March 14, 2016

Russell Hays, Lassen National Forest Supervisor, and
Chris O'Brien, Public Services & Ecosystems Staff Officer,
Lassen National Forest
2550 Riverside Dr.
Susanville, CA 96130

Re: Comments on Lassen OSV Designation

Sent via email to:
comments-pacificsouthwest-lassen@fs.fed.us, cjobrien@fs.fed.us and
rdhaysp@fs.fed.us

Dear Supervisor Hays and Mr. O'Brien,

I am writing to submit the following comments for your consideration on the Lassen National Forest Draft Environmental Impact Statement (DEIS) for Over-Snow Vehicle (OSV) Designation. I am familiar with recent scientific studies and reports on the Pacific marten and the Sierra Nevada red fox. I have reviewed the DEIS and the Wildlife Report Including BA-BE for Terrestrial Wildlife Species. My comments pertain to the wildlife portions of the DEIS, particularly in regard to the two carnivores. These comments were developed under contract to Winter Wildlands Alliance and submitted on behalf of Winter Wildlands Alliance, Snowlands Network, The Wilderness Society, and the Center for Biological Diversity.

I am a professional wildlife biologist whose work has focused on public land management and wildlife conservation issues in the Sierra Nevada for the past 15 years. My curriculum vitae is enclosed for further information on my expertise. Based on my wildlife biology experience, the USFS has not yet thoroughly disclosed project impacts to two rare forest carnivores, the Sierra Nevada red fox and Pacific marten. And, the agency has not developed an alternative that avoids substantial negative impacts to wildlife.

1. **The DEIS and BE/BA Do Not Offer a Hard Look at Project Impacts to Imperiled Species, as Required by NEPA.**

The LNF OSV project has the potential for substantial impacts on Pacific marten and Sierra Nevada red fox. However, these impacts have not been adequately disclosed, as required by the National Environmental Policy Act ("NEPA").

NEPA dictates that the Forest Service take a "hard look" at the environmental consequences of a proposed action, including its direct, indirect, and cumulative effects. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 348 (1989); 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.16, 1508.7, 1508.8. The required hard look

encompasses effects that are "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8. To satisfy the "hard look" requirement, an EIS must rely on high quality information and ensure the scientific integrity of its analysis. See Native Ecosystems Council v. U.S. Forest Serv., 418 F.3d 953, 964 (9th Cir. 2005).

Marten are inherently vulnerable to extinction of their small body size, low reproductive rates, and association with old forest habitat (Buskirk and Powell 1994; Buskirk and Ruggiero 1994; USDA Forest Service 2001b). They are highly sensitive to habitat disturbance because of their dependence on forest cover, which is reduced by roads and logging (Lyon et al. 1994). Recent evidence suggests marten may be poorly distributed in the northern Sierra Nevada and southern Cascades compared to the early 1900s (Zielinski et al. 2005a; Slauson et al. 2006). The OSV Use project area is identified as where marten may be most vulnerable to population isolation and declines (Zielinski et al. 2005b; Spencer and Rustigan-Ramsos 2012). Management for this species should focus on protecting high quality habitat and improving conditions for marten survival.

The Sierra Nevada red fox has been suspected of declining for decades (Schempf and White 1977; Perrine 2010). Their range has contracted in recent decades (Sacks et al. 2010). The Lassen area subpopulation is estimated to have an effective population size of only 21 individuals, the IUCN definition of a critically endangered population (Sacks et al. 2010); the subpopulation "comprise a small, isolated remnant population that has lost much of its genetic diversity." (Perrine 2010). The small, isolated nature of this subpopulation is considered a "moderate threat" to the Cascades DPS by the USFWS (2015a). Further, recreation is identified as a risk factor to this fox because of its intolerance of humans:

> "The Cascade and Sierra Nevada red fox populations are at the greatest risk of extinction; both appear to be small and in decline. The Sierra Nevada red fox has been considered extremely sensitive to the presence of humans (Grinnell et al. 1937) so that increased recreation within it's range could be problematic." (Buskirk and Zielinski 2003, pg. 210).

The OSV DEIS does not fully consider or quantify the impacts of the project given these species vulnerability to human disturbance, especially on the Lassen NF. In addition, key life history characteristics are not addressed in the DEIS or BA/BA, as described in more detail below.

I want to remind the USFS of its obligation to consider all scientific information in the adverse effects analysis. If the information is incomplete or unavailable, the Forest Service must make clear that such information is lacking. 40 C.F.R. § 1502.22. If the information "is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the [EIS]." Id. § 1502.22(a). If the information cannot be obtained due

to exorbitant cost or unknown means of obtaining it, the agency must include additional information in the EIS, including statements that the information is incomplete or unavailable and the relevance of the information, a summary of existing credible scientific evidence, and the agency's evaluation of reasonably foreseeable significant adverse impacts "based on theoretical approaches or research methods generally accepted in the scientific community." Id. § 1502.22(b).

a. The Effects Analysis is Incomplete and Disregards OSV Impacts to Marten Riparian, Foraging, Resting and Wintering Habitat; and Disregards the Importance of Sierra Nevada Red Fox Winter Habitat.

The Lassen NF proposes to open 947,120 acres of National Forest to OSV use, thereby exposing between 112,000 to 134,000 acres of high capability marten reproductive habitat to high and moderate OSV use (Table 17, BE/BA p.119-120). The DEIS and BE/BA only compare impacts to marten "reproductive habitat" under different alternatives (BE-BA Table 17, p.119; DEIS Table 67, p. 191). I was surprised to find only marten breeding habitat considered in the DEIS and BA/BE (p.116; DEIS p.188). All marten habitat on the forest is lumped and examined in the same coarse analysis, however, the BE acknowledges that "riparian areas…are important for [marten] foraging." (p.111). Indeed, Spencer et al. (1983) report marten "strongly prefer" riparian logepole associations in the central Sierra Nevada. Nevertheless, the USFS does not discuss any potential impacts from the project on riparian areas, foraging habitat, or foraging success under high levels of OSV use. I am left to wonder how much riparian or foraging habitat the project impacts, and in what way.

It is unclear why there is no project impact analysis for marten foraging habitat or riparian habitat. The Lassen OSV Use project will certainly affect these areas. Further, the DEIS and BE/BA exclusive focus on marten breeding habitat and omits important wintertime impacts that I expect to occur. OSV use is likely to affect dispersing or non-breeding marten during winter, yet this possibility is not discussed.[1] As a result, the DEIS and BE/BA poses a significantly increased risk and uncertainty by relying on generalized habitat data to define marten habitat and total acres affected by OSV travel, without regard to different types of habitat, other than reproductive (eg. foraging and wintering).

Project impacts on winter habitat for SN red fox are not considered. All the tables and discussion in the BE are focused on "high reproductive habitat" (BE/BA table on p. 136). Cleve et al. (2011) developed a habitat model to predict SN red fox occurrence for this area, and their habitat model should be used instead.[1] In this way

[1] The USFS is obligated under 40 C.F.R. § 1502.22 to consider all scientific information in the adverse effects analysis.

the USFS did not take a hard look at impacts to SN red fox winter habitat, resting habitat, or foraging habitat, similar to marten in this section.

b. The Effects Analysis Does Not Adequately Address Marten Vulnerability to Predation, or OSV Facilitation of Predators into Deep Snow Habitat.

