promptly opening up a new comment period in response to the court-ordered reconsideration of its decision not to list the Pacific fisher. We support a decision that the West Coast Distinct Population Segment (DPS) of the fisher be listed as threatened under the Endangered Species Act (ESA), and we provide further information for why, due to its small population (<300 individuals) and exigent threats to its habitats, the Southern Sierra Nevada Evolutionarily Significant Unit (SSN ESU) of fishers should be listed as endangered.

Summary of Comments

These comments and other information provided with this letter focus on the Southern Sierra population of fisher because we have substantial information that supports the need to list the SSN ESU as endangered. A species is considered "endangered" if it "is in danger of extinction throughout all or a significant portion of its range …." ESA, Section 3(6). Based on its small population size (<300 individuals), the potential for stochastic events that could wipe out the SSN ESU or subpopulations of the ESU, as well as continuing habitat degradation from fires, the ongoing die-off of large trees from the recent drought, associated logging after fires and to mitigate hazards from more than 100 million dead trees, and the likelihood that climate change will exacerbate these effects, there is sufficient evidence that the SSN ESU should be listed as endangered. At the very least, the evidence supports listing the entire West Coast DPS of fishers as "threatened," which means "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." ESA, Section 3(20).

These comments describe and provide detailed information about 20 large vegetation management projects in both the Sierra and Sequoia National Forest, which in just the last 3 year would adversely affect a significant percentage of the fisher's habitat in the Southern Sierras.

Based on statements in the FWS's decision not to list the fisher, vegetation projects like these have not been considered in the listing analysis. In addition to the ones listed, there are many more that have historically degraded the fisher's habitat from before 2016.

In addition, the ESA requires that FWS must give separate consideration for listing the Southern Sierra population of fishers based on the State of California's decision to list the fisher as threatened under the California ESA.

Moreover, many factors provide support for a decision to list the Southern Sierra fisher population as endangered, or at the very least as threatened, based on the small population size, the potential for stochastic events to wipe out the entire population or subpopulations, and various ongoing effects from climate change.

Finally, FWS has never consider the adverse effects from winter activities, such as over snow vehicles (OSVs), such as snowmobiles and associated OSV grooming activities, which increase noise, the potential for collisions, and predation during the winter when fishers are most vulnerable.

All of these adverse effects counsel that the fishers be listed as threatened or endangered.

Specific Comments

A. Specific Responses to FWS Inquiries

In its Federal Register notice, FWS has asked for:

> **(3) Information regarding the threat of wildfire, including studies or information pertaining to current and future trends in wildfire frequency and severity, as well as information pertaining to the immediate response of fishers to post-fire landscapes in the West Coast DPS of fisher.**

According to the FWS' own fisher report,

> Mallek et al. (2013 and references therein, p. 17) suggest that large and severe fires in the absence of strategic forest management approaches could reduce habitat quality and population size for fishers in the southern Sierra Nevada. Because fisher habitat in this region occurs in a narrow band running north to south, fires burning at high severity within fisher habitat have the potential to disrupt north-south connectivity of habitat within the Sierra Nevada (Figures 14 and 15).
>
> The estimate given in Appendix C (Tables 25a and 25b) shows the amount of habitat likely to be lost to fire, but does not estimate the effects of the population fragmentation that would result if connectivity is lost between the northern and southern ends of the area occupied by the SSN population of fishers. If habitat connectivity is lost to the north of the area currently used by the SSN population,

> this loss could prevent the population from expanding (see the Examples: 2013 Fire Season section below). In addition, if forests burned at high severity in this region are replaced by chaparral or grasslands (see above, and Climate Change section), such a change would represent a permanent loss of habitat.

FWS 2016 Fisher Report, p. 69.

> Hazard tree reduction projects post-fire also have the potential to reduce large live trees and snags that pose a threat to human safety and also may be suitable for fisher den or rest sites in a post fire landscape. Some form of hazard tree treatment occurs after the vast majority of fires unless they occur in wilderness areas. Areas with especially dense road networks or near wildland urban interface are the most heavily impacted. There are no data specific to the potential effects on fisher from such operations.

Id., p. 68. Sequoia ForestKeeper, however, presents some data on hazard tree logging after fires in the next section.

In addition, according to leading fisher researchers,

> climate change, reduced snowpack, and recurring drought will exacerbate the trend of more large, high-severity wildfires in the Sierra Nevada (Flannigan et al., 2000; Kane et al., 2015; Lydersen et al., 2014; Safford and Van de Water, 2013), and it is likely that wildfires will increasingly burn within occupied fisher habitats in the southern Sierra Nevada.

Sweitzer et al. 2016:222 (See Exhibit A).

The Sierra National Forest had a large fire in fisher habitat:

> **Railroad Fire –** In 2017, this fire burned roughly 12,400 acres in an area to the south of Yosemite NP in fisher Core 5 habitat. See http://bit.ly/2tF4Fwu.

In addition, the Sequoia National Forest had three large fires in 2015, 2016, and 2017, and several smaller fires in 2018, which burned substantial amounts of habitat in the Fisher's Core 2 and Core 3 areas:

> **Rough Fire** – In 2015, this fire burned over 150,000 acres in the northern Sequoia NF and the Southern Sierra NF on both sides of the Kings River Canyon, which includes the northern portion of the Fisher's Core 3 area and southern portion of the Core 4 area, as well as the entire Linkage Area C. See http://bit.ly/2tLPIcl.

