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U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846
SWFO_mail@fws.gov

Ms. Margaret Everson Principal Deputy
Director Wildlife Service
849 C Street,
NW Washington, DC 20240
Margaret_Everson@fws.gov

Teresa Benson Forest Supervisor
Sequoia National Forest Supervisors Office
1839 S. Newcomb
Porterville, CA 93257
teresa.benson@usda.gov

David Bernhardt Secretary of the Interior
U.S. Department of the Interior
1849 C Street, N.W.
Washington, DC 20240
exsec@ios.doi.gov

Dean Gould Forest Supervisor
Sierra National Forest
1600 Tollhouse Road
Clovis, CA 93611
dean.gould@usda.gov

Randy Moore Regional Forester
USDA Forest Service Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592
randy.moore@usda.gov

VIA EMAIL & CERTIFIED MAIL, RETURN RECEIPT REQUESTED

RE: Notice of Intent to Sue for Violations of the Endangered Species Act; Proposed Projects Listed in 08ESMF00-2020-F-2168 USFS Fisher Programmatic Biological Opinion (PBO) and 08ESMF00-2020-F-2168 Batch 1 Appendage to USFS Fisher PBO in the Sierra and Sequoia National Forests

Dear Madam and Sirs,

The United States Forest Service (USFS) and U.S. Fish and Wildlife Service (USFWS) are hereby notified that **Unite the Parks, Sequoia ForestKeeper, and The John Muir Project** intend to file suit, pursuant to the citizen suit provision of the **Endangered Species Act (ESA), 16 U.S.C. § 1540(g), and the Administrative Procedure Act (APA)**, to challenge the agencies' violations of the ESA regarding the **endangered Southern Sierra Nevada Distinct Population Segment (SSN DPS) of the Pacific fisher and the proposed projects in the Sierra National Forest and the Sequoia National Forest, listed in Programmatic Biological Opinion (PBO) 08ESMF00-2020-F-2168 and 08ESMF00-2020-F-2168 Batch 1 Appendage to USFS Fisher PBO.**

The majority of these projects take place in occupied fisher habitat and entail commercial logging of trees, including large trees and snags, at and around denning sites, and the removal of both understory brush and canopy cover, which are critical for the survival of the SSN Pacific fisher (Thompson et. al. 2020). These projects also entail road building, fuelbreak construction, salvage logging, and herbicide use, which will further damage habitat and expose the fisher to predation. In issuing the Biological Opinion and the Addendum, the USFWS failed to perform an adequate analysis of baseline conditions and/or cumulative effects, failed to use the best available science in considering the impacts of USFS actions on fishers, failed to adequately apply the interim scientific recommendations, failed to rationally conclude that the projects are likely to harm habitat, inhibit fisher recovery and jeopardize the existence of the fisher, and finally, failed to outline reasonable and prudent alternatives to the actions taken.

The Pacific fisher's (SSN DPS) habitat is at risk and its population is dangerously low. Estimates made twenty years ago, i.e., prior to the recent drought, indicated that fishers numbered from a low of 100 individuals to a high of 500 individuals (Lamberson et. al. 2000). Based on field data collected in 2002 to 2009, the fisher population in the Southern Sierra Nevada was adjusted downward and estimated to be less than 250 individuals (Zielinski et. al. 2013). The subsequent 2012-to-2015 drought and the associated insect infestation and tree die-off severely damaged fisher habitat in the Southern Sierra Nevada (Green et. al. 2019), such that, there has been a 39 percent decline in fisher foraging and denning habitat (Federal

register, Vol. 85, No. 95, p.29562). **Please note:** This habitat loss excludes recent fires, which burned more than 100,000 acres. The average habitat patch size went from over 31,500 acres to 2,600 acres, a more-than twelvefold reduction to roughly 8 percent of the initial patch size, indicating severe fragmentation, which has a detrimental impact on fisher survival (Thompson et. al. 2020). See *Figure 1* (Thompson et. al. 2020) to view the narrowing band of fisher habitat.

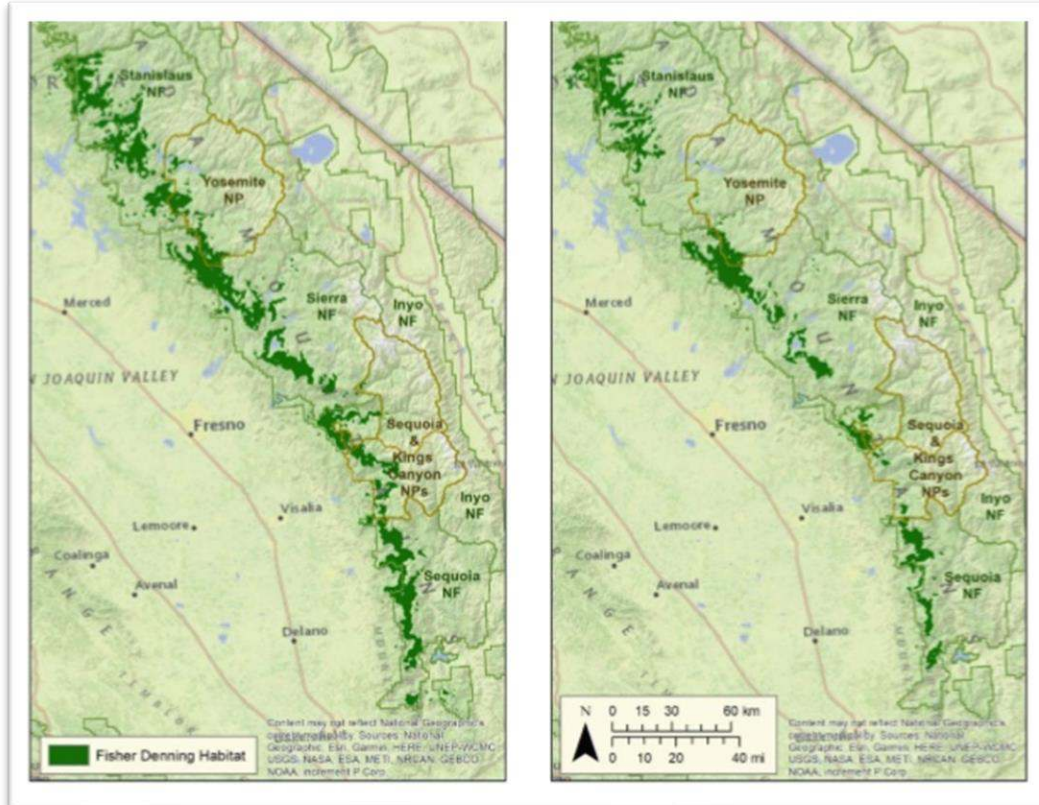


Figure 1: Maps from Interim Recommendations: 39 Percent Habitat Loss Shown

The USFWS endangered species determination assessed the SSN fisher population *before* this dramatic drought event (FWS ESA p. 29563) and the associated 39 percent habitat loss. Given this loss and the low number of fishers in existence, protecting the fisher’s remaining habitat is critical to its survival; the logging projects approved in the PBO both harm the fisher’s dwindling habitat, and, by the USFWS’s own assessment, will likely result in the direct loss of life.

In the Batch 1 Appendage, USFWS issued a take permit allowing the Forest Service to disrupt four denning females nursing eight kits, (i.e., harming four females and killing eight kits is permitted), declaring that this take would not jeopardize the fisher population as a whole and is “expected to have an insignificant impact on the overall population.” See pp. 9-10. There is no scientific basis for this declaration, since the current population size is low, likely less than recorded in the recent past, and unverified. Furthermore, the current population is dangerously close to and may already be below the threshold needed to avoid extinction (Lacy 1997). In the forthcoming project analyses, we will show the damage done to fisher habitat and the magnitude of the threats from these projects, given the fragility of the existing fisher population.

In the Sierra Nevada, Pacific fishers rely on late seral forested habitats (old growth) with a high percentage of large-diameter trees, snags and downed wood occurring within forested stands that meet or exceed a 60% canopy cover (Zielinski 2004). Large-diameter living trees are especially critical for females bearing offspring. For den selection (Spencer et. al. 2015), fishers select resting sites with



characteristics of late successional forests: large-diameter living trees, coarse downed wood, and singular features of large snags, tree cavities, or deformed trees (Powell and Zielinski 1994). Pacific fishers also rely on an interconnected habitat, with shaded canopy and understory brush, which protects fishers from predation as they move through the forest. Powell (1993) estimated that fishers move (on average) up to 3.1 miles per day. During the breeding season, adult male fishers often move up to 20-25 miles per day (USFS Programmatic Biological Assessment 2020 p. 18). Native plant species (understory brush) and trees (forest canopy) are vital for providing coverage for fishers as they travel and forage in their habitat.

In sum, Pacific fishers need big trees, an interconnected habitat, brushy understory cover, a shaded overhead forest canopy cover of 60% or more, and adequate prey populations for sustenance. Large, area-wide epidemics of forest disease and insect outbreaks, like the one which just occurred in the Sierra Nevada as a result of the recent drought, will displace fishers if canopy cover is lost and salvage and logging operations in response to outbreaks further degrade the habitat (Naney et. al. 2012, p. 36). In addition, if multiple management activities occur simultaneously, female fishers attempting to relocate may be forced to move kits further and leave them unattended longer, increasing the risk of mortality to both mother and kits (Thompson et. al. 2020).

Most of these projects are occurring simultaneously; they include extensive post-fire salvage logging and commercial logging; they also include extensive herbicide application, fuelbreak construction, road construction and maintenance, and hazard tree removal, which will affect large trees in denning habitat. Most, if not all, of these projects will remove canopy cover and understory plant species, and they will alter and harm occupied fisher habitat, directly and indirectly, and hence, they constitute a threat to the species, which may lead to its extinction.

I. Identity of Organization Giving Notice

The name, address, and phone number of the organizations giving notice of intent to sue under the ESA are:

Unite the Parks
P.O. Box 6947
Los Osos, CA 93412
(805) 242-6086

Sequoia ForestKeeper
P.O. Box 2134
Kernville, CA 93238
(760) 376-4434

John Muir Project
P.O. Box 897
Big Bear, CA 92314
(530) 273-9290

II. Requirements of the ESA

Section 7 of the ESA requires each federal agency, in consultation with USFWS, to ensure that any action authorized, funded, or carried out by the agency is not likely to (1) jeopardize the continued existence of any threatened or endangered species or (2) result in the destruction or adverse modification of the critical habitat of such species. 16 U.S.C. § 1536(a)(2). “Action” is broadly defined to include actions that may directly or indirectly cause modifications to the land, water, or air; and actions that are intended to conserve listed species or their habitat. 50 C.F.R. § 402.02.

For each federal action, the federal agency must request from USFWS whether any listed or proposed species may be present in the area of the agency action. 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12. If listed or proposed species may be present, the federal agency must prepare a “biological assessment” to determine whether the listed species may be affected by the proposed action. If the agency determines that its proposed action may affect any listed species or critical habitat, the agency must engage in “formal consultation” with USFWS. 50 C.F.R. § 402.14. To complete formal consultation, USFWS must provide the action agency with a “biological opinion” explaining how the proposed action will affect the listed species or habitat. 16 U.S.C. § 1536(b); 50 C.F.R. § 402.14.

If USFWS concludes that the proposed action “will jeopardize the continued existence” of a listed species, the biological opinion must outline “reasonable and prudent alternatives.” 16 U.S.C. §

1536(b)(3)(A). If the biological opinion concludes that the action is not likely to jeopardize the continued existence of a listed species, and will not result in the destruction or adverse modification of critical habitat, USFWS must provide an “incidental take statement,” specifying the amount or extent of such incidental taking on the species, any “reasonable and prudent measures” that USFWS considers necessary or appropriate to minimize such impact, and setting forth the “terms and conditions” that must be complied with by the agency to implement those measures. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i).

Agencies must also reinitiate consultation on agency actions over which the federal agency retains, or is authorized to exercise, discretionary involvement or control... “(b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered...” 50 C.F.R. § 402.16.