Because of their small body size, marten are particularly vulnerable to predation (Slauson and Moriarty 2010; Witmer et al. 1998) and stochastic extinction (Buskirk and Ruggiero 1994). Marten appear to seek deep snow during winter time, despite their lack of adaptations to cold temperatures, in order to isolate themselves from humans and to escape predators such as bobcat, fisher, and even coyote that are unable to cross deep snow (Krohn et al. 1997; Buskirk and Ruggiero 1994). Indeed, several studies have found greater predation rates on marten in the absence of deep snow (Bull and Heater 2001; Moriarty 2014). Coyote, a known predator of marten and a habitat generalist, have only two limiting factors: deep, soft snow and wolves (Buskirk and Zielinski 2003). Predictably, several studies have demonstrated that snowmobiles allow coyotes access to areas where deep snow-adapted carnivores go to take refuge from predators (Brunnell et al. 2006; Kolbe et al. 2007). Grooming and cross-country OSV travel disrupts seasonal habitat partitioning among carnivores by facilitating generalists, such as coyote, into deep snow habitat where they would otherwise not be able to intrude (Kolbe et al. 2007). This, in turn, has population level consequences for imperiled species (Wengert et al. 2014), such as marten. The USFS must properly evaluate and minimize the impact of OSV use for marten, their competitors, and their predators. [1]

Besides coyote, bobcat are also emerging as an especially deadly predator to marten. Bobcat were the main marten predator in two recent telemetry studies, one of which occurred on the Lassen NF (Bull and Heater 2001; Moriarty 2014). And, bobcat have killed so many female fisher (a close relative of marten) in the Southern Sierra adaptive management project that researchers are concerned about population-level impacts from bobcat (Wengert et al. 2014). There is no mention of bobcat in the DEIS or BE/BA effects analysis, yet predation likely poses population-level risk to marten in the project area, particularly in combination with OSV facilitation of predators to winter range.

Yet another potential impact of OSV disturbance to marten is that OSVs could flush marten from resting areas and make them more vulnerable to predation. This impact is missing from the impacts analysis, except mention in a table that lists all project impacts to marten, including: "altered movement due to OSV use" (BA/BE p. 117). [1] The EIS should more deeply explore the consequences to marten of "altered movement", including what proportion of total impact would involve "altered movement." The EIS should also describe how each impact listed contributes to the determination. The BE/BA does not provide separate in depth discussion of each of the project impacts, as required by NEPA. Rather, all impacts are lumped together on the vast majority of the forest. This is not very informative. The USFS must first

acknowledge the enormous risk OSVs pose to marten by exposing them to predators during wintertime, and acknowledge that OSVs facilitate predators in deep snow, and at least specify where and how this would occur.

Instead, the OSV Use DEIS hardly mentions marten vulnerability to predation in the list of threats (p188). The Project's BE/BA mentions risk of OSV-facilitated coyote predation on lynx (p.116), but only addresses the threat to marten in bullet form, and this impact is not quantified, discussed, or compared between alternatives, or compared between trails, staging areas, etc.: "Other behavioral and habitat modification includes…creation of a vector pathway for competitors or predators." (BE/BA p.118). This brief mention of predation issues for marten is inadequate to inform the public or decision maker. Again, the question arises- What are factors affecting this impact? What is the range of severity in OSV impacts, and where would they occur in relation to important areas on the forest for marten (eg. Humboldt Peak, Swain Mountain areas, and surrounding Lassen NP (maps in section 1g and 2a, below).

c. The Effects Analysis Does Not Address OSV Potential to Increase Marten Vulnerability Exposure.

The BE/BA and DEIS do not acknowledge the importance of marten rest areas during winter, or how OSV travel could interfere with marten resting, cover, and thermoregulation requirements. In winter, marten expand their home range, yet habitat type is more restricted (Rustigan-Ramos and Spencer 2012). Their small body size and moderately insulating fur leads to high rates of heat loss while resting (Powell et al. 2003). Indeed, Bull and Heater (2001) recorded three marten in a single study that died of exposure. To reduce heat loss during winter, marten rest under the snow and enter shallow torpor daily (Powell et al. 2003). In addition, they thermoregulate behaviorally— changing body positions relative to snow surface and forest types to minimize heat loss (Ibid). This is likely why subnivean rest sites are rarely used more than once (Wilbert et al. 2000). Therefore, it is important to protect rest areas from disturbance in the winter, because depending on snow conditions, different features allow subnivean access to a diversity of resting and hunting areas (Hargis and McCullough 1984; Wilbert et al. 2000; Powell et al. 2003). The OSV Use project ignores winter habitat needs of marten, and how OSV use is likely to interfere with their need to thermoregulate and take cover from predators during foraging. [1] Exposing 81-91% of marten habitat to OSV disturbance (Table 66, pg. 191 DEIS) is entirely unacceptable. All of the alternatives should minimize OSV impacts to marten and other wildlife species, as required.

d. The Project Underestimates Impacts of Vehicle Disturbance on Pacific Marten.

Marten are solitary and territorial, and generally avoid human encounters (Slauson et al. 2006). Where they persist across their range, marten show a trend toward areas of lower human influence (Laliberte and Ripple 2004). For example, in the Mt.

Lassen area, marten showed a preference to areas without vehicle traffic. Occupied areas had significantly fewer roads ($p<0.001$) than sites without marten detections; road density was lower in areas with higher density of marten (Kirk 2007). The BE/BA did not consider this research. To the contrary, the OSV Use BE/BA makes the leap that because marten occur in the project area, they are likely habituated to OSVs (p.118-19). There is no evidence to support this claim. The BE/BA incorrectly cited Zielinski et al. (2008) as the basis for this statement; however, the habituation hypothesis was one of several untested explanations for their results offered in the discussion section this article. Habituation was not what the Zielinski paper was examining in their research. On the other hand, the scientific research from the Lassen area, cited above, did conduct a statistical analysis of this hypothesis, and found the opposite, that it appears marten in the Mt. Lassen area are distributing themselves across the forest in order to avoid contact with vehicles and humans. There are significant gaps in the scientific research drawn upon to make this impact analysis. [1]

In the published literature, the impact of roads on marten is most significant at the home range or landscape scale. Interpreting presence/absence data to extrapolate habituation to roads or OSV disturbance is too simplistic. For example, marten avoidance of roads is measurable in landscapes with less human disturbance and road avoidance is more pronounced in areas of intact old forest; by comparison, in landscapes with logging, marten presence/ absence data may not show roads as a deterrent, but roads are likely to be a cumulative factor (Chapin 1998; Chevau et al. 2013).

There is another assumption about marten and OSVs that was troubling in the OSV project BE/BA. The determination that martens tend to avoid the open areas preferred by OSV users, contradicts the current management reality (DEIS Alternative 1, p.vi) illustrated in the BE/BA (table on p. 117) in which 91% of high capability marten reproductive habitat is open to OSV use. The DEIS repeats a similar assumption that "martens tend to avoid open areas preferred by OSV users, decreasing the potential for disturbance or collision." (p.190). However, there are between 299,061 to 264,734 acres of high-capability marten habitat are open to OSV use depending on the alternative (BE/BA p.120). The assumption in the BE that marten are able to avoid areas preferred by OSVs does not match the reality of pervasive OSV use across the forest demonstrated in the project documents above. In fact, marten and other wildlife species have almost nowhere to go on the forest to avoid OSV disturbance under current management, or any other alternative proposed in the DEIS. An alternative that substantially reduces disturbance to wildlife has yet to be developed.

e. The Project Underestimates Impacts of Vehicle Disturbance on Sierra Nevada Red Fox.

Similar to the Pacific marten issues described above, the USFS estimates between 59-66% of SN red fox reproductive habitat will be open to OSV disturbance under all

alternatives (DEIS p.214). Yet, SN red fox is "extremely sensitive to human disturbance" (Buskirk and Zielinski 2003). Of further concern is that the USFS dismisses OSV impacts to SN red fox by citing the USFWS Species Report estimation that the impact of vehicle collisions on SN red fox will be minor, resulting in a low-level impact to the subspecies (BE/BA p.138). The USFWS determination that vehicle strikes do not pose a high impact to the subspecies does not dismiss vehicle impacts at the project-level. An estimated "small number of individuals will be struck by vehicles" in the project area (Ibid) may indeed have population-level impacts to Sierra Nevada red fox leading to a trend toward federal listing, because the subpopulation is so small (Sacks et al. 2010).

I noticed that the DEIS and BE/BA weigh noise disturbance and other potential project impacts in terms of a threat to the Sierra Nevada red fox. A threat assessment is the standard by which the USFWS decides if listing a species under the ESA is warranted. However, this is not the standard the USFS is directed to gauge project impacts to protected species. The USFS should identify impacts to individuals, populations, and species in a different way. The impact of vehicle strikes is not discussed in the context of the OSV project (other than as a table), and therefore the USFS is likely to underestimate project impacts to SN red fox. This goes for other impacts as well, such as deep snow compaction, facilitation of coyote into SN red fox winter habitat, noise disturbance, etc. The "threat" standard per USFWS, is confused throughout the SN red fox effects analysis and should be corrected.

