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Amendment to the Wildlife Reports

Westside Fire Recovery Project

Happy Camp Oak Knoll and Salmon/Scott River Ranger Districts,
Klamath National Forest
Siskiyou County, California

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I. Summary of Modifications between Draft and Final EIS

There were changes made to the treatment units as a result of additional field work and modifications to project design. This section of the addendum documents the changes to the effects as a result of these changes on threatened/endangered species, sensitive species, Management Indicator Species, Survey and Management Species and migratory birds. Although northern spotted owl is covered in this document for each alternative, the analysis is not connected to section 7 consultation under the Endangered Species Act; a biological assessment was prepared for consultation purposes.

Corrections and Clarifications to Methods

Several of the species in the wildlife reports (biological evaluation, management indicator species, and survey and manage) were evaluated using remote sensing data that was used to create spatial habitat layers and the fire effects to the habitat. Unfortunately, the Rapid Assessment of Vegetation (RAVG) data that were used to estimate the loss of basal area resulting from fire and consequently adjust the habitat types was incorrectly categorized: moderate severity burning was categorized as 25% to 75% basal area lost rather than the correct 50% to 75%. This incorrect categorization resulted in incorrectly assessing the fire effects to habitat. Since fire severity (loss of basal area) is related to habitat quality, incorrect RAVG can overestimate or underestimate the fire effects thus incorrectly assessing the resulting habitat quality. Fortunately, the incorrect classification doesn't change the overall analysis of the project on wildlife, but there are some changes to particular aspects of the analysis. For example, of the eleven goshawk nests evaluated for the project, two nest sites changed in the existing level of risk to reproduction. Hickory nest site went from moderate to high while Beaver went from moderate to low risk to reproduction.

A large portion of the proposed treatments in the project is the roadside hazard with fuels treatment. On page 16 of the DEIS, the roadside hazard and fuels treatment is described, and it is stated that this is anticipated to remove are large portion of the understory within forested habitats. The roadside hazard will generally, not always, remove trees that are contributing to the overstory tree canopy cover. The combination of roadside hazard and fuels treatment is anticipated to reduce the general quality of forest habitat. For most forest-related species, this treatment would result in degrading or downgrading habitat. Since the DEIS, the fuels prescription that coincides with roadside hazard has been split into "complete" and "modified" fuels treatments. The "complete" fuels treatment with roadside hazard will still result in the same effects as in the DEIS but the "modified" fuels treatment will remove less of the understory and the effect is expected to be a general degrading rather than downgrading of forest habitat. The large number of acres with a reduced habitat effect resulted in less effects for several species (e.g. spotted owl and goshawk).

Finally, the salvage unit footprint has changed in some of the drainages while the footprint in other drainages is similar to the draft EIS. These changes have influenced several of the wildlife analyses by increasing the amount of habitat disturbed, mostly within the Walker and Grider drainages. Most of the salvage in Beaver and Whites fire-related project areas is similar to the salvage presented in the draft EIS.

Northern Spotted Owl

On page 63 of the DEIS, the summary table (table 34) displays the determination for the northern spotted owl for each alternative using the language typically used for the determination during consultation under the Endangered Species Act (ESA). Although the determination is accurate, the

analysis in the Biological Evaluation (BE) and summarized in the DEIS is not connected to consultation with the U.S. Fish and Wildlife Service (USFWS). The spotted owl analysis used for consultation is covered in the Biological Assessment (BA).

The BA is a document used to communicate information and analysis between the Forest and the USFWS under the ESA for consultation on the Westside Fire Recovery Project. The BA only analyzes one alternative or combination of alternatives as decided by the responsible official. The analysis presented in the BE is intended to provide information to the responsible official and the public on the potential effects of the Westside Fire Recovery Project on northern spotted owl for each alternative as presented in the DEIS under the National Environmental Policy Act.

On page 6 of the BE, the description of rapid assessment of vegetation condition (RAVG) that displays five RAVG classifications or grid codes (0, 1, 2, 3, and 4) needs clarification. RAVG grid codes 1 (0%-25%), 2 (25%-50%), 3 (50%-75%), and 4 (75% -100% basal area loss) occur within the fire perimeter while grid code "0" represents the area unaffected by the fires occurring in 2014.

On page 6 of the BE, the methods describe the data used to identify the habitat that may be affected by the project. Since the time of the BE that accompanied the DEIS, adjustments were made to the spotted owl GIS habitat layer to better capture the quality of habitat. The habitat adjustment resulted in a portion of dispersal habitat being elevated to foraging habitat. This only occurred in the northwestern portion of Happy Camp project area.

On page 9, NSO habitat types were not described and the description below is added to the BE.

NSO habitat is commonly separated into nesting/roosting (NR), foraging (F), and dispersal (D) habitat; these habitat types are described in detail in the NSO Recovery Plan (USDI USFWS 2011). Nesting/roosting is generally described as mid- to late-seral forests that contain stands of large trees with high canopy cover ($\geq 60\%$), multilayered canopies, and nesting platforms. Foraging habitat can be described as slightly reduced canopy cover, fewer large trees, but still enough space in the understory for NSO to maneuver through the trees for hunting prey. Dispersal habitat contains a moderate level of canopy closure and trees large enough to provide shelter and potential foraging opportunities for traveling NSO. For this analysis, suitable habitat is defined as NR and F habitat.

Multiple aspects of suitable habitat are required for habitat to be considered suitable or high quality habitat such as the presence of defect and decay in the stand, large downed logs and snags, and the presence of water in appropriate distance and juxtaposition to stands that contain these attributes (USDI USFWS 2011). These habitat elements cannot be queried from the EVEC data; for specific areas of the project, these elements were assessed through field evaluation, NAIP imagery, and discussions with field personnel familiar with the project area vegetative conditions. Given this level of uncertainty of the accuracy of suitable habitat designation in the GIS layer, the actual quantity of suitable habitat may be somewhat overestimated. Due to the scope and scale of this project, it was not practicable to field validate the remotely sensed habitat data (EVEC) for all areas affected by all project activities; however, the portion that was field evaluated resulted in a reasonably accurate assessment of the habitat layer depicting NRF habitat even though there was some error in accurately splitting NR and F over the entire analysis area. Even though NR and F are sometimes presented separately in this analysis, most of the analysis combines NR and F to reduce this potential error.

Post-fire foraging (PFF) habitat was delineated in order to capture the potential for continued use by NSO of previously suitable NRF, at least in the short term until the ultimate deterioration of the burned habitat and loss of standing trees. Even with the loss of canopy cover and key habitat

components typically found in NRF habitat, studies indicate that burned areas can still function as foraging opportunity after the fire, depending on many factors including patch size, edge type, burn severity, and proximity to known owl sites (Bond et al. 2002, Bond et al. 2009; Clark 2007, Clark et al. 2011, and Clark et al. 2013). Although NSO use of PFF is well documented, there is still some uncertainty on how PFF contributes to reproduction. However, tracking PFF and analyzing the effects from post-fire salvage with the assumption that foraging habitat is important for providing a food supply necessary for NSO survival and reproduction, and PFF, although physically different from foraging habitat, may provide foraging opportunity is important. In addition, research on spotted owl use of post-fire landscapes indicates that spotted owls that use these burned forests may be affected by post-fire salvage (USFWS 2011).

The EVEG habitat layer provided the baseline of suitable NRF prior to the fire. Post-fire foraging habitat was then determined by overlaying the correctly categorized RAVG data to the pre-fire NRF. PFF was delineated where moderate fire severity (grid code 3) or high fire severity (grid code 4) occurred in pre-fire foraging habitat or where high fire severity occurred in pre-fire nesting/roosting habitat.

A large proportion of PFF is NRF habitat that burned at the highest severity and, therefore, contains minimal amounts of structure or cover. Because of this, it was assumed that NSO are not likely to use PFF when it occurred too far from existing cover – estimated to be more than 500 feet. This distance was derived from a review of recent literature on the use of edge habitat (Comfort 2013, Eyes 2014) and professional judgment. For this analysis PFF1 is PFF that is within 500 feet of suitable habitat patches ≥ 5 acres in size. PFF2 is the PFF that doesn't meet the definition of PFF1.

Fire-affected nesting/roosting (FANR) habitat was delineated for this analysis as NR habitat that burned at moderate severity (RAVG grid code 3) because NR habitat that has been affected at this level is not expected to function in the same way as NR habitat that has been affected by low severity fire. Because stands of habitat that burn at moderate severity can result in 50% to 75% of the basal area loss, fire severity can result in a wide variety of stand conditions post-fire. If a stand was typed as nesting/roosting prior to the fire, it was comprised of high canopy closure and larger trees, among other variables. Therefore, if a fire burned at the low end of moderate severity (grid code 3, closer to 50% loss of basal area), then the stand may retain more canopy cover and less tree mortality than a stand that received moderate fire severity at the higher end of moderate fire severity (grid code 3, closer to 75% basal area loss). Stands that burned at the higher end of moderate fire severity have more of the appearance of a high-severity burn and lack the characteristics necessary for cover and/or thermoregulation to be used as nesting/roosting or foraging habitat. Fire-affected nesting/roosting is a small portion of the total acres of NRF, PFF and FANR because FANR typically occurs on the fringes of high severity burn patches, in the transition zone between high and low burn severities of pre-fire NR habitat.

In this analysis, NR habitat that burned at grid code 3 is categorized separately so that fire effects specific to these areas of habitat can be accounted for in the analysis and the role that this habitat type plays in NSO use of the post-fire landscape can be captured.

FANR is considered in this analysis as possibly providing foraging opportunity rather than as nesting/roosting because FANR no longer contains adequate cover and structure for nesting but it can contain enough prey habitat and perch structure to allow for effective foraging. When compared to PFF, FANR will generally have larger trees/snags on average that can provide more physical structure that is likely to persist, standing for a longer period of time (assuming similar site conditions

and disturbance). However, trees/snags in FANR will likely succumb to the eventual effects from the fire as many, but generally not all, of the trees in a stand that have burned at moderate severity will die and many of these will fall, possibly as soon as 3 to 5 years of this analysis. In general, some of the fire-damaged trees will have needles and leaves and these trees may provide some cover for foraging NSO.

On page 10 of the BE, a brief description of NSO use of fire-affected habitat was presented along with a reference to the BA for further discussion. Instead of referencing the BA, the following detailed description was added to the BE.

Areas burned with high- and moderate-burn severity are typically no longer considered suitable habitat for nesting, roosting or long term occupation by spotted owls because these areas no longer supply the habitat attributes needed for thermal protection, nesting structure and cover from predators necessary for long term viability. While these stands do not contain all the attributes that typically define NSO habitat, high severity burned areas are known to be used by NSO to a limited extent possibly for foraging; observations indicate that under certain circumstances NSO use the edges along less severely burned areas (likely existing habitat) and avoid large, contiguous patches of high severity burn (Clark 2007, Comfort 2014).

Although spotted owls may use former nesting, roosting, and foraging habitat burned with high and moderate severity located within their home range for foraging, the overall importance of these areas to NSO's survival and reproduction is still relatively unknown. Results from radio-telemetry studies of spotted owls in post-fire landscapes indicate that spotted owls will use forest stands that have been burned, but many other factors dictate the extent and degree to which this will occur such as the relative position to existing habitat and the contrast of edge between moderate to high severity burned areas and areas that burned with low severity or are unburned (Bond et al. 2002, Bond et al. 2009, Lee et al. 2013, Comfort 2014, Eyes 2014). Many studies indicate that NSO are potentially capitalizing on the increased prey abundance that may have resulted from the fire effects on habitat (Bond et al. 2009, Roberts et al. 2011, Clark et al. 2013). Even though areas with little cover, like pre-fire suitable habitat that burned at moderate and high fire severity, appear to possibly increase the risk of NSO being predated, foraging along edges of suitable habitat may provide a balance between the potential increase of prey abundance while being close to escape cover where an NSO could avoid being predated.

In the Klamath region, NSO have been found foraging within more open stands not recently affected by fire but these areas contain brush or a low basal area of conifer trees. The presence of a few scattered trees or snags likely facilitated hunting for prey such as woodrats; a particular telemetered pair made extensive use of a burned area with manzanita shrubs and scattered live trees (Irwin et al. 2012). This would indicate that, at least under certain circumstances, NSO will venture into more open habitats such as areas burned at high and moderate severity when vertical structure is present to offer perching or a certain degree of cover, although the exact level of cover that is needed to meet spotted owl needs is unknown. However, NSO use of a particular area is likely more complex than simply the amount of cover.

Site Occupancy

The amount of high severity fire within the core and home range may be an important component for estimating the likelihood that an owl may occupy a particular area. In a burned landscape, NSO generally select nesting areas with low to moderate severity fire effects (Clark 2007, Bond et al. 2009, Clark et al. 2011) but, given the choice, NSO may select unburned areas for nesting or foraging

(Clark 2007). Clark et al. (2013) found about 64% reduction in NSO occupancy following a fire as compared to the unburned portion of the study site that experienced about 25% reduction in occupancy during the same time period; however, post-fire land management likely influenced occupancy in the burned portion of the study area. Although limited by a small sample size, Gaines et al. (1997) found a similar pattern of spotted owl site occupancy as Clark et al. (2013); sites that were largely unaffected by fire in the core were more likely to be occupied than sites that were extensively burned. Lee and Bond (2015) found that NSO occupancy was largely unaffected by burn severity.

The use of fire-affected core and home range may be related to site fidelity despite possible negative tradeoffs (e.g. lower survival). Bond et al. (2002) found that a large portion of the monitored spotted owls returned to their pre-fire nest site the year following a fire despite varying fire severities. In southern California forests, spotted owls had an increased likelihood of site abandonment when 124 acres of their 200 acre core areas burned at high severity; high severity fire affected about 62% of the core use area which suggests strong site fidelity (Lee et al. 2013). Lee et al. (2012) also found strong site fidelity despite an average of 32% of the suitable habitat burned at high severity in the core. Strong site fidelity was also apparent for the California spotted owls monitored after the Rim fire; spotted owls showed a slightly negative response to the increased proportion of high severity fire within the protected activity center. The authors conclude that high severity fire doesn't affect spotted owl occupancy (Lee and Bond 2015). Lee and Bond (2015) attempt to qualitatively correlate occupancy with survival and reproduction, but occupancy of a previously used site may be just a result of strong site fidelity despite the habitat quality of the site. A measure of reproduction success or survival would provide a much better understanding of relating spotted owl use of fire-affected areas and possible tradeoffs.

NSO with strong site fidelity that experience moderate to high fire severity in the core and home range may encounter additional challenges. Clark (2007) generally found that severe wildfires in NSO home ranges caused owls to increase their home range size in order to encompass more suitable habitat. He also found that spotted owls with territories located immediately adjacent to moderate- and high-severity burned areas, avoided these areas and had <5% of their locations fall within the boundaries of the fire. Owls that ventured into the burned areas were typically individuals that were displaced by fire and periodically visited their old territory. According to Clark's study, when given the opportunity, owls focused their activities in unburned habitat. In his study, several owls with territories inside the fire frequently traveled long distances to forage in unburned habitat, supporting his prediction that owls would focus activities in the oldest forest stands with the least amount of fire damage (Clark 2007).

The amount, quality, and distribution of post-fire habitat in the core and home range may influence NSO use areas and possibly nesting success. The amount of forest habitat with high (>60%) canopy cover dominated by medium- and large-sized trees is an important predictor of survival and reproduction (Franklin et al. 2000, Dugger et al. 2005, Temple et al. 2014). The amount of habitat affected by high severity fire in the nest stand or within frequently visited foraging areas likely has a greater negative effect than does high severity fire in other areas in the home range (Jenness et al. 2004, Dugger et al. 2005). Although typically short term (1 to 2 growing periods), low severity fire can also affect suitable habitat by removing smaller trees and/or brush that are important habitat components for prey species but low severity fire is not likely to remove all prey habitat structure. Roberts et al. (2011) found that low and moderate severity fires don't affect occupancy, especially when the area contains abundant large trees and high canopy cover.

The proportion and arrangement of unburned or low-severity burned suitable habitat in relationship to moderate- or high-severity burned areas within an NSO home range is important in determining the likelihood of NSO use of these areas. This relationship is important because NSOs will likely focus their use of burned areas for foraging in areas with adjacent cover. The distance to cover is likely a key factor influencing use of burned areas. Because habitat selection by NSOs is strongly influenced by abiotic features such as distance to water, proximity to nest, slope position and elevation, it is possible that use of the burned habitats by NSO as described by Clark et al. (2013) or Bond et al. (2009) may occur due to the juxtaposition of the burned areas to some other feature, such as a nest site or water, rather than based on the “suitability” of the area, particularly if the owls were accustomed to using the area prior to the fire. Factors involved in the NSO’s periodic selection of burned areas for foraging are not known at this time; further research is needed to account for the many other aspects of a burned landscape that may influence the NSO selection process.

Land management

Owl use of burned areas is well documented but links between owl use, fire severity, and level of salvage are not clear. Researchers are typically unable to separate effects of pre-fire timber harvest, wildfire, and post-fire salvage harvest (Bond et al. 2002, Clark et al. 2011, Roberts et al. 2011, Lee et al. 2012, Clark et al. 2013, Temple et al. 2014); consequently, study results are highly variable, depending on methods, burn severities, proximity of NSO to fire and spatial arrangement. Research of NSO use of burned areas has also been confounded by small sample sizes. In addition, general terms used in the literature including “fire severity” and “salvage logging” make comparison to specific conditions found within the project area difficult. Most references to “salvage logging” in the literature refer to clear-cut logging, and do not factor in design features such as leave tree groups, legacy tree retention, treatment in relationship to core area, or even the use of limited operating periods.

Clark et al. (2013) examined the potential effects on nesting territory occupancy in areas that recently experienced fire and suggested that past timber harvest, high severity fire, and salvage within the core nesting area best explained a decrease in NSO occupancy; however, high severity fire effects to occupancy were confounded with past timber harvest and salvage logging suggesting that NSO occupancy may not persist in burned landscapes. This is not surprising given the fact that timber harvest and high severity fire commonly remove habitat attributes associated with NSO habitat; this removal leads to a reduction in habitat quality or habitat loss. Salvage logging in the Clark et al. (2013) study area used clearcutting where all the trees were harvested within an area and no areas left untreated (untreated areas are often called retention areas). Retention areas in salvage treatments can provide structure needed by NSO (Clark 2007). Clark (2007) examined NSO use of burned areas and found 60% of owl locations within salvaged areas were in retention areas (clumps or along riparian areas) within the unit, suggesting that owls may use salvage areas with remnant structures.

In southern California, Lee et al. (2013) found no statistically significant effects of fire or salvage logging on spotted owl occupancy. However, the authors claim that the weak statistical relationship may be biologically meaningful. They describe an inverse relationship between the amount of high severity burn in the core and occupancy but indicate this effect could be exacerbated by salvage logging (i.e. clearcutting). Salvage logging effects alone could not be separated from the fire effects; the spatial configuration of the salvage was not provided for a qualitative assessment. The authors, however, described the 203 hectare cores on average containing 106 hectares of habitat where 24 hectares burned at high severity and 63 hectares were salvaged logged. Lee et al. (2013) did not

provide any information on the prescription of the salvage in the study except the salvage was visible using satellite or aerial imagery thus implying that the treatment removed many to all trees within a particular area.

Another study used an observation approach to estimate NSO use of fire-affected forest within the home range; however, without a measure of fitness, the results are inconclusive or correlative (Bond et al. 2009). Bond et al. (2009) studied four spotted owl territories (4 males and 3 female) within a wildfire perimeter about four years after the fire; they found the owls foraged in all burn severities, with a selection for high-severity burned areas. Although this study has been widely used to demonstrate the importance of high-severity burned forests for NSO, the study is limited by the small sample size, brief study period (12 weeks), and non-random owl selection. The authors provide a snapshot of information without any link to potential effects to survival or reproduction.

Overall, research is inconclusive and contradictory regarding spotted owl use of severely burned coniferous forests (Elliot 1985, Gaines 1997, Bond et al. 2002, Bond et al. 2009, Clark 2007, Clark et al. 2012, Comfort 2013, Eyes 2014). Some studies have shown spotted owls to exhibit site fidelity and occupancy that isn't likely affected by fires even if a large portion of a territory is burned at high severity (Bond et al. 2002, Lee et al. 2012, Lee and Bond 2015) while others studies have shown owls to move completely away from previously occupied areas after high-severity burns (Elliot 1985, Gaines 1997) particularly when burns occurred within core areas of resident birds. Bond (2010) reported 30 percent of California spotted owls' nonbreeding-season roost locations were within the fire's perimeter. In another study, radio-telemetry locations demonstrated that the owls selected low-severity burned forests for roosting during the breeding season, and selected low, medium, and high-severity burned forests for foraging within 1.5 km of the nest or roost site, with the strongest selection for high-severity burned forest (Bond et al. 2009). Despite these contradictory findings, the research does provide some agreed-upon principles for spotted owl use of fire affected landscapes:

- Spotted owls appear to display strong site fidelity by returning to their activity centers after a fire, even if the activity center is completely burned and may not contain areas that meet the definition of suitable habitat.
- Spotted owls appear to be using high-severity fire affected areas for possibly roosting or foraging, although nesting in these areas is not likely to occur.
- Spotted owls using burned areas may use standing snags and surviving green trees as perch sites for foraging, particularly along edges where sufficient cover is available.
- Spotted owl use of burned areas appear to be influenced by the distance from suitable forest cover (use of burned habitat decreases with increased distance from suitable habitat), but a maximum distance an owl might travel from suitable habitat is unknown.
- Pre-fire nesting/roosting and foraging habitat that burned at moderate and high fire severity appears to provide foraging opportunity for spotted owls but the level of effect on spotted owl survival and reproduction is unclear.
- The amount, quality, and distribution of suitable habitat remaining in the core and home range after a fire appear to influence occupancy.

- Salvage harvest of pre-fire nesting/roosting and foraging habitat that burned at moderate and high fire severity likely contributes to the reduction in spotted owl occupancy, but the effects may be more pronounced when salvage occurs in the core.

Risk to Reproduction

In the Biological Evaluation (page 10), the section called “assumptions” outlined the assumptions that were used for this analysis, but these assumptions need clarification and corrections.

Table 1: Comparison of assumptions for Northern Spotted Owl assumptions between the DEIS and the FEIS.