After the initiation or re-initiation of consultation, the federal agency is prohibited from making any irreversible or irretrievable commitment of resources with respect to the agency action. 16 U.S.C. § 1536(d). In fulfilling its obligation to ensure that its actions do not jeopardize the continued existence of any endangered species or destroy or adversely modify its critical habitat, the federal agency is required to use the best scientific and commercial data available. 16 U.S.C. § 1536(a)(2).

In addition, Section 9 of the ESA and its implementing regulations prohibit the unauthorized “take” of any endangered species of fish or wildlife. 16 U.S.C. § 1538(a)(1); 16 U.S.C. § 1533(d); 50 C.F.R. § 17.31. “Take” is defined broadly under the ESA to include harming, harassing, trapping, capturing, wounding or killing a protected species either directly or by degrading its habitat. See 16 U.S.C. § 1532(19).

III. Description of Forest Service and USFWS Actions

On May 15, 2020, the USFWS listed the SSN DPS as endangered. On May 19, 2020, the Forest Service issued a biological assessment of 35 proposed projects in the Programmatic Biological Assessment for the Southern Sierra Nevada DPS of the Pacific fisher, regarding the logging and removal of trees and other vegetation across the Sierra, Sequoia, and Stanislaus National Forests¹. It identified Class 1 projects as those that may affect but are not likely to adversely affect the fisher, and Class 2 projects as those that are not likely to adversely affect OR those that are likely to adversely affect the Pacific fisher and its habitat. There are 16 Class 2 projects and 19 Class 1 projects (35 in total) in the first batch, according to the Forest Service’s initial assessment. The USFWS issued a biological opinion (08ESMF00-2020-F-2007 Fisher PBO) on the **USFS Programmatic Biological Opinion on June 10, 2020, allowing these 35 projects to continue unabated. On June 11, 2020, the Forest Service appended an additional five projects, at least two of which were deemed likely to adversely affect the fisher and its habitat.** The next day, on June 12, 2020, USFWS issued an addendum to the Biological Opinion (08ESMF00-2020-F-2168 Batch 1 Appendage to USFS Fisher PBO) allowing these five projects to move forward, and authorizing the take of 12 fishers (four endangered female Pacific fishers will be unable to successfully reproduce for *at least* one denning season² and eight kits will be injured or killed), exempting the Forest Service from the prohibitions described in section 9 of the Act.

¹ There are 24 projects included in the Sierra National Forest, 15 in the Sequoia National Forest. There is one project in the Stanislaus Forest, which we are not addressing in this letter.

² We note here that the take statement only covers one denning season; however, the Sonny Meadows North and South Project will be conducted over several years and the Musick Vegetation Project will take 5 years to complete (*see* Batch 1 Appendage, pp. 5-6). Moreover, follow-up pile burning in the Railroad Restoration Project would be conducted in subsequent years, and additional hazard trees will be identified in the Sky Ranch Road System Hazard. Tree Abatement Project in the next few years. *See* p. 5. Therefore, it is reasonably likely that there will be further take of fishers beyond one denning season.

IV. Our Response: USFWS & USFS ESA Violations

In approving these logging projects, the USFWS and USFS failed to perform an adequate analysis of baseline conditions, use the best available science, consistently apply scientific recommendations, rationally conclude that the projects are likely to jeopardize the habitat and the continued existence of the fisher, and outline reasonable and prudent alternatives to the actions taken.

Specifically, the USFWS concurred with the USFS that 35 of 40 USFS logging projects may affect, but are not likely to adversely affect the fisher. They concluded that five logging projects will likely adversely affect (LAA) the fisher, but not significantly enough to prevent the logging projects from moving forward. USFWS gave four rationales for their decision on the 35 projects, which are nearly identical to the rationales provided for the five additional projects with the take permit. See Appendix A on page 32 for the two sets of rationales. The USFWS made a slight variation when issuing the take permit and approving the additional five projects, adding a rationale regarding the direct mortality of fishers and the small scale of the five projects. To cover all the USFWS rationales in the Batch 1 Appendage completely and clearly, we have appended this overall list of rationales to include a discussion of the direct mortality and reproductive success of the fisher, and we have added the “small-in-scale” rationale to the larger landscape discussion, as these rationales are best addressed simultaneously.

We will refute these rationales in the following order (regular text applies to the thirty-five projects; *italicized text indicates the additional rationales used for approving the five projects and the take permit*):

1. The projects will not decrease the quality or quantity of fisher habitat at a landscape scale (p. 4 & 7); *changes in habitat quality will be small and scattered; the proposed projects encompass a small proportion of the fisher population and a small proportion of the available suitable habitat within the range of the fisher (pp. 7-8);*
2. The projects will implement appropriate limited operating periods (LOP) in potential denning habitat during the denning season to avoid disturbance to female fishers and their kits (p. 4); *while noise disturbance caused by the proposed activities will disrupt denning fishers, these effects will be rare, short-term (i.e., will only occur while activities are in close proximity to active dens), and only last that season (p. 7);*
3. In the long-term, projects will be beneficial to the fishers by increasing the resilience of habitat (p. 4 & 7);
4. The conservation measures detailed in the Programmatic Biological Opinion are designed to ensure that important habitat elements are maintained, and extensive suitable habitat will be available during and after projects are completed (p. 4);
5. *Conservation measures implemented by USFS will ensure that direct mortality of individual fishers is unlikely to occur, and will maintain sufficient high-quality denning and foraging fisher habitat (p. 8).*

We will refute each rationale individually and by sub-topic, citing projects as appropriate. For example, under the USFWS rationale “long-term benefits,” we will discuss the damages and effects of post-fire salvage logging, and then refer to the number of projects that include post-fire salvage logging. Further, we will discuss the current misdirection of USFWS analysis, which inhibits the development of an adequate recovery plan, and the lack of analysis of preventative actions that would protect the Pacific fisher. We will begin the discussion with the quality and quantity of fisher habitat and refute the underlying assumptions built into this rationale.

(1) Quality & Quantity of Remaining Fisher Habitat on a Landscape Scale & A Small Scale

USFWS Rationale: The projects will not decrease the quality or quantity of fisher habitat at a landscape scale; *changes in habitat quality will be small and scattered; the proposed projects encompass a small proportion of the fisher population and a small proportion of the available suitable habitat within the range of the fisher;*

These two rationales assert that fisher habitat will not decrease or decline on a small scale or at a landscape scale, and that the projects will only affect a small proportion of the fisher population or a small portion of available suitable habitat. We assert that fisher habitat will change on large and small scale due to these projects, but that is discussed in detail in Rationale 3; more pertinent to this discussion is the fact that these projects occur in occupied fisher habitat, and thereby directly threaten the existing fisher population with the commercial logging of large diameter trees, post-fire salvage logging, fuelbreak construction, road construction, ongoing application of herbicides, and the removal of understory brush. In this rationale, USFWS does not address relevant issues, namely: 1) existing habitat conditions, the location of the fisher and thereby the importance of occupied habitat, and 2) the fisher's behavior in regards to its remaining habitat and the availability of suitable habitat elsewhere.

We will begin with a brief review of existing habitat conditions and the population size of the fisher.

The Pacific fisher's (SSN DPS) habitat is at risk and its population is low. Estimates made twenty years ago, prior to the recent drought and the ensuing habitat loss, suggest that fishers numbered from a low of 100 individuals to a high of 500 individuals (Lamberson et. al. 2000). Nine years later, using data from 2002 to 2009, the fisher population was estimated to be no more than 250 individuals (Zielinski et. al. 2013). The USFWS assessed the SSN fisher population *before* the drought event (FWS ESA p. 29563) and the associated 39 percent habitat loss and declared it endangered. Given these extraordinary losses and the already low number of fishers estimated to be in existence, protecting the fisher's remaining occupied habitat is critical to its survival.

Existing Conditions & Remaining Habitat: This dramatic habitat loss does not include additional losses associated with recent fires in two project areas, Ferguson and Railroad; these fires affected 109,300 acres. These two post-fire salvage logging projects are located in this burn area and were rated "Likely to Adversely Affect" the fisher. The USFWS has allowed these two projects to continue despite the fact that they occur in an occupied fisher core with 41 fisher den buffers. These projects enable the USFS to conduct post-fire salvage commercial logging 300 feet from existing roads, a non-standard distance, in an occupied fisher core. The Ferguson project has 15 fisher den buffers, and the Railroad project has 26 fisher den buffers, and on both projects, surveys confirmed that Pacific fishers still occupy the area.

Please note: the fisher den buffers in the Railroad project were difficult to discern; see the map on page 33; we may have undercounted. The effects of post-fire salvage logging is discussed in detail in rationale 3, but it is important to note that the post-fire salvage logging is considered highly destructive to habitat, as it often removes vital snags and prevents recovery and regrowth of the forest, both native shrubs and tree species, and it often increases the likelihood of wildfires (Donato, D.C., et. al. 2006).

The five projects in the addendum also contain a large portion of occupied fisher habitat and known fisher den buffers in the Sierra National Forest. A den buffer contains a known female den where kits are raised. In emails, biologists clarified that (excluding the 39 percent habitat loss and the recent fires) there are 77 den buffers in the Bass Lake Ranger District, and 116 den buffers in the Sierra National Forest in total. There are 75 fisher den buffers in or near these five projects, which constitute the majority of the den buffers quantified in the entire Sierra National Forest. Given this fact, the statement that "the proposed projects encompass a small proportion of the fisher population" is misleading. *See* Table 1: Addendum Project Chart: Fisher Den Buffers (Prior to 39 percent Habitat Loss).

Table 1: Addendum Project Chart: Fisher Den Buffers (Prior to 39 percent Habitat Loss)

Project Name	Affected Fisher Dens Buffers/Den Tree	District
Sky Ranch	22	Bass Lake
Musick	2 ³	High Sierra
Ferguson	15	Bass Lake
Railroad	26 ⁴	Bass Lake
Sonny Meadows	10	Bass Lake
Total/Total Bass Lake	75 Total/73 Total Bass Lake	

The majority of SSN Pacific fishers den buffers in the Sierra National Forest exist in these five project areas, and the projects' commercial logging operations directly threaten the existing fisher population by removing habitat (trees and shrubs), by operating in and around fisher dens during denning season and beyond, and by constructing new roads and fuelbreaks, which will disrupt and further fragment habitat. Hence, the statement regarding "the quality or quantity of fisher habitat at a landscape scale or a small scale" is not relevant to the survival of the fisher population because the projects will damage the fisher in its home range, where it currently lives, and displace and directly threaten individuals.

Fisher Responsiveness to Migration: Further, the availability of suitable habitat elsewhere, doesn't help the fisher survive existing and detrimental logging projects. The USFWS references show that fishers have not migrated into suitable habitat areas regardless of their availability. As reported in the ESA listing (Federal Register, Vol. 85, No. 95, page 29545), "... fisher populations have not expanded into unoccupied suitable habitat throughout much of the NCSO and SSN DPSs (Gabriel et. al. 2015, p. 16)." Permitting the disruption and/or destruction of the majority of known fisher den buffers in the Sierra National Forest based on the existence of suitable habitat elsewhere is dubious stewardship of an endangered species and it directly contradicts the agency's own findings.

The habitat destruction and probable fisher death due to the 2012-2015 drought and beetle outbreak and the recent wildfires are sufficient to endanger the continued existence of the SSN DPS Pacific fisher, and the USFWS states in the ESA listing that these important effects have not been quantified yet. Further disruption near and in the majority of the established den sites will put this already-endangered population in great jeopardy.

Finally, all of the projects in the Sierra National Forest appear to include commercial logging (though the SNF has not confirmed this); the commercial projects and the ensuing loss of living trees due to them was not evaluated by USFWS, so the agency cannot fully comprehend the extent of damage done to the forest and its habitat on a small or large scale. Moreover, in addition to logging in occupied fisher habitat, the total project area in the Sierra National Forest covers at least 156,983 acres (as calculated from the project documentation), and the area available to log in the Sierra National Forest is 229,502 acres (North et. al. 2015). This calls into question the assertion that: "The projects will not decrease the quality or quantity of fisher habitat at a landscape scale," as it appears that Sierra National Forest is logging in 68 percent of its available acreage.