The DEIS dismisses noise disturbance concerns for the fox because even where high OSV use overlaps with SN fox sighting areas because "no OSV related incidents have been reported." (DEIS p.211). And that "the mere location of SN red fox sightings in these areas suggest that the subpopulation adjusts to the noise involved." (Ibid). This is a pitfall for the USFS effects analysis. Simply stating that there is no evidence of an impact does not mean it doesn't exist. The 2010 Sierra Nevada red fox Conservation Assessment addressed this very pitfall:

> "…the general lack of basic ecological information for this species makes the identification and analysis of threats a largely speculative exercise, and ultimately poses a risk to the effective management of the Sierra Nevada red fox and its habitat." (Perrine 2010, p.29).

The Sierra Nevada red fox is a poorly studied species, which warrants managers to exercise extra caution, not less. The lack of evidence puts a greater burden on the project effects analysis, not less.

Despite the determination in the BE/BA that "Noise disturbance is not a key threat to the [SN red fox] species." (p.142), it appears noise disturbance in the project area may be both pervasive and intense, with 34% of high quality fox breeding habitat exposed to high or moderate levels of OSV noise disturbance (BE/BA, Table 24 p.140). The USFS defines OSV use (DEIS p. 25) as: High- areas within 0.5 miles of

staging areas, groomed trails, or meadows within 0.5 mi. of groomed trail; Moderate- areas within 0.5 mi of marked trails, areas between 0.5 to 1.5 mi of groomed trails, meadows >10 acres, 0.5-1.5 mi. from OSV trail; Low-to-No Use- areas >1.5 mi. from groomed trail, areas > 0.5mi from areas where OSVs are prohibited, below 3,500', forested areas with >20% slope, meadows >30 acres that are 1.5 mi from an OSV trail. An estimated 30 OSVs use each trailhead for about 4 hours each weekend, and 7 each weekday. The DEIS does not explain how that this level of OSV use in such a large area does not have considerable impacts to SN red fox.

Sierra Nevada red fox expert Dr. Sacks recently stated in his public lecture: "Recreation may not be a cause of Sierra Nevada red fox decline, but is predicted to be a factor limiting recovery." (Dr. B.D. Sacks lecture to California Department of Fish and Wildlife, April 11, 2014[2]). The USFS must consider site-specific information such as the amount and intensity of OSV disturbance in SN red fox habitat within the context of the critically endangered Southern Cascades DPS. The USFS must develop an alternative that substantially reduces disturbance and harassment to this rare and declining carnivore.

Of further concern, the DEIS states that SN red fox may be habituated to OSVs (p. 213). However, mere presence of an animal near a disturbance does not indicate habituation, or lack of serious impacts to wildlife. For example, population level stress may be more difficult to measure, or may remain hidden until conditions get dire (ie. sex ratio of an entire population has shifted). Chronically high glucocorticoid hormone levels (elevated for more than a few days) can impact an animal's growth, disease resistance and reproductive ability (Wingfield and Ramenofsky 1999). Human disturbance from ecotourism, for example, caused elevated stress hormones in birds that led to reproductive failure (Fowler 1999). This type of stress will certainly impact animals at the population level, but is evident at the individual-scale before population-scale impacts are detectable. In a small population, individual-level impacts can quickly have population-level impacts. [1]

f. The Forest Service Fails to Take a Hard Look at OSV Reduction and Elimination of Marten or Sierra Nevada Red Fox Deep Snow Habitat.

Deep snow is an important component of winter habitat for the Sierra Nevada red fox (Perrine 2010; USFWS 2015a). The fox seeks deep snow conditions during wintertime as a survival strategy. In the absence of deep snow habitat, coyote, dogs, disease and other threats are likely to add to the decline of Sierra Nevada red fox populations (Ibid). The DEIS and BE/BA does not consider the significance of deep snow habitat to SN red fox, nor does it address OSV impacts to this habitat. [1] The BE/BA states "Suitable Sierra Nevada red fox habitat would not be physically

[2] https://www.wildlife.ca.gov/Conservation/Lectures/Archive

modified and connectivity would not be altered by OSV use…" (p.137 and 141). This is claim is unfounded. The Sierra Nevada red fox seeks high-elevations because of deep snow and prey availability during winter (Perrine 2005; USFWS 2015a). In the only existing study describing winter rest areas for the fox, Perrine (2005) observes the fox's use of deep snow as daytime cover. The OSV Use project does not describe how OSVs, trail grooming, cross-country OSV travel, and other related activity would compact deep snow, thereby modifying the habitat by reducing or eliminating its availability. In addition, the project does not carefully consider or quantify the potential for the OSV Use project to facilitate coyote incursions into deep snow habitat; however, current research points to this emerging issue (Perrine 2005; Kolbe et al. 2007; USFWS 2015a). The elimination of deep snow habitat from OSV compaction should be carefully quantified and located spatially.

Similarly, the critical importance of deep snow habitat for marten is described in the previous sections (Krohn et al. 1997; Buskirk and Ruggiero 1994), but the potential for the project to reduce or eliminate this habitat is not recognized in the project BE/BA: "Habitat would not be physically modified by OSV use…under any of the alternatives." (p.121). This is incorrect and must be corrected to ensure a hard look at project impacts to marten and red fox, and to ensure the viability of these species.

In sum, the OSV Use project documents do not provide adequate information to determine the impacts of this project on Pacific marten or Sierra Nevada red fox. Thus, the Forest Service's analysis of impacts is incomplete uncertain and poses a serious risk to the marten and Sierra Nevada red fox populations in the project area. Based on the most recent USFWS 12-month finding for SN red fox, it is my opinion that the species is struggling and that further stressors in core areas may threaten species persistence or recovery. Similarly, based on the lack of high-quality breeding habitat or adequate movement corridors for marten in the Northern Sierra (Zielinski 2005, Rustigan-Ramsos and Spencer 2012), and in conjunction with recent timber harvest projects like Creeks II and North 49, which have reduced breeding habitat quality and survival for martens in the project area (Moriarty 2014), marten are struggling on the Lassen NF.[1] The USFS fails to consider how further stressors in core areas such as from the OSV Use project may threaten species persistence and recovery in the planning area.

g. The USFS Reliance on USFWS 12-Month Finding for Listing the Sierra Nevada Red Fox on the Endangered Species Act is Entirely Inadequate for a Project Impact Analysis.

The USFS relies almost exclusively on excerpts from the USFWS 12-month finding on SN red fox (USFWS 2015b) to serve as a project impact analysis. Simply reproducing several pages from the 12-month finding does not constitute a hard look under NEPA, especially for an imperiled species such as SN red fox. This species deserves a much more honest and detailed consideration in the design of this project.