Original Assumption	Edited Assumption
Occupancy and reproduction success is solely based on the amount and quality of habitat in the activity center	Occupancy and reproduction success is based on the amount and quality of habitat in the activity center
Habitat burned at low (<50% basal area removed per RAVG data) severity will still function as it did pre-fire	No change
<p>Pre-fire nesting/roosting and foraging habitat that burned at moderate severity (50-75% basal area removed) will not function at its pre-fire habitat type. o Nesting/roosting will become foraging habitat</p> <ul style="list-style-type: none"> • Foraging habitat will become post-fire foraging area (PFF) 	<p>Pre-fire nesting/roosting and foraging habitat that burned at moderate and high fire severity (>50% basal area removed) will not function at its pre-fire habitat type.</p> <ul style="list-style-type: none"> • Nesting/roosting habitat burned at moderate severity (50%-75% basal area loss) will be a separate category called Fire-Affected Nesting/Roosting (FANR) • Nesting/roosting habitat burned at high severity (75%-100%) and foraging habitat burned at moderate and high severity will be a separate category called Post-Fire Foraging (PFF)
PFF may contribute to the success of NSO reproduction in the short-term (as long as the snags remaining standing) for ACs with few acres of suitable habitat, but PFF will not be part of the criteria of this analysis because the research doesn’t provide a clear understanding on how PFF contributes to satisfying nesting NSO needs.	Even though there isn’t a clear relationship in value between fire-affected habitat (PFF and FANR) and foraging habitat in satisfying NSO needs, we are assuming PFF and FANR will contribute some level of foraging opportunity, especially when FANR and PFF are near (≤500 feet) suitable habitat.
Roadside treatment in existing NSO habitat will result in degrading habitat thus habitat will remain functioning at the current habitat type after treatment	No change
Roadside plus fuels treatment in existing NSO habitat will result in downgrading habitat thus habitat will drop down one habitat type level. For example, an area of nesting/roosting habitat that receives a roadside and fuels treatment will result in this area becoming foraging habitat after treatment.	<p>Roadside hazard plus fuels treatment has been split into two categories: 1) roadside hazard with modified fuels and 2) roadside hazard with complete fuels treatment.</p> <ul style="list-style-type: none"> • Roadside hazard with modified fuels results in NRF and D to be degraded but the habitat will remain functioning at the same level after treatment as it was prior to the treatment.

	<ul style="list-style-type: none"> Roadside hazard with complete fuels treatment results in NRF to be downgraded to dispersal habitat. Dispersal habitat remains dispersal habitat after treatment.
Several salvage harvest units contain existing suitable NSO, but the habitat will not be salvaged. The habitat may receive a fuels treatment that will result in a habitat degrade, but not a downgrade or removal.	Several salvage harvest units contain existing suitable NSO habitat. The habitat may receive a fuels treatment that will result in a habitat degrade but habitat will not be downgraded or removed.
Landing construction will result in the loss of habitat for the footprint of the landing.	No change

On page 12 of the BE, the section titled “spatial and temporal bounds” was adjusted to better capture the effects of the project. The spatial bound is defined as the critical habitat that occurs in a 1.3 mile buffer from all treatment occurring with each critical habitat subunit. The temporal bound will remain the same as presented in the BE.

On page 140 of the DEIS and page 10 of the BE, the spatial bound described the analysis as including all activity centers that overlapped the fire perimeter. After further review, the analysis area was expanded to include 10 more activity centers because of the possible direct or indirect effects to these centers from proposed treatments. Therefore, the analysis area included all activity centers where the center of the activity center overlapped a 1.3 mile buffer of all treatment units.

On page 11 of the BE, table 2 outlines the amount of habitat within each “risk to reproduction” category. These categories don’t include FANR or PFF because there are no recommended minimums associated with successful reproduction or information in the literature on the level of equivalency fire-affected habitat may have with suitable habitat. The literature provides several examples of spotted owl detections within moderate and high severity fire-affected habitat but the information is limited on determining the role that fire-affected habitat may play in spotted owl reproduction. Several authors have simply presumed owls are foraging in these fire affected areas based on the possible increase in prey abundance; however, this potential foraging opportunity may or may not offset the loss of suitable habitat. Therefore, comparison between suitable habitat and fire-affected (FANR and PFF) habitat is difficult given the large amount of uncertainty in the cost of NSO using FANR and PFF in terms of NSO survival and reproduction; however, the analysis presented in this document attempts to incorporate the possibility that this fire affected habitat may provide foraging opportunity but at a lower quality than foraging habitat.

Therefore, FANR and PFF have been added to the categories to account for the possible foraging opportunity but at lower amount than suitable habitat. The table below displays the amount of habitat and FANR and PFF within each level of the analysis indicator “risk to reproduction”.

On page 141 of the DEIS (summarized on page 145, table 3-8) and page 39 of the BE, the existing condition for activity centers analyzed in the project was summarized in table 3-6 of the DEIS and table 15 of the BE based on the current amount of habitat and the criteria displayed in table 2 on page 11 of the BE. Using the modified criteria (presented in this document), the activity centers were re-analyzed.

Table 2: Updated criteria for risk to reproduction for Northern Spotted Owl

Risk to Reproduction	Criteria*
Very Low	<ul style="list-style-type: none"> In the core, >400 acres of NRF, FANR, and PFF1 (≥250 NR must occur in the core), AND In the home range, >935 acres of NRF, FANR, and PFF1
Low	<ul style="list-style-type: none"> In the core, >250 acres being NRF, FANR, and PFF1 (≥150 NR must occur in the core), AND In the home range, >1,086 acres NRF, FANR, and PFF1
Moderate	<ul style="list-style-type: none"> In core and home range, 665 to 1,336 acres of NRF, FANR, and PFF1 (≥500 acres NRF must occur in core and home range combined)
High	<ul style="list-style-type: none"> In core and home range, <665 acres of NRF, FANR, and PFF1

On page 38, the BE states “The analysis area includes 80 NSO activity centers (AC) that occur in the analysis area and have been active at some point since the early 1980s.” The analysis area was extended to account for all potential direct and indirect effects that resulted in the analysis area overlapping an additional 14 ACs; this resulted in adding the 14 ACs to the previously analyzed 80 ACs in the draft BE for a total of 94 ACs. In addition, one new AC was identified as a result of surveys conducted in 2015; however, surveys are not complete at this time and additional ACs may be discovered through the completion of the surveys. Therefore, 95 ACs are analyzed in this document (23 ACs in the Beaver fire-related project area, 57 ACs in the Happy Camp area and 15 ACs in the Whites area).

On page 38, the BE states “The analysis area is about 262,450 acres in size; the analysis area contains about 27,440 acres of nesting/roosting, 52,240 acres of foraging, and 51,760 acres of dispersal habitat. In addition to NSO habitat (nesting, roosting, foraging, and dispersal) as described by several documents (e.g. 2011 NSO Recovery Plan), we are reporting the acres of post-fire foraging area (5,240 acres).” These acres are not correct given the incorrect categorization of RAVG. The table below displays the acres of habitat within the project area. The analysis area is about 291,499 acres in size and split between three areas: 74,320 acres in Beaver, 161,334 acres in Happy Camp, and 55,845 acres in Whites.

Table 3: Acres of spotted owl habitat and FANR, and PFF1 occurring within the analysis area

Project Area	Habitat Type			
	NRF ¹ (acres)	D ¹ (acres)	FANR ¹ (acres)	PFF1 ¹ (acres)
Beaver	15,066	10,947	96	1,162

Happy Camp	46,050	34,837	1,031	7,237
Whites	21,680	11,109	227	2,307
Total	82,796	56,893	1,354	10,706

¹NRF represents nesting, roosting, and foraging habitat that has no fire effects or burned at very low and low fire severity. FANR represents nesting/roosting habitat that burned at moderate fire severity. PFF1 represents the post-fire foraging which is foraging habitat burned at moderate and high fire severity plus nesting/roosting habitat burned at high fire severity that occurs within 500 feet of suitable habitat ≥ 5 acres in size.

Table 4: The level of risk to NSO reproduction given the current condition of the core and home range for known activity centers

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver
Very Low	2	0	2
Low	14	11	6
Moderate	37	4	8
High	4	0	7

On page 38, the BE states “Based on remaining habitat in known cores and home ranges, about 80% of the ACs analyzed in the project area are at “high” or “moderate” risk to reproduction.” On page 39, the BE states “The 12 ACs in the “high” risk level may be an underestimate of the ACs in poor condition because four ACs are near (<25 acres) the threshold of entering the “high” risk level.” This is incorrect given the incorrect categorization of RAVG and the addition of 15 ACs. About 62% of the ACs analyzed in the analysis area are at “high” or “moderate” risk to reproduction. Although the corrected RAVG did influence the number of habitat acres within most of the ACs which in turn influenced the “risk to reproduction” level, the 10 ACs (the new AC is within the fire perimeter) added to the analysis didn’t overlap the fire perimeter and were consequently not affected by the correction of categorization of the fire severity data (RAVG). There are 11 ACs with “high” risk level instead of the 12 reported in the BE associated with the DEIS.

On page 44, the BE states “All the ACs (All ACs were affected by the fires) analyzed in this project...” This is incorrect; the 10 ACs added to this analysis don’t overlap the fire perimeter.

On page 44, the BE states “The slow habitat development is especially difficult for the 14 (ACs in the high risk to reproduction level) or more ACs that were heavily affected by the fire...” This statement is partly correct; the ACs in the “high” category will likely have difficulty reproducing successfully; however, there are 11 ACs within the “high” category.

Changes to Critical Habitat

The table below displays the “original assumption” as presented in the BE and the “edited assumption” which displays the addition or clarification of the assumptions used for this analysis.

Table 5: Comparison of assumptions for the changes to Northern Spotted Owl critical habitat between the DEIS and the FEIS.

Original Assumption	Edited Assumption
All NSO habitat that burned at high severity (75-100% basal area loss) is longer suitable habitat	Pre-fire NRF that burned at moderate or high fire severity will be combined into one category called “fire-affected critical habitat”
Nesting/roosting habitat that burned at moderate severity (50-75% basal area loss) was downgraded to foraging habitat	Combined with the first assumption
Foraging habitat that burned at moderate severity became unsuitable habitat	Combined with the first assumption
Roadside treatment in existing NSO habitat will result in degrading habitat thus habitat will remain functioning at the current habitat type after treatment.	No change
Roadside plus fuels treatment in existing NSO habitat will result in downgrading habitat thus habitat will drop down one habitat type level. For example, an area of nesting/roosting habitat that receives a roadside and fuels treatment will result in this area becoming foraging habitat after treatment.	Roadside hazard plus fuels treatment has been split into two categories: 1) roadside hazard with modified fuels and 2) roadside hazard with complete fuels treatment. <ul style="list-style-type: none"> • Roadside hazard with modified fuels results in NRF and D to be degraded but the habitat will remain functioning at the same level after treatment as it was prior to the treatment. • Roadside hazard with complete fuels treatment results in NRF to be downgraded to dispersal habitat. Dispersal habitat remains dispersal habitat after treatment.
Several salvage harvest units contain existing suitable NSO, but the habitat will not be salvaged. The habitat may receive a fuels treatment that will result in a habitat degrade, but not a downgrade or removal.	Several salvage harvest units contain existing suitable NSO habitat. The habitat may receive a fuels treatment that will result in a habitat degrade but the habitat will not be downgraded or removed.
Landing construction will result in the loss of habitat for the footprint of the landing.	No change
Additional assumption	Although moderate and high severity fire-affected NRF doesn’t generally meet the description of the Primary Constituent Elements (PCE) 2, 3, and 4, PCE1 does describe early- to late-seral forest components of critical habitat. High and moderate fire-affected NRF will be considered a component of

	PCE 1.
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On page 132 of the DEIS (also discussed on page 12 of the BE), the section called Changes to Critical Habitat states “for the purpose of this analysis, due to the lack of information on how these burned areas are being used [by NSO], use of post-fire burned areas for foraging will not be discussed further” inaccurately dismisses the possible foraging opportunity in nesting/roosting and foraging habitat that burned at moderate and high fire severity (RAVG grid code 3 and 4); even though these areas don’t meet the commonly described foraging habitat in the Klamath Province (Zabel et al. 2003, USDI USFWS 2011) primarily because the loss of canopy cover due to the fire, we are including these moderate and high fire severity affected areas when it overlaps pre-fire nesting/roosting and foraging habitat.

Studies have detected NSO in a variety of habitats including high severity fire-affected forested areas. The reason for NSO using these areas despite the lack of canopy cover was attributed to the potential increase in prey abundance (Bond et al. 2009, Lee et al. 2013). NSOs foraging in high fire severity areas are likely to remain in close proximity to existing suitable habitat; the amount and arrangement of suitable habitat may also influence foraging areas (Clark 2007, Comfort 2014). Contrastingly, high severity fire-affected areas are not generally used by NSO for nesting or roosting, possibly because the tree canopy was essentially consumed by the fire (Bond et al. 2009, Clark et al. 2011).

Pre-fire nesting/roosting and foraging critical habitat that burned at moderate and high fire severity (RAVG grid code 3 and 4) is called “fire-affected critical habitat.” The footprint of the treatment that removes dominate and co-dominant tree/snags in the fire-affected critical habitat is considered a loss of foraging opportunity. Even though NSO may use the treatment areas after implementation, the removal of the trees/snags will likely affect foraging, possibly to the point that an owl may not use the area for foraging. Given this uncertainty on NSO use (spatially and temporally) of fire-affected critical habitat, it was assumed to be a worst-case scenario which would be a loss of foraging opportunity.

On page 12 of the BE, it was stated that there was more information about critical habitat in the BA; in the current analysis, the following critical habitat information is added to the BE.

The California Klamath Province is considered a ‘fireprone’ area because of its frequent fire return intervals and existing vegetation condition that likely elevates the potential of fire (USDI USFWS 2012). Within fire-prone areas, resource agencies planning vegetation management in critical habitat for the northern spotted owl (NSO) are encouraged to ameliorate current threats of on-going habitat loss from uncharacteristic fires and vegetation change that are largely related to past fire exclusion (USDI USFWS 2012). Resource agencies are also encouraged to work toward maintaining or enhancing the characteristics of older forest and providing large habitat blocks and associated interior forest conditions. Regional variations should be taken into account; in the Klamath Province this means providing mosaics of interior habitats and edges to provide for the diversity of prey for NSO.

Critical habitat is generally described as the specific geographic area occupied by the species at the time of listing plus areas that contain the physical and biological features that are essential to the conservation of endangered and threatened species and may need special management or protection. Instead of providing general recommendations that cover the entire critical habitat area, critical habitat was split into units and subunits to provide specific recommendations because units or subunits may provide different functions to aid in the recovery of the species.

For the spotted owl, the Westside Project overlaps portions of the Klamath East and Klamath West Critical Habitat units; these units were further divided into four critical habitat subunits (KLE6, KLE7, K LW7, and K LW8). Generally, all four subunits have special management considerations to enhance or protect existing essential biological or physical features, reduce the loss of habitat to wildfire, reduce change in habitat as a result of fire exclusion, and buffer competition with barred owls, but the primary function for these subunits is to support the survival, reproduction, and dispersal (USDI USFWS 2012).

Primary Constituent Elements (PCEs) are the physical and biological features that provide the essential life history requirements of the species. The 2011 CHU designation identifies the primary constituent elements for NSO as those physical and biological features that support nesting, roosting, foraging, and dispersal. Specifically the PCEs for the NSO are summarized (from USDI Fish and Wildlife Service 2012):

1. Forest types that support the northern spotted owl across its geographic range. Within the Klamath Province, these include mixed conifer/mixed conifer-hardwood, mixed evergreen, Douglas-fir, white fir, and Shasta red fir. These forest types may be in early-, mid- or late-seral stages.
2. Nesting, roosting, and
3. Foraging habitat.
4. Dispersal habitat.

These PCEs are quoted from the critical habitat rule. In the following analysis, we will refer to these PCE categories as PCEs 1, 2, 3 and 4 with subdivisions discussed as appropriate. This document only evaluates project effects in relation to the 2012 critical habitat ruling and supersedes, as appropriate, any previous analysis of critical habitat effects.

PCE 1, Forest Type:

These activities can occur in early-, mid-, or late-seral forest types identified in the PCEs in the final rule. On the Forest, PCE 1 includes the mixed conifer and mixed evergreen type, the Douglas-fir type, the Shasta red fir type and a small amount of the moist end of the ponderosa pine, coniferous forest zones.

PCE 2, Nesting and Roosting habitat Klamath/Northern California Interior Coast Ranges

Stands for nesting and roosting that are generally characterized by:

- a) moderate to high canopy closure (60 to over 80 percent);
- b) Multilayered, multispecies canopies with large (20 to 30 inches or greater dbh) overstory trees;
- c) High basal area (greater than 240 square feet/acre);
- d) High diversity of different diameters of trees;
- e) High incidence of large live trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence);

- f) Large snags and large accumulations of fallen trees and other woody debris on the ground; and
- g) Sufficient open space below the canopy for northern spotted owls to fly.

PCE 3, Foraging habitat in the Klamath/Northern California Interior Coast Ranges

Foraging habitat is generally characterized by:

- a) Stands of nesting and roosting habitat; in addition, other forest types with mature and old-forest characteristics;
- b) Presence of the conifer species, incense-cedar, sugar pine, Douglas-fir, and hardwood species such as bigleaf maple, black oak, live oaks, and madrone, as well as shrubs;
- c) Forest patches within riparian zones of low-order streams and edges between conifer and hardwood forest stands;
- d) Brushy openings and dense young stands or low-density forest patches within a mosaic of mature and older forest habitat;
- e) High canopy cover (87 percent at frequently used sites);
- f) Multiple canopy layers;
- g) Mean stand diameter greater than 21 inches;
- h) Increasing mean stand diameter and densities of trees greater than 26 inches increases foraging habitat quality;
- i) Large accumulations of fallen trees and other woody debris on the ground; and
- j) Sufficient open space below the canopy for northern spotted owls to fly.

PCE 4, Dispersal (also-known-as “transience and colonization”) habitat Klamath/Northern California Interior Coast Ranges

Dispersal habitat is generally characterized by:

- a) Stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities; in general this may include, but is not limited to, trees with at least 11 inches dbh and a minimum 40 percent canopy cover; and
- b) Younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.
- c) Habitat supporting the colonization phase of dispersal, which is generally equivalent to nesting, roosting, and foraging habitat as described in PCEs (2) and (3), but may be smaller in area than that needed to support nesting pairs.

On page 142 in the DEIS (summarized in table 3-8, page 145) or page 39 of the BE, the acres of critical habitat in table 3-7 of the DEIS or table 16 of the BE have changed because the critical habitat analysis area has changed.

Table 6: The table displays the current number critical habitat acres for Analysis Indicator 2

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	NSO Critical Habitat			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	73	16	117	0
KLE7	39,962	7,606	6,864	6,480	8,434
KLW7	28,876	2,619	8,027	6,931	839
Whites					
KLW8	30,148	6,703	7,393	6,422	2,217
Beaver					
KLE6	7,429	1,577	1,402	1,401	229
KLE7	650	172	52	277	0

Bald Eagle

There is no change in methods for the Bald Eagle.

Northern Goshawk

The term nest was used in the DEIS analysis this has been replaced with potentially occupied territories (territories) to better characterize the sites since nests have not been located for all of the sites.

On page 17 of the BE, the header called “Analysis indicator #2 – risk to reproduction” with a sub heading called “assumptions for eagle disturbance analysis” is incorrect; the subheading should state “assumptions for northern goshawk disturbance analysis.” Under the same subheading, the assumptions have been modified to better illustrate Northern Goshawk desired habitat characteristics.

Table 7: Comparison of assumptions for Northern Goshawk risk to reproduction between the DEIS and the FEIS.

Original Assumption	Edited Assumption
High fire severity affected goshawk habitat will not function as habitat	Fire-affected goshawk habitat that burned at high severity (RAVG grid code 4) doesn’t contain the habitat attributes associated with goshawk nesting (e.g. dense tree canopy cover) or foraging habitat (e.g. understory for prey species habitat); thus, this area was classified as non-habitat.
Nest sites below the described amount of habitat in the	Goshawk nest sites that currently contain low amounts of habitat will likely have difficulty being

“high” level of risk are no longer occupied	reproductively successful; this doesn’t mean that the nest site can’t be active or a pair couldn’t be reproductively successful despite the difficulties associated with low amounts of habitat.
Level of risk categories presented below accurately represent the effects to goshawk nesting success	<u>No change needed</u>
Roadside hazard and salvage will remove habitat	<u>This assumption is no longer valid</u>
<u>Added assumption</u>	<u>Roadside hazard with modified fuels treatment will result in degradation of habitat.</u> <u>Roadside hazard with complete fuels treatment will result in downgrading of habitat.</u> <u>Roadside hazard only will result in degradation of habitat.</u> <u>Salvage will result in a loss of habitat.</u> <u>Site preparation and planting will downgrade habitat.</u> <u>Underburning will degrade habitat.</u>

On page 18 of the BE, the section called “criteria for assessing the risk to goshawk reproduction” contains a table that describes the criteria used to evaluate the level of risk to goshawk reproduction. However, after further review of active goshawk nests on the Forest, the thresholds for the moderate and low level of risk was set too high in the number of acres. The “low” risk level is described in the Forest Plan as a standard and guideline. The table below displays the changes to the criteria.