> **Cedar Fire** – In 2016, this fire burned roughly 29,000 acres across the entire Core 2 area in the Greenhorn Mountains, essentially isolating a small fisher population to the south of the Summit area of the Greenhorn Mountains. See http://bit.ly/2tCshlq (providing acreage burned); see also Figure 14 below (map).

Pier Fire – In 2017, this fire burned roughly 36,500 acres into the central portion of the Core 2 area west of Springville, CA, up to the Western Divide in the Giant Sequoia National Monument. See http://bit.ly/2tDQibN.

Alder, Mountaineer, and Moses Fires – In 2018, three smaller fires burned a total of roughly 5942 acres of fisher habitat in the central portion of the Core 2 area along the western boundary of the Golden Trout Wilderness. See http://bit.ly/2tAIaZE (providing acreage burned, no maps available).

Schaeffer Fire – In 2017, this fire burned over 16,000 acres of fisher habitat in the central portion of the Core 1 area on the Kern Plateau, previously burned in the McNally Fire, essentially dividing the Core 1 area in two. See http://bit.ly/2HdqHi4 (providing acreage burned); see also Exhibit H (map of Core 1 with Schaefer Fire overlaid).

In fact, the isolation of fisher populations south of the Cedar Fire area were of such great concern that the Forest Service indefinitely suspended the proposed Rancheria Forest Restoration Project (Rancheria) until it gathers further information and conducted additional analysis, as discussed in the next section. Similar concerns exist with respect to the Schaeffer Fire as it relates to the Core 1 area.

(4) Information regarding any threats related to small population size and isolation relevant to the West Coast DPS of fisher (e.g., low reproductive capacity, inbreeding depression, demographic and environmental stochasticity).

Isolation of fisher populations resulted from the Cedar Fire area, as discussed in the Rancheria Supplemental Information Report:

> [H]abitat fragmentation and loss of connectivity caused by the Cedar Fire occurred after the 2013 Fisher BE was completed. These changes may be significant and alter the original determination for this project that the Rancheria Project "may affect individuals, but is not likely to contribute to the need for Federal listing or result in loss of viability of fisher."
>
> * * *
>
> These changes present new information that was not previously addressed in the Rancheria EA, and for which supplemental NEPA analysis is needed to address the environmental concerns related to fisher, as these concerns have a bearing on the Rancheria Project's impact on fishers. Therefore, in accordance with FSH 1909.15 Section 18.4, it is my determination that supplemental NEPA analysis must be prepared and the existing Rancheria Decision Notice and FONSI must be reconsidered in light of the new information. The suspension of the Rancheria timber sale contract shall remain in place while this supplemental NEPA analysis and reconsideration are being conducted, and all implementation of the existing Decision Notice is stayed until a further determination is made.

Rancheria SIR, pp. 11-12 (See Exhibit B).

The following map from the Biological Evaluation (BE), Figure 14, from the Bull Run Roadside Hazard Tree Mitigation Project (see Exhibit C, Page 62 of 86), illustrates the extent of the Cedar Fire (in red outline), the isolation of fisher habitat south of the Cedar Fire (Core 2 area in blue outline), and the location of the Rancheria Project (in green), as well as several other logging projects within the Core 2 area. Substantial portions of the fisher's core habitat have or will be affected by the fire, ongoing logging, and future logging, as well as the continued substantial die-off of trees from the recent drought.