Finally, these logging projects, as submitted to the USFWS, do not provide a complete accounting and evaluation of the existing projects taking place in fisher habitat or the ones that have recently taken place.

³ Two fisher den buffers are located within the project area, but fisher sightings also occurred near the project area.

⁴ This number was calculated by overlaying two maps. There were 30 den buffers in the Railroad fire footprint; the exact number of den buffers is likely higher than estimated here.

The French Fire Biological Assessment begins to list additional logging projects to suggest a cumulative effects analysis, in Appendix B, pp. 79-91. The extensive list of projects includes:

- Mile High Roadside Hazard Salvage Project
- Woodchuck Hazard Reoffer Hazard
- Haas Woodchuck Revisited
- Fish Camp Logging
- Smith Hazard
- Huntington Basin
- Coyote Fuels Reduction and Forest Restoration
- Keola Project
- Kings River Experimental Watershed Project
- Carstens Fire and Site Preparation Planting Project
- Snow Patterson Maintenance Project

All of the aforementioned projects involve commercial logging, and many state in clear terms that their effect is to remove large living trees. For example, in regards to the Smith Hazard project, the document states “The effect is to remove approximately 300 trees, likely mostly large old decadent live trees or snags.” These are the very trees needed by the Pacific fisher and already limited in number. The removal of old growth will also occur in the Woodchuck Hazard Reoffer and Haas Woodchuck Revisited project; the USFS already recently logged 1,140 old growth trees in the Highway 168 Hazard and the Dinkey Hazard logging projects, and states that it has logged “mostly large old decadent live trees or snags” (French Fire BE/BE p. 81).

In sum, the USFS and USFWS are jeopardizing the dwindling fisher population by directly harming occupied habitat and allowing actions that are detrimental to the fisher (including but not limited to post-fire salvage logging and hazard tree logging). These actions will harm habitat on a small scale and on a landscape scale.

(2) LOPs and Noise Disturbance:

USFWS Rationale: The projects will implement appropriate limited operating periods (LOP) in potential denning habitat during the denning season to avoid disturbance to female fishers and their kits; *while noise disturbance caused by the proposed activities will disrupt denning fishers, these effects will be rare, short-term (i.e., will only occur while activities are in close proximity to active dens), and only last that season;*

These two rationales and their underlying assumptions are not backed by scientific evidence. Limited Operating Periods (LOPs) are touted as a remedy that will mitigate the effects of habitat loss and the noise of truck traffic, bulldozer work, chainsaws, logging, and road construction; loud noises are known to disrupt female fishers, particularly when denning. Specifically, the LOPs recommend logging after the denning and breeding season is over in June, and logging an hour after sunrise and halting an hour before sunset, so not at night, but during the day⁵.

These LOPs have not been studied for their efficacy; they are a remedy with no known positive effect; they are intermittently applied; in some cases, they are not applied at all; and, finally, if applied according to standards set in the interim recommendations, they appear to inadequately protect the female fishers from disruption during denning, mating, and kit-rearing. Hence, this rationale is unproven and is unlikely

⁵ “Do not generate noise at night” (PBO 08ESMF00-2020-F-2168 p. 16) and “begin logging projects one hour after sunrise (and ending one hour before sunset)” (Sky Ranch BE/BA p. 8)

to mitigate take of the existing fisher population, because it relies on unverified theories and uses an unevenly applied set of proposed standards.

To confirm our understanding of the LOPs, we inquired with USFWS. The USFWS stated in an email dated July 7, 2020, that the LOP recommendations were made by fisher biologists, including Dr. Craig Thompson, a lead researcher. We contacted Dr. Thompson on July 6, 2020 with a request for the efficacy research as related to the prescribed LOPs. He did not respond to the request, and studies directly related to fishers and LOPs do not seem to exist and were not referenced.

The LOPs recommend that logging operations begin no earlier than late-June after natal den establishment and mating. Yet, female fishers require availability of a safe habitat to raise kits from March through October (Spencer et. al. 2016), from the time they are weaned at 2.5 months (late May), to when they can catch live prey beginning at 4 months (late July to early August), and are independent by 7 months (September to October) (Spencer et. al. 2016). By permitting logging activity after June, the current LOPs disregard the needs of juvenile fishers; kits must learn to capture prey and to avoid predators (like bobcats, mountain lions, etc.) (Gabriel et. al. 2015), critical skills they must acquire if the species is to survive.

The average date ranges for major fisher life-cycle events in the Southern Sierra Nevada (Spencer et. al. 2016) are as follows:

- Natal den establishment and parturition: March 17-April 14
- Male visits to dens and mating: March 29-May 6
- Kits moved to maternal den(s): April 4-June 24
- Rearing of mobile kits and use of maternal rest sites: mid or late June-October

Females need safe and quiet habitat from spring through fall, not simply during the denning season through June. Thus, an appropriate and effective LOP would last from March to November.

Moreover, another underlying assumption of the LOPs is that no noise at night or near dawn or dusk will alleviate the noise of operations going on throughout the day. This is not supported by the established scientific data, and in some cases, it directly contradicts it. Although fishers were thought to be nocturnal more than 50 years ago (Coulter 1966), they can be active nearly any time of the day (Spencer et. al. 2015)⁶. Using remote radio-telemetry data-loggers, Cummins (2016) established that once kits are 40 days old, the SSN DPS mother spends more than 12 hours per day outside the den, so her foraging activities can keep pace with her kits' growing nutritional needs; the odds of finding her out during daylight hours are 50-50 or greater (Cummins 2016, Figure 3). Also, on average, the excursions of SSN DPS mothers are timed with the warmest times of day (Cummins 2016, Figure 5), which never correlate with the dawn hour, rarely correlate with dusk, and are certainly not at night. This demonstrates that the LOP guidelines forbidding logging activity near dawn and dusk and at night are not justified by and contradict the direct scientific observations of the SSN DPS Pacific fisher's behavior, documented and available to the USFWS and the USFS four years ago.

Finally, these LOPs can be waived, as stated in the project documentation for all 40 projects: "The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location."

⁶ The complete statement is "they can be active nearly any time of the day, with a tendency toward crepuscular (morning and evening) activity peaks" – we feel this distracts from the consensus view that fishers are active all day.

In the addendum covering the five projects and the take permit, the USFS and USFWS immediately contradict this stated standard. In the Ferguson project, post-fire logging will take place in potential denning habitat during breeding season and with incomplete LOPs. The project documentation states:

“While there are BMPs and an LOP, not all potential denning habitat is protected with the LOP for this project. (Based on discussions with USFWS, it was clarified that there could be disturbance during the breeding season in areas without LOPs, possibly resulting in indirect or direct impacts to individuals, therefore the call should be LAA (Likely to Adversely Affect), so it is now being modified from the original determination made in the submitted (Ferguson PD pp. 14-15.)”

In this case, the LOPs were waived to allow logging to occur in a known occupied fisher habitat area, which would likely result in a breeding disturbance, because of the timing, duration, and specific location. The action taken is directly opposite to the declared standard.

In sum, the underlying assumptions of LOP efficacy, built into this rationale, are misleading. LOPs aren't known to mitigate the damage done by the noise and disruption of logging projects occurring in fisher habitat all day, they don't use the best available science and, in fact, seem to contradict it, and they are unevenly applied and easily waived; and are waived inappropriately, rendering their use as a mitigation strategy for damage done during logging projects null. In this rationale, the USFWS did not adequately evaluate and apply the best available science and make appropriate recommendations for changes in logging operations, which further puts the Pacific fisher at risk for extinction.

LOPs are part of 36 of the projects proposed and approved in the USFWS Biological Opinion in the Sierra and Sequoia National Forests, despite the fact that there is no established benefit to the Pacific fisher, and there is no scientific basis for their use.

(3) Long-term Resilience of Habitat

USFWS Rationale: In the long-term, projects will be beneficial to fisher by increasing the resilience of habitat.

Introductory Statement:

This rationale is scientifically unfounded and incorrect; the majority of these projects will do extensive, immediate and lasting damage to the forest ecosystem and fisher habitat. Canopy cover, large trees and understory native plant species will be removed, and habitat will be damaged and fragmented by post-fire salvage logging, hazard tree logging, road construction, fuelbreak and SPLAT (Strategically Placed Area Treatments) construction, and ongoing herbicide application. These activities do direct damage to fisher habitat, and they increase human interference with the forest ecosystem and harm forest resilience; this in turn leads to an increase in the frequency and intensity of fires (DellaSala et. al. 2014). In the following section, we discuss USFS project actions, related to the long-term damage to fisher habitat and the resilience of the forest ecosystem, referencing specific projects as appropriate. In doing so, we will denote the project documentation and the page numbers where the data and references can be found. For example, for the Musick Project, we will add “Musick PD p. 45” to point to the project documentation, and “Musick BE/BA p. 45” to point to the Biological Evaluation and Assessment.

- **Post-Fire Salvage Logging**

Post-fire salvage logging in the fire-adapted forests of the Sierra Nevada is destructive to forest ecology, forest resilience, and fisher habitat. In the Sierra National Forest, post-fire salvage logging is part of 10 of the 24 projects approved by USFWS in its biological opinion, and in the Sequoia National Forest, it is part of 5 of 15 projects. This type of logging reduces forest resilience, degrades water quality, compacts and disrupts soils, impairs the ecological recovery of the forest, and it can increase fire hazard (Donato et. al. 2006). Plants and animals in Sierra Nevada forests have adapted to fire, and some depend upon it, including the Giant Sequoia and the black-backed woodpecker, and projects that disrupt the natural

ecological processes inhibit the recovery of the forest from fire, and harm species that depend upon fire to regenerate. Post-fire salvage logging also hinders forest restoration by compacting soils, introducing and spreading invasive species, causing erosion, adding sediment to streams, and degrading water quality. With post-fire logging projects, often the largest, most fire-resistant snags, live trees and tree trunks are logged, which are already limited in number; less than 12 percent of old growth trees remain in the Sierra Nevada (Erman et. al. 1996 vol. II).

As this relates to the Pacific fisher, removing trees and native plant species reduces canopy and understory cover, which protect the fisher from predation. Also, removing den trees, large trees and snags directly removes vital denning habitat, which female fishers use to raise kits; female fishers den in large living trees most of the time (i.e., 66-75 percent of the time, Thompson et. al. 2020 p. 23). The habitat conditions that fishers are actively using and preferentially selecting are completely incompatible with the conditions that are created by post-fire logging. (Hanson 2013, Hanson 2015). In particular, post-fire salvage logging occurs in the two projects deemed likely to adversely affect (LAA) the Pacific fisher, the Railroad and Ferguson Logging Projects, which we discuss in detail on the following sub-section.

Project Insight: Railroad: The Railroad project is a commercial salvage (post-fire) logging project taking place in and around an occupied fisher habitat near 26 fisher den buffers, at last estimate. The human-caused Railroad fire started when a tree felled hit a transmission wire on August 29, 2017. It burned 12,407 acres, swept through occupied fisher habitat, and burned through the Shadow of the Giants area of Nelder Grove, killing several 2000-year-old trees in a grove of ancient Giant Sequoias. Fisher monitoring has ended in this area, so not all den sites are known, and the project documentation states that the incidental removal of a den tree could occur (Railroad PD p. 8).

A stated goal of this project is to log commercially viable trees before they degrade in value. It also states that “the logging will reduce the threat of catastrophic fires in the future” and a personal statement made by a USFS employee is used to validate that position (Railroad PD p. 6), though post-fire logging generally increases fire risk. According to the project documentation, there will be a greater extent of disturbance than an occasional hazard tree removal, because the logging extends 300 feet from the road, which is further than normal road maintenance.⁷ Merchantable trees will be removed as sawlogs, and non-merchantable trees may be masticated (shredded), felled, machine piled, or removed as biomass. Merchantable hazard trees will be logged within 300 feet of each side of the road edge through a hazard-tree-removal contract or other feasible method. Dead trees within 300 feet of all these roads will be felled. Smaller diameter dead trees would also be felled prior to piling. Slash concentrations would be burned. Piling will be accomplished using a tractor or grapple piled. This project entails removing large trees, small trees and brush, and compacting soils incidentally with tractors and heavy equipment. The logged area will be re-planted only if sufficient seed trees are not available, after the operation takes place (Railroad PD p. 4).