Table 8: Comparison of original and edited criteria for assessing goshawk risk to reproduction

Level of Risk	Original Criteria	Edited Criteria
High	Primary nest zone (0.5 mile radius around nest site) <ul style="list-style-type: none"> Maintain 100-199 acres of nesting habitat with $\geq 60\%$ canopy cover Maintain ≥ 204 acres of forested habitat with $\geq 40\%$ canopy cover and small openings Foraging habitat zone (0.5 to 1.0 mile radius around nest side) <ul style="list-style-type: none"> Maintain the 1,506 acres can be a mix of opening and forested age classes 	The territories that don’t meet the criteria of the risk levels “Moderate” or “Low” are considered “High” risk.
Moderate	Primary nest zone (0.5 mile radius around nest site) <ul style="list-style-type: none"> Maintain 200 - 299 acres of nesting habitat with $\geq 50\%$ canopy cover Maintain ≥ 204 acres of forested habitat with $\geq 40\%$ canopy cover and small 	Primary nest zone (0.5 mile radius around nest site) <ul style="list-style-type: none"> Maintain 200 - 300 acres of nesting habitat with $\geq 60\%$ canopy cover Maintain ≥ 100 acres of forested habitat with $\geq 40\%$ canopy cover and small

	<p>openings</p> <p>Foraging habitat zone (0.5 to 1.0 mile radius around nest side)</p> <ul style="list-style-type: none"> • Maintain ≥ 900 acres of forested habitat with $\geq 40\%$ canopy cover • The remaining 606 acres can be a mix of opening and forested age classes 	<p>openings</p> <p>Foraging habitat zone (0.5 to 1.0 mile radius around nest side)</p> <ul style="list-style-type: none"> • Maintain ≥ 800 acres of forested habitat with $\geq 40\%$ canopy cover • The remaining 706 acres can be a mix of opening and forested age classes
Low	<p>Primary nest zone (0.5 mile radius around nest site)</p> <ul style="list-style-type: none"> • Maintain > 300 acres of nesting habitat with $\geq 60\%$ canopy cover • Maintain ≥ 204 acres of forested habitat with $\geq 40\%$ canopy cover and small openings <p>Foraging habitat zone (0.5 to 1.0 mile radius around nest side)</p> <ul style="list-style-type: none"> • Maintain ≥ 900 acres of forested habitat with $\geq 40\%$ canopy cover • The remaining 606 acres can be a mix of opening and forested age classes 	No Change

On page 40 of the BE, the BE states “Eleven goshawk nests have been occupied at some point in the last twenty years within or near the project area. All eleven nests have been affected by the 2014 fires, but the level of effects to habitat is variable. Consequently, only one of the eleven nests meets the Forest Plan Standard and Guide (pg. 4-29) habitat minimums. Unlike most of the nests, this nest is mostly outside the fire perimeter and received only small changes in habitat abundance.” The goshawk affected environment needs some clarification and a correction. The edited excerpt from the BE is provided below.

Eleven goshawk potentially occupied territories have been occupied at some point in the last twenty years within or near the project area. All eleven potentially occupied territories have been affected by the 2014 fires, but the level of effects to habitat is variable. The effect of fire on goshawk habitat is dependent on the habitat quality before the fire and the fire severity; low fire severity on high quality habitat will likely not change the function of the habitat but high severity fire on high quality habitat will remove important habitat components like tree canopy cover. Goshawks are forest dwelling species and are generally not found in areas absent of canopy cover. Unfortunately most of the potentially occupied territories in the project area had low levels of habitat prior to the 2014 fires and the varying levels of fire severity included high severity fire which removed habitat or reduced the quality of habitat. Consequently, none of the eleven potentially occupied territories meet the Forest Plan Standard and Guidelines (pg. 4-29) habitat minimums in existing habitat conditions.

2015 Survey Information

Since the DEIS, the 2015 goshawk surveys have resulted in identifying two active known territories. These two territories (Stanza and Middle Creek) were previously analyzed. In addition, surveys have detected a single or pair of goshawks at four locations that weren’t previously identified as a potentially occupied territories. The surveys are not complete at the time of writing this document and

the surveys have not determined whether these detections are new goshawk territories and if so, whether they are reproductively active. The surveys have only determined that a single or pair are occupying an area. For purposes of this analysis, we analyzed these goshawk detections like known sites but without a nest site, we have placed the center of the territory in nesting habitat close to the goshawk detections to represent the most likely place the goshawk may nest. These detections plus any other goshawks found during surveys will be subject the limited operating period as described in the Project Design Features in Chapter 2 of the FEIS.

Fisher, Marten, and Wolverine

Fisher, marten, and wolverine analysis has changed since the publication of the draft EIS and BE. The incorrectly categorized RAVG data used in the draft analysis resulted in incorrectly estimating the level of fire severity, specifically basal area loss due to fire, which resulted in incorrectly estimating the post-fire habitat condition and distribution. The following clarification or modifications will display the changes that occurred since the draft EIS and BE.

Connectivity

On page 23 of the BE, the “assumptions for fisher, marten, and wolverine connectivity analysis” are displayed.

Since the publication of the draft EIS, the public has reported two observations to the Forest regarding fisher use of fire-affected areas. One observation occurred in the Doggett Creek area; a fisher was observed in a burned portion of the project area but the exact area was not clear. The second observation occurred in the Elk Creek area where a fisher was observed crossing a proposed salvage unit that burned at moderate to high fire severity. The pictures of the fisher show a background of pre-fire habitat, probably denning/resting or foraging habitat. These observations provide evidence that fisher will use fire-affected habitat and are also consistent with recent research (Hanson 2013) but the exact type of fisher use (movement or dispersing, denning, resting, or foraging) is not clear. At a minimum, fishers are likely using fire-affected habitat to move between patches of high quality habitat.

One of these assumptions from the BE states “All pre-fire habitat that received high fire severity (>75% of basal loss) is considered non-habitat for this analysis.” High severity fire-affected habitat doesn’t typically meet the defined characteristics of fisher or marten (or, to a lesser degree, for wolverine habitat. However, denning/resting and foraging habitats typically contain larger size trees and if these habitat types are subjected to high fire severity, the trees typically remain standing as snags and provide physical cover despite the loss of canopy cover (primary component of habitat). Fire-affected habitat could provide enough cover for a fisher to travel through these areas to move from one patch of habitat to another even though these areas may result in lower survival. In order to account for this possible use of fire-affected (high fire severity) denning/resting and foraging habitat, these areas were combined with movement habitat even though the physical description of fire-affected denning/resting and foraging habitat and movement habitat could be considerably different. For purposes of this analysis, denning/resting and foraging habitat that burned at high severity (>75% basal area loss) is simply called “fire-affected habitat.”

Table 9: Modifications or clarifications to assumptions used in the “habitat connectivity” analysis

Original - list of assumptions for “habitat connectivity”	Edited - additions to assumptions for “habitat
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	connectivity”
Fisher, marten, and wolverine habitat is used as described above.	No change
Fisher, marten, and wolverine are not likely to cross habitat openings without snags and coarse woody debris >600ft in width.	No change
Fisher, marten, and wolverine will not cross barren openings without physical structure (e.g. trees, snags, or coarse woody debris) >160ft in width.	No change
All pre-fire habitat that received high fire severity (>75% of basal loss) is considered non-habitat for this analysis	Pre-fire denning/resting and foraging habitat that burned at high severity (>75% basal area loss) will become movement habitat for the purposes of this analysis. Movement habitat that burned at high severity (>75% basal area loss) is considered non-habitat.
All pre-fire habitats that received moderate fire severity (50-75% basal loss) will reduce in habitat quality. <ul style="list-style-type: none"> • Pre-fire denning/resting and foraging habitat will become movement habitat • Pre-fire movement habitat will become non-habitat 	No change
Addition	Pre-fire denning/resting, foraging, and movement habitat affected by low severity fire (RAVG grid code 1 and 2 (≤50% basal area loss) will remain at the same habitat type despite the potential degradation resulting from fire.
Salvage and site-prep/plant will reduce all pre-fire habitat to non-habitat	Salvage will reduce any remaining habitat to non-habitat except in riparian reserves or any other planned retention areas. Salvage is not planned to occur in riparian reserves or planned retention areas. Site preparation and planting that occurs outside of riparian reserves is assumed to remove any habitat occurring in the unit.
Fuels treatment (except underburn) will downgrade habitat <ul style="list-style-type: none"> • Post-fire denning/resting will become foraging habitat • Post-fire foraging will become movement habitat 	Fuels treatment (except underburning and roadside modified fuels treatment) will downgrade habitat <ul style="list-style-type: none"> • Post-fire denning/resting will become foraging habitat • Post-fire foraging will become movement habitat
Addition	Underburning and roadside modified fuels treatment will result in habitat degradation.

Fisher Home Range

Table 10: Modifications or clarifications to assumptions used in the “fisher home-range” analysis

Original - list of assumptions for “fisher home range”	Edited - change or additions to assumptions for “habitat connectivity”
The average home range size of a female fisher is about 5,000 acres and the watershed represents a representative home range	No change
Home ranges must contain habitat characteristics as described in the table below	No change
All pre-fire habitat that received high fire severity (>75% of basal loss) is considered non-habitat for this analysis	Pre-fire denning/resting and foraging habitat that burned at high severity (>75% basal area loss) will become movement habitat for the purposes of this analysis. Movement habitat that burned at high severity (>75% basal area loss) is considered non-habitat.
All pre-fire habitats that received moderate fire severity (50-75% basal loss) will reduce in habitat quality. <ul style="list-style-type: none"> • Pre-fire denning/resting and foraging habitat will become movement habitat • Pre-fire movement habitat will become non-habitat 	No change
Salvage and site-prep/plant will reduce all pre-fire habitat to non-habitat	Salvage will reduce any remaining habitat to non-habitat except in riparian reserves or any other planned retention areas. Salvage is not planned to occur in riparian reserves or planned retention areas. Site preparation and planting that occurs outside of riparian reserves is assumed to remove any habitat occurring in the unit.
Fuels treatment (except underburn) will downgrade habitat <ul style="list-style-type: none"> • Post-fire denning/resting will become foraging habitat • Post-fire foraging will become movement habitat • Post-fire movement will become non-habitat 	Fuels treatment (except underburning and roadside modified fuels treatment) will downgrade habitat <ul style="list-style-type: none"> • Post-fire denning/resting will become foraging habitat • Post-fire foraging will become movement habitat
Addition	Pre-fire denning/resting, foraging, and movement habitat affected by low severity fire (RAVG grid code 1 and 2 (≤50% basal area loss) will remain at the same habitat type despite the potential degradation resulting from fire.
Addition	Underburning and roadside modified fuels treatment will result in habitat degradation.

Therefore, the assumption of “All pre-fire habitat that received high fire severity (>75% of basal loss) is considered non-habitat for this analysis” is replaced by “Pre-fire denning/resting and foraging habitat that burned at high severity (>75% basal area loss) will become movement habitat for the purposes of this analysis;” this change will also be reflected in table 9 of the BE. The description of Table 11 is “criteria for quality of future habitat for fisher, marten, and wolverine” which is incorrect; Table 11 should state” criteria for defining a change in fisher home range”.

Table 11: Criteria for defining a change in fisher home range

Female fisher home range	Original -Proportion of habitat within 7 th field watershed	Edited - Proportion of habitat within 7 th field watershed
Maintain home range	Each watershed contains <ul style="list-style-type: none"> At least 50% of the watershed contains denning/resting and foraging habitat, AND Up to 50% of the watershed contains movement habitat, AND No more than 20% of the watershed contains non-habitat (<20% canopy cover). 	Each watershed contains <ul style="list-style-type: none"> At least 50% of the watershed contains denning/resting and foraging habitat, AND Up to 50% of the watershed contains movement habitat and <u>fire-affected habitat</u>, AND No more than 20% of the watershed contains non-habitat (<20% canopy cover).
Loss of home range	<ul style="list-style-type: none"> <50% of the watershed contain denning/resting or foraging habitat, OR >20% of the watershed contain <20% canopy cover 	<ul style="list-style-type: none"> <50% of the watershed contain denning/resting or foraging habitat, OR >20% of the watershed contain <20% canopy cover (except fire-affected denning/resting and foraging habitat which is combined with movement habitat)

On page 41 of the BE in the “affected environment,” the BE displays table 17 with the existing amount of habitat occurring in the analysis area. Due to the incorrectly categorized fire severity data, the acres having existing habitat has changed. The table below shows the acres presented in the BE and the adjusted acres of habitat.

Table 12: Comparison of the acres of fisher, wolverine and marten habitat between DEIS and FEIS.

Species	Habitat acres presented in Draft BE			Adjusted habitat acres			
	Denning/resting (acres)	Foraging (acres)	Movement (acres)	Denning/resting (acres)	Foraging (acres)	Movement (acres)	Fire Affected habitat
Fisher and Wolverine	106,397	32,730	135,120	77,411	101,170	113,970	23,083

Marten	44,249	8,500	38,870	24,262	16,671	24,592	14,442
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On page 41 of the BE, the analysis indicator “habitat connectivity” describes the general level of connectivity; however, given the incorrectly categorized RAVG data, the level of connectivity has changed for several drainages. The adjusted data categories resulted in identifying 39 drainages with “moderate” connectivity, 23 drainages with “low” connectivity, and five drainages with “very low” connectivity. None of the drainages were identified with “high” connectivity.

Table 13: Level of connectivity for fisher, wolverine and marten updated per reclassified RAVG.

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	26	10	0
Beaver	0	7	5	1
Whites	0	6	8	4
TOTAL	0	39	23	5

On page 41, the BE states “The 67 watersheds analyzed for this project had only 25 watersheds with enough habitat to support a home range or contribute to a home range. The remaining 42 watersheds have too many open areas or didn’t have enough denning/resting and foraging habitats.” Given the changes to the analysis, there are now 27 watersheds (4 in Beaver, 10 in Whites and 13 in Happy Camp fire-related project areas) that contain enough habitat to meet the definition of a fisher home range.

In addition, this section didn't identify the names of the 67 watersheds analyzed. This list represents the 67 watershed analyzed in the fisher, marten, and wolverine analysis: Bear Creek, Benjamin Creek-Klamath River, Big Creek, Big Ferry-Swanson, Bishop Creek-Elk Creek, Buckhorn Creek, Buckhorn Gulch-Beaver Creek, Caroline Creek-Klamath River, China Creek, Cliff Valley Creek, Collins Creek-Klamath River, Cougar Creek-Elk Creek, Deep Creek-Scott River, Doggett Creek, Dona Creek-Klamath River, Doolittle Creek, Dutch Creek, Eddy Gulch, Franklin Gulch-Scott River, Fryingpan Creek-Klamath River, Granite Creek, Headwaters Elk Creek, Hoop & Devil-Elk Creek, Horse Creek, Jackass Gulch’ Jaynes Canyon, Jessups Gulch-North Fork Salmon River, Kohl Creek, Lower East Fork Elk Creek, Lower Grider Creek, Lower North Russian Creek, Lower South Russian Creek, Lower West Fork Beaver Creek, Lumgrey Creek, McCarthy Creek-Scott River, Middle Creek, Middle Elk Creek, Miller Gulch-Klamath River, Music Creek, North Fork Kelsey Creek, O’Neil Creek, Quigleys Cove-Klamath River, Rainy Valley Creek, Rancheria Creek, Robinson Gulch-North Fork Salmon River, Schutts Gulch-Klamath River, Shadow Creek, Sixmile Creek, Soda Creek-Beaver Creek, South Fork Kelsey Creek, Specimen Creek, Sugar Creek, Taylor Creek, Tom Martin Creek-Klamath River, Tompkins Creek, Toms Valley Creek-Elk Creek, Upper Canyon Creek, Upper East Fork Elk Creek, Upper Elk Creek, Upper French Creek, Upper Grider Creek, Upper North

Russian Creek, Upper South Russian Creek, Walker Creek, West Grider Creek-Klamath River, Whites Gulch, and Yellow Dog Creek-North Fork Salmon River

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

It was not explicitly stated but the original analysis assumed that treatment within the Northern Spotted Owl limited operating periods would not disturb bat colonies because the limited operating periods would prevent disturbance until at least July 9th – which is past the June date in which bat hibernacula and maternity areas are susceptible to disturbance. This assumption is made in the amendment of the report as well.

Willow Flycatcher

The analysis for the draft EIS includes an assumption in the methods for analyzing effects that only fish-bearing reaches were considered to contain potential habitat (DEIS page 136 and Biological Evaluation page 29). This was not an assumption of the final analysis. The final analysis includes all hydrologic Riparian Reserves including mapped springs (using the interim widths defined in the Forest Plan). The analysis area was expanded because of the possibility for willow habitat in meadows in the headwaters of the streams.

Siskiyou Mountain Salamander

The term “known site” is defined as locations where the species has been detected and for the Siskiyou Mountains salamander, the know site also includes the surrounding habitat.

On page 31 of the BE, it states that “On the Forest, Siskiyou Mountains salamanders are found in areas with more boulders, deeper leaf litter, higher canopy closure, higher subsurface temperatures, and lower fern cover (Ollivier et al. 2001)”; this statement is incomplete. Ollivier et al. (2001) study described these microhabitat conditions for areas where the species was found south of the Siskiyou Crest which includes a portion of the Klamath National Forest. Welsh et al. (2007) found similar habitat attributes; they found Siskiyou Mountains salamanders in moist, older, closed canopy forests with deep litter and cobble to boulder sized rock substrates. Other studies have described this species' habitat with the presence of talus and canopy cover (Clayton et al. 1999 and Suzuki et al. 2008). DeGross and Bury 2007 summarized this species' habitat as diverse, typically on slopes with conifer or mixed conifer with wet microclimates in rocky substrates. However, these microhabitat characteristics may not completely describe every site the salamander has been located. Sometimes, the species is located in areas that don't meet this general habitat description like areas with low amount of canopy cover; these sites may be able to maintain rocky, cool, moist habitat based on the physical location (e.g. aspect) (DeGross and Bury 2007).

The loss of canopy cover may not affect micro-site conditions equally across sites thus other factors may need to be considered to determine whether a site may persist after a disturbance event. The effects on micro-site conditions are variable depending on the habitat characteristics and the distance from the edge into the habitat (Chen et al. 1993). Latitude, aspect, and local climate are important for considering changes in micro-site conditions (Chen et al. 1993). The Siskiyou Mountains salamander activities are affected by the micro-site conditions; this species is typically associated with cool, moist conditions (Chen et al. 1995 and Welsh et al. 2007). South aspects are generally hotter and drier than north aspects; south aspects may only provide a limited period during the year where the micro-site conditions may meet the conditions needed for these salamanders to be active at or near the ground surface while the north aspects may create favorable conditions for a longer period of time (Chen et al. 1995 and Welsh et al. 2007).

Fire can change the micro-site climate conditions by changing the site composition. Even though fire can physically change the rocky substrate that makes up a large portion of the salamander habitat, the change isn't usually enough to change the rock quality of the salamander habitat; however, fire can consume the organic material (e.g. leaf litter) that may cover the rocky areas and reduce the surrounding vegetation that shades the rocky areas. The surrounding vegetation and organic ground material likely contribute to the micro-site conditions by creating cooler and moister site conditions (Bury et al. 2002). The loss of canopy cover and organic ground material can affect these desirable conditions and possibly result in reducing the capability of the salamanders to be active at or near the ground surface. However, like described above, other physical features (e.g. aspect) may aid in offsetting the change in vegetation.

On page 32 of the BE, the analysis indicator 1 states that the area was surveyed, but this needs clarification. The Happy Camp project area has several known locations of the Siskiyou Mountains salamander that are a result of strategic surveys. These strategic surveys don't completely cover every acre of the project area rather these strategic surveys are part of a several year survey effort that targeted areas that are more likely to contain the species. Given the large area of this project, the strategic survey effort has only covered a small portion of the project area. Project level surveys are currently underway to identify sites in treatment units to be added to the known sites category. These known sites have Protection Design Features to reduce effects to these known sites.

On page 32 of the BE, the assumptions of the Siskiyou Mountains salamander analysis are presented, but these assumptions are brief so additional explanation are added here.

The assumption points out the fact that most of the treatment units experienced moderate and high fire severity which indicates that most or all the trees are dead or high likely to die over the next couple years. Dead trees typically produce very little canopy cover because most, if not all, the branches that makeup the tree canopy are consumed by the fire. However, the trunk of the tree and any remaining branches may block a portion of the solar radiation hitting the rocky habitat of the salamander. This assumption in no way attempts to discount the possibility of salamanders potentially occupying a particular area rather this assumption points out the fact that canopy cover is not playing a role in determining whether a site is occupied or not. Further, the assumption states "salamanders will persist in known sites". In other words, we expect all the known sites to contain salamanders regardless of the fire effects and subsequently, these sites will have protection buffers as described in the Project Design Features.

The analysis assumes that any ground-based disturbance will disturb known sites. This includes ground-based salvage harvest, ground-based site preparation for planting, and any roadside hazard treatments using ground-based equipment.

It was originally reported that there are 48 known sites in the project area (DEIS page 143 and Biological Evaluation page 42). Final analysis identified a total of 72 known sites (this includes the original 48 sites) in the project area.

Tehama Chaparral Snail

The indicator used to describe effects was misidentified in the DEIS. The indicator that was used was likelihood of dispersal. The indicator is updated in this amendment.

Western Bumble Bee

There is no change in the methods for the Western Bumble Bee.

Management Indicator Species – Snag Associated Species

There is no change in the methods for Management Indicator Species – Snag Associated Species.

Management Indicator Species – Hardwood Associated Species

There is no change in the methods for Management Indicator Species – Hardwood Associated Species.

Survey and Manage Species

On page 6 of the Survey and manage Report, the “affected environment” needs some clarification. The Northwest Forest Plan designated a list of Survey and Manage species that are associated with late-successional habitat. Since the time of this plan, new information has shown many of these Survey and Manage species (mollusk and salamander species) occur in areas outside of late-successional forest likely because other habitats can provide similar micro-site condition. Survey and Manage recommendations focus on minimizing effects to areas that have contained one of these mollusk and salamander species analyzed in this project. However, there is little information on how fire may affect these sites especially for moderate and high fire severity fire, but we know that these species have likely experienced frequent fire on the Forest.

Habitat within pre-fire habitat that burned at very low and low severity may contain the micro-site conditions associated with the S&M species analyzed for this project. However, the habitat affected by moderate and high severity may not provide the needed micro-site conditions for these species given the lack of canopy cover and understory vegetation. Moderate and high severity fire kills most, if not all the trees and consumes most of the small vegetation resulting in little to no canopy cover. These changes in conditions can create a hot, dry condition that is not conducive habitat for mollusk or salamander species, these conditions may change as vegetation regenerates. Even if a site experiences moderate or high fire severity, it is difficult to confirm a site not occupied so we are assuming all known sites are occupied. Therefore, standards and guidelines are applied to all known sites.

Whether or not fire creates conditions that may affect the species occupancy of a particular site, the intent of the Survey and Manage standards and guidelines is to protect known sites. For this project, project design features were developed to apply the standards and guidelines to protect these sites regardless of the current condition.

Migratory Birds

There is no change in methods for migratory bird analysis.