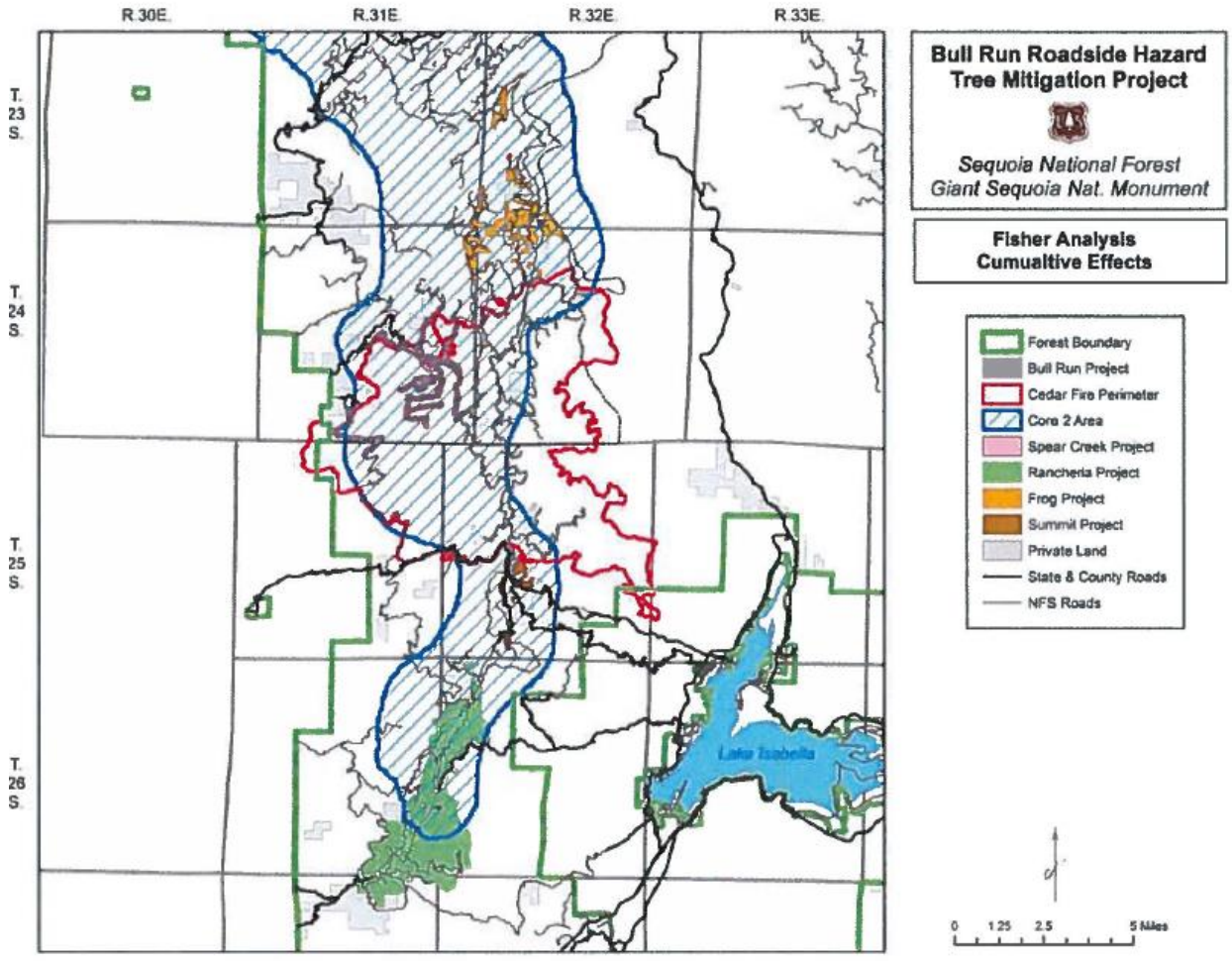

Figure 14. Cumulative Effects Area for the Bull Run Hazard Tree Project.

Here we note that the isolated fisher population in Core 2, to the south of the Cedar Fire project, is also represents the southern-most extent of fishers in the United States. And according to recent scientific reports, the Core 2 is significant because it "has the highest recorded fisher occupancy rates (Zielinski et al. 2013a), highest predicted average habitat quality (Table 1), and highest genetic diversity (Tucker et al. 2014) in the Assessment Area." *Southern Sierra Nevada*

Fisher Conservation Strategy, p. 14 (available at https://consbio.org/products/projects/southern-sn-fisher-conservation-strategy). Because of the importance of this habitat and the fisher in this core area, the isolation of a subpopulation of these fishers is greatly troubling. And, as discussed above, the Pier Fire, which burned and additional 36,500 acres with significant portions in the Core 2 area, these recent cumulative effects from fires and logging projects adversely impact the most important subpopulation of the Southern Sierra fisher ESU.

(5) Information regarding any effects of ongoing and widespread tree mortality in the Sierra Nevada range on the West Coast DPS of fisher.

Because of the ongoing and widespread tree mortality in the Sierra Nevada, the authors of the *Southern Sierra Nevada Fisher Conservation Strategy*, in March 2017, issued an assessment of the potential adverse effects on the fisher and issued a revised strategy based on these new circumstances. But in the analysis, the authors stated:

> There is no available research or direct observations concerning how massive changes in tree cover due to drought and insect mortality, including death in even the largest tree classes, may affect fisher habitat use or population processes. There is also no direct evidence indicating how fishers will respond to management actions being implemented by land managers in response to this mortality event.

Changed Circumstances and Implementation of the Southern Sierra Nevada Fisher Conservation Strategy, Note from the Authors, March 2017, p. 1 (See Exhibit D). Moreover, given

> a lack of accurate and regularly updated vegetation data [and] no vegetation mapping program available today that is updated annually and systematically; nor is there a standard means of translating between on-ground (plot-based) measurements and the remotely-sensed metrics used in the Strategy, [t]his makes evaluating changes in fisher habitat conditions following disturbances very difficult.

Id. Based on the significant uncertainty and potential for adverse effects on the fisher from drought-related habitat losses combined with management activities, FWS must consider that the fisher population in the Southern Sierra could be greatly affected and needs the additional protections from an ESA-listing as threatened or endangered.

Moreover, without an ESA-listing of the Southern Sierra population, the various activities proposed to mitigate the effects of the drought in the fisher's habitat, including salvage logging, hazard tree felling along roads and in power line corridors, as proposed by the Forest Service, the BLM, the State of California, and private landowners will not be adequately reviewed for their cumulative effects on the fisher. This can only be done by the FWS, who with listing can require a review of all the various cumulative actions and then provide the necessary conservation measures to mitigate any adverse effects from these activities.

As such, the ESA's requirement that the FWS gather and seek out the best scientific data extends to determining how the various management activities proposed by the Forest Service, BLM, State of California, and private entities will further affect the Southern Sierra fisher population. Below, we will provide information regarding most of the vegetation management projects—information, which is readily available from the Forest Service, which FWS must consider for this process. See ESA, Section 4(b)(1)(A) ("The Secretary shall make determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available to him …").