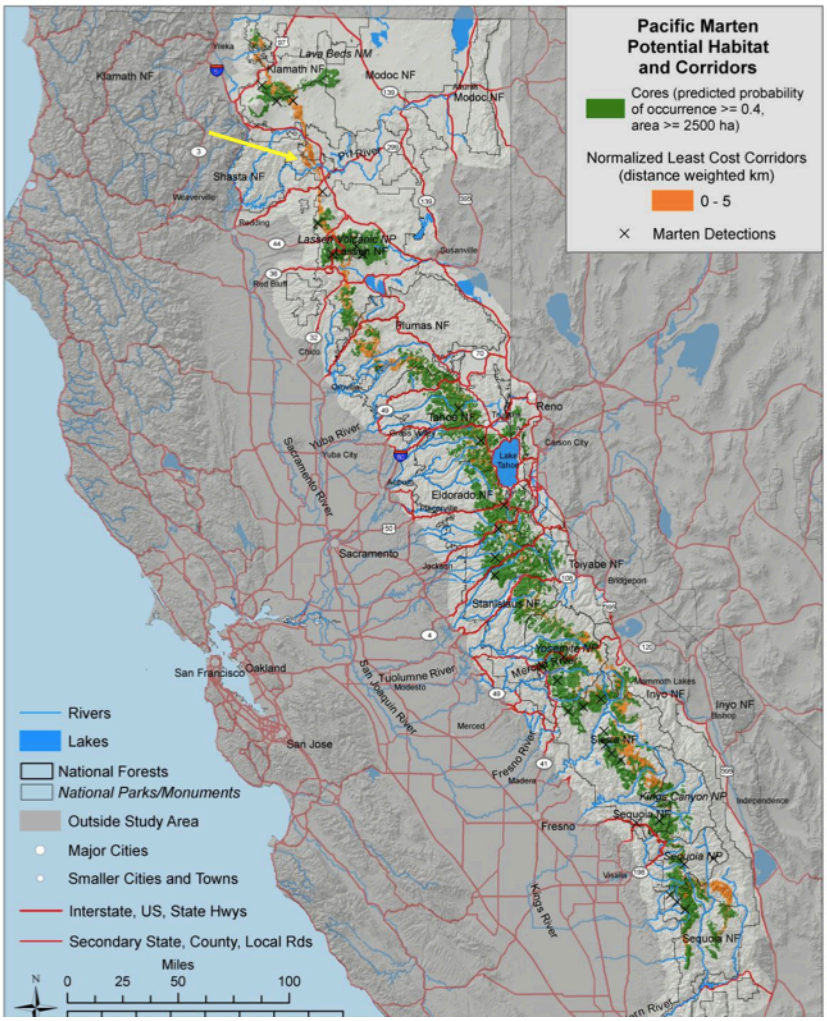
In the OSV Use BE/BA, six out of 10 pages of the SN red fox section are directly excerpted from the Federal Register (USFWS 2015b). Reliance on this source for verbatim species account information, such as identifying species range or prey, is somewhat understandable. On the other hand, simply providing verbiage from the 12-month finding to serve as an effects analysis on a USFS project encompassing between 960,000-970,000 acres is totally inadequate, and not scientifically or legally viable. The NEPA requires a site-specific, project-specific, hard look at project impacts to protected species. After pages of verbatim USFWS text, the OSV project's determination statement justifies the finding 'may affect, not likely to lead to a loss of viability or a trend toward federal listing' based on the statement that "Noise-based disturbance is not a key threat to the species.", and, "The Service [USFWS] has determined that… vehicle collisions do not rise to the level of a threat currently nor are they likely to increase into the future." I am concerned that the USFS understand that simply tiering on an ESA petition finding does not equate an effects analysis for subsequent federal actions at the project scale under NEPA.

h. The OSV Project Area's Significance to Marten Conservation is Underestimated.

Forest carnivores, such as marten and fisher, tend to be wilderness species and are largely intolerant of human activities. Their low reproductive rates and large spatial requirements, by mammalian standards, make them more vulnerable to extirpation and extinction (Ruggerio et al. 1994). Marten in particular are threatened by population declines across the West (Buskirk and Powell 1994; Schneider and Yodzis 1994). The DEIS did not address concern among scientists for marten habitat connectivity on the Lassen NF. Spencer and Rustigian-Romsos (2012) modeled potential habitat and movement corridors in the Cascade and Sierra Nevada regions (Figure 4 below), they recommend:

> "In the northern 1/3 of the study area, management should focus on protecting habitat quality within and around the perimeters of the core populations (Mount Shasta-Medicine Lake region; Mount Lassen-Swain Mountain-Thousand Lakes Wilderness region) and especially in and between the smaller cores, stepping stones, and connectivity areas between these regions, and between Mount Lassen and the more contiguous habitat core to the south (i.e., on the west slopes of the Plumas and Lassen National Forests)." (Spencer and Rustigian-Romsos 2012, p.29)

> "… marten conservation should focus on maintaining or improving potential dispersal corridors between suitable habitat areas in the northern forest areas (Plumas, Lassen, Klamath, Shasta, and Modoc National Forests) while minimizing habitat fragmentation in suitable habitats throughout the study area." (Spencer and Rustigian-Romsos 2012, p.9).



From Spencer and Rustigian-Romsos (2012):

> Figure 4. Marten core areas and normalized 5-km least-cost corridors. Note the long and constrained corridor between core areas on the Klamath and Lassen National Forests crossing the Pit River Valley (yellow arrow), which may represent a dispersal barrier or strong filter.

As pictured above, OSV Use project area includes several areas identified by marten experts as key to marten persistence in the region. [1] OSV trails, staging areas, play areas and cross-country travel should be carefully examined separately in these key areas so that impacts can be minimized. In an area like Humboldt Peak and the front country north, west, and south of Lassen NP where marten populations are struggling the DEIS fails to recognize or protect these key areas for marten conservation.

i. Impacts to the Lassen NF Carnivore Network are Not Disclosed.

The USFS should to examine impacts to Pacific marten and Sierra Nevada red fox at multiple scales- at the individual, home range, and population scale in order to properly disclose impacts to these species by the OSV project. At the landscape scale, the DEIS did not consider impacts to the Lassen NF carnivore network, as required by NEPA. The forest carnivore ("furbearer") network was set aside to protect important marten and fisher habitat and should be protected from disturbance. Although the forest carnivore network is no longer a land allocation under the 2004 ROD, the ecological and habitat values that were recognized by the Forest Service in designating the network must still be recognized and analyzed in the DEIS.

According to the forest plan, one purpose for establishing the network was "to provide breeding areas and travel corridors to facilitate movement of individuals and genetic exchange throughout the length of the Forest." (Lassen National Forest 1992a, p. T-1). Despite this concern, the OSV Use DEIS fails to disclose or analyze the impacts to the forest carnivore network and its habitat values, contrary to NEPA. The NFMA also requires that all projects are consistent with the forest plans: all "plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans." 16 U.S.C. § 1604(i).

2. The Information Presented in the DEIS Suggests This Project May Have Substantial Impacts and Threaten the Viability of Wildlife Species.

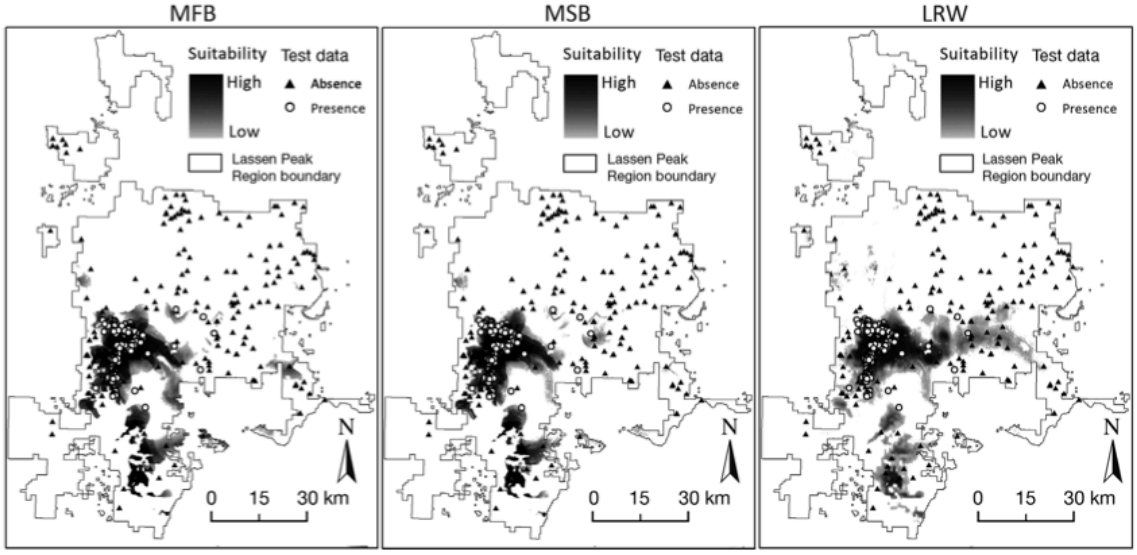
The National Forest Management Act (NFMA) directs the Forest Service to "provide for diversity of plant and animal communities" in the planning process. 16 USC 1604(g)(3)(B). The Forest Service's regulations that implement this statutory mandate require that "[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species." 36 CFR 219.19. "For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area." (Ibid). With respect to Forest Service designated sensitive species - which includes the Pacific marten and Sierra Nevada red fox -- the agency is further required "to insure their viability and to preclude trends toward endangerment that would result in the need for Federal listing." (Forest Service Manual 2672.1.) Through these steps in this process, NFMA imposes substantive constraints on the management of forest lands to insure biological diversity. See Neighbors of Cuddy Mountain v. United States Forest Service, 137 F.3d 1372, 1379- 1380 (9th Cir. 1998).