Big Game

Effects to big game have been added as a result of public comment. The Forest Plan provides direction for big game habitat management in Chapter 4 for the maintenance or improvement of wildlife habitat for Forest Emphasis species such as elk and deer, specifically Standard and Guide 8-47 which directs the design of projects “to improve, create or maintain a mix of forage and cover conditions that will maintain or increase deer populations”

Black-tailed deer and Roosevelt elk are Forest emphasis species for which Forest Plan standards and guidelines 8-47 through 8-55 are displayed on pages 4-33 of the Forest Plan. Deer require a vegetation mosaic of several components including shrubs and grasses. Grasses provide quality spring to early summer forage for deer and is an important component of suitable deer habitat (CDFG

2008). Grass is important in the spring when nutrients in grass are highest (Dietz 1976). The indicator for the analysis of the effects of the proposed alternatives is recovery of understory browse and cover species.

The spatial boundary for the analysis is the project area. The temporal boundary is about 10 years which is the estimated amount of time needed for shrubs to regenerate in areas burned with high and moderate vegetation severity.

Alternative 1

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

On page 44 of the BE, a sentence states “All the ACs [activity centers] (All ACs were affected by the fires) analyzed in this project will continue to accumulate fuels resulting from the burned trees falling over.” The adjusted spotted owl analysis area includes 14 activity centers that contain no fire effects from Beaver, Whites, or Happy Camp fires because the project activities extend beyond the fire perimeter so an activity center can overlap treatment but not the fire perimeter.

On page 47, the BE states “The addition of direct, indirect, and cumulative effects will result in no shift in risk to reproduction.” This is incorrect. The re-analysis identified one AC in Beaver analysis area that increased in risk from low to moderate risk to reproduction as a result of the cumulative effects of adding effects of present and reasonably foreseeable future actions to the effects of alternative 1.

Table 14: The level of risk to NSO reproduction given the current condition of the core and home range for known activity centers

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver
Very Low	2 (2)	0 (0)	2 (2)
Low	14 (14)	11 (11)	6 (5)
Moderate	37 (37)	4 (4)	8 (9)
High	4 (4)	0 (0)	7 (7)

The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

On page 47 of the BE, the BE states “The result of the cumulative effect is about 552 acres of critical habitat in subunit KLE7. The remaining three subunits have no cumulative effects for this analysis indicator.” This is incorrect given the changes in the data explained earlier in this document and the description of effects needs clarification.

NSO critical habitat doesn't occur on private lands so the effects described for this analysis indicator are limited to public lands. In addition, the reasonably foreseeable future actions don't have completed prescriptions for the various treatments but we have basic unit delineation. Therefore, the primary cumulative effects are a result of estimating the potential effect for a project that may or may not have effects on critical habitat. The draft BE used a "worst case" scenario by estimating that treatments in future project may reduce the quality of NSO habitat to the point that habitat may be removed. The potential cumulative effects estimate represents a worst case that is highly likely to be an overestimate. Below is a table that displays the estimated acres of habitat potentially affected by current and future projects within each of the critical habitat subunits that occur in the analysis area.

Table 15: Change in critical habitat for each critical subunit in each project area subunit.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	0 (-80)	0 (-64)	0 (+144)	0 (0)
KLW7	28,876	0 (0)	0 (0)	0 (0)	0 (0)
Whites					
KLW8	30,148	0 (-105)	0 (-2)	0 (+116)	0 (0)
Beaver					
KLE6	7,429	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Bald Eagle

There is no change in effects to the Bald Eagle between DEIS and FEIS.

Northern Goshawk

On page 44 of the BE and summarized on page 153 of the DEIS, the BE states "the eleven goshawk nests that may be affected by this project have been affected by the fire which has resulted in most of the nests having a low amount of habitat. Only one nest (Six-mile) has sufficient habitat to have a low level of risk to reproduction while the remaining ten nests have moderate or high risk levels. Without treatment, these ten nests will continue to struggle supporting reproduction and for the high risk nests, reproduction is not likely. Over the long term, the highly fire-affected habitat will remain in poor condition and will not provide habitat." This is has been corrected in this analysis. The reclassification of the RAVG data has led to changes in risk for two of the original 11 potentially

occupied territories. Hickory went from a moderate risk to a high risk and Sixmile went from a low to a moderate risk to reproduction. The updated risk for alternative 1 is summarized in Table 16.

There are no potentially occupied territories that have sufficient habitat to meet the criteria of a low risk to reproduction; consequently, all the pairs associated with these nest sites will likely have some additional challenges to meet the needs of reproduction using the amount of existing habitat as a proxy. This doesn't mean that reproduction will only occur at any nest sites that occur in the territories with low risk; moderate and high risk. Territories which contain less habitat or low amounts of high quality habitat are expected to have more difficulty finding sufficient resources to support reproduction when compared to a low risk territory.

Table 16 displays the current level of risk and the cumulative effects of adding the effects of other projects occurring on all land ownerships to the effects of alternative 1. The Kohl territory will also have treatment on private land that will affect habitat but this nest is already at high risk and the risk level will remain at high; adding the effects of these treatments on private land will likely result in conditions that would make reproduction very difficult for nesting goshawks. Given the uncertainty of the level of treatments occurring on private land, any habitat occurring in the anticipated private land treatment was determined to have a loss of habitat.

The Kelsey nest site overlaps a future foreseeable Forest project (Lovers Canyon project) that is proposing treatment that could affect goshawk habitat. Even though this territory will be assessed during the Lovers Canyon project planning, the project is early in development and the prescriptions have not been finalized for the anticipated proposed actions. Given the uncertainty of the possible treatments, the worst-case scenario was used. Under this scenario, treatments occurring within proposed silvicultural units will be expected to reduce canopy cover below 40%; thus there is expected to be a loss of habitat. With these assumptions for Lover Canyon project the Kelsey territory is the only nest with cumulative effects that increase the risk to reproduction level. It goes from a moderate to a high when cumulative effects are considered. The Six-mile territory is anticipated to have habitat affected by a current project (Eddy LSR project) but the estimated effect resulting from the project is small and will not result in a change in risk level. The remaining territories have <5 acres of habitat anticipated to be downgraded or removed; these territories will not change in risk level.

Table 16: Level of risk to goshawk reproduction for Alternative 1

Potentially Occupied Territories	Original - Level of Risk to Reproduction	Final – Level of Risk to Reproduction
Beaver		
Beaver	Moderate	Moderate (Moderate)
Kohl	High	High (High)
Woodchopper	High	High (High)
Happy Camp		
China	Moderate	Moderate (Moderate)
Elk	High	High (High)

Kelsey	Moderate	Moderate (High)
Stanza	High	High (High)
Middle	High	High (High)
East Fork Elk	N/A	High (High)
Kuntz	N/A	Moderate (Moderate)
O'Neil	N/A	High (High)
Walker	N/A	High (High)
Whites		
Hickory	Moderate	High (High)
West Whites	Moderate	Moderate (Moderate)
Six-mile	Low	Moderate (Moderate)

* The level of risk to reproduction is presented as Low, Moderate, or High while the cumulative effect is presented as “(H)” high, “(M)” moderate, or “(L)” low.

Fisher, Marten, and Wolverine

Habitat Connectivity

Table 19 on page 46 of the BE is not correct and the table below shows the number of drainages that are within each level of habitat connectivity based on the re-analysis. Table 17 has the updated numbers.

Table 17: Number of drainages by level of habitat connectivity for fisher, wolverine and marten

Level of Habitat Connectivity	Draft BE – Number of 7 th field watersheds	Final BE – Number of 7 th field watersheds
High	0	0
Moderate	30	39
Low	16	23
Very Low	21	5

The table below displays the number of drainages for each level of habitat connectivity by project area for Alternative 1 based on the re-analysis between draft and final BE. Table 18 will replace table 19 from the draft BE.

Table 18: Level of habitat connectivity for fisher, wolverine and marten by fire area

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low

Happy Camp	0	26	10	0
Beaver	0	7	5	1
Whites	0	6	8	4
TOTAL	0	39	23	5

Fisher Home Range

On page 45, the BE states “The high severity burned forest is not likely to provide much use by these species since most of the vegetation cover has been removed. A lack of overhead cover resulting from the fire is likely to obstruct the movements of fisher and marten, but as the snags start to fall over along with shrub growth, the area may provide enough physical structure for fisher and marten to move across these openings.” These statements need clarification. The habitat affected by high severity fire created areas without overhead cover because the fire consumed the much of the small vegetation and most of the overhead cover (e.g. leaves, needles, and small branches). However, the remaining dead vegetation still provides some level of cover from the snags and possibly residual shrub stems; these post-fire vegetation conditions create physical structure that could provide cover for fisher, marten, and wolverine even though the level of cover is less than commonly associated with habitat used by these species. Pre-fire denning/resting and foraging habitat represent the areas composed of mostly contiguous forested habitat with larger trees. Therefore, these pre-fire habitat types that burned at high severity are more likely to provide a level of cover that may be used by fisher, marten, and wolverine when compared to other habitat types. To account for this possible use, pre-fire denning/resting and foraging habitat that burned at high severity is included with movement habitat.

Table 19: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 1 for the project area. Number in the parentheses represents the number that does or don’t meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
36 (28)	31 (39)

On page 48, the BE states “The addition of direct, indirect, and cumulative effects will result in at least one watershed (Dutch Creek) not providing enough habitat connectivity within the watershed. Therefore, Dutch Creek will be difficult cross due to the large gaps in habitat and may influence survival, especially marten and fisher.” The cumulative effects resulting from the re-analysis identified ten drainages including Dutch Creek that had a reduced level of connectivity. Below is a table that displays the number of drainages that had reduced connectivity as a result of the direct and indirect effects of alternative 1 and the cumulative effects resulting from adding the effects of alternative 1 to those of other current and reasonably foreseeable future projects. Overall, the cumulative effects resulted in 10 drainages having a lower level of connectivity.

Table 20: Level of habitat connectivity with cumulative effects for fisher, wolverine and marten by fire area

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	26 (26)	10 (9)	0 (1)
Beaver	0	7 (3)	5 (2)	1 (8)
Whites	0	6 (4)	8 (10)	4 (4)
TOTAL	0	39 (33)	23 (21)	5 (13)

The number in the parentheses represents the number of drainages at a particular level of connectivity given the cumulative effects of this alternative and current and reasonably foreseeable future actions.

On page 48, the BE states “The addition of direct, indirect, and cumulative effects will result in at least one watershed (Big Ferry-Swanson) not providing enough habitat to support a fisher home range.” The re-analysis of the fisher home range resulted in no home ranges falling below the thresholds as a result of the combined direct and indirect effects of alternative 1 and the cumulative effects of adding effects of this alternative to the effects of other current and reasonably foreseeable future projects even though the effects of other projects did reduce habitat acres within some of the fisher home ranges.

Pallid Bat, Townsend’s Big-eared Bat and Fringed myotis

There is no change in analysis for this alternative between DEIS and FEIS.

Willow Flycatcher

There is no change in analysis for this alternative between DEIS and FEIS.

Siskiyou Mountain Salamander

There is no change in analysis for this alternative between DEIS and FEIS.

Tehama Chaparral Snail

There is no change in analysis for this alternative between DEIS and FEIS.

Western Bumble Bee

There is no change in analysis for this alternative between DEIS and FEIS.

Management Indicator Species – Snag Associated Species

There is no change in analysis for this alternative between DEIS and FEIS.

Management Indicator Species – Hardwood Associated Species

There is no change in analysis for this alternative between DEIS and FEIS.

Survey and Manage Species

There is no change in analysis for this alternative between DEIS and FEIS.

Migratory Birds

There is no change in analysis for this alternative between DEIS and FEIS.

Alternative 2

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

On page 48, the BE states “All the known ACs within the analysis area will have some type of treatment in the home range, but the level of effects will vary. For analysis indicator 1, a “very low” risk is desired, but only three AC met the “very low” criteria before treatment and alternative 2 will not affect these AC’s risk level. None of the ACs in “low” increased in risk level, but one AC did increase in risk level from “moderate” to “high”. The “high” risk level can’t increase in risk despite changes in habitat acres.” This is incorrect. There are four of the 94 ACs assessed in this analysis that don’t contain treatment in the core or home range. There are four ACs that are identified as having a “very low” risk to reproduction and alternative 2 did not change the level of risk for these ACs. However, alternative 2 did increase the risk for nine ACs with low levels of risk and six ACs with moderate levels of risk.

On page 49, the BE states “The direct and indirect effects of alternative 2 plus cumulative effects resulting from other actions within the analysis area did not change the risk level for any of the ACs.” This is incorrect. The direct, indirect, and cumulative effects did not result in any of the ACs in Happy Camp or Whites analysis areas to change in the level of risk to reproduction; the Beaver analysis area had two ACs increase in risk. One AC went from low to moderate risk while the other AC went from moderate to high risk. Although any increase in risk to reproduction is not good for NSO, ACs with very low and low risk that have an increased risk may be especially detrimental.

The risk level for ACs is hierarchical where the very low risk is most likely to provide sufficient resources for reproducing owls and any increase in risk level will likely make reproduction more difficult for owls within those ACs. Even though moderate and high risk level ACs are important for the recovery of NSO, the very low and low risk level ACs are likely more important because these ACs are more likely to aid in successful reproduction. The combination of the fire effects and the direct, indirect, and cumulative effects will also affect the ACs with a high level of risk; the high risk level represents the ACs with a small amount of habitat that are the least likely to support reproduction, but additional effects can continue to reduce the amount habitat and possibly disrupt the amount of time for the habitat to return to suitable habitat or possibly affect the quality of future habitat. The 13 ACs (six in Happy Camp and seven in Beaver) in high risk level were affected by the direct, indirect, and cumulative effects despite the lack of change in the risk level. The table below displays the resulting distribution of AC at various risk levels resulting from alternative 2 and the cumulative effects of adding the effects of alternative 2 to the effects of other current and reasonably foreseeable future actions.

Table 21: Number of ACs within each risk to reproduction category

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver

Very Low	2 (2)	0 (0)	2 (2)
Low	7 (7)	9 (9)	6 (5)
Moderate	42 (42)	6 (6)	8 (8)
High	6 (6)	0 (0)	7 (8)

The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of this alternative and current and reasonably foreseeable future actions.

Changes to Critical Habitat

On page 148 of the DEIS (table 3-9 (page 149) and discussed under heading “Cumulative Effects”) and page 49 of the BE (Table 22 and discussion under heading “Cumulative Effects”), the acres of critical habitat for alternative 2 are displayed; these have changed because of adjustments to fuels prescriptions and adjustment to habitat typing.

Table 22: Change in Critical Habitat for Alternative 2 (Analysis Indicator 2)

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-103 (-184)	-198 (-344)	+201 (+427)	-2,808 (-2,808)
KLW7	28,876	-115 (-115)	-428 (-428)	+294 (+294)	-498 (-498)
Whites					
KLW8	30,148	-96 (-201)	-180 (-289)	+457 (+681)	-784 (-784)
Beaver					
KLE6	7,429	-35 (-35)	-28 (-28)	-24 (-23)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Bald Eagle

Level of Disturbance to Nest Sites

The level of disturbance did not change as a result of the changes to alternative 2. Project design features will mitigate noise disturbance to all four nests in the project area (DEIS page 151 and Biological Evaluation page 53).

Risk to Future Potential Nest Trees

The changes to the alternative do not change the risk for future nest tree potential. The Dona, Muck-a-Muck and Fryingpan nests have a low risk to future nest tree potential. The project leads to a high risk to future nest tree potential for the Caroline Creek nest (DEIS page 151 and Biological Evaluation page 53). Snag-retention project design features in the salvage units will reduce the risk to future potential nest trees; however, given the specific requirements of an eagle nest tree and the uncertainty of the retained snags, the Caroline Creek nest will remain at a high risk.

Northern Goshawk

Level of Disturbance to Nest Sites

A limited operating period defined in the project design feature section of Chapter 2 of the FEIS will minimize noise disturbance to goshawk nests during the sensitive reproductive period. There will be no effect.

Risk to Reproduction

A majority of the effects to habitat which influence goshawk risk to reproduction are a result of the anticipated effects of the roadside hazard and fuels treatment; these treatments are estimated to result in reducing tree canopy cover and, depending on the type of fuels treatment (“complete” or “modified”) coinciding with the roadside hazard, habitat will be degraded or downgraded to low quality habitat. The low quality habitat may be used for foraging but the level of fuels treatment will likely affect the prey species abundance.

On page 55, the BE states “Ten of the 11 known goshawk nests (Woodchopper nest contains no activities) in the project area contain proposed activities that will remove dead or dying trees within areas considered to be no longer habitat....” This statement is not clear. All eleven territories have some level of proposed activities; the Woodchopper territory is not expected to have habitat degraded, downgraded, or removed as a result of the proposed activities.

On page 55, The BE states “Alternatives 2, 3, 4, and 5 will remove habitat and result in two nests (Hickory and West Whites) increasing in the level of risk to reproduction from moderate to high. Both of these nests have abundant habitat in the primary nest zone (0.5 mile radius of the nest), but the foraging zone (outside the primary nest zone 0.5 to 1.0 mile) doesn’t contain a large amount of habitat and is consequently near the moderate risk category minimum for foraging area habitat acres. Therefore, the treatment in Alternatives 2, 3, 4, and 5, although small in the number of acres of habitat removed, will result in the Hickory and West Whites goshawk nest having a high level of risk to reproduction.” This statement needs corrected due to the reclassification of the RAVG data and associated Northern Goshawk habitat typing.

The Hickory territory was identified as having a moderate risk to reproduction in the draft Biological Evaluation; after the re-analysis of habitat, the nest site is actually in the high risk category and the proposed activities that remove additional habitat will not change the risk category; this nest will remain high. Like the Hickory nest site, Elk, Middle, Kohl and Stanza territories are also identified as having a high risk and, despite additional habitat effects, the risk level will remain as high.

Habitat in the Six-mile and China territories is expected to be affected by this alternative; however, given the current amount of habitat in the primary nest zone and foraging zone, the downgraded and removed acres of habitat from this alternative will not change the current level of risk to reproduction.

Six-mile will remain at a moderate risk and China will remain at a moderate risk despite the effects of the alternative.

On page 56, the BE states “Ten of the 11 nests have cumulative effects within the primary nest zone or foraging zone...Woodchopper nest contains no actions from this project, but it contains anticipated activities on adjacent private land that is in the foraging zone thus possibly removing a small amount (<10 acres) of low quality habitat.” Like mentioned above, all eleven nest sites have some level of treatment. Woodchopper nest site does contain treatments from this project.

On page 56, the BE states “Only two nests (Beaver and Kelsey) had a change in the level of risk to reproduction as a result of cumulative effects. The Beaver is located among several pieces of private land and the anticipated amount of treatment is expected to move this nest from a moderate level to a high level of risk to reproduction. The Kelsey nest was affected by the fire and the addition of treatment in the Lovers Project will result in the risk to reproduction to move from moderate to high. The remaining 7 nests have cumulative effects but the effects were not large enough to move the level of risk to reproduction.” Due to changes in the RAVG and subsequent habitat typing changes only the Kelsey has a change in risk level, going from moderate to high, as a result of cumulative effects. The other nest sites did not have a change in risk when actions considered for cumulative effects were considered.

Four new potential occupied territories were discovered since the DEIS (as described in Alternative 1 section above). There is no change in the risk to reproduction as a result of the alternative for any of these new potentially occupied territories.

Fisher, Marten, and Wolverine

Habitat Connectivity

On pages 56 and 57, the BE states “Alternative 2 will most notably affect 13 watersheds habitat connectivity. There are 7 watersheds that go from moderate habitat connectivity to low or very low connectivity. The remaining 6 watersheds will drop from low to very low habitat connectivity. All other watershed remained at the same level of connectivity given the effects of alternative 2.” This has changed since the draft BE.

Alternative 2 will result in 20 drainages being reduced in connectivity. Of the 23 moderate level connectivity drainages, 12 drainages dropped to low and 4 drainages dropped to very low connectivity while the remaining seven drainages had no change in the level of connectivity. Four drainages went from low to very low connectivity.

Table 23: Level of connectivity for fisher, wolverine and marten for alternative 2

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	26	10	0
Beaver	0	7	5	1
Whites	0	6	8	4

TOTAL	0	39	23	5
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Fisher Home Range

Table 24: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 2 for the project area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
24 (23)	43 (44)

On page 57 of the BE, the cumulative effects for alternatives 2, 3, 4, and 5 were combined since the cumulative effects were same for all the alternatives despite the direct and indirect effects may be different. The cumulative effects are separated here to better display the cumulative effects by alternative. The cumulative effects result in three drainages with moderate connectivity being reduced to low connectivity and seven drainages with low connectivity dropped to very low connectivity.

Table 25: Cumulative effects on connectivity for fisher, wolverine and marten for alternative 2

Project Area Subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	13 (13)	18 (17)	5 (6)
Beaver	0	4 (3)	6 (1)	3 (9)
Whites	0	6 (4)	7 (9)	5 (5)
TOTAL	0	23 (20)	31 (27)	13 (20)

The number in the parentheses represents the number of drainages at a particular level of connectivity given the cumulative effects of adding the direct and indirect effects of this alternative to effects of other projects.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

Prescribed fire in the Marble Mountain Wilderness was removed from this alternative. The number of potential hibernacula with a moderate risk of disturbance went down to low risk as a result in the removal of prescribed fire from the Marble Mountain Wilderness on Snoozer Ridge in all alternatives (Table 26).

The cumulative effects on disturbance are the same as described in the DEIS (page 157 and the Biological Evaluation page 60).

Table 26: Number of potential hibernacula/maternalities and their risk of disturbance as a result of the proposed activities in each alternative

Risk of Disturbance	Alternative 2	Alternative 2 Cumulative
High	13	24
Moderate	14	11
Low	32	23

Willow Flycatcher

Level of Habitat Alteration

There is no change in the effects to the willow flycatcher as a result of the modifications to the GIS data. The level of habitat alteration is the same as described in the DEIS (page 158) and the Biological Evaluation (page 61).

Siskiyou Mountain Salamander

Risk of Habitat Disturbance

There are seventeen known Siskiyou Mountain Salamander sites in the project area that are in treatment units with the potential for ground disturbance. This is slightly lower than the nineteen sites reported in the DEIS (page 159) and the Biological Evaluation (page 61). This is because of the modification of treatment footprint, specifically in the salvage units. There are now no known sites in salvage units with proposed ground-based harvest. Eleven of the sites are in roadside hazard tree removal units and three are in site preparation units where mechanical preparation is proposed. In order to minimize effects to these known sites. As in the DEIS, a project design feature that will buffer the sites and maintain live or dead trees within the buffer will be implemented. This project design feature will make the risk of habitat disturbance of known sites low.