Sequoia ForestKeeper has provided the necessary links in the section below to all the readily-available "best scientific and commercial data" about vegetation management actions by the Forest Service in the Sequoia and Sierra National Forests, which FWS must now consider in detail in its listing decision.

B. FWS must Address Specific Effects from Vegetation Management Activities, which degrade Fisher Habitat and Support ESA-listing.

Of course, FWS must also consider concerns to the fisher's persistence and survival based on information not previously considered or new information that bears on the species and its habitat.

As of the 2016 listing decision, there are still significant ongoing habitat threats to the Southern Sierra fisher population from vegetation management activities that adversely alter fisher habitat. Based on statements in support of its 2016 listing decision, FWS has not previously and adequately considered readily-available data about these activities:

> Vegetation management
>
> We were unaware of any large-scale database existing in the Sierra Nevada region to assess timber harvest on Federal lands in that region.
>
> We had no analogous datasets specific to Federal lands in the Sierra Nevada subregion with which to derive timber harvest rates to use in projecting future fisher habitat loss.

FWS 2016 Fisher Species Report, p. 98.

> The only available, large-scale, robust analysis of vegetation trends specifically tied to fisher habitat was done for the southern Sierra Nevada range where fishers currently occur (Spencer *et al.* 2016, pp. 41–45, Appendix A-3). Although this analysis tracked fisher habitat trends, it did not differentiate habitat changes by disturbance type, so we could not assess what portion of the change in fisher habitat was a result of vegetation management.

Id., p. 100. Of course, Spencer et al. 2016 is the *Southern Sierra Nevada Fisher Conservation Strategy*, which does not include the type of data or information FWS would need (and has failed

to gather on its own) in order to determine the extent of timber harvests on Federal lands in the Southern Sierra.

Information about timber harvest is, however, readily-available from the Forest Service in the form of project files and specialist reports for each of the various timber sales and vegetation management activities for the Sequoia and Sierra National Forests:

Sequoia National Forest:

https://www.fs.usda.gov/projects/sequoia/landmanagement/projects (includes Project Archives link at the bottom of the page); *see also* Schedule of Proposed Actions at https://www.fs.fed.us/sopa/forest-level.php?110513 for current project status.

Sierra National Forest:

https://www.fs.usda.gov/projects/sierra/landmanagement/projects (includes Project Archives link at the bottom of the page); *see also* Schedule of Proposed Actions at https://www.fs.fed.us/sopa/forest-level.php?110515 for current project status.

Since FWS is interested in activities since 2016 to potentially project habitat changes from vegetation management into the future, we can provide you with specific information on the following larger vegetation management projects that have been or are being planned for implementation throughout the fisher's core habitat. All of these recent projects will adversely affect fisher core denning or resting habitat in the Sequoia and Sierra National Forests:

Sequoia National Forest: 37,000+ acres of veg. management in Core 2 & 3 fisher habitat; hyperlinks to Forest Service project files provided. (Project documents, in addition to Scoping, may be found under tabs titled Analysis, Decision, Supporting, and Post-Decision at the links shown below.)

Hazard Tree Felling Slash Clearing – Hume District – Core 3 area, within the perimeter of the 2015 Rough Fire, includes 1789 acres of tree felling and cleanup along roads, implemented in 2018 and 2019. See http://bit.ly/2H0whEh.

Eshom Restoration Project – Core 3 area, proposed for implementation in 2019; 2134 acres biomass removal, 1381 acres mastication, 3849 acres underburns. See http://bit.ly/2tELGSS.

Big Stump Fuels Reduction – Core 3 area, proposed for implementation in 2018-2019; 3078 acres fuel reduction. See http://bit.ly/2tAs4zl.

Eshom Area Fuel Break Maintenance – Core 3 area, implemented in 2017 and 2018; 769 acres on 6 existing fuelbreaks. See http://bit.ly/2tEUAQa.

McKenzie Ranch Project – Core 3 area, fully implemented in 2018; included 562 acres of mastication, 355 acres of mastication and underburning, and 371

acres of prescribed burning. See project docs: https://drive.google.com/open?id=1buepgzDHOClHdeWLuKcKU4DRsrAHtwGy ; https://drive.google.com/open?id=1r8rkSeriuiaGbO5JMtA2M8TG609M_K7H; https://drive.google.com/open?id=1Zn-UPu1iDG7OkkU6Y_VO0EMoFrClSiJ0; https://drive.google.com/open?id=1KrRPtyMkmg-dsCW035QP6oLR-AVarlE8; https://drive.google.com/open?id=1Ky0vDGjBs2s29UwHyBmtdWDvcCUQp498

Tule River Reservation Project – Core 3 area, implemented in 2017; 2380 acres of fuel treatments. See http://bit.ly/2tBGpv9.

Frog Project – Core 2 area, fully implemented in 2017, further isolating fisher south of Cedar Fire from implementation directly north of the Cedar Fire area; 1258 acres of fuel reduction thinning. See project docs: https://drive.google.com/open?id=1lMF0oJeRQdCh3n7suW048OCBnItp_Ve3; https://drive.google.com/open?id=14aNVPUQxcgZmOgOtQ3AlhdOsk-09UsIa; https://drive.google.com/open?id=12yfzmhcwbPE_CLCjeP-ZHU4WYIFq96Lm.