Not only will this project damage the forest and its resilience, but it will inhibit forest regeneration and native plant recovery, immediately and in the long term. It will directly remove habitat, nearly all of it, and potentially, it will involve the logging of occupied den trees. The USFS actions and results of this

⁷ See *EPIC v. Carlson*, No. 19-17479, Slip. Op. at 12 (9th Cir., Aug. 3, 2020) (“The Project at issue provides substantial revenue to the Forest Service. It allows logging of commercially valuable trees up to 200 feet on either side of the road; allows felling of partially burned trees that have a 50 percent or higher chance of mortality; allows felling of large trees at such distances from the road that their tips will be 50 or more feet from the road even if the tree falls directly toward the road; and allows logging over an area of approximately 4,700 acres. Under no reasonable interpretation of its language does the Project come within the CE for “repair and maintenance” of roads.). Opinion available at <https://cdn.ca9.uscourts.gov/datastore/opinions/2020/08/03/19-17479.pdf>.

project directly undermine forest resilience, in the short and the long term. See the figure in on the following page for the potential effects of this project.



Figure 2: Post-Fire Logging (left Nelder Grove Unlogged & Logged Area)

Please note: these pictures were taken on the same day in 2020. Both places burned in the Railroad Fire. Both places have had the same recovery time. One has been allowed to recover with no logging (left); the other was logged in 2019 (Sky Ranch PD). This demonstrates the damage done by post-fire logging.

Project Insight: Ferguson: The Ferguson Project is a commercial salvage (post-fire) logging project taking place in and around occupied fisher habitat, near 15 fisher den buffers, at last count. The human-caused Ferguson fire burnt more than 96,901 acres in 2018 (64,830 acres burned in the Sierra NF). In the Chowchilla Mountains, a region not widely used by the public, snags and hazard trees will be salvage logged on 1500 acres. In this project area, trees will be logged along existing roads and newly constructed roads. Logging will occur 300 feet on both sides of the road, a non-standard extension of logging away from the road. Since the fire burned in a patchy manner, high-quality denning habitat still exists along Rush Creek, Squirrel Creek, and their tributaries. Notably, the interim scientific recommendations state,

“It is important for managers to consider the possibility that post-fire or post-tree mortality landscapes are not necessarily devoid of fisher activity....This may be particularly important in

areas that were previously identified as high-quality denning habitat, or are adjacent to existing high-quality denning habitat, and burned at low severity (Thompson et. al. 2020, p. 23-24).”

In fact, surveys have confirmed that fisher activity is extensive in unlogged post-fire landscapes (Hanson 2013, Hanson 2015).

The Ferguson Project area burned in a patchy manner, it has beetle-killed trees, it has intact fisher habitat, it is occupied by fishers and they have been detected, and the science indicates that salvage logging in fisher habitat will negatively affect fishers, as well as the entire forest ecosystem. The habitat conditions that fishers are actively using and preferentially selecting are completely incompatible with the conditions that are created by post-fire logging (Hanson 2013, Hanson 2015).

This project also violates USFS LOP stated standards, allowing logging within breeding season. The biologist writes in the project documentation (acronym definitions added):

“It is my determination that the proposed action may affect individuals, and is likely to adversely affect (LAA). While there are BMPs (*Best Management Practices*) and an LOP, not all potential denning habitat is protected with the LOP for this project. (Based on discussions with USFWS, it was clarified that there could be disturbance during the breeding season in areas without LOPs, possibly resulting in indirect or direct impacts to individuals, therefore the call should be LAA, so it is now being modified from the original determination made in the submitted BE.)” (Ferguson PD p. 14-15)

The project also violates the interim scientific recommendations that recommend *against* logging in high value fisher habitat, particularly in an area which has experienced a recent and large habitat loss. Yet, the project documentation states that is its exact intent:

“Snags may be felled and removed on up to 1500 acres of what was mostly high value fisher reproductive habitat prior to the 2018 Fire. Any live hazard trees felled would also reduce the future number of snags in the area.” (Ferguson PD p. 12)

“Where too much cover is removed from the current remaining fisher habitat, fisher would likely avoid the area and/or be more vulnerable to predation. If den trees are inadvertently felled in the project, and it is during denning season (recommended LOP) it could result in loss of adult females and/or young. Adult females and young contribute directly to the recovery of fisher in this area (South fork of the Merced Watershed), and to surrounding areas such as the Stanislaus and Yosemite, so such a loss could be significant.” (Ferguson PD p. 12)

This post-fire salvage logging will do long term damage to the ecosystem, inhibit forest recovery and directly remove habitat in an occupied core, and will likely result in the death of female fishers. The project does not include details on the miles of constructed or reconstructed roads, logging landings, and the amount of herbicide that will be used, if replanted. Yet, USFWS approved this project, issued a take permit and made no corrective recommendations. These projects will not improve the resilience of habitat for the fisher or the forest; they will significantly inhibit habitat recovery and fisher recovery.

In addition to these two projects, post-fire salvage logging occurs in 10 out of 24 projects in the Sierra National Forest, and five out of 15 projects in the Sequoia National Forest.

- **Roads, Road Construction & Hazard Tree Logging:**

All of the logging projects in the Sierra National Forest (24 out of 24) include the construction or maintenance of dirt roads, temporary dirt roads, and salvage and “hazard” tree logging along those roads, and five out of 15 in the Sequoia National Forest include road maintenance or construction. In this section, we discuss both roads and hazard tree logging, because they are often paired together and have a significant and detrimental effect on forest resilience and fisher habitat. Under the current administrative rules, the USFS can declare a tree within striking distance (200 feet) of a road, even a newly constructed

road as a “hazard” and log it without regard to its size at diameter breast height (DBH) or its value as wildlife habitat. As stated in the Sky Ranch Project: “all trees (large or small) that are a hazard to the road will be removed despite their wildlife value” (Sky Ranch PD p 8). This enables the USFS to log all large living trees (unprotected by wilderness designations) simply by building a road in their general vicinity and declaring trees to be “hazards.” It’s important to reiterate that logging “hazard” trees falls outside of the established standards for vegetation management in the USFS Programmatic Biological Assessment, which states: “Emergency actions (e.g. hazard tree removal) are not considered vegetation management. (USFS 2020 p. 4).” The USFS explains in detail in the vegetation management section (USFS 2020 page 28-36) its plans for logging in accordance with its own established guidelines to protect fisher habitat, which then do not apply to the “hazard” trees the agency logs along the roads in all 24 projects in the Sierra National Forest. In the Sierra National Forest projects, approximately 197.5 miles of roads are newly constructed, re-constructed or maintained. **Please note:** This mileage is likely an underestimate as not all roads constructed or maintained were included in the project documentation. We could not accurately total the miles in the Sequoia projects, as the data was not clearly defined in the project documentation.

In addition, in at least nine of these projects, the USFS goes beyond the 200-foot standard used for marking trees as “hazards,” and marks trees that are 300 feet from the roads. This non-standard distance was used in the Ferguson, Railroad, French, Grey’s, Soaproot, and Musick projects in the Sierra National Forest, and the Pier Fire, Bull Run, and KRRD Road 25S15 projects in the Sequoia National Forest. No explanation was given by the agencies for this non-standard extension.

Given USFS actions, road construction and road maintenance and the “hazard” tree logging along those roads, a significant proportion of fisher habitat is vulnerable to fragmentation and to direct loss of habitat. Living large diameter trees are most often used for fisher denning (66-75 percent), and they are at historically low numbers. While estimates vary, less than 12% of late-successional, old-growth forest remains (Erman et. al. 1996 Vol II) in the Sierra Nevada. These large-diameter trees also contribute disproportionately to forest ecosystem structure and function after they die. Dead large-diameter trees persist as standing snags for many years, providing wildlife habitat. Large-diameter logs may persist in the forest for centuries, providing habitat for vertebrates, invertebrates and microorganisms, storing carbon and other nutrients, serving as substrates for tree generation, and playing numerous functional roles (Harmon ME et. al. 1987, 2008), which support the integrity and resilience of the forest ecosystem.

The interim recommendations also caution against logging live trees:

“Given the widespread mortality of pines and other conifers across the southern Sierra Nevada, the permeability of the landscape to fishers may be in question. While limited data are currently available on how fishers are behaving and moving in this new environment, researchers actively monitoring the animals describe their behavior as reacting to the live trees, not the dead ones. Fishers are being observed using remnant stands of live trees, and finding opportunities to move between them.” (Thompson et.al. 2020 p. 20)

Instead of building roads, removing habitat, and logging trees within 200 to 300 feet of those roads, the interim recommendations suggest closing roads and using great caution when logging “hazard” trees, particularly along the secondary dirt roads (newly built and maintained), which are present in many of these projects:

“The most likely source of conflict between hazard tree removal and fisher habitat conservation is along unpaved forest roads, especially within fisher high quality denning habitat away from areas of concentrated human use, such as trailheads and campgrounds, and especially when removing large, living trees (2/3-3/4 of fisher denning and resting occurs in live trees). Hazard tree removal projects should carefully assess whether trees pose a true hazard (e.g. proximity to human activity...)” (Thompson et. al. 2020 p. 23).

Given the importance of these trees, both as fisher habitat and to the resilience of the forest ecosystem as a whole, and also given their rarity, it is remarkable that the USFWS permitted any logging of large living trees or road construction, at all.

Roads fragment habitat, increase the risk of predation by removing canopy cover and understory brush, and increase vehicle speeds if improved or paved, which lead to fisher death by vehicle strike. In terms of forest resilience, roads, including temporary ones, increase chronic soil erosion, sediment loading and runoff to streams, degrade water quality, and alter hydrological functions. In addition to the direct harm to the forest, the USDA programmatic biological assessment and interim recommendations specifically caution against the construction of roads and logging on dirt roads because of the harm they can do the Pacific fisher, stating:

“There is a potential to harm or disturb denning females during the implementation of roadside hazard tree mitigation efforts conducted during the denning season. The limited data available suggest that this risk is disproportionately associated with secondary, high clearance forest roads.” (USDA PBA 2020 p. 29)

Further, “Within both known and potential den clusters, avoid intensive mechanical treatments or new road creation, and limit vegetation management to reducing surface and ladder fuels. In these areas, ensure that any management activity retains the essential fisher habitat characteristics such as structural diversity, large trees and microsites, and multi-level canopy.” (Thompson et. al. p. 29)

The recommendations also state, “close, remediate, and re-vegetate unneeded roads, off-highway vehicle trails, skid trails, or other linear openings that facilitate access by coyotes, mountain lions, and bobcats in fisher habitat.” (Thompson et. al. 2020 p. 35)

Instead of building roads and logging trees within 200 to 300 feet of those roads, the interim recommendations make clear that closing roads and using great caution when logging “hazard” trees should be a priority. In many cases, these recommendations are ignored altogether, as trees are marked for sale next to secondary dirt roads, directly harming fisher habitat, increasing fragmentation, removing living green trees, and reducing forest resilience. In particular, road building and “hazard” tree logging coincides with three commercial logging operations (the Goat, Boggy and Cali timber sales) on the Sky Ranch Project, which we discuss in detail in the following project insight section.