Tehama Chaparral Snail

Risk of Habitat Alteration

The effects of the alternative are the same as is described in the DEIS (page 160) and the Biological Evaluation (page 62).

Western Bumble Bee

Level of Habitat Disturbance

Only Whites Gulch had a change in the effects to the western Bumble Bee as a result in the GIS data modifications. Whites Gulch has 0.5 acres fewer acres of meadow habitat disturbed. White Gulch had a low level of disturbance before the data modification so the reduction did not change the category of effects.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

Overall, the effects to snag habitat abundance are the same as described in the Environmental Consequences Section of the DEIS. The project is designed to maintain the Forest Plan standards of 5

snags per acre averaged over 100 acres and will provide a habitat level of “good” snag associated habitat.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

Alternative 2 may affect about 665 acres of hardwood habitat that exists in the roadside hazard and salvage treatment units or about 4% of the hardwood habitat in the project area. Which is 63 acres fewer than 728 acres as was described in the Environmental Consequences Section of the DEIS. As described in the DEIS and the Management Indicator Species report the treatments are not likely to remove the habitat but may indirect effect it.

Survey and Manage

The effects are the same as described in the DEIS (page 165) and the Survey and Manage report (page 7).

Migratory Bird

There is no change in the project’s compliance with the Migratory Bird Memorandum of Understanding as described in the DEIS and the Migratory Bird Report.

Alternative 3

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

On page 50, the BE states “Alternative 3 deferred treatment for several small salvage units scattered in the project area including the Beaver project area subunit. Interestingly, the deferment for those few units affected 6 ACs by maintaining the “moderate level” despite treatments as compared to alternative 2.” This is incorrect. Alternative 3 retains two ACs in the Happy Camp analysis area with low risk in the low risk category when compared to alternative 2. The resulting AC risk levels in Beaver and Whites analysis areas are the same as alternative 2.

On page 50 of the BE, the BE states “The direct and indirect effects of alternative 3 plus cumulative effects resulting from other actions within the analysis area shifted the 6 ACs that were maintained with only considering the alternative 3 actions.” This is incorrect. The cumulative effects resulted in one AC going from low risk to moderate risk.

Table 27: Number of activity centers within each of the levels of risk to reproduction for alternative 2.

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver
Very Low	2 (2)	0 (0)	2 (2)
Low	9 (9)	9 (9)	6 (5)
Moderate	41 (41)	6 (6)	8 (9)

High	5 (5)	0 (0)	7 (7)
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The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding the direct and indirect effects of this alternative to effects of other projects.

Changes to Critical Habitat

On page 149 of the DEIS (discussed under heading “Cumulative Effects”) and page 50 of the BE (table 21 and discussion under heading “Cumulative Effects”), the acres of critical habitat for alternative 3 have changed because of adjustments to fuels prescriptions and adjustment to habitat typing.

Table 28: Change in Critical Habitat for Alternative 3 (Analysis Indicator 2)

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-103 (-184)	-198 (-344)	+207 (+433)	-2,631 (-2,631)
KLW7	28,876	-115 (-115)	-428 (-428)	+294 (+294)	-498 (-498)
Whites					
KLW8	30,148	-96 (-201)	-180 (-289)	+457 (+681)	-320 (-320)
Beaver					
KLE6	7,429	-35 (-35)	-28 (-28)	-24 (-24)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Bald Eagle

Level of Disturbance to Nest Sites

The level of disturbance did not change as a result of the changes to alternative 3. Project design features will mitigate noise disturbance to all four nests in the project area (DEIS page 152 and Biological Evaluation page 53)

Risk to Future Potential Nest Trees

The changes to the alternative do not change the risk for future potential nest trees. The Dona, Muck-a-Muck and Fryingpan nests have a low risk to future nest tree potential. The alternative leads to a high risk to future nest tree potential for the Caroline Creek nest. As described in the DEIS, project

design included in this alternative will reduce the number of trees removed and will reduce the risk to future potential nest trees to moderate (DEIS page 152 and Biological Evaluation page 54).

Northern Goshawk

Level of Disturbance to Nest Sites

The effects are the same as described in alternative 2 of in Section I of this document.

Risk to Reproduction

The effects are the same as described in alternative 2 of in Section I of this document.

Fisher, Marten, and Wolverine

Level of Habitat Connectivity

The number of acres affected in alternative 3 is different from alternative 2, but the effects didn't rise to the level to result in any difference in the level of connectivity. The drainages and the associated level of connectivity are the same as alternative 2.

The effects to fisher home range potential are the same s for alternative 1 in Section I of this amendment.

The habitat connectivity cumulative effects for alternative 3 are the same as those presented in alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

Prescribed fire in the Marble Mountain Wilderness was removed from this alternative. The number of potential hibernacula with a moderate risk of disturbance went down to low risk as a result in the removal of prescribed fire from the Marble Mountain Wilderness on Snoozer Ridge. (Table 26)

The cumulative effects on disturbance is the same as described in the DEIS (page 157 and the Biological Evaluation page 60).

Willow Flycatcher

Level of Habitat Alteration

There is no change in the effects to the willow flycatcher as a result of the modifications to the GIS data. The level of habitat alteration is the same as described in the DEIS (page 158) and the Biological Evaluation (page 61).

Siskiyou Mountain Salamander

Risk of Habitat Disturbance

The risk of habitat disturbance is the same as for alternative 2.

Tehama Chaparral Snail

Risk of Habitat Alteration

The effects of the alternative are the same as is described in the DEIS (page 160) and the Biological Evaluation (page 62).

Western Bumble Bee

Level of Habitat Disturbance

There is no change to the effects of this alternative as a result of the GIS data modifications.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

Overall, the effects to snag habitat abundance are the same as described in the Environmental Consequences Section of the DEIS. The project is designed to maintain the Forest Plan standards of 5 snags per acre averaged over 100 acres and will provide a habitat level of “good” snag associated habitat.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

Alternative 2 may affect about 656 acres of hardwood habitat that exists in the roadside hazard and salvage treatment units or about 4% of the hardwood habitat in the project area. Which is 61 acres fewer than 717 acres as was described in the Environmental Consequences Section of the DEIS. As described in the DEIS and the Management Indicator Species report the treatments are not likely to remove the habitat but may indirect effect it.

Survey and Manage

The effects are the same as described in the DEIS (page 165) and the Survey and Manage report (page 7).

Migratory Bird

There is no change in the project’s compliance with the Migratory Bird Memorandum of Understanding as described in the DEIS and the Migratory Bird Report.

Alternative 4

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

On page 50 of the BE, the BE states “For analysis indicator 1, the resulting level of risk to reproduction is the same as alternative 2, but there are differences in acres of habitat affected.” This statement is still accurate, but this statement needs clarification. Each risk level has a range of habitat acres that defines each category so an AC could have treatment that removes habitat but not result in a change in risk level. Although alternative 4 has the same number of ACs for each risk level as alternative 2, alternative 4 has fewer habitat acres affected by proposed activities.

On page 51, the BE states “The direct and indirect effects of alternative 4 plus cumulative effects resulting from other actions within the analysis area resulted in similar effects described in alternative 2 cumulative effects.” This is still correct. Despite differences in the number of habitat acres affected, the number of ACs within each level of risk to reproduction is the same as alternative 2.

Table 29: Number of activity centers within each of the levels of risk to reproduction for alternative 4.

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver
Very Low	2 (2)	0 (0)	2 (2)
Low	7 (7)	9 (9)	6 (5)
Moderate	42 (42)	6 (6)	8 (8)
High	6 (6)	0 (0)	7 (8)

The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding the direct and indirect effects of this alternative to effects of other projects.

Changes to Critical Habitat

On page 150 of the DEIS (discussed under heading “Cumulative Effects”) and page 51 of the BE (table 22 and discussion under heading “Cumulative Effects”), the acres of critical habitat for alternative 4 are displayed; these have changed because of adjustments to fuels prescriptions and adjustment to habitat typing.

Table 30: Change in Critical Habitat for Alternative 4 (Analysis Indicator 2).

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-101 (-181)	-185 (-331)	+186 (+412)	-2,669 (-2,669)
KLW7	28,876	-107 (-107)	-305 (-305)	+201 (+201)	-378 (-378)
Whites					
KLW8	30,148	-89 (-194)	-158 (-268)	+428 (+652)	-784 (-784)
Beaver					
KLE6	7,429	-35 (-35)	-27 (-27)	-24 (-24)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Bald Eagle

Level of Disturbance to Nest Sites

The level of disturbance did not change as a result of the changes to alternative 4. Project design features will mitigate noise disturbance to all four nests in the project area.

Risk to Future Potential Nest Trees

There were no changes to treatments that affected bald eagle nest tree potential in this alternative. The risk to future potential nest trees is low for all nests for this alternative.

Northern Goshawk

Level of Disturbance to Nest Sites

The effects are the same as described in alternative 2 in Section I of this document.

Risk to Reproduction

The effects are the same as described in alternative 2 in Section I of this document.

Fisher, Marten, and Wolverine

Level of Habitat Connectivity

Alternative 4 has four fewer moderate connectivity drainages with reduced habitat connectivity as a result of the direct and indirect effects when compared to alternative 2. Twelve drainages with moderate connectivity dropped to low or very low connectivity; nine of these drainages occur in the Happy Camp project area while the remaining three drainages occur in Beaver.

Table 31: Level of connectivity for fisher, wolverine and marten for alternative 4

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	17	14	5
Beaver	0	4	6	3
Whites	0	6	7	5
TOTAL	0	27	27	13

The effects to fisher home range potential are the same s for alternative 1 in Section I of this amendment.

The effects to fisher home range potential are the same s for alternative 1 in Section I of this amendment.

The cumulative effects resulted in 10 drainages being reduced in the level of connectivity. Three of the moderate connectivity level drainages were reduced to low level connectivity by the cumulative effects of adding effects of the alternative to those of other projects. The remaining seven drainages were reduced from low to very low connectivity.

Table 32: Cumulative effects on fisher, wolverine and marten habitat connectivity for alternative 4

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	17 (17)	14 (13)	5 (6)
Beaver	0	4 (3)	6 (1)	3 (9)
Whites	0	6 (4)	7 (9)	5 (5)
TOTAL	0	27 (24)	27 (23)	13 (20)

The number in the parentheses represents the number of drainages at a particular level of connectivity given the cumulative effects.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Risk of Disturbance

Prescribed fire in the Marble Mountain Wilderness was removed from this alternative. The number of potential hibernacula with a moderate risk of disturbance went down to low risk as a result in the removal of prescribed fire from the Marble Mountain Wilderness on Snoozer Ridge. (Table 26).

The cumulative effects on disturbance is the same as described in the DEIS (page 157 and the Biological Evaluation page 60).

Willow Flycatcher

Level of Habitat Alteration

There is no change in the effects to the willow flycatcher as a result of the modifications to the GIS data. The level of habitat alteration is the same as described in the DEIS (page 158) and the Biological Evaluation (page 61).

Siskiyou Mountain Salamander

Risk of Habitat Disturbance

The risk of habitat disturbance is the same as for alternative 2.

Tehama Chaparral Snail

Risk of Habitat Alteration

The effects of the alternative are the same as is described in the DEIS (page 160) and the Biological Evaluation (page 62).

Western Bumble Bee

Level of Habitat Disturbance

Only Whites Gulch had a change in the effects to the western bumble bee as a result in the GIS data modifications. Whites Gulch has 0.5 acres fewer acres of meadow habitat disturbed. White Gulch had a low level of disturbance before the data modification so the reduction did not change the category of effects.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

Overall, the effects to snag habitat abundance are the same as described in the Environmental Consequences Section of the DEIS. Except the percent of snag associated species habitat went from 12% to 11%. The project is designed to maintain the Forest Plan standards of 5 snags per acre averaged over 100 acres and will provide a habitat level of “good” snag associated habitat.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

Alternative 2 may affect about 623 acres of hardwood habitat that exists in the roadside hazard and salvage treatment units or about 3% of the hardwood habitat in the project area. Which is 56 acres fewer than 679 acres as was described in the Environmental Consequences Section of the DEIS. As described in the DEIS and the Management Indicator Species report the treatments are not likely to remove the habitat but may indirect effect it.

Survey and Manage

The effects are the same as described in the DEIS (page 165) and the Survey and Mange report (page 7).

Migratory Bird

There is no change in the project’s compliance with the Migratory Bird Memorandum of Understanding as described in the DEIS and the Migratory Bird Report.

Alternative 5

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

On page 51, the BE states “Alternative 5 maintained one more AC in the “moderate” risk level compared to alternative 2.” This is incorrect. Alternative 5 retains five more ACs (four in Happy Camp and one in Whites analysis area) in the low risk category than alternative 2. Although these five ACs represent a small number of the ACs affected by the proposed activities, the very low and low risk ACs are important to the NSO population since very low and low risk ACs are more likely to have the resources for NSO reproduction than moderate and high risk ACs.

Table 33: Number of activity centers within each of the levels of risk to reproduction for alternative 5.

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver
Very Low	2 (2)	0 (0)	2 (2)
Low	11 (11)	10 (10)	6 (5)

Moderate	39 (39)	5 (5)	8 (7)
High	5 (5)	0 (0)	7 (9)

The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of the alternative and other projects.

Changes to Critical Habitat

On page 150 of the DEIS (discussed under heading “Cumulative Effects”) and page 51 and 52 of the BE (table 23 and discussion under heading “Cumulative Effects”), the acres of critical habitat for alternative 5 are displayed; these have changed because of adjustments to fuels prescriptions and adjustment to habitat typing.

Table 34: Change in Critical Habitat for Alternative 5 (Analysis Indicator 2)

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-78 (-159)	-165 (-310)	+245 (+471)	-804 (-804)
KLW7	28,876	-88 (-88)	-174 (-174)	+335 (+335)	-252 (-252)
Whites					
KLW8	30,148	-92 (-198)	-147 (-256)	+467 (+690)	-743 (-743)
Beaver					
KLE6	7,429	-102 (-102)	-86 (-86)	+102 (+102)	-190 (-190)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Bald Eagle

Level of Disturbance to Nest Sites

The level of disturbance did not change as a result of the changes to alternative 5. Project design features will mitigate noise disturbance to all four nests in the project area.

Risk to Future Potential Nest Trees

There were no changes to treatments that affected bald eagle nest tree potential in this alternative. The risk to future potential nest trees is low for all nests for this alternative.

Northern Goshawk

Level of Disturbance to Nest Sites

The effects are the same as described in alternative 2 of in Section I of this document.

Risk to Reproduction

The effects are the same as described in alternative 2 of in Section I of this document.

Fisher, Marten, and Wolverine

Level of Habitat Connectivity

Nine of the moderate level connectivity drainages were reduced in connectivity level to low or very low connectivity. Four low connectivity drainages went to very low connectivity.

Table 35: Connectivity for fisher, wolverine and marten for alternative 5

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	20	12	4
Beaver	0	4	6	3
Whites	0	6	7	5
TOTAL	0	30	25	12

The effects to fisher home range potential are the same s for alternative 1 in Section I of this amendment.

The cumulative effects resulted in 10 drainages being reduced in the level of connectivity. Three of the moderate connectivity level drainages were reduced to low level connectivity by cumulative effects of the alternative plus other projects. The remaining seven drainages were reduced from low to very low connectivity.

Table 36: Level of connectivity for fisher, wolverine and marten for alternative 5

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	20 (20)	12 (11)	4 (5)
Beaver	0	4 (3)	6 (1)	3 (9)
Whites	0	6 (4)	7 (9)	5 (5)
TOTAL	0	30 (27)	25 (21)	12 (19)

The number in the parentheses represents the number of drainages at a particular level of connectivity given the cumulative effects of adding the direct and indirect effects of this alternative to effects of other projects.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Risk of Disturbance

Prescribed fire in the Marble Mountain Wilderness was removed from this alternative. The number of potential hibernacula with a moderate risk of disturbance went down to low risk as a result in the removal of prescribed fire from the Marble Mountain Wilderness on Snoozer Ridge. (Table 26)

The cumulative effects on disturbance is the same as described in the DEIS (page 157 and the Biological Evaluation page 60).

Willow Flycatcher

Level of Habitat Alteration

There is no change in the effects to the willow flycatcher as a result of the modifications to the GIS data. The level of habitat alteration is the same as described in the DEIS (page 158) and the Biological Evaluation (page 61). The additional prescribed fire in this alternative in the Beaver fire area increases the percent habitat disturbed in Doggett Creek and Soda Creek by less than 2% which is not enough to increase the level of habitat alternation. They remain in the low category.

Siskiyou Mountain Salamander

Risk of Habitat Disturbance

There are fifteen known Siskiyou Mountain Salamander sites in the project area that are in treatment units with the potential for ground disturbance. There are two fewer known sites in site preparation units with mechanical preparation proposed compared to alternative 2. However, the same project design feature used to mitigate effects to known sites is included in this alternative so the effects to the twelve sites are the same as for alternative 2; the risk of habitat disturbance to known sites is low.

Tehama Chaparral Snail

Risk of Habitat Alteration

The effects of the alternative are the same as is described in the DEIS (page 160) and the Biological Evaluation (page 62).

Western Bumble Bee

Level of Habitat Disturbance

There is no change to the effects of this alternative as a result of the GIS data modifications.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

Overall, the effects to snag habitat abundance are the same as described in the Environmental Consequences Section of the DEIS. The project is designed to maintain the Forest Plan standards of 5 snags per acre averaged over 100 acres and will provide a habitat level of “good” snag associated habitat.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

Alternative 2 may affect about 364 acres of hardwood habitat that exists in the roadside hazard and salvage treatment units or about 2% of the hardwood habitat in the project area. Which is 2 acres fewer than 366 acres as was described in the Environmental Consequences Section of the DEIS. As described in the DEIS and the Management Indicator Species report the treatments are not likely to remove the habitat but may indirect effect it.

Survey and Manage

The effects are the same as described in the DEIS (page 165) and the Survey and Mange report (page 7).

Migratory Bird

There is no change in the project’s compliance with the Migratory Bird Memorandum of Understanding as described in the DEIS and the Migratory Bird Report.

II. Environmental Consequences of Modified Alternative 2 and Modified Alternative 3

Modified Alternative 2

Methods

The methods used for this analysis can be found in detail in the Wildlife Biological Evaluation, Wildlife Biological Assessment, Management Indicator Species, Survey and Manage and the Migratory Bird Reports.

Environmental Consequences

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

The proposed activities in the Beaver project area for this alternative will result in the same distribution of ACs in each risk level as alternative 2, but the effects would be much less for one AC located in Doggett Creek. Even though the actual acres of affected habitat are not the same as alternative 2, alternative 2 modified have much less salvage in the core of the Doggett Creek AC which reduces the amount of disturbance and the amount of fire affected habitat being removed. However, the level of risk didn’t change for any of the ACs in the Beaver analysis area.

Table 37: Number of activity centers within each level of risk to reproduction for Alternative 2 modified

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver

Very Low	2 (2)	0 (0)	2 (2)
Low	9 (8)	9 (9)	6 (5)
Moderate	41 (41)	6 (6)	8 (8)
High	5 (6)	0 (0)	7 (8)

The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of the alternative and other projects.

Changes to Critical Habitat

Modified alternative 2 affects the same amount of NSO critical habitat as in alternative 2 in the Beaver project area. Modified alternative 2 represents a reduced amount of treatment of modification of treatment prescription from alternative 2. However, the changes to treatments reflected in modified alternative 2 occurred outside of KLE6 or KLE7 critical habitat subunits (KLE6 and KLE7 are the only critical habitat subunits occurring in the Beaver analysis area). Therefore, the modified alternative 2 treatment that occurred in the critical habitat in the Beaver analysis area resulted in the same number of acres of habitat being affected as in alternative 2.

Table 38: Change in Critical Habitat for Alternative 2 modified

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-103 (-184)	-198 (-344)	+201 (+427)	-2,655 (-2,655)
KLW7	28,876	-115 (-115)	-333 (-333)	+294 (+294)	-462 (-462)
Whites					
KLW8	30,148	-96 (-201)	-180 (-289)	+457 (+681)	-784 (-784)
Beaver					
KLE6	7,429	-35 (-35)	-28 (-28)	-24 (-24)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The cumulative effects in the Beaver project area are extensive. The Beaver Fire burned many acres of NSO habitat and the resulting salvage occurring on private land cover a large area. These cumulative effects are far reaching because of the size of the fire and the alternating land ownership (also known as checkerboard pattern ownership). This combination of land ownership and fire conditions created large scale salvage that resulted in islands of habitat. These islands present a challenge for NSO to find sufficient resources given the low amount of habitat located in the islands on the Forest. However, private land management occurring in Beaver doesn't affect all 23 ACs analyzed in this document; there are about 8 ACs that contain large portions of possible salvage. Alternative 2 modified has proposed treatment within these same 8 ACs that are likely to receive salvage on private land thus the combination of treatment of this alternative plus private land salvage will further increase the amount of salvage and reduce the quality of habitat.

The cumulative effects resulted in two ACs with an increased level of risk in the Beaver analysis area: 1) Doggett Creek (0283), and 2) Fishtrap Creek (4143). The Doggett Creek core is mostly located on Forest land but the home range is mostly located on private land that has been salvaged or is likely to be salvaged. The Doggett Creek AC also had a male detected in the core from 2015 surveys (surveys are not complete at the time of writing this document). Consequently, alternative 2 modified has the salvage removed in the core of Doggett Creek AC, but the cumulative effects still resulted in the AC going from moderate risk to high risk. In addition, Fishtrap Creek AC increased in risk from low to moderate. There are other ACs that have many acres of habitat affected as result of the fire followed by salvage and the proposed activities of this alternative but these ACs have a high risk and the additional effects are not reflected in the risk level since there is no level beyond high.

Changes to Critical Habitat

The Beaver project area contains small portion of NSO critical habitat subunit KLE6 but the analysis area which is a larger area than the project area includes a small portion of KLE7, but this portion of KLE7 doesn't contain any proposed activities in the Beaver portion of the project. In addition, critical habitat doesn't occur on private land thus activities occurring on private land are not counted in the critical habitat analysis. Therefore, cumulative effects of this alternative are about 87 acres of critical habitat and about 152 acres of fire affected critical habitat for the Beaver analysis area. The cumulative effects are the same number of acres presented in alternative 2.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The Dona nest is in the Beaver fire area. The level of disturbance for the nest site will be mitigated through limited operating periods (Chapter 2 of the FEIS). The level of disturbance will be low.