Rancheria Project – although suspended, this future planned project would likely have an adverse impact on the isolated fishers south of the Cedar Fire area; 5880 acres mechanical thinning, hand thinning, and prescribed fire. See http://bit.ly/2H0YA5r.

Bull Run Project – Core 2 area, within the perimeter of the Cedar Fire, mostly implemented in 2018; 3500 acres roadside hazard tree logging. See http://bit.ly/2H2uxdE.

Spear Creek Project – Core 2 area, within the perimeter of the Cedar Fire, mostly implemented in 2018; 1250 acres roadside hazard tree logging. See http://bit.ly/2H4WEZJ.

Pier Fire Project – Core 2 area, within the perimeter of the Pier Fire, proposed for implementation in 2019; 1636 acres roadside hazard tree logging. See http://bit.ly/2H2CAqP.

Summit Project – Core 2 area, just south of the Cedar Fire in the Alta Sierra or Summit area, proposed for implementation in 2019; 66 acres of roadside hazard tree removal, 607 acres of dead tree removal. See http://bit.ly/2tCjKiv.

Joey Project – Core 1 area, proposed for implementation in 2019; 880 acres vegetation management; 5273 acres prescribed burning. See http://bit.ly/2H1evko.

With regard to the Core 3 projects, Sequoia ForestKeeper has prepared a map, which shows most of the recent projects and their locations, as well as the Rough Fire and Core 3 areas overlapped. See Exhibit E (attached).

Also, with regard to the Core 2 project, please also refer to Figure 14 above for most of the projects, with the exception of the Tule River Reservation and Pier Fire Projects, which are located to the north of the map area.

Sierra National Forest: 53,000+ acres of veg. management in Core 4 & 5 fisher habitat; hyperlinks to Forest Service project files provided.

Exchequer Project – Core 4 area, near Dinkey Creek area, proposed for implementation in 2019; 1682 acres of restoration thinning; 4684 acres of fuel reduction treatments; 7757 prescribed burning. See http://bit.ly/2tExVDL.

Bald Mountain Project – Core 4 area, south and east of Shaver Lake, implemented in 2018; 5728 acres of fuel reduction thinning. See project docs: https://drive.google.com/open?id=1CJ4vbCtPLEH9bzRdloCSOHMQxqzZwbfv; https://drive.google.com/open?id=1LzLrTEd3QM-IHFzgDXBidx2g8fubYXoX; https://drive.google.com/open?id=1yRwHqbxcd1PLg-1FAkCrVggQAnDl0WV4; https://drive.google.com/open?id=19bxj-wJWSo7ds7ydAJV14n6fA6Ws0mE8.

Shaver Wishon Project – Core 4 area, along roads between Shaver Lake and Wishon Reservoir, removing dead trees on 1590 acres; implemented in 2016 and 2017. See http://bit.ly/2H2ibST.

Musick Project – Core 4 area, west of Shaver Lake, currently under analysis; 12,000 acres or proposed vegetation treatments. See http://bit.ly/2tFu7lM.

Forest-wide Prescribe Fire Project – Core 4 and 5, essentially the entire Sierra NF where fishers reside, which is currently under analysis; proposal for between 10,000 to 50,000 acres of management-ignited prescribed burning per year. See http://bit.ly/2tEig7u.

Railroad Fire Hazard Project – Core 5 along roads within the Railroad Fire area; unknown acres. See http://bit.ly/2tE6RnZ.

These various projects listed above are only ones that the Forest Service has recently implemented (since 2016), is currently implementing, or has specific plans for implementation this year. There are many more vegetation management activities that pre-date these projects, which contribute cumulatively adverse effects on fishers in the Southern Sierras. And of course, the Forest Service has plans for many more activities in the future to respond to the die-off of nearly 100 million trees, as well future large fires that are likely to occur throughout the fisher's habitat.

C. FWS must give separate consideration for listing the Southern Sierra population of fishers based on the State of California's decision to list the fisher.

The ESA requires that FWS "shall give consideration to species which have been-- … identified as in danger of extinction, or likely to become so within the foreseeable future, by any State

agency or by any agency of a foreign nation that is responsible for the conservation of fish or wildlife or plants." ESA, Section 4(b)(1)(B).

Two days after April 18, 2016, when FWS decided not to list the fisher under the Federal ESA, the State of California, on April 20, 2016, listed the Southern Sierra Nevada (SSN) ESU of fishers as threatened under the California Endangered Species Act (CESA). See https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109405&inline, p. 12 of 13. The State's listing decision was supported by a Notice of Findings, which explained the scientific basis for the State's determination that the SSN ESU was threatened with extinction. See Exhibit F (attached). For this reason, FWS must provide separate consideration of the fisher's listing status under ESA, Section 4(b)(1)(B). And while the state's listing protects individual fisher from take, it does not protect the fisher's habitat. For the same reasons given in the State's Notice of Findings, FWS must now provide at least threatened status, and consider endangered status under the Federal ESA to protect and conserve the fisher's habitat throughout the Southern Sierras.