The Lassen NF OSV project DEIS has the potential for substantial impacts on wildlife species, thereby threatening their viability. The OSV Use DEIS fails to consider the overall effect of the project on the Sierra Nevada red fox and Pacific marten. As discussed below, the Sierra Nevada red fox is in a critical state, and to comply with

NFMA's viability and diversity protection requirements, the Forest Service must avoid any possibility of leading to a trend toward federal listing of the Southern Cascades sub-population. Based on the information that is presented in the DEIS, it appears that Alternatives 1-4 have the potential to harm and threaten the viability and distribution of the Sierra Nevada red fox, as well as Pacific marten.

a. The Forest Service Cannot Support a Finding that OSV Use in the Project Area Will Not Lead Toward a Trend Toward Federal Listing the Sierra Nevada Red Fox or Pacific Marten.

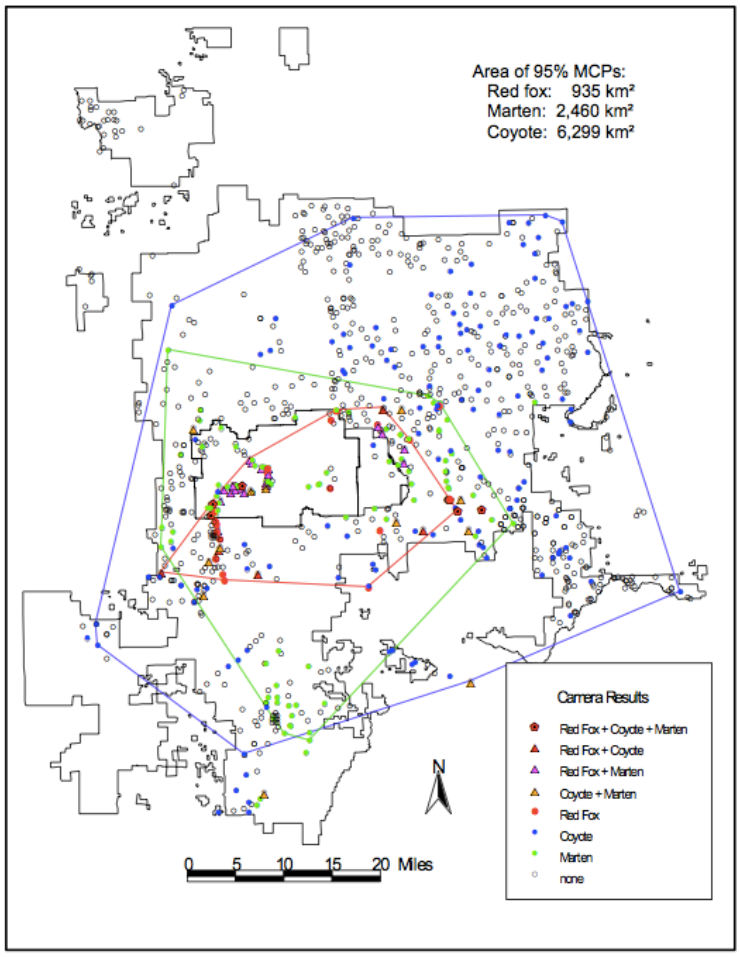
The OHV project BE/BA states the OSV Use Project is "not likely to lead to a loss of viability or a trend toward federal listing" for Sierra Nevada red fox (p.141). The Forest Service has not considered necessary information on distribution of individual Sierra Nevada red fox, their Lassen population, or suitable habitat to make that determination. In particular, the Forest Service does not discuss the locations of current home ranges of Sierra Nevada red fox in the project area even though location information is available (Perrine 2005; Cleve et al. 2010). As shown in the figures below, Sierra Nevada red fox are documented in the areas of Morgan Summit, and areas surrounding Swain Mountain, between Lassen National Park and Highway 44; and also the Humbug Summit area, where dispersing fox was recorded on camera in 2013 (USFWS 2015a). I am concerned with how many popular OSV trails and high levels of cross-country travel are proposed in these areas.



From Cleve et al. 2011:

> Figure 6. *Vulpes vulpes necator*. Ensemble habitat suitability model for Sierra Nevada red fox, based on spatially-weighted logistic regression (LRW) and Maxent with subset back- ground (MSB) models.

Cleve et al. (2011) mapped suitable SN red fox habitat in the Lassen area. They used two kinds of Maxent habitat models and a linear regression habitat model. They tested model accuracy using occurrence data from Perrine (2005), as well as historic range maps. All three models were similar in their ability to identify occupied habitat on the Lassen NF, between 86-91%, but the LRW best predicted the historic range of the SN red fox (Ibid), demonstrating its utility in predicting suitable habitat. Both occurrence data and the LRW model should inform the OSV project analysis. [1]



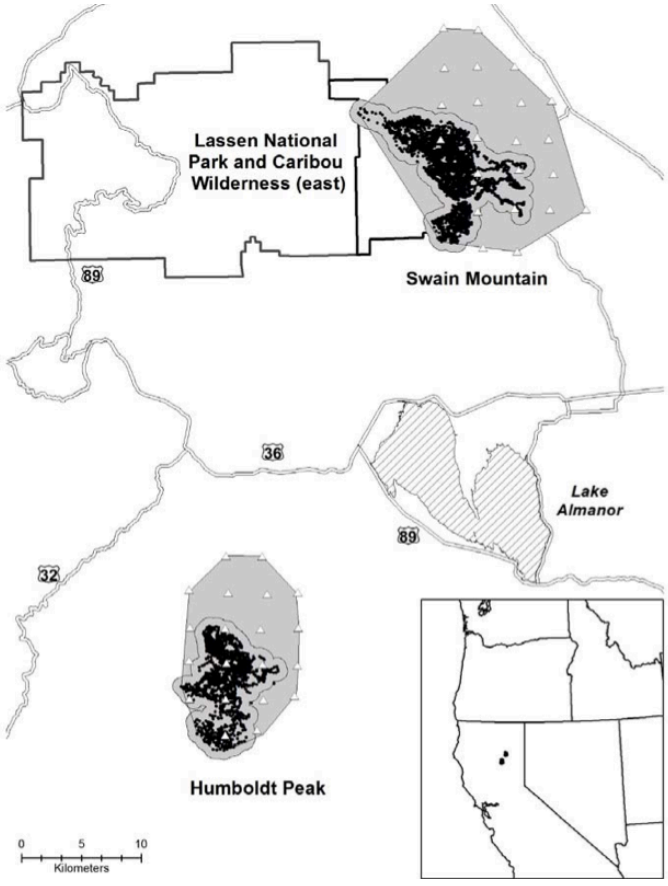
From Perrine (2005):

> Figure 10: Camera sampling in the Lassen Peak region, 1992-2002 (n = 998). 95% minimum convex polygons delimit detection areas for red fox (red), marten (green) and coyote (blue).

The LNF OSV Use project proposes high and moderate levels of disturbance across approximately 34% of the SN red fox "high capability" reproductive habitat in the project area (DEIS p.214). It is unclear how much of the Southern Cascades DPS is impacted by the proposed alternatives, but project impacts to the scale of the DPS (not project area) must be conducted to address viability concerns.