Risk to Future Potential Nest Trees

The risk to future potential nest trees is the same as for alternative 2, which is low.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effect on levels of disturbance is the same as for alternative 2.

Risk to Future Potential Nest Trees

The cumulative effect on the risk to future potential nest trees is the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Effects of modified alternative 2 are the same as for alternative 2.

Table 39: Number of 7th field watersheds within each level of connectivity for modified alternative 2 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	4 (3)	6 (1)	3 (9)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

Table 40: Number of 7th field watersheds that do or do not meet home range potential criteria for modified alternative 2 for Beaver fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

The watersheds not meeting the home range potential criteria are the same as for alternative 1.

Cumulative Effects

Level of Habitat Connectivity

There are six watersheds that move from a moderate or low connectivity to a very low connectivity when private land salvage is added to the effects of the alternative.

Change in Fisher Home Range

Just as in alternative 1, none of the cumulative actions considered in the fire area (private land salvage and timber harvest plans) reduce the habitat enough move any watersheds from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The risk of disturbance is the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative risk of disturbance is the same as alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The level of willow flycatcher habitat altered is the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative level of willow flycatcher habitat altered is the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Beaver fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there are no direct or indirect effects on the species from this alternative.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Beaver fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effect to the Tehama Chaparral Snail is the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effect to the Tehama Chaparral Snail is the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The level of habitat disturbance as a result of the alternative is the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative level of habitat disturbance as a result of the alternative is the same as for alternative 2.

Management Indicator Species

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by modified alternative 2 varies between individual species but about 8% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, modified alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of modified alternative 2 are 1875 acres of snag habitat will be affected by the project; 2786 acres will be affected by actions considered for cumulative effects. This is a total of 4661 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Modified alternative 2 will affect 158 acres of hardwood habitat. This is about 4% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of modified alternative 2 are 158 acres of hardwood habitat will be affected by the project; 327 acres will be affected by actions considered for cumulative effects. This is a total of 485 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The cumulative effects are the same as for alternative 2.

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Alternative 2 modified reduced the amount of salvage scattered over most of the Happy Camp project area. There are three NSO ACs located in the Walker, Grider, and Louie drainages that were mostly affected by moderate and high severity fire in the cores, but the home range contains habitat that may be more capable of supporting NSO. Even though we don't know how NSO will respond to the extensive fire effects in these three AC cores, it is possible that these NSO may move to an area in their home range that has better habitat. Given this possibility, we identified areas that provide more contiguous and higher quality habitat within the home range and dropped salvage in those areas. In addition, several small salvage units were removed from this alternative because these units occurred in NSO cores that were identified as having "moderate level of habitat fitness" which is discussed in the Biological Assessment (the salvage occurring in the core of the AC discovered during 2015 surveys is

an exception to the design of this alternative because this AC wasn't discovered until after this alternative design was completed; however, this newly discovered AC was included in the alternative 3 modified design). However, despite the reduction of salvage in the core and home range in several ACs compared to alternative 2, the level of risk to reproduction is the same

Changes to Critical Habitat

The Happy Camp analysis area contains portions of KLE6, KLE7, and KLW8 critical habitat subunits, but only KLE7 and KLW8 contain treatment. The change in critical habitat in this alternative is similar to alternative 2. Alternative 2 modified effects about 135 fewer acres of foraging and 189 fewer acres of fire affected critical habitat fewer than alternative 2. Most of the foraging habitat affected by this alternative occurs in KLW8, but most of the effects to fire affected critical habitat occurs in KLE7.

Cumulative Effects

Risk to Reproduction

The cumulative effects of the proposed activities in this alternative plus other projects within the analysis area will result in two ACs with increased levels of risk to reproduction. AC 1130 increased from "low" to "moderate" level of risk while AC 4133 increased from "moderate" to "high".

Changes to Critical Habitat

The cumulative effects of modified alternative 3 resulted in fewer acres (about 135 fewer acres of critical habitat and 189 fewer acres of fire affected critical habitat) of critical habitat being affected when compared to alternative 2.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The Fryingpan, Muck-a-Muck and Caroline Creek nests are in the Happy Camp fire area. The level of disturbance for the nest sites will be mitigated through limited operating periods (project design features in chapter 2 of the FEIS). The level of disturbance will be low.

Risk to Future Potential Nest Trees

The risk to future potential nest trees is the same as for alternative 2 which is moderate due to the snag retention requirements in salvage units.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effect on levels of disturbance is the same as for alternative 2.

Risk to Future Potential Nest Trees

The cumulative effect on the risk to future potential nest trees is the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

There is one more watershed with moderate connectivity, therefore one less watershed with a low connectivity, compared to alternative 2.

Table 41: Number of 7th field watersheds within each level of connectivity for modified alternative 2 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	14 (14)	17 (16)	5 (6)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The effects are the same as for alternative 2.

Table 42: Number of 7th field watersheds that do or do not meet home range potential criteria for modified alternative 2 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
11 (11)	25 (25)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in reducing the habitat connectivity of one watershed (Big Ferry – Swanson) from “low” to “very low” habitat connectivity. Private land Timber Harvest Plans are the reason for the downgrade in connectivity.

Change in Fisher Home Range

The cumulative effects are the same as for alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The risk of disturbance is the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative risk of disturbance is the same as alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The level of willow flycatcher habitat altered is the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative level of willow flycatcher habitat altered is the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects of the alternative are the same as for alternative 2.

Cumulative Effects

Risk of Habitat Disturbance

The cumulative effects of the alternative are the same as for alternative 2.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effect to the Tehama Chaparral Snail is the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effect to the Tehama Chaparral Snail is the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The level of habitat disturbance as a result of the alternative is the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative level of habitat disturbance as a result of the alternative is the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by modified alternative 2 varies between individual species but about 13% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, modified alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of modified alternative 2 are 18732 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 18949 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Modified alternative 2 will affect 442 acres of hardwood habitat. This is about 11% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of modified alternative 2 are 442 acres of hardwood habitat will be affected by the project; 10 acres will be affected by actions considered for cumulative effects. This is a total of 452 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The cumulative effects are the same as for alternative 2.

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Modified alternative 2 proposed activities have similar effects to the ACs in the Whites project area. Despite the less salvage occurring in this alternative, the level of risk to reproduction is the same as alternative 2.

Changes to Critical Habitat

Modified alternative 2 has similar effects to critical habitat as alternative 2. There are fewer acres of salvage, but the effects to critical habitat and fire affected critical habitat are the same to those calculated for alternative 2.

Cumulative Effects

Risk to Reproduction

The cumulative effects for this alternative resulted in the same level of risk for the ACs within the Whites analysis areas as described in alternative 2.

Changes to Critical Habitat

Compared to alternative 2 cumulative effects, the acres of critical habitat and fire affected critical habitat are the same as those calculated for the cumulative effects in modified alternative 3.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

The effects to connectivity are the same as for alternative 2.

Table 43: Number of 7th field watersheds within each level of connectivity for modified alternative 2 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	6 (4)	7 (9)	5 (5)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The effects of this alternative are the same as alternative 2.

Table 44: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
9 (8)	9 (10)

Cumulative Effects

Level of Habitat Connectivity

The cumulative effects are the same as for alternative 2.

Change in Fisher Home Range

The cumulative effects are the same as in alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The risk of disturbance is the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative risk of disturbance is the same as alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The level of willow flycatcher habitat altered is the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative level of willow flycatcher habitat altered is the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Whites fire area is outside of the Siskiyou Mountain Salamander's range; therefore, there are no direct or indirect effects of this alternative on the species.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Whites fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effect to the Tehama Chaparral Snail is the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effect to the Tehama Chaparral Snail is the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The level of habitat disturbance as a result of the alternative is the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative level of habitat disturbance as a result of the alternative is the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by modified alternative 2 varies between individual species but about 9% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, modified alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of modified alternative 2 are 4,236 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 4,453 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Modified alternative 2 will affect 23 acres of hardwood habitat. This is about 3% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of modified alternative 2 are 23 acres of hardwood habitat will be affected by the project; 4 acres will be affected by actions considered for cumulative effects. This is a total of 27 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The cumulative effects are the same as for alternative 2.

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Compliance with Law, Regulation, Policy and the Forest Plan

The modified alternative 2 meets all law, regulation, policy and Forest Plan requirements.

Modified Alternative 3

Environmental Consequences Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Modified alternative 3 further reduced the effects to NSO than those reductions presented in alternative 3. When compared to alternative 2, modified alternative 3 resulted in the same level of risk for each AC as alternative 2 despite the removal of salvage from the Beaver project area.

Table 45: Number of activity centers within each level of risk to reproduction for modified alternative 3.

Risk to Reproduction	Number of Activity Centers		
	Happy Camp	Whites	Beaver
Very Low	2 (2)	0 (0)	2 (2)
Low	9 (9)	9 (9)	6 (5)
Moderate	41 (41)	6 (6)	8 (9)
High	5 (5)	0 (0)	7 (7)

The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of the alternative and other projects.

Changes to Critical Habitat

Compared to alternative 2, about 103 more acres of nesting/roosting and foraging critical habitat and 4 more acres of fire affected critical habitat will be affected in modified alternative 3. However, modified alternative will affect fewer acres of dispersal habitat. Although salvage was removed from the Beaver project area for this alternative, several fuel treatments were added that resulted in a net increase in the number of critical habitat acres affected.

Table 46: Change in Critical Habitat for Alternative 3 modified (Analysis Indicator 2)

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
Happy Camp					
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-80 (-161)	-200 (-346)	+221 (+447)	-2,261 (-2,261)
KLW7	28,876	-93 (-93)	-403 (-403)	+318 (+318)	-324 (-324)
Whites					

KLW8	30,148	-93 (-93)	-229 (-229)	+458 (+682)	-778 (-778)
Beaver					
KLE6	7,429	-94 (-94)	-72 (-72)	+79 (+79)	-156 (-156)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the change of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The cumulative effects resulted in one less AC going from “moderate” to “high” level of risk when compared to alternative 2. However, Fishtrap Creek did change in risk level from “low” to ‘moderate’ as a result of the cumulative effects. All the other ACs in the Beaver analysis area didn’t change in risk level as a result of cumulative effects.

Changes to Critical Habitat

Compared to alternative 2 cumulative effects, about 103 more acres of nesting/roosting and foraging critical habitat and 4 more acres of fire affected critical habitat will be affected in the cumulative effects for modified alternative 3.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

The effects are the same as for alternative 2.

Table 47: Number of 7th field watersheds within each level of connectivity for modified alternative 2 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	4 (3)	6 (1)	3 (9)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The watersheds not meeting the home range potential criteria are the same as for alternative 1.

Table 48: Number of 7th field watersheds that do or do not meet home range potential criteria for modified alternative 3 for Beaver fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

Cumulative Effects

Level of Habitat Connectivity

The cumulative effects are the same as for alternative 2.

Change in Fisher Home Range

Just as in alternative 1, none of the cumulative actions considered in the fire area (private land salvage and timber harvest plans) reduce the habitat enough move any watersheds from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Risk of Disturbance

The effects are the same as for Alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects are the same as for Alternative 2.

Cumulative Effects

Level of Habitat Alteration

The effects are the same as for Alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Risk of Habitat Disturbance

The effects are the same as for Alternative 2.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects are the same as for Alternative 2.

Cumulative Effects

Likelihood of Dispersal

The effects are the same as for Alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The effects are the same as for Alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by modified alternative 3 varies between individual species but about 5% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of modified alternative 3 are 1,182 acres of snag habitat will be affected by the project; 2,786 acres will be affected by actions considered for cumulative effects. This is a total of 3,968 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Modified alternative 3 will affect 106 acres of hardwood habitat. This is about 2% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of modified alternative 3 are 106 acres of hardwood habitat will be affected by the project; 327 acres will be affected by actions considered for cumulative effects. This is a total of 433 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

The reduction of treatment in modified alternative 3 did reduce the number of ACs changing in the level of risk. Compared to alternative 2, modified alternative 3 had 2 fewer ACs changing in the risk level from “low” to “moderate” and one less AC changing in risk level from “moderate” to “high”.

Changes to Critical Habitat

Compared to alternative 2, about 68 fewer acres of nesting/roosting and foraging critical habitat and 721 fewer acres of fire affected critical habitat will be affected in modified alternative 3.

Cumulative Effects

Risk to Reproduction

The cumulative effects didn't result in any of the ACs changing in the level of risk within the Happy Camp analysis area.

Changes to Critical Habitat

Compared to alternative 2 cumulative effects, about 68 fewer acres of nesting/roosting and foraging critical habitat and 721 fewer acres of fire affected critical habitat will be affected in the cumulative effects for modified alternative 3.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

There are seven more watersheds with moderate connectivity compared to alternative 2. There is 3 more watersheds with low connectivity (compared to very low connectivity) compared to alternative 2.

Table 49: Number of 7th field watersheds within each level of connectivity for modified alternative 2 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	20 (20)	15 (14)	1 (2)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The effects are the same as for alternative 2.

Table 50: Number of 7th field watersheds that do or do not meet home range potential criteria for modified alternative 3 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
11 (11)	25 (25)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in reducing the habitat connectivity of one watershed (Big Ferry – Swanson) from “low” to “very low” habitat connectivity. Private land Timber Harvest Plans are the reason for the downgrade in connectivity.

Change in Fisher Home Range

The cumulative effects are the same as for alternative 2.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Risk of Disturbance

The effects are the same as for Alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects are the same as for Alternative 2.

Cumulative Effects

Level of Habitat Alteration

The effects are the same as for Alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Risk of Habitat Disturbance

The effects are the same as for Alternative 2.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects are the same as for Alternative 2.

Cumulative Effects

Likelihood of Dispersal

The effects are the same as for Alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The effects are the same as for Alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by modified alternative 3 varies between individual species but about 9% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of modified alternative 3 are 12,551 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 12,768 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Modified alternative 3 will affect 236 acres of hardwood habitat. This is about 6% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of modified alternative 3 are 236 acres of hardwood habitat will be affected by the project; 10 acres will be affected by actions considered for cumulative effects. This is a total of 246 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Modified alternative 3 will result in the number of ACs within each level of risk as alternative 2 in the Whites analysis area. The Whites analysis area had the least amount of change to treatment that would affect NSO habitat thus these ACs weren't expected to change in risk level.

Changes to Critical Habitat

The effects are the same as for alternative 2.

Cumulative Effects

Risk to Reproduction

The cumulative effects will not result in a change in the level of risk to reproduction in the Whites analysis area.

Changes to Critical Habitat

The cumulative effects are the same as alternative 2.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

The effects are the same as for alternative 2.

Table 51: Number of 7th field watersheds within each level of connectivity for modified alternative 2 in the Beaver fire area.

Level of Connectivity

High	Moderate	Low	Very Low
0	6 (4)	7 (9)	5 (5)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The effects of the alternative the same as alternative 2.

Table 52: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
9 (8)	9 (10)

Cumulative Effects

Level of Habitat Connectivity

The cumulative effects are the same as alternative 2.

Change in Fisher Home Range

The cumulative effects are the same as alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Risk of Disturbance

The effects are the same as for Alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects are the same as for Alternative 2.

Cumulative Effects

Level of Habitat Alteration

The effects are the same as for Alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects are the same as for Alternative 2.

Cumulative Effects

Risk of Habitat Disturbance

The effects are the same as for Alternative 2.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects are the same as for Alternative 2.

Cumulative Effects

Likelihood of Dispersal

The effects are the same as for Alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

Cumulative Effects

Level of Habitat Disturbance

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by modified alternative 3 varies between individual species but about 8% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, modified alternative 3 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative

effects of modified alternative 3 are 3708 acres of snag habitat will be affected by the project; 194 acres will be affected by actions considered for cumulative effects. This is a total of 3,902 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Modified alternative 3 will affect 22 acres of hardwood habitat. This is about 3% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of modified alternative 3 are 22 acres of hardwood habitat will be affected by the project; 4 acres will be affected by actions considered for cumulative effects. This is a total of 26 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Compliance with Law, Regulation, Policy and the Forest Plan

The modified alternative 3 meets all law, regulation, policy and Forest Plan requirements.

III. Modification of Environmental Consequences by Fire Area since the Draft EIS

Affected Environment

The general affected environment is the same as presented in the Biological Assessment, Biological Evaluation, Survey and Manage Report, Management Indicator Species Report, and DEIS.

Methodology

The methods have changed or clarified in the section 1 of this document.

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

The Beaver analysis area contains 23 ACs; seven of these ACs are completely outside the fire perimeter or they are only affected on the far outside portions of their home ranges. The remaining 16 ACs have varying levels of fire effects; nine ACs were mostly burned through. Given the existing habitat in the ACs analyzed in the Beaver analysis area, two ACs have very low, six ACs have low, eight ACs have moderate, and seven ACs have high risk to reproduction. Therefore, without any treatments, in the seven ACs in the “high” category, a pair of owls occupying the area will likely have a difficult time finding enough resources to support themselves plus offspring.

Changes to Critical Habitat

The analysis estimates the number of critical habitat acres affected by each alternative. NSO use of fire affected areas for foraging is a point of disagreement in the literature for several possible reasons, but for this analysis, the pre-fire suitable habitat that burned at moderate and high fire severity are included. Suitable habitat that burned at low fire severity still contains the physical attributes of suitable habitat thus this habitat is identified as suitable habitat. Given the types of treatment proposed for this project that are likely to maintain or remove habitat, we focus the reporting of effects on downgrading and removing habitat. Habitat removal means the habitat prior to treatment will no longer function as NSO habitat after treatment. NSO habitat is generally described as a hierarchy in habitat quality with nesting/roosting being the highest quality and foraging and dispersal following in order; habitat downgrading signifies the lowering of a habitat quality from one level to the next.

The spatial boundary is all of the areas designated as critical habitat within the analysis area. The analysis area is the same as the spatial bounds described in the Risk to reproduction. The temporal bounds will be the same as for Risk to Reproduction.

The Beaver analysis area contains about 4,881 acres of critical habitat and about 229 acres of fire affected critical habitat within two subunits (KLE6 and KLE7). The estimated amount of critical habitat for each habitat type is presented below.

Table 53: Existing conditions for Northern Spotted Owl Critical Habitat for the Beaver fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	NSO Critical Habitat			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	7,429	1,577	1,402	1,401	229
KLE7	650	172	52	277	0

Bald Eagle

There is one nest site in this fire area. It is at the bottom of Dona Creek along the Klamath River.

Northern Goshawk

There are three Northern Goshawk potentially occupied territories in the Beaver fire area. The territories are the Beaver, Kohl and the Woodchopper nests. Woodchopper and Kohl territories have a high risk to reproduction and Beaver has a moderate risk to reproduction. The risks are a result of past events including the 2014 wildfire event.

Fisher, Marten, and Wolverine

Level of Habitat Connectivity

For this analysis, 67th field watersheds were analyzed, none of which have “high” habitat connectivity, partly or mainly due to the 2014 fires that removed many acres of habitat and increased the number of naturally occurring openings in the project area. Almost half (39) of the watersheds have “moderate” connectivity while the remaining 28 watersheds have “low” (23) or “very low” (5) habitat connectivity. Past fires that created large openings in a given watershed are among the causes of the number of watershed with low or very low connectivity.

The Beaver analysis area has 7 watersheds with a moderate level of connectivity and 6 watersheds with a low or very low level of habitat connectivity.

Table 54: Number of 7th field watershed within each level of habitat connectivity under existing conditions for the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	7	5	1

Change in Fisher Home Range

Overall, of the 67 watersheds analyzed for this project include 36 watersheds with enough habitat to support a fisher home range or contribute to a home range. The remaining 31 watersheds have too many open areas (many of which were created by the 2014 fires) or do not have enough acres of denning/resting and foraging habitat to meet the criteria of a home range. The Beaver analysis area contains 4 out 13 watersheds that may support a fisher home range.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

There are seventeen potential hibernacula/maternalities in the Beaver Fire area.

Willow Flycatcher

There are eleven watersheds with potential willow flycatcher habitat in the Beaver fire area.

Siskiyou Mountain Salamander

The Siskiyou Mountains salamander is known to occur in the Happy Camp project area, but there are no detections of the species in the Beaver or Whites project areas.

Tehama Chaparral Snail

There are no known sites in the Beaver fire area. The affected environment for the Tehama Chaparral Snail is the same as described in the DEIS (page 144) and the Biological Evaluation (page 42).

Western Bumble Bee

Level of Habitat Disturbance

The general affected environment for the Western Bumble Bee is same as described in the DEIS (page 144) and the Biological Evaluation (page 43). There are five watersheds that have potential Bumble Bee habitat (meadows) in this fire area.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

There is about 23,400 acres of snag species associated habitat in the Beaver fire area. Many of the cavity-nesting, snag-associated species that potentially occur in the project area have interdependent and complex life cycles that rely specifically on this habitat type. The abundant selection of snags can provide primary cavity nesters the opportunity to construct several cavities that will in turn provide secondary cavity nesters more potential nest sites.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

There is about 4,250 acres of hardwood species associated habitat in the Beaver fire area. This doesn't mean that these species will not enter a hardwood stand that burned with high severity effects to retrieve their food caches but the lack of canopy cover in these areas doesn't provide much escape cover to avoid predation. Plus, these species rely on the acorn mast as a food source; without live hardwoods, these species may need to move to other areas in search of food. However, some of the hardwoods do re-sprout after a fire and may produce a mast in about ten years. Hardwood re-sprouting is already evident in the project area.

Survey and Manage

The affected environment is the same as described in the DEIS (page 145) and the Survey and Manage report (page 6).

Big Game

Forage and cover are important attributes of quality deer and elk habitat. These conditions have been

removed on the short term in the areas that experienced high vegetation severity. The conditions have been degraded in areas with moderate vegetation severity, but resprouting of hardwoods and existing shrubs will recover cover and forage quickly (2-5 years). If deer or elk are present in areas with high or moderate vegetation severity, they may use the areas along the periphery that still contain some vegetation cover.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

The Happy Camp analysis area contains 57 ACs; eight of these ACs are completely outside the fire perimeter or are only affected on the far outside portions of their home ranges. The remaining 49 ACs have varying levels of fire effects. Given the existing habitat in the ACs analyzed in the Happy Camp analysis area, 2 ACs have very low, 11 ACs have low, 39 ACs have moderate, and 5 ACs have high risk to reproduction. Therefore, without any treatments, the five ACs in the “high” category, a pair of owls occupying the site will likely have a difficult time finding enough resources to support themselves plus any offspring.