The State's Notice of Findings regarding fisher listing concluded:

> Based upon the evidence in the record the Commission has determined that the best scientific information available indicates that the continued existence of the Southern Sierra Nevada fisher evolutionarily significant unit is in serious danger or threatened by present or threatened modifications or destruction of the species' habitat, predation, competition, disease, or other natural occurrences or human-related activities, where such factors are considered individually or in combination. (See generally Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1)(A); Fish & G. Code, §§ 2062, 2067.) The Commission determines that there is sufficient scientific information to indicate that designating the Southern Sierra Nevada fisher evolutionarily significant unit as a threatened species under CESA is warranted at this time and that with adoption and publication of these findings the Southern Sierra Nevada fisher evolutionarily significant unit of fisher for purposes of its legal status under CESA and further proceedings under the California Administrative Procedure Act, shall be listed as threatened.

Exhibit F, Page 10; also available at http://www.fgc.ca.gov/CESA/fisher_findings_part_warranted.pdf.

D. The Southern Sierra Nevada Population of Fishers Should be Listed as Endangered

There are many factors that provide support for a decision that the entire West Coast DPS of fisher should be listed as threatened under the ESA, and the Southern Sierra population of fishers should be listed as endangered, or at the very least as threatened.

1. The SSN Fisher Population is an Evolutionary Significant Unit (ESU)

Under California law, the SSN population is an ESU and therefore is considered a subspecies of fishers, which requires consideration on its own as a population of fishers for listing purposes.

To be considered an ESU, a population must meet two criteria: (1) it must be reproductively isolated from other conspecific (i.e., same species) population units, and (2) it must represent an important component of the evolutionary legacy of the species (Waples 1991). The California Department of Fish and Wildlife's peer-reviewed status review determined that the two fisher ESUs (Northern California and SSN) were separated by a distance that equated to more than 4 times the maximum dispersal distance reported for fishers. The status review also determined that maintenance of populations that are geographically widespread and genetically diverse is important because they may consist of individuals capable of exploiting a broader range of habitats and resources than less spatially or genetically diverse populations.

Because the SSN fisher population is an ESU, the FWS should treat it as a subspecies in its listing consideration and list it based on separate criterion due to its small population size, the continuing and increasing isolation of the population and subpopulations, and the potential that stochastic events could wipe out the entire population or subpopulations.

2. Small Population Size

California based its decision to list the SSN fisher population/ESU under the California ESA primarily on the fact that the small population size in the SSN area is of risk of its continued existence in California. Moreover,

> Due to its small size, estimated at <300 adults (Spencer et al. 2011), and long-term genetic isolation (Knaus et al. 2011, Tucker et al. 2012), there are acute conservation concerns regarding the long-term viability of this population which has been considered for listing as a Threatened species under both State and Federal Endangered Species Acts (U.S. Fish and Wildlife Service 2014, California Department of Fish and Wildlife 2015).

Tucker et al. 2018, p. 2 (See Exhibit G, attached).

The fisher population in the SSN ESU is likely at risk of extirpation due to its small population size, limited geographic range, narrow and linear configuration of available habitat, and isolation. The SSN ESU fisher population likely contains fewer than 300 adults (Spencer et al. 2015:7) which, coupled with its isolation, increases its vulnerability to stochastic (random) environmental or demographic events, including catastrophic fire or disease. Small populations are also at greater risk from the loss of genetic diversity, including inbreeding depression.

> A recent study of radio collared fishers monitored from 2008 through 2014 in the SSN population showed the survival rate (calculated using demographic parameters) of adult males, but not females, is lower than other populations in the DPS, and estimates a lambda of 0.97 (C.I. 0.79–1.16) (Sweitzer et al. 2015a, pp. 781–783; Sweitzer et al. 2015b, p. 10). A more recent analysis from this study (Sweizter et al. 2015d, p. 77), however, suggests a lower population growth rate of 0.90 (95 percent C.I. 0.71–1.12) from 2008 to 2014; however, the population growth rate was at 1.0 or above for the period from 2010 to 2014 (Sweitzer et al. 2015d, p. 77). Population growth in the SSN population area is thus estimated to

> trend less than 1.0; the authors suggest the population is not in persistent decline, however, but is offset by periods of stability or growth (Sweitzer et al. 2015a, p. 784).

FWS 2016 Fisher Report, p. 50 (emphasis added). Since then, however, there have been significant changes in the fisher's habitat from at least three large fires, 3 years of drought, and a substantial number of vegetation management projects, which FWS did not factor into the report's population trend.

3. Continued and Increasing Genetic Isolation of Fisher Sub-populations in the SSN

The SSN fisher population had already been isolated before European settlement:

> Multiple lines of genetic evidence suggest that the isolation of the SSN population from other populations of fisher within the west coast States is longstanding and predates European settlement (Knaus et al. 2011, entire; Tucker et al. 2012, entire; Tucker 2015, pers. comm., pp. 1–2).

74 Fed Reg. at 22716 (Apr. 18, 2016). But as discussed in the previous section large fires, drought, and many previously undocumented vegetation management projects threaten to isolate subpopulations of fisher within the SSN population. This is most prevalent in the southern-most extent of the fisher's range—the Core 2 area where Forest Service biologists concluded that the Cedar Fire has isolated fishers to such an extent that it has suspended vegetation management activities it knows will further degrade the fisher's habitat. But these isolations also have occurred as a result of other fires, such as the Rough fire, which burned 150,000 acres, including an important linkage across the Kings river between fishers in Core 3 and Core 4.

> Because fisher habitat in this region occurs in a narrow band running north to south, fires burning at high severity within fisher habitat have the potential to disrupt north-south connectivity of habitat within the Sierra Nevada (Figures 14 and 15).