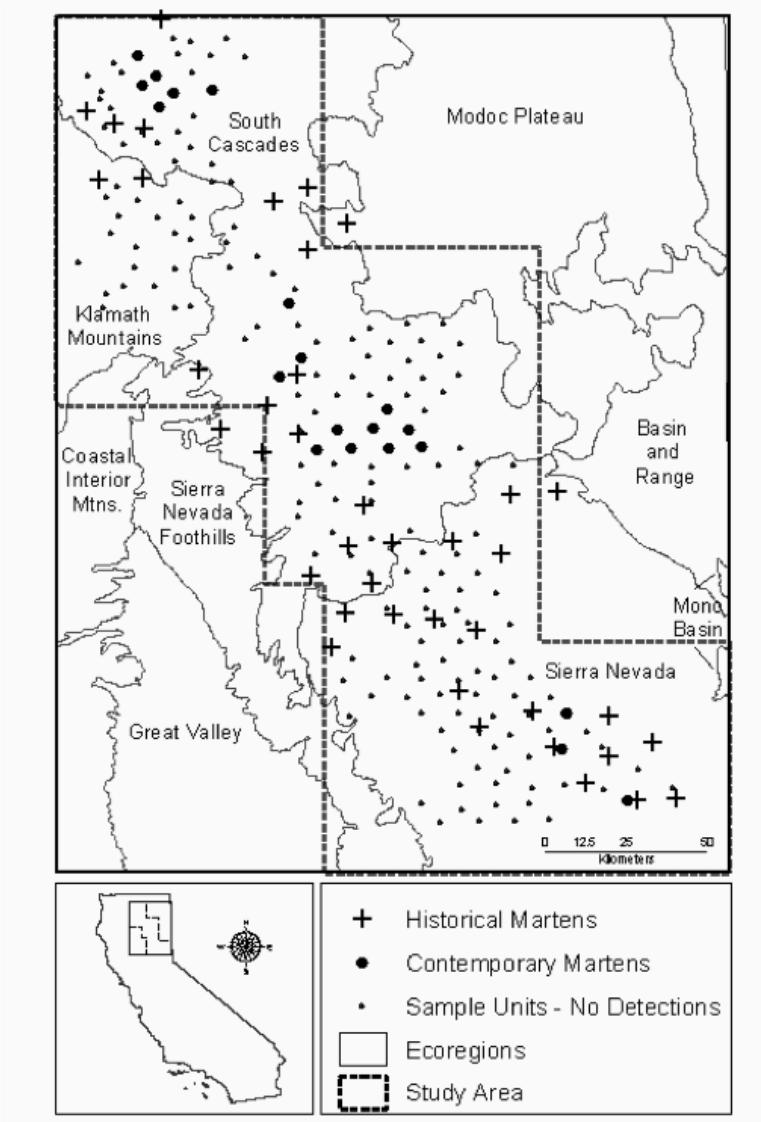
Thus, the DEIS does not analyze the effects of the project – under any of the alternatives – on individual home ranges, or on the Southern Cascades DPS of Sierra Nevada red fox in the project area. Unfortunately any impact on Sierra Nevada red fox in the Lassen area, with the effective population hovering around 21 individuals (Sacks et al. 2010), may threaten viability of the species. Project impacts must be considered in light of this imperiled status; and, alternatives that minimize impacts to the species must be developed.

Similarly, marten telemetry studies (Figure 7 from Kirk 2007; Figure 3.1 from Moriarty 2014 below) were used to delineate areas of importance to individuals and populations of marten in the project area. As discussed above, the Lassen OSV project has the potential to interfere with important movement corridors linking Pacific marten populations on the Lassen NF with those on the Plumas NF. Furthermore, the project threatens to disturb or displace marten in their core winter range. The project impacts in specific areas where marten are known to occur (see maps below), and areas identified by marten experts as key to marten persistence in the area, are not considered in the project effects analysis, contrary to NEPA and NFMA.[1]



From Moriarty (2014):

Figure 3.1. Our study occurred in two independent sites (Humboldt Peak, Swain Mountain) within Lassen National Forest, California. Here, we display the study area used for the compositional analysis (grey). White triangles represent trapping locations and filled circles include Pacific marten locations.



From Kirk (2007):

Figure 7. Map of historic marten detections (1920-1930 = Grinnell et al. 1937) and contemporary marten detections (1999-2002 = this study) in northeastern California.

b. The DEIS Does Not Acknowledge that Sierra Nevada Red Fox in the OSV Project Area are Already in a Precarious State Due to

Inbreeding Depression, Small Population Size, Coyote Range Expansion and Climate Change.

Climate change effects must be integrated into the NEPA analysis as part of the environmental baseline. Agencies are required under NEPA to "describe the environment of the areas to be affected or created by the alternatives under consideration." 40 C.F.R. § 1502.15. The affected environment sets the "baseline" for the impacts analysis and comparison of alternatives. As the Ninth Circuit has held, "without establishing the baseline conditions . . . there is simply no way to determine what effect the proposed [action] will have on the environment and, consequently, no way to comply with NEPA." Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988). Excluding climate change effects from the environmental baseline ignores the reality that the impacts of proposed actions must be evaluated based on the already deteriorating, climate-impacted state of the resources, ecosystems, human communities, and structures that will be affected. Accordingly, existing and reasonably foreseeable climate change impacts must be included as part of the affected environment, assessed as part of the agency's hard look at impacts, and integrated into *each* of the alternatives, including the no action alternative.

The Sierra Nevada red fox in California have undergone substantial declines recently, resulting in a population bottleneck and low genetic diversity (Sacks et al. 2010; USFWS 2015a). They have a restricted range and their small body size and large home ranges suggests the species is persisting in challenging conditions. In addition, their typical prey may have been displaced from the project area (Perrine 2005). The Lassen area effective population is only 21 individual fox, and these "critically low numbers" coincide with increases in coyote abundance in the state (Sacks et al. 2010). The DEIS and BE/BA significantly understates the precarious status of Sierra Nevada red fox in the project area.

In addition to the threats the Southern Cascades Sierra Nevada red fox subpopulation faces (see page 2), coyote are also a major concern. The only study on the Lassen area SN red fox found that coyote restrict the fox at mid-elevations in otherwise suitable habitat (Perrine 2010). This is acknowledged in the BE/BA, but not considered in conjunction with the proposed project. The USFS concludes that "the Service [USFWS] has determined that predation does not rise to the level of a threat currently nor is it likely to increase into the future." BE/BA (p.139). However, the situation is more complicated with coyote and SF red fox. The USFWS states:

> "For coyotes, predation and competition have an overall medium level impact to the Sierra Nevada red fox due to a) the presence of coyotes co-occurring at multiple sighting areas within the subspecies range. B) The potential for increased predation in the Crater Lake, Lassen and Sonora Pass sighting areas into the future given climate model projections of decreased snowpack levels that make habitat more favorable to coyotes, c) the overall

> inability of the populations at those three locations to shift up in elevation." (USFWS 2015a, p.61008)

Then the USFWS goes on:

> "there is no indication that potential future changes in snowpack levels or shifting habitat at high elevations (as suggested by climate models) would occur within the next 50 years to such a degree that coyote numbers would increase throughout the subspecies range to the point that coyote predation or competition would rise to the level of a threat."

Then later the USFWS admits "the projections we discuss here may underestimate the potential effects of climate change." (Ibid p.45). Clearly the USFWS is conflicted about the degree to which coyote is a risk to SN red fox subpopulations. Nevertheless, the USFS must weigh this risk in the context of the OSV project, including allowing pervasive OSV impacts across the Southern Cascades DPS. Overall, OSV impacts may not have weighed decisively in the USFWS 12-month finding, however this does not mean an OSV plan opening the vast majority of the Lassen NF to snowmobile use may not have population-level negative impacts for the subspecies. The fact that OSVs disturbance was not enough to list SN red fox does not indicate the OSV Use project does not have serious negative impacts to the SN red fox.

In summary, coyote and OSV facilitation of coyote into deep snow refugia are too quickly dismissed from the project analysis. The USFS does not properly consider the impacts of adding these stressors across 59-66% of high capability SN red fox reproductive habitat (DEIS p.214). Also, climate change and reduced snowpack should also be part of the environmental baseline and inform the analysis of direct, indirect, and cumulative impacts. For a subpopulation of SN red fox that is isolated and declining, the risk posed by the project increases the likelihood of federal listing and extinction.

c. The DEIS Violates the 2004 Forest Plan Amendment by Not Proposing Den Site Buffers for Pacific Marten.

The NFMA requires that all projects are consistent with the forest plans: all "plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans." 16 U.S.C. § 1604(i). The BE/BA mentions marten den sites occur in the project area (p.121), there were also marten den sites identified in the Creeks II project, and there are probably other den sites as a result of all the telemetry studies on marten in the Lassen NF. Although vague mention of LOPs is buried in the BE/BA (p.121), the LOPs are not part of the proposed action or design features. The required LOP must be included as a project design feature for all proposed alternatives (from the 2004 SN Forest Plan Amendment ROD):

"88. Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. 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."