Changes to Critical Habitat

The Happy Camp analysis area contains about 38,733 acres and about 9,273 acres of fire affected critical habitat within three critical habitat subunits (KLE6, KLE7, and KLW7). The estimated amount of critical habitat for each habitat type is presented below.

Table 55: The current acres of Northern Spotted Owl Critical Habitat for Happy Camp fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	NSO Critical Habitat			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	287	73	16	117	0
KLE7	39,962	7,606	6,864	6,480	8,434
KLW7	28,876	2,619	8,027	6,931	839

Bald Eagle

There are three Bald Eagle nests in this fire area. These are Fryingpan, Muck-a-Muck and Caroline Creek (named for the drainages in which they are located). They are all along the Klamath River. These nests have a low risk to future nest tree sites.

Northern Goshawk

There are nine potentially occupied territories in the Happy Camp fire area. These are the China, East Fork Elk, Elk, Kelsey, Kuntz, Middle, O’Neil, Stanza and Walker territories. China, Kelsey and

Kuntz territories have a moderate risk to reproduction as a result of past events including the 2014 wildfires. The remaining potentially occupied territories have a high risk to reproduction.

Fisher, Marten, and Wolverine

Level of Habitat Connectivity

The Happy Camp analysis area contains several (26) watersheds with moderate level of connectivity while the remaining 10 watersheds had a low level of connectivity.

Table 56: Number of 7th field watershed within each level of habitat connectivity under existing conditions for the Happy Camp fire area.

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Happy Camp	0	26	10	0

Change in Fisher Home Range

The Happy Camp analysis area contains 18 out of the 36 watersheds that may support a fisher home range.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

There are twenty-eight potential hibernacula/maternalities in the Happy Camp fire area.

Willow Flycatcher

There are thirty-eight watersheds with potential willow flycatcher habitat in the Happy Camp fire area.

Siskiyou Mountain Salamander

The Siskiyou Mountains salamander has a narrow species range that generally covers the area from Applegate Valley to the Klamath River. The southern portion of the range overlaps with the Happy Camp project area. Depending on the species range map, the Happy Camp project area could overlap up to 25% of the species range.

The general affected environment is the same as described in the DEIS (page 143) and the Biological Evaluation (page 42). There are fifty-nine known sites in the Happy Camp fire area.

Tehama Chaparral Snail

There are three known sites in the Happy Camp fire area. The affected environment for the Tehama Chaparral Snail is the same as described in the DEIS (page 144) and the Biological Evaluation (page 42)

Western Bumble Bee

Level of Habitat Disturbance

The general affected environment for the Western Bumble Bee is same as described in the DEIS (page 144) and the Biological Evaluation (page 43). There are twenty-six watersheds that have potential Bumble Bee habitat (meadows) in this fire area.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

There is about 146,700 acres of snag species associated habitat in the Happy Camp fire area. Many of the cavity-nesting, snag-associated species that potentially occur in the project area have interdependent and complex life cycles that rely specifically on this habitat type. The abundant selection of snags can provide primary cavity nesters the opportunity to construct several cavities that will in turn provide secondary cavity nesters more potential nest sites.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

There is about 4,070 acres of hardwood species associated habitat in the Happy Camp fire area. This doesn't mean that these species will not enter a hardwood stand that burned with high severity effects to retrieve their food caches but the lack of canopy cover in these areas doesn't provide much escape cover to avoid predation. Plus, these species rely on the acorn mast as a food source; without live hardwoods, these species may need to move to other areas in search of food. However, some of the hardwoods do re-sprout after a fire and may produce a mast in about ten years. Hardwood re-sprouting is already evident in the project area.

Survey and Manage

The affected environment is the same as described in the DEIS (page 145) and the Survey and Manage report (page 6).

Big Game

The affected environment is the same as described in the Beaver fire area.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Risk to Reproduction

The Whites analysis area contains 15 ACs; two of these ACs are completely outside the fire perimeter or are only affected on the far outside portions of their home ranges. The remaining 13 ACs have varying levels of fire effects. Given the existing habitat in the ACs analyzed in the Whites analysis area, 11 ACs have low and four ACs have moderate risks to reproduction; there is no AC with a very low or high level of risk to reproduction.

Changes to Critical Habitat

The BE description of the effects resulting from alternative 1 is the Whites analysis area is the same as described in the BE (page 44).

The Happy Camp analysis area contains about 20,518 acres and about 2,217 acres of fire affected critical habitat within three critical habitat subunits (KLW8). The estimated amount of critical habitat for each habitat type is presented below.

Table 57: Current Northern Spotted Owl Critical Habitat acres for Whites fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	NSO Critical Habitat			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLW8	30,148	6,703	7,393	6,422	2,217

Bald Eagle

There are no known Bald Eagle nest sites in the Whites fire area.

Northern Goshawk

There are three Northern Goshawk potentially occupied territories in the Whites fire area. These are the Hickory, Sixmile and West Whites territories. Hickory has a high risk to reproduction. Sixmile and West Whites have moderate risk to reproduction. The risk levels are a result of past events including the 2014 wildfires.

Fisher, Marten, and Wolverine

Level of Habitat Connectivity

The Happy Camp analysis area contains 6 watersheds with moderate level of connectivity while the remaining 12 watersheds had a low or very low level of connectivity.

Table 58: Number of 7th field watershed within each level of habitat connectivity under existing conditions for the Whites fire area.

Project Area subunit	Level of Connectivity			
	High	Moderate	Low	Very Low
Whites	0	6	8	4

Change in Fisher Home Range

The Whites analysis area contains 14 out of 21 watersheds that may contain a fisher home range.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

There are thirteen potential hibernacula/maternity in the Whites fire area.

Willow Flycatcher

Level of Habitat Alteration

There are eighteen watersheds with potential willow flycatcher habitat in the Whites fire area.

Siskiyou Mountain Salamander

The Happy Camp fire area is within the range of the Siskiyou Mountain Salamander, but the Beaver and Whites fire areas are outside the known range of this species.

Tehama Chaparral Snail

There are no known sites in the Whites fire area. The affected environment for the Tehama Chaparral Snail is the same as described in the DEIS (page 144) and the Biological Evaluation (page 42)

Western Bumble Bee

Level of Habitat Disturbance

The general affected environment for the Western Bumble Bee is same as described in the DEIS (page 144) and the Biological Evaluation (page 43). There are eleven watersheds that have potential Bumble Bee habitat (meadows) in this fire area.

Management Indicator Species

Snag Species Association

Changes in Snag Habitat Abundance

There is about 49,200 acres of snag species associated habitat in the Whites fire area. Many of the cavity-nesting, snag-associated species that potentially occur in the project area have interdependent and complex life cycles that rely specifically on this habitat type. The abundant selection of snags can provide primary cavity nesters the opportunity to construct several cavities that will in turn provide secondary cavity nesters more potential nest sites.

Hardwood Species Association

Changes in Hardwood Habitat Abundance

There is about 700 acres of hardwood species associated habitat in the Whites fire area. This doesn't mean that these species will not enter a hardwood stand that burned with high severity effects to retrieve their food caches but the lack of canopy cover in these areas doesn't provide much escape cover to avoid predation. Plus, these species rely on the acorn mast as a food source; without live hardwoods, these species may need to move to other areas in search of food. However, some of the hardwoods do re-sprout after a fire and may produce a mast in about ten years. Hardwood re-sprouting is already evident in the project area.

Survey and Manage

The affected environment is the same as described in the DEIS (page 145) and the Survey and Manage report (page 6).

Big Game

The affected environment is the same as described in the Beaver fire area.

Environmental Consequences

Alternative 1

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Alternative 1 will not directly affect this indicator because there are no treatments to remove or degrade any northern spotted owl habitat. Almost all the activity centers analyzed in this project will continue to accumulate fuels resulting from the burned trees falling over. Regeneration of habitat will likely take more than 100 years to develop into high quality northern spotted owl habitat as long as high severity fire doesn't interrupt forest development. The slow habitat development is especially difficult for the activity centers that were heavily affected by the 2014 fires. The loss of suitable habitat can affect NSO reproduction.

Most of the ACs in the Beaver analysis area were affected by the 2014 fires, but 8 of these ACs were more affected (>50% of the core and home range burned) than the others by the Beaver Fire. Without treatment, the remaining owl pairs will likely stay at the current location or move to a new location where the habitat may be more conducive to fulfilling their needs. The table below displays the number of ACs occurring at each level of risk to reproduction for the Beaver analysis area.

Table 59: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 1 for Beaver fire area.

Risk to Reproduction	Number of Activity Centers*
Very Low	2 (2)
Low	6 (5)
Moderate	8 (9)
High	7 (7)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

Critical habitat for the northern spotted owl overlaps a large portion of the 2014 fires; a large number of critical habitat acres were burned at high severity. Critical habitat units typically contain high quality habitat or sites that are capable of producing high quality habitat therefore the loss of critical habitat often coincides with the loss of the better owl habitat. Alternative 1 will not affect northern spotted owl critical habitat. The lack of treatment will retain all the remaining habitat and important

legacy structures to aid in the development of owl habitat by providing physical structure as the stand regenerates. Since northern spotted owls and their prey rely on these structures to fulfill their needs for survival and reproduction, the maintenance of large trees and large woody debris will increase the quality of future owl habitat.

Table 60: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 1 in the Beaver fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	7,429	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The Beaver analysis area is a checkerboard distribution of land ownership primarily between the Forest and private forest companies. Given the fire effects to both ownerships, private land has many acres of fire-affected habitat that are likely to be removed or have already been removed. Although private land is not held to the same rules as the Forest, we are assuming the salvage harvest on private land is limited to moderate and high fire severity affected areas. Deviations from this assumption could affect the magnitude of effects for ACs within the Beaver analysis area given the proportion and distribution of private land ownership. Despite these uncertainties, one AC is identified with an increased risk to reproduction as a result of the cumulative effects of adding the direct and indirect effects of alternative 1 to effects of other actions on private and public lands. The AC went from low risk to moderate risk level.

Changes to Critical Habitat

The cumulative effects of alternative 1 in Beaver analysis area will result in no change in the amount of critical habitat affected.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

There will be no disturbance to nest sites as a result of alternative 1.

Risk to Future Potential Nest Trees

The eagle nests that may be affected by this project will likely continue to provide nesting opportunity without treatment. The lack of treatment will have no effect on disturbing nesting eagles in the short- or long-term. The current nesting tree will likely continue to stand, but other possible

nesting trees are available near the current nest site thus no action will result in no effect on future possible nest trees. In the long-term, the nest tree may still be standing, but other possible nest trees will be available.

Cumulative Effects

Level of Disturbance to Nest Sites

There are no direct or indirect effects to this indicator so there are no cumulative effects.

Risk to Future Potential Nest Trees

The only action considered for cumulative effects that affect the Dona nest site is Timber Harvest Plan # 87. This project will occur in about 10 acres where there are potential nest trees. This will not decrease the current risk to future potential nest trees when added to the effects of this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The no action alternative will not disturb any of the goshawk territories. Any active nests in the project will not be disturbed by heavy equipment and increased road activity. In the long-term, the lack of disturbance is expected to continue without action.

Risk to Reproduction

Without treatment, the high risk territories will continue to struggle to support reproduction. Over the long-term, the high risk nests will remain in poor condition and habitat conditions are not likely to improve. Moderate risk territories will passively recovery, but slower than if treatment should occur.

Cumulative Effects

Level of Disturbance to Nest Sites

There are no direct or indirect disturbance to Northern Goshawks so there is no cumulative effect.

Risk to Reproduction

The actions that have the potential for cumulative effects for Northern Goshawks is private land salvage for Beaver fire area. The salvage downgrades some habitat in the Woodchopper and Kohl territories. These territories already have a high risk to reproduction so the risk is not increased by the effects of cumulative actions.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

The project area had large proportion of habitat affected by moderate and high fire severity during the 2014 fires which created conditions that are less desirable for fisher, marten, and wolverine connectivity. These species are closely associated with forested habitat that has a high proportion of overhead cover. Moderate and high fire severity removes most, if not all, vegetation in the understory

thus leaving mostly standing dead trees and possibly stems of dead shrubs. The time between the fire and regeneration of the vegetation may take as little as one growing season to provide some cover for fisher and marten, but early seral vegetation may not provide sufficient cover until the shrubs or trees grow to about 4feet in height. The time needed for the vegetation to reach this height is typically dependent on several factors like site conditions, but generally, the project area is capable of regenerating vegetation quickly.

In the short-term, fisher, marten, and wolverine (to a much lesser degree) may have some challenges moving through the watersheds largely affected by moderate and high fire severity, but the actual level of connectivity is more related to the connectivity level prior to the fire and the amount and distribution of the remaining denning/resting and foraging habitat. Watersheds with existing denning/resting and foraging habitat are more likely to provide opportunities for these species to find food, water, and resting opportunities with adequate cover during their travels through the watershed as compared to watersheds that currently contain a small amount of habitat that may or may not be a result of the 2014 fires.

The Beaver analysis area currently contains 13 watersheds with moderate to very low habitat connectivity. The lack of treatment in this alternative will result in these watershed regenerating without the interruption of treatment and many, if not all, of the treatment units will grow herbaceous and shrub vegetation quickly. In the short-term, watersheds with low and very low habitat connectivity will likely create conditions where an individual may have challenges moving through a watershed while the watersheds with a moderate level of connectivity will likely still provide these species to move through the watershed. In the long-term, tall shrubs and possibly small trees that regenerate in fire affected areas may be large enough to provide sufficient cover for marten, fisher, or to a lesser degree, wolverine (don't necessarily need this much cover) thus increasing connectivity.

Table 61: Number of 7th field watersheds within each level of habitat connectivity for alternative 1 in the Beaver fire area.

Level of Habitat Connectivity			
High	Moderate	Low	Very Low
0 (0)	7 (3)	5 (2)	1 (8)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

Although tall shrubs and woody debris likely provide structure for fisher and marten to move across openings, one of the most important factors for fisher and marten home ranges is sufficient denning/resting and foraging habitat. Denning/resting and foraging habitat affected by the 2014 fires will take many years to regenerate; any additional assistance to accelerate the regeneration process is likely to help. In the short-term, protection of existing denning/resting habitat from future high severity fire is important to conserve viable home ranges. Alternative 1 will not help to accelerate regeneration or reduce the risk of high severity fire removing more habitat. Fuels created by the 2014 fires will continue to accumulate and will create conditions that increase the likelihood of future high severity fire (see the fire and fuels resource report for more detailed information). This accumulation

of fuels will threaten denning/resting and foraging habitat that may increase fragmentation of home ranges. Alternative 1 will allow the forest to regenerate and if high severity fire doesn't interrupt the regeneration, denning/resting habitat may regenerate in about 100 years.

Table 62: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 1 for Beaver fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

The watersheds that are not meeting the home range potential criteria are Buckhorn Creek, Buckhorn Gulch, Doggett Creek, Dona Creek, Dutch Creek, Kohl Creek, Lumgrey Creek, Miller Gulch, and Quigleys Creek.

Cumulative Effects

Level of Habitat Connectivity

The Beaver analysis area is a checkerboard distribution of land ownership primarily between the Forest and private forest companies. Given the fire effects to both ownerships, private land has many acres of fire-affected forested habitat that are likely to be removed or have already been removed. Although private land is not held to the same rules as the Forest, we are assuming the salvage harvest on private land is limited to moderate and high fire severity affected areas. Deviations from this assumption could affect the magnitude of effects on connectivity in the analysis area given the proportion and distribution of private land ownership.

The cumulative effects reduced the habitat connectivity in 9 of the 13 watersheds analyzed in the Beaver analysis area. Two "moderate" level watersheds were reduced in connectivity to a "very low" level and two other "moderate" level watersheds were reduced in connectivity to a "low" level. Five watersheds went from "low" to "very low" habitat connectivity.

Change in Fisher Home Range

The cumulative actions considered in the fire area (private land salvage and timber harvest plans) decreased habitat enough in one watershed (Jaynes Canyon) to keep it from not meeting the home range potential criteria.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Any roost sites that retained the micro-climate condition necessary to support a hibernaculum or maternity colony will continue to provide those services. For alternative 1, the lack of action will not affect bats. The rate of forest regeneration will be slow without treatment but bats will be able to continue to use the abundant source of snags. The lack of disturbance created by treatment will maintain any hibernacula or maternity sites. Therefore, for this analysis indicator, there is no effect on disturbance to bats.

Cumulative Effects

There are no direct or indirect effects resulting from alternative 1, thus no cumulative effects.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

Willow flycatchers are dependent on live riparian vegetation; the loss of this vegetation is likely to affect the number of possible areas for nesting. Alternative 1 will not change the current condition of the habitat. The remaining areas of habitat will continue to provide nesting opportunity to flycatchers. Burned forest is not likely to be beneficial to flycatchers so the retention of these snags will not affect this species. In the long-term, the habitat will regenerate and possibly produce willow or alder patches for flycatchers. For this analysis indicator, the lack of action will have no effect on habitat alteration from the current condition.

Cumulative Effects

Level of Habitat Alteration

There are no direct or indirect effects resulting from alternative 1, thus no cumulative effects.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Alternative 1 will not change the existing cool, moist talus habitat typically created by dense conifer canopy on northerly slopes needed by Siskiyou Mountain salamander. Habitat burned by the 2014 fires at moderate to high severity is likely to have little to no canopy cover; the small amount of canopy cover left after the fires will be retained in this alternative. In addition, the small spaces between pieces of talus needed by the salamander to move deeper or shallower in the talus profile to reach desired temperature and moisture will not be disturbed by activities that may compact the talus. For this analysis indicator, there is no effect on risk of habitat disturbance.

Cumulative Effects

There are no direct or indirect effects resulting from alternative 1, thus there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Alternative 1 will not affect any talus in conifer and hardwood mixed habitat near riparian reserves in project area. There are likely to be some patches of habitat where canopy cover and micro-site conditions will provide for the needs of several individuals remaining after the 2014 fires. The pre-fire woody debris which is likely to be supplemented by the post-fire abundant dead trees will provide small areas of possible refugia for dispersing snails. The lack of habitat disturbance will allow remaining habitat to provide future habitat when canopy cover regenerates. For this analysis indicator, there is no effect on snails dispersing.

Cumulative Effects

There are no direct or indirect effects resulting from alternative 1, thus no cumulative effects.

Western Bumble Bee

Direct Effects and Indirect Effects

Alternative 1 will not affect bumble bee habitat, most of which is in meadows that provide nesting and foraging opportunity for bees. According to the vegetation burn severity data, most of the 4,000 acres of meadows in the project area burned at low severity in the 2014 fires; therefore, it is likely that many of the meadows still contain vegetation which can provide basic structure for a bumble bee nest site and will produce flowering plants this spring. Retaining snags outside meadows will not affect the ability of bumble bees to survive or reproduce. For this analysis indicator, there is no effect on bumble bee nest disturbance.

Cumulative Effects

There are no direct or indirect effects resulting from alternative 1, thus no cumulative effects.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

In this alternative, there will be no removal of trees, road construction, or any other activities associated with the project. Potential negative effects of no action would be high fuel loads and risk of future high severity fire adjacent to remaining habitat or within regenerating habitat. Positive effects would include the total retention of snags which are important habitat features within remaining late seral closed canopy coniferous habitat.

Snag-associated species would have abundant source and variety of snags. Black-backed woodpeckers, if present, would have the maximum available habitat produced by the high intensity fire. Other snag-associated species like the Vaux's swift and downy woodpecker would have a possible increase in more open stands of snags or creation of new snag habitat. Secondary cavity nesters, however, may have a reduction in older, decaying snags with cavities as those tend to burn up in the fires but, in the long-term, these species will likely have an abundant source of previously excavated snags.

Cumulative Effects

Other projects in the analysis area are expected to affect habitat to the point that it may not function as snag-associated habitat. Overall, about 2,786 acres of the 105,410 acres of snag habitat in the analysis area will be affected by actions considered for cumulative effects (appendix C of the FEIS). These acres represent the footprint of habitat for snag-associated species because habitat for some species overlaps. Affected acres represent about 2% of the habitat within the analysis area.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 1 does not have any direct effects on hardwood-associated species. Hardwood stands burned with moderate or high severity effects in the 2014 fires are not likely to meet the needs of these species because they are completely or partly dependent on hardwood mast as a food source. Without a food source, the species are likely to leave this fire-affected habitat to occupy areas with live trees. In the long-term, some of the hardwoods will re-sprout and provide future habitat for these species assuming wildfire doesn't return in the near future. An indirect effect of alternative 1 comes from the large fuel loads within or adjacent to the hardwood stands that are likely to contribute to another wildfire occurring that will prevent these stands from developing into a hardwood forest.

Cumulative Effects

For hardwood associated species, the effects of other actions in the analysis area will result in removing about 327 acres of the habitat in the project area. Therefore, the cumulative effects of adding the non-quantified indirect effects of this alternative to the 590 acres of hardwood habitat that will be removed in other actions will result in less habitat available in the future for hardwood-associated species.

Survey and Manage

Direct Effects and Indirect Effects

Alternative 1 will not have any direct effects on survey and manage species. The lack of treatment will not affect important habitat components such as current canopy cover, coarse woody debris, or leaf litter/duff. In the short term, the snags and limited down wood in high fire severity affected habitat will continue to provide hot, dry conditions for these species. In the moderate fire severity affected habitat, the small amount of canopy cover will likely decrease in the short-term with delayed tree mortality, thus creating even hotter and drier conditions that may be similar to the high severity fire affected habitat.

In the long term, the abundant source of snags will provide a source of woody debris (an important habitat component for the species, especially for the blue-gray tail dropper) for many years. Large woody debris in conjunction with regenerating trees may provide micro-site conditions for these species in the long term (20 years) but the regeneration of habitat will take much more time (beyond the long-term time span for this analysis).

Cumulative Effects

The only cumulative actions within the analysis bounds are Forest projects. These projects all have project design features to avoid effects to known sites for survey and manage species so there are no cumulative effects from alternative 1 to known sites.