FWS 2016 Fisher Report, p. 69. Given the narrow north-south corridor of fisher habitat in the Southern Sierra, it is likely that fires, which will surely occur in the near future, will further isolate fisher subpopulations, especially in the Sequoia National Forest's Core 2 area, which in most places is less than 3-5 miles wide. See Figure 14, above.

4. Potential for Stochastic Events that could Wipe Out the Entire SSN Population or Subpopulations

In its 2016 Notice of Findings, Cal. DFW found that a majority of future scenarios modeled in the literature indicated significant increases in large wildfires are likely by the middle of this century. Wildfires affect habitats used by fishers and can directly affect individual animals. Stochastic events of this type have a potential for significant impact on the SSN ESU, since small populations are especially vulnerable to such impacts.

Since 2015, three large fires (Rough, Cedar, Pier) and several smaller fires occurred in Cores 2 and 3 within the SSN ESU with additional fires that affected the species' habitat in the Sierra National Forests. Also, since 2015, the prolonged drought has been acting like a stochastic event by causing the loss of more than 130 million mostly large trees in the Southern Sierras. While the death of these large trees from fire and drought reduces the fisher's canopy cover, the effects from fires and tree die-off is exacerbated by associated management activities carried out for the purpose of salvage of trees for commercial value or the felling and removal of trees along hundreds of miles of roads to mitigate hazards. These roadside tree removal activities create 400 to 600 foot wide linear swaths of areas devoid of trees where the Forest Service removes or fells nearly all trees, creating corridors of fragmentation. Fishers, in turn, are deterred from crossing these linear corridor, which further isolates subpopulations, restricting gene flow and their ability to find suitable mates.

5. Other Factors

Illegal Marijuana Grows Continue

Even though California has now legalized marijuana, the Forest Service continues to find illegal pot grows and its associated rodenticide exposure risk to fishers. So long as there is a black market for marijuana and municipalities enacting local restrictions for growing plants, this concern will continue and fisher will continue to be poisoned by rodenticides.

Climate Change will Increase Various Threats to Fishers

As climate change continues to wreck havoc on California's forests, as we have seen from larger and more severe fires, as well as an extended fire season, threats related to climate change will get worse:

> These observations are meaningful because climate change, reduced snowpack, and recurring drought will exacerbate the trend of more large, high-severity wildfires in the Sierra Nevada (Flannigan et al., 2000; Kane et al., 2015; Lydersen et al., 2014; Safford and Van de Water, 2013), and it is likely that wildfires will increasingly burn within occupied fisher habitats in the southern Sierra Nevada.

Sweitzer et al. 2016, p. 222 (Exhibit A, attached).

With climate change come increases in potential for contracting diseases, as fishers seek out new areas in search of prey to survive, placing them in the path of domestic dogs with the potential to transmit parvo or other diseases associated with dogs. This same mechanism will expose fishers to more predators. Fisher are exposed to domestic dogs that the Forest Service permits hunters to use while hunting other species in fisher habitat. Fisher can also be stressed when hunting dogs chase and tree fisher in fisher habitat.

Climate change may also increase snow levels, such as the current 2018-2019 season, making winter foraging for prey more difficult, reducing the fisher's prey base and requiring fisher to expend more energy seeking out prey.

> When overstory canopy is markedly reduced, as in mixed- or moderate-severity fires, important microclimate characteristics are altered (for example, increased temperature or reduced shelter from wind and precipitation). Additionally, conflicts with other species or conspecifics may increase due to the open stand structure and absence of rest sites. Landscapes with reduced canopy cover may provide decreased protection from predation, raise the energy costs of traveling between foraging sites, and provide unfavorable microclimate and decreased abundance or vulnerability of preferred prey species (Lofroth et al. 2010, p. 85). Once overstory is removed, it may take many decades to reestablish (Naney et al. 2012, p. 2)
>
> When stand-replacing fire removes canopy cover altogether, and at a large enough scale, habitat is likely rendered unsuitable for fishers, as these early successional stands may lack canopy cover and the structural elements for rest and den sites required by fishers (Jones and Garton 1994, pp. 380–382; Weir and Harestad 1997, pp. 257–258; Weir and Corbould 2008, p. 2). If large-scale loss of canopy occurs due to large stand replacing fires, the number of fisher home ranges is reduced. Fragmentation due to fire may lead to increased energy expenditures and could ultimately affect survival, reproduction, and recruitment of fishers (Naney et al. 2012, p. 7). Predation risk may increase due to the lack of cover and the relatively high abundance of predators in fragmented landscapes (Naney et al. 2012, p. 7–8). Large enough areas of early seral vegetation after fire may present a temporary barrier to dispersing fishers, thereby reducing connectivity within and between populations.

FWS 2016 Fisher Report, p. 65.

E. <u>Adverse Effects from Over Snow Vehicle (OSV) grooming activities and snowmobiles have not been previously considered and must be considered in the currently listing decision because the adverse effects contribute towards the fisher's threatened or endangered status.</u>

Pacific fishers are likely to be adversely affected by noise from OSV grooming activities, associated snowmobile noise, and the potential for associated snowmobile collisions with fishers since groomed trails will allow snowmobile users to greatly increase their speed. Grooming may also make it easier for the fisher's predators to access areas and cause higher mortality. Moreover, grooming may also make it easier to ride snowmobiles at night when fisher are even more active.