Project Insight: Sky Ranch: This project removes “hazard” trees along approximately 46.3 miles of Forest Service system roads. The Sky Ranch Project includes three commercial timber sales, covers 15,242 acres, involves logging 26,000 trees, and occurs in an occupied fisher habitat area with 22 fisher den buffers. Sixteen of the 22 fisher den buffers within the project area are within the Railroad Fire perimeter. According to the project documentation:

“Within the Railroad fire area, hazard tree removal will be more significant and within the high fire severity areas (215 acres) almost all of the trees will be removed leaving very little cover near the roads.” (Sky Ranch PD p. 8)

Within the project area plus a 1/4-mile buffer, there are 6,070 acres of high value fisher reproductive habitat (Sky Ranch BE/BA pp. 36-37). According to the project documentation, all trees (large or small) that are a hazard to the road will be removed despite their wildlife value. The project states that commercially viable trees greater than 10 inches at DBH will be marked for logging; and trees less than 10 inches DBH, which pose a hazard to the road, will also be marked for logging:

“Only commercially viable trees with a dbh > 10 inches in diameter at breast height (dbh) will be marked; however, all trees (even those < 10” dbh) which pose a hazard to the road and public safety may be removed.” (Sky Ranch PD p. 3)

Therefore, any tree near a road in the project area can be logged. If the sale of trees does not occur due to market conditions, then the logged trees will be decked on existing landings along the roads in the project area for biomass, chipping or fuelwood contractors. Approximately 50% of the project area has already been logged; thus, about 13,000 more trees are left to log. There are two known fisher den trees within the project area. The den trees will be logged if they are deemed a hazard to the road (Sky Ranch PD p. 4).

The Sky Ranch project includes the Goat, Boggy and Cali timber sales, and these projects include the logging of large, living green trees. For the Goat sale, details were obtained, which clarify the degree to which large trees are being logged as “hazards”; 80 percent of the trees logged as part of the Goat timber sale were living, and many of them were greater than 20 inches at DBH. See Appendix C page 34. The Goat timber sale alone has done extensive and lasting damage to forest resilience and fisher habitat. The rest of the timber sale data, which notably USFWS does not include in its review of USFS projects, is needed to accurately quantify the damage. We have requested additional data on the commercial logging and timber sales in the Sierra National Forest, but have yet to receive it.

We will next discuss the Aspen project, which is also a post-fire commercial logging project.

Project Insight: Aspen: This project involves post-fire salvage logging in an occupied fisher habitat area. The project area encompasses 22,350 acres, of which 15,457 acres prior to wildfire was high-to-moderate-quality fisher habitat; due to the Aspen fire, 6,589 acres (30%) of suitable denning and foraging habitat was lost. Post-fire salvage logging will occur over 1,830 acres, and secondary-salvage logging of fire or insect weakened trees will occur over 3,239 acres. This project also includes reforestation efforts, which includes mastication, tractor and grapple piling, and herbicide use. In addition, 15 miles of temporary roads will be constructed and maintained, and “hazard” tree logging will occur within 150 feet of 90 miles of roads (Aspen BE/BA p.18 Table 2). A stated goal of this project is to log in time to minimize the commercial loss of the trees being sold. This project has been deemed not likely to adversely affect the fisher because of the replanting that will occur in the area, as well as the use of LOPs. The project also oddly lists timber projects, active cattle allotments, and off-highway vehicles (OHVs) and off-snow vehicles (OSVs) as positive for habitat regeneration.

“Table 38 lists the ongoing federal management activities on the Forest. These projects include the prescribed burn program, other fuel reduction projects, timber and culture projects, active cattle allotments, and recreational activities and events (e.g., off-highway vehicles [OFIVs] and off-snow vehicles [OSVs]). All of these projects are predicted to ultimately result in greater long-term retention of fisher habitat within project boundaries over the long term.”

(Aspen BE/BA p. 89)

This pronunciation appears with no scientific basis and is technically a gross misstatement that contradicts the prevailing scientific consensus. Constructing and reconstructing more than 100 miles of roads and running salvage and “hazard” tree logging operations along those roads, which removes the remaining large living trees and the snags in fisher habitat, threatens the fisher and the integrity and resilience of the forest ecosystem, both in the present and in the future.

Road building, road maintenance and hazard tree removal occurs in 24 out of the 24 projects in the Sierra National Forest. In the Sequoia National Forest, hazard tree logging occurs in 13 out of 15 projects, and road building and/or maintenance occur in five out of 15 projects.

- **Fuelbreaks**

Fuelbreaks, as defined in the project documentation, are 400-foot wide clearings of native plant species and trees, and they often include the regular application of herbicides to ensure they remain clear of plant species. The rationale for creating fuelbreaks is that, though they will immediately be detrimental to wildlife, fisher habitat and forest resilience, they will help control and stop the spread of wildfires. However, scientific evidence and research suggest the opposite may be true, because of the ensuing

damage done to the forest ecosystem and the role that fuelbreaks actually play in terms of wildfire control. While fuelbreaks enable fire fighters to position themselves to fight fires under certain conditions (i.e., low wind), the fuelbreaks themselves rarely stop fires (Syphard et. al. 2011, p. 2045). Embers float over fuelbreaks, regardless of their width, especially with wind-driven wildfires. Fuelbreaks also directly alter the forest habitat (by removing it), create habitat edges, which serve as entry points for invasive plant species and predators, fragment habitat, and can increase the intensity of fires through plant desiccation and spurring the growth of non-native plant species.

The interim recommendations specifically caution against creating fuelbreaks, recommending that,

“In areas defined as potential reproductive habitat, avoid fragmenting habitat through the creation of open linear features like fuelbreaks (< 40% overstory and < 10% understory), and regeneration harvest gaps larger than 0.5 ac.” (Thompson et. al. 2020 p. 27)

Notably, a half-acre is 147 feet by 147 feet; the fuelbreaks are 400 feet across and are many miles long and have additional “safety zone” clearings, every one-quarter mile along that linear span. Fuelbreaks are more than twice as large as the recommended maximum clearing size.

These fuelbreaks reduce vital fisher habitat, and they are likely to increase predation, because they create edges that serve as entry points for predators. Habitat alteration and fragmentation contribute to predation rates, because forest edges, open areas, and roads increase access by bobcats, coyotes, and mountain lions. Pattison and Catterall (2019) documented that linear forest clearings facilitated movement of both large and mid-sized carnivores. In its ESA listing, the USFWS also reports that predation is the dominant source of fisher mortality (Federal Register, Vol. 85, No. 95, p. 29545). As such, the interim recommendations make an unequivocal statement that,

“Given the ecological uncertainties regarding the impact of widespread use of fuelbreaks (Shinneman et. al. 2019), and the documented increase in large predator activity (DeMars and Boutin 2018), use of fuelbreaks inside remaining fisher high quality denning habitat should be avoided whenever possible.” (Thompson et. al. 2020 p. 23)

Fuelbreaks are part of 11 out of 24 projects in the Sierra National Forest, and notably, in the Musick project discussed below, fuelbreaks are created in the middle of fisher denning habitat. Fuelbreaks are part of 2 out of 15 projects in the Sequoia National Forest.

Project Insight: Musick: The Musick project encompasses 33,000 acres, affects 13,232 acres and includes 2 fisher den buffers. This project involves the commercial green tree harvest of 5 million board feet (BE/BA Musick p. 31), logging 4969 acres, creating 1597 acres of fuelbreaks, constructing 12 miles of roads, logging within 200 feet of more than 84 miles of road, applying herbicide to 4669 acres, logging 2050 acres of green living trees, logging 3012 acres of hazard trees, and removing and burning 6400 acres with prescribed fire. The project is not within an existing development or infrastructure project and involves new construction of roads and logging sites. The Musick project includes many planned actions that threaten the Pacific fisher, in both short term and long term that directly contradict the most recent scientific recommendations, including but not limited to: the creation of vast openings in the canopy, 400 feet across, as fuelbreaks; the ongoing application of herbicides in fisher denning areas; the commercial logging and removal of large living trees greater than 30 DBH (BE/BA Musick p. 150); the removal of understory native species and cover; miles of road construction; and noise disturbances, such as helicopter logging, chainsaw operations, and bulldozing.

Specific Issues: Fuelbreaks and Strategically Placed Area Treatments (SPLATs) and Safety Zones. Fuelbreaks will be constructed 200 feet from center line of a ridge or road, a total of 400 feet in width. A 40-foot wide dozer line will be created down the middle of each fuelbreak and will be maintained regularly. All dead trees will be removed and live trees will be removed and spaced 20-24 feet apart (BE/BA Musick p. 21); we assume the project document meant that a few living trees will be retained 20 to 24 feet apart from one another. Native shrubs will be killed using herbicide and herbicides will be

reapplied as needed. In addition, SPLATs will be created (clearings of trees) along the 400-foot wide fuelbreaks, every one-quarter mile along the linear span of the fuelbreak. Heavy brush, dead trees, thickets of undergrowth, and thick stands of trees will be removed for safety zones. Short grass and larger green, live trees void of ladder fuels will be spaced at about 75 feet apart in safety zones. In prior studies, SPLATs caused an immediate 6% reduction in potential fisher habitat (Sweitzer et. al. 2015b). Below pictures show existing work already performed in the area, clearly showing habitat destruction.



Figure 3: Musick Area: Road 9s07b & Existing Fuelbreak under Transmission Wire (9s06k)

- **Glyphosate-based Herbicide Application & Surfactants**

Fuelbreaks (and many logging projects) are often accompanied by the spraying of glyphosate-based herbicides to control native plant species. Though there is much research on glyphosate-based herbicides, we are only briefly discussing glyphosate application as it relates to habitat damage and wildfire. The direct effects of spraying glyphosate-based herbicides on the Pacific fisher and regularly spraying herbicides in its habitat are unknown. We do know that glyphosate-based herbicides directly affect the environment.

The Musick project proposes to spray glyphosate-based herbicides and other chemicals on a minimum of 4669 acres, including directly over two fisher den buffers. Glyphosate is used to kill native shrub species such as manzanita, ceanothus, and bear clover. While the documentation states that glyphosate, “would not come in contact with wildlife unless an accident occurs or project design features are not followed (BE/BA Musick p. 32);” this statement contradicts the statement in the same project documentation, which says: “There are herbicide treatments planned for both den buffers. Within one den buffer, chemical release in the fuelbreak is 19.5 acres, and chemical release for planting is 26.9 acres, while in the other den buffer chemical release for planting is 121.6 acres (BE/BA Musick p. 91).” Herbicide treatments will also occur within 2,140 acres of suitable fisher habitat, removing understory brush, as the area is cleared of trees.

This is likely to increase the area’s flammability, because glyphosate-based herbicides are crop desiccants. Glyphosate’s desiccating effects reduce a native plant’s ability to uptake water, and when

plants can no longer absorb sufficient water, they can become flammable, endangering forest resilience to fire and potentially local communities. This is exacerbated by the fact that fuelbreaks enable invasive plant species to proliferate (Shinneman et. al. 2019, p. 9, 28). Cheatgrass, a common invasive species in the Sierra Nevada, causes fires to burn more intensely and across a wider area. Cheatgrass fires also spread more cheatgrass, which in turn, disrupts the natural fire cycle and the ecological integrity of the forest and replaces native shrub species (Shinneman et. al. 2019, p. 35), all of which are detrimental to forest resilience and fisher habitat.

Further, the analysis of the effect of surfactants, such as R-11, the spreading agent, used along with herbicide application, appears to be missing from the project documentation, though it is (at a minimum) used in the French, Bald and Soaproot Logging projects. Surfactants reduce surface tension and increase the spreading properties of herbicides. Surfactant R-11 includes a safety data sheet, which warns of its flammability and acute toxicity if ingested. Further, if other surfactants are used but unmentioned, their effects are unknown and unquantified. A more thorough analysis of the combined use of these chemicals on the landscape is needed, to ensure that there are no detrimental effects on habitat, wildlife, humanity and the ecological integrity of the forest soils and aquatic systems.

Glyphosate-based herbicides are used in 10 out of 24 projects in the Sierra National Forest and are used in at least one out of 15 projects in the Sequoia National Forest.

- **Wildfires**

The USFWS, the USFS, and scientists concur that large, high intensity fires threaten habitat and pose a significant threat to the Pacific fisher and fisher habitat.