"89. Mitigate impacts where there is documented evidence of disturbance to the den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb den sites." (ROD, p. 62).

d. The DEIS Violates the 2004 Forest Plan Amendment by Not Proposing LOP for Sierra Nevada Red Fox.

The USFS should fully align the OSV Use project with the Sierra Nevada Forest Plan. The 2004 Sierra Nevada Forest Plan requires forests to: "analyze all potential management impacts to Sierra Nevada red fox and apply a limited operating period [LOP] from January 1 to June 30 to avoid adverse impacts to potential breeding.". Further, the SN Forest Plan directs forests to "Evaluate activities for a 2-year period for detections not associated with a den site." (2004 ROD p. 54). The LNF OSV project impacts to den site locations are not discussed in relation to this requirement. No alternative is offered which seeks to comply with S&G #32 for issuing an LOP on the project and none of the alternatives minimize disturbance to Sierra Nevada red fox. The required LOP and ongoing monitoring in the project area must be included as a project design feature for all proposed alternatives.

3. The USFS Does Not Minimize Impacts to Wildlife Resources, as Required by Executive Order 11644.

None of the alternative in the DEIS minimize project impacts to wildlife. Alternatives 1, 2, 3 and 4 expose between 81-91% of marten habitat to high and moderate OSV use (DEIS Table 66. P. 189). There is no alternative that exposes less than 81% of all marten habitat on the LNF to high and moderate OSV use. Similarly, 32-34% of Sierra Nevada red fox "high reproductive habitat" would be affected by high and moderate OSV use depending on the alternative (DEIS Table 77, p. 214). This does not comply with direction set forth under Executive Order 11644: "Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats." (EO 11644, Sec. 3, Pt.2).

Furthermore, there is no alternative that minimizes impacts beyond what would be considered by USFS wildlife experts to be "low impact". In a 2008 study on OSVs and marten, Zielinski et al. defined "low levels of disturbance" to marten by OSVs as one

pass on a snowmobile every 2 hours in less than 20% of an individual marten home range. There are three problems with the DEIS on this issue. First, the DEIS does not examine OSV impacts to marten home range scale. Second, none of the alternatives in the LNF OSV Use project offer anything close to low levels of disturbance under this definition, especially on the weekends. According to the DEIS assumptions, OSV use occurs primarily on weekends between the hours of 10am and 3pm (DEIS page 123). In addition, LNF visitor use data reported 30 snowmobiles per weekend on any given individual trailhead. This averages to 12 passes per hour on an out-and-back excursion, which is much higher than what is considered "low level disturbance" by Zielinski et al. Forest-wide, the DEIS estimates there are 106 vehicles during peak use hours on weekends (DEIS Table 47, page 131). An average outing lasts about 4 hours, according to NVUM data (DEIS Table 44, page 130). However, no further information is given about how many passes in what areas this could amount to. There is the potential for thousands of passes in some areas on some days, according the data in the DEIS. The impacts to marten home range remain unquantified, thereby posing an unknown risk to the species. Furthermore, no alternative offers low levels of OSV disturbance across the entire forest. By definition, every alternative exposes marten to high levels of OSV disturbance, the impacts of which are untested in the literature. This violates Executive Order direction to minimize impacts to wildlife during vehicle route designation.

The DEIS points out differences between routes in their potential to facilitate cross country travel. Comparing the potential for cross country travel among alternatives and between proposed OSV routes and areas could help the ID team, the public and decision makers to identify staging areas and trails that have a greater impact on wildlife than others. The LNF could use this data to tailor a decision that could minimize impacts on wildlife such as marten and SN red fox, as required. Ultimately, the USFS should develop a preferred alternative that minimizes negative OSV impacts to wildlife. Comparison of impacts of various areas, trails, staging areas and cross-country area impacts to important areas for marten and SN red fox will be key to identifying and developing this alternative.

4. Cumulative Impacts

An EIS must analyze cumulative impacts "which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. The purpose of a cumulative effects analysis is to provide "a realistic evaluation of the total impacts and [not] isolate a proposed project, viewing it in a vacuum." Grand Canyon Trust v. Fed. Aviation Admin., 290 F.3d 339, 342 (D.C. Cir. 2002).

Marten populations in California are small and isolated, therefore any negative impact to this species can have large impacts on population viability, compounding

other risk factors (Moriarty 2014). Sierra Nevada red fox are also critically endangered, according to the IUCN, as the species is undergoing a genetic bottleneck with likely inbreeding depression (Sacks et al. 2010), making the possibility of future reproduction dangerously low. Even minor disturbances can have large negative consequences for both species.

a. Recent Marten Population Isolation and Habitat Degradation on the Lassen NF Not Considered.

The Creeks II and North 49 projects are recent timber harvest projects on the Lassen NF with have wide-ranging impacts on marten habitat. The Lassen National Forest has a problematic history with forest management and marten. The Creeks II project, the Lassen National Forest Supervisor chose to approve Alternative 3 of the FEIS in July 2012. In a response letter to Sierra Forest Legacy's objections to the Creeks II project in 2012, the Forest Service Region Five Deputy Regional Forester, Barnie Gyant, stated:

> " A monitoring program for the Creeks II project was developed (FEIS, Appendix F pp. 407 through 415) to ensure that project objectives were met. This plan is intended to incorporate scientific monitoring on the project level as a way to address the measurement indicators outlined with the project objectives (FEIS, pg. 407), and includes monitoring of marten habitat to measure changes in key marten habitat attributes as a result of treatment and to test marten movements through various treatment areas within marten territories. Vegetative analysis will be completed through LiDAR analysis, comparing pre- and post-treatment changes. Vegetation data and LiDAR will be collected prior to project implementation and one year post-treatment. Camera and track plate stations will be collected prior to implementation, one year post treatment, and potentially five years post treatment (FEIS, pp. 409, 413). While not intended to become a standard for monitoring associated with future decisions in the Almanor Ranger District or the Lassen National Forest, <u>it is expected that information gathered will be useful to future decisions</u> (FEIS, pg. 407)."

It is not clear from the DEIS how the results of marten monitoring that Mr. Gyant said would be useful to future decisions have informed the OSV Route project design or analysis. The Humboldt Peak and surrounding area southwest of Lake Almanor is critically sensitive area for the imperiled marten (Ellis 1998), and management actions should follow the LRMP, incorporate information from the recent monitoring Mr. Gyant required for marten in the area.

b. The DEIS Incorrectly Portrays the Cumulative Effects of Recent Fuel Reduction Projects to Marten as Benign.

The OSV Use Project BE/BA states:

> "Vegetation and fuels management activities in recent years have included primarily thinned, masticated and/or burned vegetation to reduce the potential for catastrophic wildfires. These projects are usually excluded from larger CWHR types and or management prescriptions have emphasize [sic] recruitment of large snags and logs as well as retention of large conifer…In summary ongoing and reasonably foreseeable actions may be additive locally, but are not expected to contribute significant impacts to those discussed for marten for the project under any of the alternatives." (BE/BA p120-121)".

This statement is flippant about recent impacts of timber harvest on marten, which have recently been demonstrated to have substantially poor impacts on marten habitat and persistence in the Lassen area. Marten expert Dr. Moriarty, who did her Ph.D. dissertation on the impact of fuels reduction on marten near Humboldt Peak on the Lassen NF, concluded about the HFQLG fuel reduction projects such as Creeks II:

> "Structurally simple stands and openings, often created for fuel reduction treatments, substantially reduced the functional connectivity of landscapes for marten." (Moriarty at al. 2015).

> "…our findings reveal that subtle changes to forest structure (e.g. thinning), typically assumed to be less harmful to the viability of forest-dependent populations than tree removal, also negatively impacted functional connectivity."

The DEIS' sanguine portrayal of fuel reduction impacts on marten in the area contradicts recent research by marten experts.

c. The Effects Analysis Does Not Address Cumulative Impacts of Illegal Marijuana Cultivation.