These adverse effects were not considered in FWS' 2016 Fisher Report or in the analysis for the decision not to list the fisher in 2016. They must be considered now, since they amount to substantial information that bears on effects on fisher populations and the decision whether to list the fisher as threatened or endangered. Winter adverse impacts from noise, collisions, or increased predation due to grooming activities are amplified during difficult winter months, as fishers are already naturally stressed due to cold temperatures and snow levels. Therefore, the additional stresses from the effects of noise, collisions, or increased predation on just a few

fishers could marginally contribute to the fisher's population decline and the viability of the SSN fisher population.

In 2009, the Sequoia NF completed its travel management analysis, in which is discussed the effects of noise associated with off-highway vehicles (OHVs) on Pacific fishers:

> The level of route density and associated noise disturbance may influence how fisher utilize available habitat. This notion seems to be supported by a few recent studies that imply that fisher may favor occupancy of landscapes with lower road use or road density. For example, Dark (1997) studied fisher in a well-roaded study area (i.e. areas without roads did not exist) on the Shasta-Trinity National Forest. Results suggested that fisher were detected more frequently at sites where roads were closed by the use of gates or otherwise designed to discourage vehicular traffic. Fishers used habitats with a greater density of low-use roads and favored landscapes with more contiguous, unfrequented forests and less human activity. Campbell (2004) noted that sample units examined within the central and southern Sierra Nevada region occupied by fisher were negatively associated with road density. This relationship was significant at multiple spatial scales (from 494 to 7,413 acres).
> * * *
> Zielinski et al. (2007) acknowledged that they did not know how martens would react in the presence of OHVs or their sound, or whether their exposure to OHVs generates a stress response that produces deleterious effect on reproduction or survival. It is unknown if the effects of motorized routes on Pacific fisher are comparable to marten, but because fishers occur at lower elevations than martens, they are more likely to be directly affected by human activities.

TMP FEIS, p. 529 (Exhibit I). There is no question that noise disturbance, similar to that from OHVs, occurs during OSV grooming and associated snowmobiling use. Moreover, OSV grooming, like motorized routes for OHVs, likely make it easier for the fisher's predators to gain access and cause greater mortalities:

> **Route for Competitors and Predators**: Motorized routes may provide access for competitors or predators that would not have existed otherwise. Habitat alterations favoring bobcats, mountain lions or coyotes could increase fisher mortalities (Macfarlane 2009).

TMP FEIS, p. 530 (Exhibit I). According to recent studies, predators are still considered the greatest source of mortality to fishers.

That OSV grooming and associated snowmobile use is similar to effects from OHVs was confirmed by a literature review and analysis by the Forest Service, in conjunction with the National Park Service, to understand the effects from winter recreation on mid-size carnivores in the Greater Yellowstone Ecosystem. In 1999, the agencies conducted this extensive literature review and found:

Mortality resulting from an accidental collision with a snowmobile is possible, but the probability is low. Intentional killing of carnivores by a snowmobiler is possible, but most likely it would only occur in rare, isolated incidents.

Winter stress combined with human disturbance/ harassment may cause increased mortality to wildlife. Most studies on this topic have been conducted on ungulates, however. Copeland (1996) found that human activities near wolverine dens during the denning and kit-rearing period may cause den abandonment and displace wolverines into suboptimal denning sites. This could result in lower reproductive success and/or kit survival.

Natal dens are also important to recruitment for other carnivores, including the fisher, marten, and lynx. Minimal human disturbance is an important feature when females choose a den site. Fisher and lynx are likely to move to another den if disturbed.

* * *

Compaction of snowfields by snowmobiles alters the mild snow microenvironment, potentially affecting organisms that live within or beneath the snow by increasing temperature stress or restricting movement by compacting the air spaces between the snow and the ground (Schmid 1983, Boyle and Sampson 1985). Winter mortality of small mammals is markedly increased under areas compacted by snowmobiles. The reduction in population numbers of these small mammals could well reduce the population of species preying upon them (Bury 1978). Fitzgerald (1977) found that the long-tailed weasel often tunnels beneath the snow when hunting during the winter. Raine (1983) found that martens made less use of subnivean space when the snow surface was crusted, probably because of difficult access.

A significant effect on carnivores from winter recreational activities is displacement from or avoidance of high recreational use areas (*i.e.*, groomed trails, marked trails, destination areas, and play areas). Human use will increase where high recreational use areas exist or are provided. As the associated recreational use level increases, the impact on carnivores also increases (Ruediger 1996).

* * *

[S]tudies show that fishers generally are more common where densities of humans are low and human disturbance is reduced. They are secretive, usually avoid humans, and seldom linger when they become aware of the presence of humans. The females use one to three dens and are more likely to move if disturbed. Indirectly, human activities may lead to negative impacts on fishers through increased human access to fisher populations (USFS 1991, Ruggiero et al. 1994, Heinemeyer and Jones 1994).

Effects of Winter Recreation on Mid-Sized Carnivores (Wolverine, Fisher, Marten, Lynx, Bobcat, Red Fox, and Weasel), pp. 67-69 (included as Exhibit J) (emphasis on "groomed trails" added).

For these reasons, fishers in the SSN population deserve consideration for listing as endangered, and should at least be listed as threatened.

For Sequoia ForestKeeper,

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