The USFWS ESA states, “Of particular significance regarding implications for the DPS’s status were loss and fragmentation of habitat resulting from high-severity wildfire and wildfire suppression (i.e., loss of snags and other large habitat structures on which the species relies), climate change, and tree mortality from drought, disease, and insect infestations.” (USFWS ESA p. 29532)

Fire is also mentioned in the interim recommendations as significant: “Fisher persistence in the southern Sierra Nevada is now at elevated risk due to the recent habitat changes and increased population fragmentation that appears evident following the recent drought-related tree mortality and high-intensity wildfires.” (Thompson et. al. 2020 p. 4)

Finally, the USFS also concurs that fires are a major habitat risk, stating in the biological assessment that: “Currently, large, severe wildfires, in concert with drought, climate change, and insect outbreaks, are generally considered the largest threat to fisher habitat (Scheller et. al. 2011; Lawler et. al. 2012).” (USFS p. 23)

There is consensus on fire and its damage, and there is also unanimous failure to discuss the correlation between logging and the ensuing increase in the severity and frequency of fires, which occur as a result. It has been well established that logging leads to more fires (Stone et. al. 2004) at greater severity levels.

Scientists recently examined the severity of 1,500 forest fires affecting over 23 million acres during the past three decades in 11 western states. Forests with the highest levels of protection (wilderness, parks, and roadless areas) had the lowest fire severities overall, while forests with the fewest environmental protections had the highest fire severity levels (Bradley et. al. 2016). Heavily logged areas and tree plantations have been known to burn more extensively than intact forests (Brown 2000), and plantation forestry (logging followed by replanting) has a greater impact on fire severity (increasing the likelihood of fires) than decades of fire exclusion. Numerous scientific studies have found that logging, including post-fire logging and commercial thinning, more often tend to increase, not decrease, subsequent fire severity (e.g., Hanson and Odion 2006, Thompson et. al. 2007, Cruz et. al. 2014, Bradley et. al. 2016, Zald and Dunn 2018). With regard to post-fire habitat, research shows that if such areas are left alone (not

logged), and if they later re-burn in another wildland fire, they experience mostly low/moderate-severity effects (van Wagten et al. 2012). Commercial thinning in particular has been found to harm Pacific fishers, who tend to avoid areas that are logged as part of timber sales (Garner 2013).

In addition, the structure of even aged tree farms is among the most fire prone configurations in forests, whereas older forests on public, federal lands have greater resilience to fire, despite long term fire exclusion (Zald et al. 2018); this is consistent with recent findings (Koontz et al. 2020) that show that more homogeneous vegetation landscapes carry significantly higher severe-fire risk than landscapes that are heterogeneous on local scales. That said, logging (whether even-aged or selective cutting) has been correlated with increased fire frequency and severity for decades. The seminal Sierra Nevada Ecosystem Project's (SNEP) report in 1996, showed that: "Timber harvest, through its effects on forest structure, local microclimate, and fuels accumulation, has increased fire severity more than any other recent human activity."

Foresters in the Sierra and Sequoia National Forest are attempting to remedy existing conditions, with more logging, which is an approach that contradicts the scientific consensus showing that logging is correlated with increased fire risk and severity.

A more effective method for managing for fire in the heavily logged and unlogged areas of our National Forest is to allow trees to grow. For example, the single most important factor in predicting fire risk in tree plantations (particularly for devastating crown fires, which advance from tree crown to tree crown, often faster and with greater resultant tree mortality than fire on the ground) is the age of the plantation. Thompson et al. (2011) found that the age of a plantation was the best predictor of the level of canopy damage from a fire, and it was more important than any other variable, including the weather. Tree plantations become more resilient after the age of 25.

"The best fitting geostatistical regression model indicated that the level of canopy damage reached its maximum around age 15 and stayed relatively high until age 25 before declining. Based on a previous analysis of unmanaged vegetation (Thompson and Spies, 2009), we had hypothesized that daily weather conditions would be important predictor variables within the models. However, the data did not support this hypothesis." (Thompson, J.R., et al. 2011)

It seems then, the best management practice to mitigate crown fires in tree plantations, at the very least, is simply to carefully tend and protect trees until they are old enough to withstand fire, and to avoid creating new plantations, which are more likely burn at high severity. These facts are at odds with the logging projects submitted and approved in the biological opinion, which include 1) the commercial harvest of trees, 2) plantation thinning, 3) post-fire salvage logging and 4) the removal of large decadent old trees, all four of which are likely to increase the severity and frequency of fires.

Concluding Statement: Refutation of the Rational Claiming "Long-Term Resilience"

USFS and USFWS allow immediate and lasting damage to fisher habitat, while claiming long-term resilience of habitat. Given the extent of post-fire salvage logging, road construction, "hazard" tree logging, and fuelbreak construction and maintenance, herbicide-use and their ensuing effects on wildlife and wildfire, these projects will have immediate and long-term detrimental effects on forest resilience and fisher habitat. While the USFWS and USFS conclude there would be an improvement to fisher habitat and forest resilience, this conclusion contradicts the project data and the best available science.

Table 2: Sierra Logging & Disruptive Management Actions⁸

Sierra National Forest Actions	24 Total Projects	Percent Affected
Post-Fire Salvage Logging	10	42 percent
Hazard Tree Logging	24	100 percent
Road Construction/Maintenance	15	63 percent
Fuelbreaks	11	46 percent
Herbicide Use	10	42 percent

Table 3: Sequoia Logging & Disruptive Management Actions⁹

Sierra National Forest Actions	15 Total Projects	Percent Affected
Post-Fire Salvage Logging	5	33 percent
Hazard Tree Logging	13	87 percent
Road Construction/Maintenance	5	33 percent
Fuelbreaks	2	13 percent
Herbicide Use	1	7 percent

(4) Conservation Measures:

USFWS Rationale: The conservation measures detailed in the Programmatic Biological Opinion are designed to ensure that important habitat elements are maintained, and extensive suitable habitat will be available during and after projects are completed;

In prior sections, we have shown that fisher habitat will be damaged in the long term (longer than 30 years), and it will be damaged in the areas that the fisher currently lives, which are critical to its survival. We have also shown that the scientific recommendations and the measures in the programmatic biological opinion are unevenly applied, if applied at all, making their presence insufficient to protect the Pacific fisher from extinction.

The insufficiency of the existing regulations and their application is exacerbated by USFWS's failure to fully examine project documentation and to request specifics on the commercial logging projects (timber sales), so that the agency can fully evaluate the habitat loss, and the threats to the fisher in the immediate term and in the long term. USFWS has not made any site visits to examine and/or validate the results of USFS actions. The result is that the USFWS has approved logging projects, which will do considerable harm to habitat during and after the projects are completed, leaving the landscape in a weakened condition that both threatens the fisher's survival and makes the landscape more prone to fires. As previously discussed, "hazard" tree logging, road building, post-fire logging, and road and fuelbreak construction are detrimental to fisher habitat and forest resilience, and these actions are part of the majority of the projects listed in the biological opinion.

Specifically, in this rationale, we look closely at the damage done by several projects, which indicates planned, immediate habitat losses that persist over the next 10, 20, and 30 years, in exchange for minor possible improvements often beginning at year 30, which do not account for the losses, and which also unrealistically assume that no fires occur during the convening 30 years, making those minor promised future gains improbable.

⁸ The data in this table and its accuracy is based on the project documentation that the USFS provided the USFWS so the agency could construct its Biological Opinion. Often that data was contradictory.

⁹ The data in this table and its accuracy is based on the project documentation that the USFS provided the USFWS so the agency could construct its Biological Opinion. Often that data was contradictory and incomplete.

Hence, the repeated claim of future habitat improvements by the proposed vegetation treatments is by no means certain, and the USFWS' willingness to tolerate guaranteed losses to endangered-species habitat is irresponsible. Furthermore, the interim recommendations specifically caution against this kind of risky gamble with the fisher's survival:

“The regional fisher population must survive the short-term challenges in order to reap long-term benefits. Therefore projects focusing on long-term habitat management objectives should, whenever possible, avoid short-term habitat loss and additional fragmentation in areas where site conditions are capable of supporting high quality habitat.” (Thompson et. al. 2020, p. 36)

The USFWS-approved projects highlighted below pursue actions that are in direct opposition to this recommendation, and that disregard fisher habitat losses in favor of unlikely and slight improvements 30 years from today. For context, the average female fisher lives 6-7 years. To reap the “benefits” at 30 years, it would take five full fisher lifetimes. For perspective, in human terms for the average U.S. citizen, this is equivalent to destroying the homes of more than half of the U.S. population, for uncertain, dubious, and marginal promised benefits 393 years from today, and only under the most unrealistically optimistic assumptions.

Sierra Project Insight: Dinkey South: This commercial logging project covers 1,358 acres. Proposed treatments include prescribed fire, planting, thinning, and maintenance of existing plantations using mechanical methods (tractor logging, tractor piling of debris), hand methods (planting, cutting brush and trees with chainsaws, hand piling of debris, and hoeing weeds and brush), and chemical methods (use of herbicides to control vegetation). There are two dens within 1.5 miles of the project. Commercial “hazard” trees will be logged. According to estimates in the biological evaluation under the proposed actions, the fisher will have less potential habitat and a lower average number of trees/acres > 24" DBH immediately after action as well as 5, 10, and 30 years in the future compared to doing nothing.

Sierra Project Insight: Dinkey North: This logging project covers 1617 acres. It includes prescribed fire, logging and “hazard” tree felling. There are two known dens within a mile of the site. In five of the twenty strands that this project covers, the main focus will be removal of intermediate fir and incense cedar, leaving 50% canopy cover. The modeling and charts provided in the biological evaluation show that the actions that they take will have little if any positive impact on fisher habitat. Action alternative 1 (not disturbing the forest) would lead to a greater amount of acreage that is suitable fisher habitat than the USFS chosen action alternative 2. The project documentation clarifies that it will take the forest 20 years to recover; excluding commercial logging data, which is not provided to USFWS for evaluation.

Sierra Project Insight: Grey's Mountain: This commercial logging project covers 3,586 acres. The area proposed for this project includes white fir, sugar pine, incense cedar, and ponderosa. Both live and dead pre-commercial trees (1-10" DBH) and commercial trees (10"-30" DBH) will be logged. Additionally, hand/machine piling and burning, jackpot, and understory burning will be used to reduce fuels for fire. There are two fisher den trees within the prescribed fire unit. A 300-foot wide fuelbreak will be reestablished by thinning trees in the area to about 18 foot spacing. Maintenance will be performed on 56 miles of road, reconstruction on 20.3 miles of road, and a quarter mile of temporary roads will be constructed. This project was deemed not likely to affect the fisher, based on the premise that the treatments will reduce habitat loss from fires in the future (a dubious conclusion even when making overly optimistic assumptions).

Sequoia Project Insight: Frog 2: The proposed project would treat about 33 units, totaling roughly 1,625 acres with fuel reduction, hazard tree removal, and associated road management activities. The units vary in size from 10 to 138 acres and consist of mixed conifer/hardwood and red fir stands that are between 40 and 200 years old (FrogBEFisher1 withouttable2updatedintro_20120726 p. 8). Priority for treatment would be determined by low stand health and vigor, high fuel hazards, and commercial removal opportunities. This project will damage the forest so extensively it will take many years to recover. Figure 3 indicates that there is a projected drop in canopy cover as a result of thinning. However this is matched

by a projected recovery of canopy cover over time, with the average density across treated units reaching >50%, 20 years post project implementation. (BEFisher1withouttable2updated p. 47).

Sequoia Project Insight: Pier Fire: This is a post-fire salvage logging project covering 1636 acres. In particular, it will fragment forested habitat. The areas proposed for treatment are linear features, approximately 300 feet wide on either side of roads. The removal of snags and live hazard trees would reduce the amount of downed woody material available to fishers as hiding cover in the future. The treatments may create or enhance a reluctance to cross open areas and therefore interfere with dispersal. The project includes felling and removing snags and trees identified as “hazards;” it includes human activity from tree felling, road maintenance, chipping and pile burning that may cause disturbance to wildlife in the project area, including fishers.