Another major concern with regard to small carnivores in the Sierra Nevada are anti-coagulent rodenticides. Anti-coagulent rodenticides (AR) have been detected in the carcass of marten in coastal California and are considered an "emerging concern" for the species (USFWS 2015). Acute toxicity from an AR (d-CON rat poison) has been documented in fisher (another small mustelid species closely related to Pacific marten) in the southern Sierra Nevada. The source was marijuana farms on National Forest lands. Thompson et al. (2013) document 85% of dead fisher found in their four-year study tested positive for AR, which bioaccumulates and is extremely toxic. In this study, female fisher survival was negatively influenced by the number of marijuana cultivation sites within their home range (Ibid). In

another study in the northern Sierra Nevada, 75% of recovered fisher carcasses tested positive for AR (Sierra Forest Legacy 2015). Marten and Sierra Nevada red fox are among the many California species found with AR post-mortem. This emerging threat to these species was not identified or considered in the cumulative effects analysis to marten on the LNF OSV Use project.[1] Without this information, impacts from the project may appear less consequential than they truly are given their possible extent.

d. The Effects Analysis Does Not Address Cumulative Impacts of Climate Change and Loss of Snowpack on Pacific marten or Sierra Nevada Red Fox.

Another significant risk factor for Pacific marten and Sierra Nevada red fox that is not adequately discussed in the OSV DEIS or BE/BA is climate change.[3] Snowpack in the Sierra Nevada is predicted to decrease by 30% over the next 30 years (Klos et al. 2014). Because marten seek deep snow to hide from predators, a reduced snowpack will reduce the amount and connectivity of winter refugia from predators for marten (Moriarty 2014). Dr. Moriarty attributed at least 4 marten deaths from bobcat encroaching on marten winter range in a low precipitation year during her research on the Lassen National Forest (personal communication on Oct. 29, 2015). Climate change and reduced availability of deep snow will undoubtedly amplify negative impacts of snowmobiles on marten, as well. Synergistic effects of climate change and predator pressure (as illustrated by Moriarty's 2014 dissertation on the Lassen NF) have not been addressed in the effects analysis for the LNF OSV Use project. [1]

Similarly, Sierra Nevada red fox seek deep snow to escape coyote (Perrine 2005). The project DEIS fails to recognize how OSV use eliminates deep snow habitat by facilitating predator incursion into this refugia; and, how this predator facilitation in deep snow years acts synergistically to accelerate the effects of climate change in low snow years where coyote have access to more of the fox's winter range. [1] The USFWS explains below what happens in low snow years:

> "As snowpack depths decline, coyotes are likely to stay longer and return earlier to higher elevations, eventually becoming resident there. SNRF raise their pups in the spring, while snowpacks are just beginning to recede (Id. at 92). This is also the time of greatest resource scarcity (Id. at 193). Food availability is important for successful reproduction (Id.), so additional competition and predation from coyotes during this time would likely lower reproductive success… Increased competition and predation from coyotes due to climate change is thus likely to put the population at greater risk over the next 50 years." (USFWS 2015a, p.50)

[3] Indeed, climate change and reduced snowpack should be part of the environmental baseline and inform the analysis of direct, indirect, and cumulative impacts across the OSV use designation project.

There is no argument that SN red fox is at high risk because of climate change. In deep snow years, coyote incursion into red fox habitats is slowed temporarily. However, if OSV trails and compaction in SN red fox winter range compromises or even eliminates this deep snow barrier, then the OSV Use project may enhance and accelerate the negative impacts of climate change for SN red fox and marten. Climate change and reduced snowpack should also be part of the environmental baseline and inform the analysis of direct, indirect, and cumulative impacts. The USFS should carefully consider how allowing widespread OSV use in occupied SN red fox and marten habitat may act synergistically with climate change to compromise winter habitat in deep snow years and to endanger these species.

5. Reasonable Range of Alternatives

An EIS "shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. To that end, NEPA requires agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action. 40 C.F.R. § 1502.14(a); see also 42 U.S.C. § 4332(2)(E) (agencies must "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources"). The alternatives analysis is the "heart" of an EIS. 40 C.F.R. § 1502.14. "An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action." Nw. Envtl. Def. Ctr. v. Bonneville Power Admin., 117 F.3d 1520, 1538 (9th Cir. 1997); see also 40 C.F.R. § 1508.25(c) (scope of an EIS dictated by its range of alternatives, including no action, "[o]ther reasonable courses of actions," and mitigation measures). This includes more environmentally protective alternatives and mitigation measures, consistent with NEPA's basic policy objective to protect the environment. 40 C.F.R. § 1500.2(e) (agencies must "[u]se the NEPA process to identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment"); see also, e.g., Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094, 1121-22 (9th Cir. 2002) (citing cases), abrogated on other grounds by The Wilderness Soc'y v. U.S. Forest Serv., 630 F.3d 1173, 1178-80 (9th Cir. 2011) (en banc). "The existence of a viable but unexamined alternative renders an [EIS] inadequate." Mont. Wilderness Ass'n v. Connell, 725 F.3d 988, 1004 (9th Cir. 2013) (quotations and citation omitted). The "touchstone" of the inquiry is "whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation." Mont. Wilderness Ass'n, 725 F.3d at 1005 (quotations and citation omitted).

The difference between impacts to marten and SN red fox from Alternative 1-4 is small: every alternative's impact to these species is similar or identical. For example, there is no difference between impact of Alternative 1 and 2 on SN red fox or marten. They will impact marten habitat the same amount, exposing 63,585 acres to

high OSV use, and 70,613 acres to moderate OSV use, and 67,112 acres to low OSV use (table 67, p.191 DEIS). Alternatives 1 and 2 will also impact SN red fox habitat on the same 15,598 acres. (DEIS p.214). Then, Alternative 3 will disturb 57,354 acres of marten habitat to high OSV use, and 55,529 acres to moderate OSV use, and 60,875 acres to low OSV use (table 67, p.191 DEIS); and will expose 14,060 acres of SN red fox to OSV disturbance (DEIS p.214). Alternative 4 will disturb and modify 63,191 acres of marten habitat to high OSV use, and 67,021 acres to moderate OSV use, and 65,284 acres to low OSV use (table 67, p.191 DEIS); and will expose 14,951 acres of SN red fox habitat to OSVs (DEIS p.214).

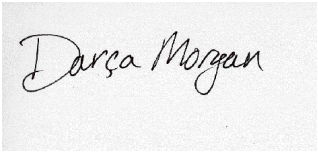
As illustrated in the paragraph above, there is a 4% difference in acres of SN red fox habitat disturbed by OSVs between all alternatives. There is a 7% difference in acres of marten habitat disturbed by high levels of OSVs use between alternatives. Moderate and low levels of OSV disturbance differ more for marten, about 20% between alternatives. In addition to habitat disturbance, snow depth requirement and number of routes (Table 67 DEIS p.191) are too similar to give a reasonable range of alternatives to consider. Further evidence that there is little real difference between the alternatives, the BE/BA (p. 120 and141) discusses all cumulative effects to wildlife in a brief discussion that does not distinguish between alternatives; rather, all project alternatives have the same cumulative effect on marten and SN red fox according to the effects analysis.

6. Project Design Feature for Law Enforcement

The photos below are from February 22, 2016 at the Ashpan Trailhead on the Lassen NF (photo credit Patricia Puterbaugh). It shows trespass vehicle tracks on a paved road that was signed closed. The trucks were either using the closed road to haul OSVs up to deeper snow, or just joyriding. I know this kind of trespass occurs in many places on the forest during winter. The USFS should consider adding a design feature to all alternatives to pursue funding for law enforcement. The USFS does not need to promise how much funding they will get, but setting a target and voicing the intent to pursue grant money for enforcement would help the public see that the USFS is planning realistically. The enforcement target or strategy could be as simple as 1) apply for enforcement money from the State of California, 2) identify goals for law enforcement in most areas most weekends, and in some areas some weekdays. 3) if state funds become available, staff-up law enforcement in areas identified as a priority in step 2. Because, no matter what decision is chosen, the same widespread trespass that is so harmful to resources will continue on the ground without enforcement.

Thank you for your consideration of these comments. Please include me on your mailing list for any future actions on the Lassen National Forest Over-Snow Vehicle Management Plan.

Sincerely,



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