Sequoia Project Insight: Joey: The project covers 6153 acres in an occupied fisher habitat area. In the project area, potential denning habitat may experience a reduction in canopy closure class (from D to M) following thinning” (Joey PD p. 6) meaning canopy cover will fall below 60%. “Roadside mechanical hazard treatment would remove trees that pose a threat, regardless of size, along segments of 22S12, 23S08, 23S09, and 23S13 within the project area.” In addition, there will be thinning of conifers from 1-24” DBH. Up to 45 acres of high-quality denning habitat may change to potential denning habitat because of a reduction of canopy cover to 40-59.9%.

Conclusion: The mere existence of conservation measures does not guarantee that they will be applied, nor that they are adequate. For example, greater than 60 percent canopy cover is the standard for fisher resting and denning habitat, according to scientific consensus, and this is reflected in the interim recommendations; e.g., “6.1.2a – In areas identified as known or potential den clusters, retain canopy cover >60% and retain multistory conditions where present.” However, the interim recommendations also quote a reduced canopy coverage of 40-60% for potential corridors between habitat patches (e.g., see 6.1.4a from the interim recommendations), and in many of these projects, this lower canopy coverage is chosen by the USFS¹⁰. The result is that fisher habitat is immediately damaged and damaged in the long term, particularly when logging large, living trees, up to 200 years-old.

(5) Direct Mortality:

Conservation measures implemented by USFS will ensure that direct mortality of individual fishers is unlikely to occur, and will maintain sufficient high-quality denning and foraging fisher habitat.

Since the USFWS issued a take permit allowing the USFS to disrupt reproduction of four female adults and take eight kits, they’ve already shown that direct mortality of individual fishers is likely to occur from project actions; in fact they state it. In the 08ESMF00-2020-F-2168 Batch 1 Appendage to USFS Fisher PBO, the USFWS writes:

“...we are reasonably certain that the proposed activities that will either reduce the suitability of denning habitat, or, when conducted within denning habitat during the denning season, will disrupt denning female fishers and their kits to the point that it reduces individual survival and reproductive success.” (p. 8)

It is impossible to precisely estimate the amount of take that will occur due to the proposed projects. However, based on the discussion above, the Service is reasonably certain that take will occur.” (p. 9)

¹⁰ Interim Recommendations: Section 6.1.2, “Attempt to leave at approximately 50% of the project area with canopy cover >40%, including some clumps with canopy cover >60%.”

The USFWS then arbitrarily concludes that disrupting reproduction of four denning female fishers and killing at least eight kits will not likely jeopardize the Pacific fisher:

“In the accompanying appendage to the 2020 Programmatic Biological Opinion, the Service determined that this level of anticipated take from the proposed projects is not likely to result in jeopardy to the SSN DPS of the fisher.” (p. 10)

Yet, the Fisher Team Final Report (Sweitzer et. al. 2015a) concludes the opposite:

“Minimum viable population size has been under debate, but at <500 individuals, the current southern Sierra Nevada fisher population will likely require active management and conservation measures to maintain a positive growth rate across the entire range.”

These statements are clearly contradictory; active management is the opposite of permitting take without even estimating the reduced population size resulting from unprecedented drought and fire events.

In order to express the magnitude of the effects of this take permit, we wish to reiterate a few points. Twenty years ago, researchers believed there might be as many as 500 animals (Lamberson et. al. 2000), but analysis of more-recent field data collected from 2002 to 2009 has resulted in a downward adjustment to less than 250 animals (Zielinski et. al. 2013, Spencer et. al. 2011). The population has been stressed by a recent 39 percent decline in its foraging and denning habitat (due to the 2012-2015 drought, beetle outbreak, and associated unprecedented tree die-off; see Federal register, Vol. 85, No. 95, p.29562 and Green et. al. 2019), and it has been further impacted by several fires and ongoing logging in the region.

These events have resulted in severe fragmentation of fisher habitat, which is detrimental to the fisher’s survival (Thompson et. al. 2020). Nevertheless, without quantifying the impacts of these events on the population, nor without even attempting to estimate the current population size, the USFWS merely asserts that the expected incidental disrupted reproductive activities by four females and the death of eight kits resulting from the proposed projects “encompass a small proportion of the fisher population” and is “expected to have an insignificant impact on the overall population” (08ESMF00-2020-F-2168 Batch 1 Appendage to USFS Fisher PBO).

We refute the USFWS’ unsubstantiated and unquantified assertions that these actions will not jeopardize the fisher population by using the most recent data collected for the SSN DPS annual growth rate (referred to in the literature as λ , and measured to be $\lambda=1.03$, Sweitzer et. al. 2015b), and the calculated population-growth sensitivities to the measured fecundity and juvenile survival rates (Sweitzer et. al. 2015a). Together with the most-recent maximum population estimate of 250 animals (Zielinski et. al. 2013, Spencer et. al. 2011), the failure of four adult females to reproduce and the loss of eight kits would result in near zero net population growth over the succeeding three years (i.e., $\lambda_1 \times \lambda_2 \times \lambda_3 = 1.02$). Such a scenario, if combined with other extreme events similar to those that have already occurred (e.g., drought, beetle outbreak, unprecedented tree die-off, fire loss), could move the population “into an extinction vortex,” according to Lamberson et. al. 2000). Lamberson et. al. (2000) make this statement because their population modeling predicts likely extinction, except for “extremely optimistic and likely unrealistic” combinations of model assumptions.

The USFWS justified the permitted take of four females and eight kits without detailed analysis, dismissively asserting its “insignificant impact on the overall population,” which appears to be an entirely unquantified, and therefore unfounded, statement.

Conclusion: Rationale Refutation

We have found, under each rationale, a failure to fully evaluate available project data and a failure to use and apply the current scientific data. The rationales appear, in many ways, to be a distraction rather than a careful analysis of forest conditions, such that appropriate actions could be recommended and taken, to save not only the Pacific fisher, but the entire forest ecosystem, on which hundreds of species depend.

In the following section, we recommend an approach to repairing the ecosystem, which warrants both further study and an immediate application.

(6) The Current Misdirection of the USFWS ESA Analysis & Recommendations

The current USFWS ESA recommendations inadequately address the needs of the Pacific fisher and the larger issues associated with Forest Service management, which have led to an apparent (though currently unverified) decline in the fisher population and fisher habitat.

In particular, there is a glaring lack of serious discussion on the effects of closing and remediating roads, which would solve multiple management issues and could restore fisher habitat simultaneously. Roads are often discussed in fisher scientific literature and in the interim recommendations¹¹, and often in terms of habitat fragmentation and predation, as canopy openings on roads lead to fisher predation and death, but they are not fully discussed in terms of the additional management problems that they present, and the remedies that closing them might produce.

In “Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities,” a survey and analysis of the existing scientific literature, it’s made clear that roads of all kinds affect terrestrial and aquatic ecosystems in seven detrimental ways:

- (1) increased mortality from road construction,
- (2) increased mortality from collision with vehicles,
- (3) modification of animal behavior,
- (4) alteration of the physical environment,
- (5) alteration of the chemical environment,
- (6) spread of exotic species, and
- (7) increased alteration and use of habitats by humans. (Trombulak et. al. 2000)

These damages can be found throughout fisher habitat in the Sierra and Sequoia National Forests. Closing and remediating roads would address these seven problems simultaneously.

In addition, for the fisher, removal of roads could also mitigate two primary fisher threats listed in the USFWS ESA documentation: 1) Rodenticide poisoning caused by illegal marijuana grow sites, and 2) wildfires (84 percent of fires on public lands are human-caused ignitions), and most of the fires mentioned in the project documentation fall into this category; though the Rough Fire in the Sierra National Forest was a lightning ignition. Essentially eight of 10 fires on public lands are caused by people (Balch et. al. 2017). Roads, particularly without an adequate system for patrolling them, can lead to more frequent fires. Recreation and dispersed camping in the forest need not be disrupted by road closures, as the majority of secondary logging roads (near Pacific fishers) and spurs do not lead to camping areas, trailheads or other commonly used dispersed camping sites, and it might be possible to patrol these roads if there were not so many of them spreading out in a haphazard manner. (A complete list of road maps can be found online, and we have included links in the reference section, under maps in an electronic copy.) See the example of the following page of road patterns in the Sierra National Forest.

¹¹ The following sections in the interim recommendations mention and/or address roads: 6.1.4d, 6.1.6c, 6.2.3a, 6.3.2a, 6.3.3a, 6.3.3c, 6.3.3d, 6.3.3e. also, in table 2 of 6.2.6, “LOP March 1 to June 30” precludes “new road construction and development of infrastructure in high quality denning habitat.”



Figure 4: Grey's Mountain Area – Sierra National Forest

With more than 2500 miles of roads and 500 miles of user created routes, this “spider” network of roads makes the Sierra National Forest difficult to manage and regularly patrol. This also makes it easier for illegal marijuana grow sites to set up camp and grow operations, pollute the land, poison the fisher, and harm habitat. According to the interim recommendations, grow sites are a significant threat to the fisher:

“In the 2015 fisher assessment and 2016 conservation strategy, exposure to pesticides associated with illegal marijuana grow sites on public lands was recognized as a novel and growing threat to population health and persistence. At that time, 87% of necropsied fishers showed exposure to anticoagulant rodenticides and three mortalities had been directly attributed to these poisons. Since then, exposure rates have continued to increase; of 22 additional fisher carcasses tested between 2015 and 2017, 100% tested positive for rodenticide exposure and the total of known direct mortalities is now 17 (Thompson et. al. 2017). The statewide mortality rate associated with rodenticide exposure has climbed from 5.6% to 18.7% since testing began in 2007 (USFWS 2019).

While USFWS ESA document suggests that a greater law enforcement presence could mitigate the proliferation of illegal grow sites (ESA USFWS 2020 p. 29555), we suggest a simpler and less costly way to prevent their occurrence: close roads that make it convenient to establish them. Nearby, Yosemite National Park has only 211 miles of paved roads, and employs 5 times as many people in the summer than the Sierra National Forest, (federally-speaking); the park is also about half as large, and it does not appear (on record) to have the extensive number of illegal grow sites as the nearby forest.

In addition, closing roads could address the problem of “hazard” tree logging, which often takes place on secondary dirt logging roads, near female fisher denning sites; this logging results in the removal of large living trees and snags, which are an important aspect of the remaining fisher habitat. Rather than logging these vital trees, the Forest Service could close roads and restore natural habitat, protecting the fisher from predation and people from “hazard” trees. Road remediation could also reduce the Forest Service’s use of

glyphosate-based herbicides and the associated surfactants — to clear roads and brush, and instead, the USFS could allow native plant species to grow, cover roads, and restore habitat.

Much could be accomplished at a minimum of damage and cost with this approach, curtailing wildfires, preventing marijuana grow sites and the associated rodenticide poisoning, restoring habitat and reducing unnecessary salvage and hazard tree logging, providing canopy cover and understory native shrubs for the fisher to move safely about the forest, and reducing herbicide use. However, this would require that the USFS and USFWS care for the nation's forests, as a foremost priority, and plan for the recovery of the Pacific fisher and the true restoration of its habitat. Instead, at least 20 USFS projects approved in the Biological Opinion involve new construction and/or maintenance of more than a hundred miles of roads, directly in opposition to the Pacific fisher's habitat needs, forest resilience, and the long-term health of the ecosystem.

Finally, it should be noted that Section 7(a)(1) of the ESA requires the Forest Service to “utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species.” The ESA requires that the USFWS jeopardy analysis must analyze the actions' impact on recovery, separate from analyzing its impact on survival, but there is nothing in the Biological Opinion to indicate either the USFS or USFWS are adhering to such an analysis.

In their failure to protect the fisher and its habitat and to plan for species recovery, the USFS and USFWS have prioritized logging and commercial extraction over the long-term health and wellness of wildlife and the land, forests, watersheds, animals and ancient trees entrusted in their care by the American people. The 200-year-old living trees that they are allowing to be logged cannot be easily recovered, if at all.

V. The Forest Service & USFWS Violations of the ESA And APA

Neither the Forest Service nor the USFWS properly account for the scientific information showing the presence of numerous fisher dens in these project areas. Consequently, the Forest Service's Programmatic Biological Assessment, as well as the USFWS' Programmatic Biological Opinion, are not based on the best available scientific information, do not offer rationally based conclusions regarding projects harm to fisher habitat, and thereby fail to ensure the protection of important fisher habitat in the project areas. The USFS and USFWS decisions and conclusions with respect to these projects' impacts to fishers thus violate the ESA, and are arbitrary and capricious under the APA.

1. The USFS and USFWS failed to perform an adequate analysis of baseline conditions;
2. The USFS and USFWS failed to use the best available science in considering the impacts of USFS actions on fishers;
3. The USFS and USFWS failed to adequately apply the interim scientific recommendations;
4. The USFS and USFWS failed to rationally conclude that the projects are likely to harm habitat, inhibit fisher recovery and jeopardize the continued existence of the fisher;
5. The USFS and USFWS failed to outline reasonable alternatives to the actions taken; and
6. The USFS analysis and USFWS jeopardy analysis failed to analyze the actions' impact on the fisher's recovery (separate from analyzing its impact on survival).

September 3, 2020



VI. Conclusion

For the above stated reasons, the U.S. Forest Service and USFWS have violated and remain in ongoing violation of Section 7 of the ESA, as well as the APA. If these violations of law are not cured within sixty days, we intend to file suit for declaratory and injunctive relief, as well as the costs of scientific analysis, research, writing, attorney and expert witness fees. The undersigned organizations prepared this notice letter based on good faith information and belief after a diligent investigation. If you believe that any of the foregoing is factually erroneous or inaccurate, please notify us promptly.

It is our practice to pursue negotiations whenever possible. In keeping with this policy, while the projects are halted to preserve and protect the Pacific fisher, we invite the Forest Service to contact us to discuss the issues raised in this notice letter.

Sincerely,

Deanna Wulff – Executive Director
Dr. Joseph Werne – Chief Scientist
Unite the Parks
P.O. Box 6947
Los Osos, CA 93412
(805) 242-6086
director@unitetheparks.org

Ara Marderosian – Executive Director
Sequoia ForestKeeper
P.O. Box 2134
Kernville, CA 93238
(760) 376-4434
ara@sequoiaforestkeeper.org

Chad Hanson, Ph.D. – Ecologist and Director
John Muir Project
P.O. Box 897
Big Bear City, CA 92314
(530) 273-9290
cthanson1@gmail.com

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MAPS

[Sierra National Forest Motor Vehicle Use Maps](#)

[Sequoia National Forest Motor Vehicle Use Maps](#)

APPENDICES

A Appendix: Rationales as Listed in the Programmatic Biological Opinion 08ESMF00-2020-F-2168 and 08ESMF00-2020-F-2168 Batch 1 Appendage to USFS Fisher PBO

A.1 Programmatic Biological Opinion 08ESMF00-2020-F-2168 Addendum Rationales for approving 35 projects (page 4)

The Service concurs that the 35 projects in Table 1 may affect, but are not likely to adversely affect the fisher because:

- (1) the projects will not decrease the quality or quantity of fisher habitat at a landscape scale;
- (2) the conservation measures detailed in the Programmatic Biological Opinion are designed to ensure that important habitat elements are maintained, and extensive suitable habitat will be available during and after projects are completed;
- (3) the projects will implement appropriate limited operating periods (LOP) in potential denning habitat during the denning season to avoid disturbance to female fishers and their kits; and
- (4) in the long-term, projects will be beneficial to fisher by increasing the resilience of habitat.

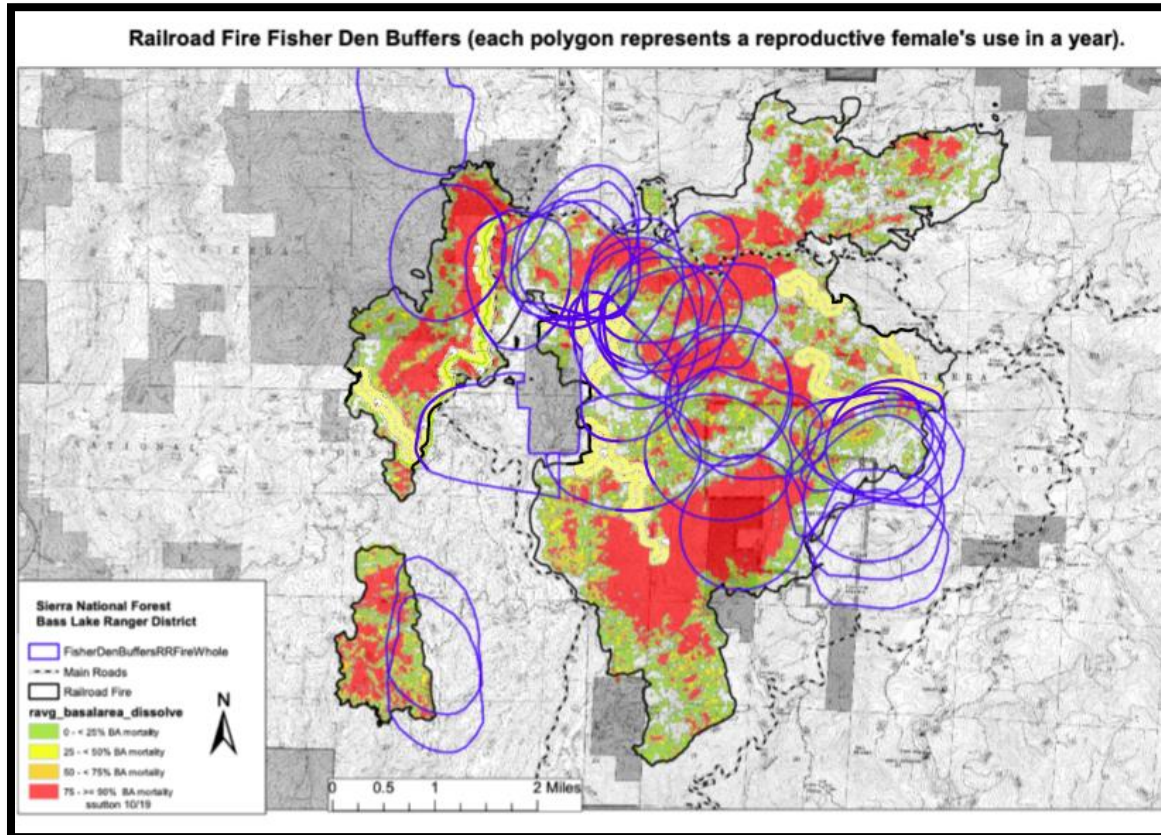
A.2 Programmatic Biological Opinion 08ESMF00-2020-F-2168 Addendum Rationales for approving 5 projects (page 7-8)

After reviewing the current status of the SSN DPS of the fisher, the environmental baseline for the action area, the effects of the five projects proposed for appendage, and the cumulative effects, it is the Service's biological opinion that these projects, as proposed, are not likely to jeopardize the continued existence of the SSN DPS of the fisher. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following:

- (1) The proposed projects will not decrease the quality or quantity of fisher habitat at a landscape scale;
- (2) Changes in habitat quality will be small and scattered, and in the long-term such activities will be beneficial to fisher by increased resilience of habitat;
- (3) While noise disturbance caused by the proposed activities will disrupt denning fishers, these effects will be rare, short-term (i.e., will only occur while activities are in close proximity to active dens), and only last that season;
- (4) The proposed projects encompass a small proportion of the fisher population and a small proportion of the available suitable habitat within the range of the fisher; and
- (5) Conservation measures implemented by USFS will ensure that direct mortality of individual fishers is unlikely to occur, and will maintain sufficient high-quality denning and foraging fisher habitat.

B Railroad Fire Fisher Den Buffers

We overlaid the Railroad fire project map with the map of the fisher den buffers in the area to count the existing fisher den buffers affected by the project, but we found the data points difficult to discern. The yellow lines show the project area; the purple circles show the fisher den buffers. The fisher den buffers within a 1/4-mile of the project count as affected by the project. There were 30 fisher den buffers detected in the Railroad fire area prior to the burn, according to the project documentation. By our accounting, there are approximately 26 fisher den buffers in the Railroad project area.



C Goat Hazard Sale Data

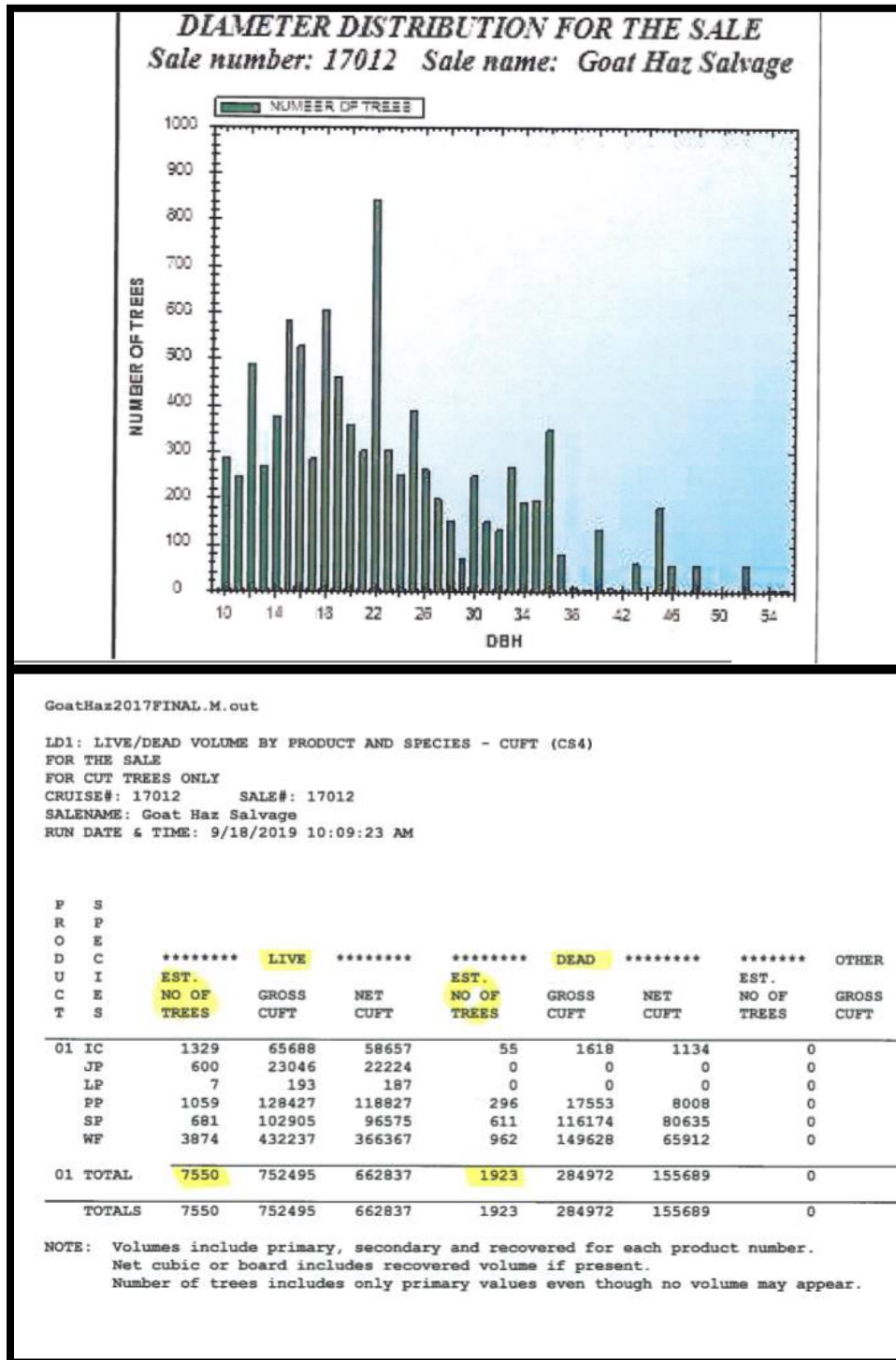


Figure 5: Goat Timber Sale Data