Migratory Bird

Direct Effects and Indirect Effects

This alternative will have no direct or indirect effect on the compliance with the MOU between the USDA Forest Service and USDI Fish and Wildlife Service. Migratory birds affected by the 2014 fires will continue to be threatened by the possible re-occurring wildfires that may affect unburned habitat. Bird species associated with snags and early seral habitat will have abundant habitat and predicted future wildfires will add to this already abundant habitat.

Cumulative Effects

This alternative will have no direct or indirect effect on complying with the MOU, thus no cumulative effects.

Big Game

Direct Effects and Indirect Effects

Forage will recover quickly in most areas due to shrub and hardwood re-sprouting and the recolonization of grasses in areas that now have an open canopy as a result of tree mortality. Cover and thermal refugia, however, will take longer to recovery. This is especially true in areas that experienced high and moderate vegetation severity and the trees are dead or dying. The increase in forage opportunities will be limited by the availability of adjacent cover. The no action alternative would contribute the least to the recovery of understory browse and cover species for deer and elk.

Cumulative Effects

The private land salvage in the Beaver fire area will limit the availability of both cover and foraging on more than 9,900 of the fire area. The private land salvage is focused on reforestation for timber production so efforts will likely be made to discourage shrub and hardwood resprouting which would provide both forage and cover. When added to the effects of alternative 1 the recovery of understory browse and cover species will be primarily limited to Forest Service lands in the Beaver fire area.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

The direct and indirect effects of no action in the Happy Camp analysis area are the same as those described in the Beaver section above.

Table 63: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 1 for Happy Camp fire area

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	14 (14)
Moderate	37 (37)
High	4 (4)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The direct and indirect effects are the same as those described in the Beaver section above.

Table 64: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 1 in the Happy Camp fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	0 (-80)	0 (-145)	0 (+225)	0 (0)
KLW7	28,876	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The cumulative effects of alternative 1 in the Happy Camp analysis area will result in no change in the AC’s level of reproduction risk because adding the effects of this alternative to the effects of other projects in the analysis area and within the relevant temporal boundaries will not change the level of reproduction risk.

Changes to Critical Habitat

The cumulative effects of alternative 1 in the Happy Camp analysis area will result in about 225 acres of nesting/roosting and foraging habitat being downgraded to dispersal habitat.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

There will be no disturbance to nest sites as a result of alternative 1.

Risk to Future Potential Nest Trees

The effects are the same as is described in the Beaver fire area.

Cumulative Effects

Level of Disturbance to Nest Sites

There are no direct or indirect effects to this indicator so there are no cumulative effects.

Risk to Future Potential Nest Trees

Thom Seider and Happy Camp Fire Protection Phase II project intersect the Caroline nest site and the Fryingpan nest site respectively. These projects have project design features that will limit the removal of potential nest trees. The effects of these actions are small and will not add to the risk to potential nest tree sites.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The no action alternative will not disturb any of the goshawk nests. Any active nests in the project will not be disturbed by heavy equipment and increased road activity. In the long-term, the lack of disturbance is expected to continue without action.

Risk to Reproduction

Without treatment, the high risk nests will continue to struggle supporting reproduction. Over the long-term, the high risk nests will remain in poor condition and will not provide habitat.

Cumulative Effects

Level of Disturbance to Nest Sites

There are no direct or indirect disturbance to Northern Goshawks so there is no cumulative effect.

Risk to Reproduction

The Lovers Canyon project will increase the risk of the Kelsey territory from a moderate risk to a high risk. This is likely an overestimate of effects but since the Lovers Canyon project is still in early stages of planning worst case was assumed in this analysis. All other territories will remain at their current risk levels as described in the affected environment.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

The direct and indirect effects of no treatment in the Happy Camp analysis area are similar to the Beaver analysis area except the Happy Camp analysis area has a different number of watersheds and distribution of habitat connectivity for each watershed.

Happy Camp contains 36 watersheds with moderate (26 watersheds) and low (10 watersheds) habitat connectivity.

Table 65: Number of 7th field watersheds within each level of connectivity for alternative 1 in Happy Camp fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	26 (26)	10 (9)	0 (1)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The effects for Happy Camp are the same as those described in the Beaver section above.

Table 66: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 1 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
18 (18)	18 (18)

The watersheds that do not meet the home range potential criteria are Bear Creek, Big Ferry Swanson, Bishop Creek, China Creek, Deep Creek, Doolittle Creek, Headwaters Elk Creek, Lower East Fork Elk Creek, Lower Grider Creek, McCarthy Creek, Middle Creek, Middle Elk Creek, North Fork Kelsey Creek, Rancheria Creek, Tom Martin Creek, Tompkins Creek, Upper Grider Creek, and Walker Creek.

Cumulative Effects

Level of Habitat Connectivity

The cumulative effects of alternative 1 in this analysis area will result in the level of habitat connectivity for one watershed (Big Ferry –Swanson) to increase from “low” to “very low” habitat connectivity. This reduction in habitat connectivity in Big-Ferry-Swanson is primarily a result of proposed treatment and potential salvage on private land.

Change in Fisher Home Range

Thom Seider and Elk Thin projects move Upper East Fork Elk Creek and Upper Elk Creek from meeting the home range potential criteria to not meeting the criteria. Private land salvage and Timber Harvest Plans move Franklin Gulch, Horse Creek, and Schutts Gulch from meeting the home range potential criteria to not meeting it when combined with the affected environment and the effects of alternative 1.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Risk of Disturbance

The effects are the same as for the Beaver fire area.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects are the same as for the Beaver fire area.

Cumulative Effects

Level of Habitat Alteration

The effects are the same as for the Beaver fire area.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Risk of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects are the same as for the Beaver fire area.

Cumulative Effects

Likelihood of Dispersal

The effects are the same as for the Beaver fire area.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Level of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Changes in Snag Habitat Abundance

The effects are the same as for the Beaver fire area.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The effects are the same as for the Beaver fire area.

Survey and Manage

Direct Effects and Indirect Effects

The effects are the same as for the Beaver fire area.

Cumulative Effects

The effects are the same as for the Beaver fire area.

Migratory Bird

Direct Effects and Indirect Effects

The effects are the same as for the Beaver fire area.

Cumulative Effects

The effects are the same as for the Beaver fire area.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for the Beaver fire.

Cumulative Effects

The private land Timber Harvest Plans and small amount of private land salvage is focused on timber production so re-sprouting shrubs and hardwoods are discouraged in these areas. Forest Service

projects will have a limited effect on big game species because they are mainly fuels reduction and thinning from below actions. There is only 700 acres of private Timber Harvest Plans and private land salvage in the Happy Camp fire area so the effects to browse and cover recovery will be localized and small.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

The direct and indirect effects of no action in the Whites analysis area are the same as those described in the Beaver section above.

Table 67: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 1 for Whites fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	0 (0)
Low	11 (11)
Moderate	4 (4)
High	0 (0)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The direct and indirect effects of no action in the Whites analysis area are the same as those described in the Beaver section above.

Table 68: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 1 for the Whites fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLW8	30,148	0 (-107)	0 (-116)	0 (+223)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The cumulative effects of alternative 1 in the Whites analysis area will result in no change in the AC's level of reproduction risk because adding the effects of this alternative to the effects of other projects in the analysis area and within the relevant temporal boundaries will not change the level of reproduction risk.

Changes to Critical Habitat

The cumulative effects of alternative 1 in the Whites analysis area will result in about 223 acres of nesting/roosting and foraging habitat being downgraded to dispersal habitat.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The no action alternative will not disturb any of the goshawk nests. Any active nests in the project will not be disturbed by heavy equipment and increased road activity. In the long-term, the lack of disturbance is expected to continue without action.

Risk to Reproduction

Without treatment, the high risk nests will continue to struggle supporting reproduction. Over the long-term, the highly fire affected habitat will remain in poor condition and will not provide habitat.

Cumulative Effects

Level of Disturbance to Nest Sites

There are no direct or indirect disturbance to Northern Goshawks so there is no cumulative effect.

Risk to Reproduction

The Eddy Late Successional Reserve project overlaps with the Sixmile territory. However, project design limits the effects to Northern Goshawk habitat and there is no change in the risk to reproduction as a result of the cumulative effect of the Eddy Late Successional Reserve project. All of the other territories have no cumulative effects to be added to the direct and indirect effects of the alternative.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

The Whites analysis area has similar effects as those described in the Happy Camp section above. However, the White analysis area contains four watersheds with very low habitat connectivity; these watersheds have lower connectivity than those presented in the Happy Camp section.

Table 69: Number of 7th field watersheds within each level of connectivity for alternative 1 for the Whites fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	6 (4)	8 (10)	4 (4)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The Whites analysis has the same effects described in the Beaver section above.

Table 70: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 1 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
14 (11)	4 (7)

The watersheds not meeting the home range potential criteria are Music Creek, Specimen Creek, Sugar Creek, and Upper French Creek.

Cumulative Effects

Level of Habitat Connectivity

The cumulative effects of alternative 1 in this analysis area will result in the level of habitat connectivity for two watersheds (Jessups Gulch-North Fork Salmon River and Music Creek) to increase from “moderate” to “low” habitat connectivity. This reduction in habitat connectivity in the Jessups Gulch-North Fork Salmon River watershed is primarily a result of proposed treatment in the Jess, Glassups, and Sawyers Bar Fuels Reduction projects. Music Creek watershed reduction in habitat connectivity is primarily a result of treatment and potential salvage occurring on private land.

The cumulative effects

Change in Fisher Home Range

The Jess project reduced the habitat enough to move Jessups Gulch from meeting the home range potential criteria to not meeting the criteria. Eddy Late Successional Reserve and Sawyers Bar

Underburn move Robinson Gulch and Lower North Russian Creek from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Risk of Disturbance

The effects are the same as for the Beaver fire area.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects are the same as for the Beaver fire area.

Cumulative Effects

Level of Habitat Alteration

The effects are the same as for the Beaver fire area.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Risk of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects are the same as for the Beaver fire area.

Cumulative Effects

Likelihood of Dispersal

The effects are the same as for the Beaver fire area.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Level of Habitat Disturbance

The effects are the same as for the Beaver fire area.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Changes in Snag Habitat Abundance

The effects are the same as for the Beaver fire area.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

The effects are the same as for the Beaver fire area.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The effects are the same as for the Beaver fire area.

Survey and Manage

Direct Effects and Indirect Effects

The effects are the same as for the Beaver fire area.

Cumulative Effects

The effects are the same as for the Beaver fire area.

Migratory Bird

Direct Effects and Indirect Effects

The effects are the same as for the Beaver fire area.

Cumulative Effects

The effects are the same as for the Beaver fire area.

Big Game

Direct Effects and Indirect Effects

The effects are the same as described in the Beaver fire area.

Cumulative Effects

The primary action considered for cumulative effects within the fire area that may affect big game habitat is the Eddy Late Successional Reserve. The other projects considered for cumulative effects have a very small footprint in the fire area. The Eddy Late Successional Reserve project is intended to promote, protect and connect old growth habitat which includes openings, brush component and multi-layered understory. These are compatible with browse and cover species big game use. The areas in the Eddy Late Successional Reserve project treatment units will provide browse and cover conditions.

Alternative 2

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

The number of ACs within each risk level did not change as a result of the proposed activities in alternative 2. This alternative has the greatest level of effect on habitat when compared to the other alternatives. About half of the treatment in the Beaver area will degrade habitat or occur within areas that didn't contain habitat before the 2014 fires. The other half of the treatment will downgrade habitat; the effects are distributed over a large area, primarily because of the distribution of land ownership in the Beaver analysis area. Therefore, the distribution of effects resulted in spreading out the effects across several ACs but the effects are not large enough to change the level of risk to reproduction for any of the ACs. Therefore, the level of risk for the ACs in Beaver is the same level of risk as described before treatment even though treatment in this alternative did affect habitat.

Table 71: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 2 for the Beaver fire area.

Risk to Reproduction	Number of Activity Centers
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Very Low	2 (2)
Low	6 (5)
Moderate	8 (8)
High	7 (8)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The Beaver project area contains small portion of NSO critical habitat subunit KLE6 but the analysis area for Beaver includes a small portion of KLE7, but this portion of KLE7 doesn't contain proposed activities. Therefore, this alternative affects about 87 acres of critical habitat and about 152 acres of fire affected critical habitat. Although fire affected critical habitat doesn't clearly fit within the critical habitat definition or the role fire affected critical habitat may play in the function of the critical habitat subunit, the acres of fire affected critical habitat is reported for this analysis to track the number of acres possibly affect by the proposed activities.

Table 72: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 2 in the Beaver fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	7,429	-35 (-35)	-28 (-28)	-24 (-24)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of alternative 2 plus the effects resulting from other actions within the analysis area change the risk level for two ACs (0283 and 4143). One AC (4143) went from low to moderate risk level, primarily as a result of the effects resulting from other projects. The second AC (0283) went from moderate to high risk level primarily as a result of the proposed activities of this alternative.

Although alternative 2 plus other projects do result in affects that may result in the elevation of risk level for ACs identified as very low, low, or moderate, ACs identified as a high level of risk before treatment can't increase in risk. High risk is intended to identify ACs that have a low amount of habitat that may result in the AC having sufficient resources to support reproduction. These high risk

activity centers will continue to have a high risk to reproduction so any additional effects to these high risk level ACs will further reduce these ACs to support reproduction.

Changes to Critical Habitat

For this analysis indicator, the cumulative effects of adding the effects of alternative 2 to those of other projects will result in additional acres of critical habitat being removed. The direct and indirect effect of this alternative (about 63 acres of nesting/roosting and foraging) plus the effect of actions from other projects will remove the same number of acres of critical habitat (nesting/roosting, foraging, and dispersal) and about 152 acres of fire affected critical habitat.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The level of disturbance to the Dona nest site is mitigated by a limited operating period and will be low.

Risk to Future Potential Nest Trees

The risk to future potential nest trees is low for the Dona Creek nest site.

Cumulative Effects

Level of Disturbance to Nest Sites

The only action considered for cumulative effects that affect the Dona nest site is Timber Harvest Plan # 87 which has a limited operating period design feature. The design feature is intended to limit disturbance to active Bald Eagle nests during the nesting period. There will be no cumulative effect to the Dona nest as a result of cumulative effects.

Risk to Future Potential Nest Trees

The only action considered for cumulative effects that affect the Dona nest site is Timber Harvest Plan # 87. This project will occur in about 10 acres where there are potential nest trees. This will not decrease the current risk to future potential nest trees when added to the effects of this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

Project Design Feature (PDF) will be used to avoid disturbance of these nests through the sensitive part of nesting. Therefore, this alternative will have a low risk of disturbing known goshawk nests.

Risk to Reproduction

All three of the potentially occupied territories have activities proposed in them in this alternative. The risk to reproduction is not increased for any of the potentially occupied territories by the alternative. Beaver will remain at a moderate risk and Kohl and Woodchopper will remain at a high risk.

Cumulative Effects

Level of Disturbance to Nest Sites

Since there is no direct or indirect disturbance to nest sites there is no cumulative effects.

Risk to Reproduction

Actions considered for cumulative effects for the Beaver fire area are private land salvage and timber harvest plans. When the effects of the alternative are added to the effects from actions considered for cumulative effects there is no change in risk levels for any of the three territories.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 2 will reduce habitat connectivity in 5 watersheds. Three watersheds (Buckhorn Creek, Dona Creek-Klamath River, and Dutch Creek) went from “moderate” to “low” habitat connectivity while the remaining 2 watersheds (Buckhorn Gulch-Beaver Creek and Doggett Creek) went from “low” to “very low” habitat connectivity. The combination of pre-fire habitat conditions and the 2014 fires (to varying degrees for each watershed) resulted in almost half of the watershed to currently have “low” or “very low” habitat connectivity. The two watersheds with moderate level of habitat connectivity were near the level of “low” habitat connectivity so even small amount of treatment was likely to push these two watersheds into the “low” level. Even though alternative 2 resulted in 5 watersheds to have a reduced level of connectivity, the 2 watersheds with “moderate” connectivity had a small amount of affected habitat compared to the other 3 watersheds that were reduced in the level of habitat connectivity from “low” to “very low”.

Table 73: Number of 7th field watersheds within each level of connectivity for alternative 2 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	4 (3)	6 (1)	3 (9)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

Alternative 2 will result in the same number of home ranges as those presented in alternative 1.

Table 74: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 2 for Beaver fire area. Number in the parentheses represents the number that does or don’t meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

The watersheds not meeting the home range potential criteria are the same as for alternative 1.

Cumulative Effects

Level of Habitat Connectivity

The Beaver analysis area is a checkerboard distribution of land ownership primarily between the Forest and private forest companies. Given the fire effects to both ownerships, private land has many acres of fire-affected forested habitat that are likely to be removed or have already been removed. Although private land is not held to the same rules as the Forest, we are assuming the salvage harvest on private land is limited to moderate and high fire severity affected areas. Deviations from this assumption could affect the magnitude of effects on connectivity in this analysis area given the proportion and distribution of private land ownership.

The direct and indirect effects of this alternative plus the estimated cumulative effects reduced the habitat connectivity in 7 of the 13 watersheds analyzed in the Beaver analysis area. One “moderate” level watershed was reduced in connectivity to a “low” level and 6 “low” level watersheds were reduced in connectivity to a “very low” level.

Change in Fisher Home Range

Just as in alternative 1, none of the cumulative actions considered in the fire area (private land salvage and timber harvest plans) reduce the habitat enough move any watersheds from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects on the risk of disturbance to hibernacula in the fire area is the same as described in the DEIS (page 157) and Biological Evaluation (page 60). The treatments are not likely to overlap with times of hibernation but may overlap with the use of maternities. Potential hibernacula/maternities with a moderate risk could affect maternity roosts but the effects are likely to affect only individuals. Potential hibernacula/maternities with a high risk are the most vulnerable to abandonment (Table 75).

Table 75: Risk of disturbance for potential hibernacula for alternative 2 in the Beaver fire area.

Beaver Fire Area	Alt. 2	Alt. 2 Cumulative
High	5	13
Moderate	7	2
Low	5	2

Cumulative Effects

Risk of Disturbance

Adding the effects of this alternative to the effects of private lands salvage and other timber harvest plans move many of the potential hibernacula from a moderate risk to a high risk (Table 75). The

majority of this effect is because of the uncertainty of mitigations occurring on private land. Therefore, the cumulative effects may be an overestimate, especially if private lands are implementing mitigation to minimize the negative effects on roost sites.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

Nine of the eleven watersheds in the Beaver fire area have a low level of habitat alteration. Buckhorn Gulch has a high level of habitat alteration and Miller Gulch has a moderate level of alteration. Project design features intended to protect water quality, including ground-based equipment exclusion zones and harvest restrictions, will mitigate this effect but not enough to reduce the level of habitat alteration.

Cumulative Effects

Level of Habitat Alteration

Cumulatively the risk level is the same for seven of the watersheds in the Beaver fire area. Adding the effects of this alternative to those of private land salvage increases the level of disturbance from low to high in Doggett and Kohl Creeks, from low to moderate in Dutch Creek, and moderate to high in Quigley's Cove.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Beaver fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there will be no direct or indirect effect of the alternative on the species.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Beaver fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

Tehama chaparral snail dispersal habitat which consists of some type of physical structure to provide cooler and moisture conditions during dispersal. Providing this structure is most important for snails that are dispersing across areas without canopy cover. Project design features provide varying sizes of woody debris of trees equal to or greater than 12 inches in diameter after fuels treatments so that treatment units have sufficient woody debris. In addition, project design features will retain live and dead trees in the treatment units to provide future woody debris, and the known sites of Tehama chaparral snails will not be treated so that remaining habitat will be retained. Therefore, given the

project design features, the likelihood of dispersal will be a high for alternative 2 and the risk of habitat alteration will be low.

Cumulative Effects

Likelihood of Dispersal

There are no other actions that will affect snail dispersal because no known sites in the project area overlap with any other project. Therefore, there will be no cumulative effects to snail dispersal or to risk of habitat alteration.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

Four of the five watershed in the fire area with potential western Bumble Bee habitat will have a low level of disturbance as a result of this alternative. Collins Creek has a high level of disturbance with more than five acres of potential habitat being disturbed by ground-based equipment.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effect on level of disturbance moves three of the 7th field watersheds from a low level of disturbance to a high level of disturbance. These watersheds are Buckhorn Gulch, Dutch Creek and Kohl creek. The increase in level of disturbance is a result of adding the effects of this alternative to those of the private land salvage harvest in the fire area.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 2 varies between individual species but about 9% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The reported total habitat affected for all alternatives and fire areas is a summation of habitat for all snag associated

species chosen for the analysis. So the estimate includes overlapping habitat types and is an overestimate of the effected habitat. The cumulative effects of alternative 2 are 2,171 acres of snag habitat will be affected by the project; 2,786 acres will be affected by actions considered for cumulative effects. This is a total of 4,957 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 2 will affect 201 acres of hardwood habitat. This is about 5% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 2 are 201 acres of hardwood habitat will be affected by the project; 327 acres will be affected by actions considered for cumulative effects. This is a total of 528 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

Action alternatives for this project will not adversely impact migratory species or their associated habitats. The habitat affected by the project will still provide habitat for many migratory bird species. Potential impacts to migratory species will be minimized through the adherence to Forest Plan standards and guidelines for snags and downed woody debris, riparian reserve buffers, limited ground disturbance, and maintenance of canopy closure. The project is designed to improve habitat conditions through the acceleration of late-successional habitat characteristics by planting trees and removing fuels that threaten the developing and existing habitat. Specific project design features to minimize negative impacts include retaining snags within treatment units which include riparian reserves, and retaining legacy components and snags mixed in with green trees. Any soft (snags existing prior to the fires) snags (greater than 14 inches in diameter) felled for safety reasons will be left on site as downed woody debris. Additional cull logs will be left on site from the operation as well. The project complies with the Migratory Bird Treaty Act MOU.

Cumulative Effects

All US Forest Service project considered for cumulative effects comply or are assumed to comply (if analysis is not complete) with the Migratory Bird Memorandum of Understanding. There are effects to migratory birds from private land activities including Northern Spotted Owl, Bald Eagle, Northern Goshawk, Willow Flycatcher and Management Indicator Species. See the cumulative effects sections for details on effects. The general finding is that while there are effects they will not cumulatively prevent the compliance with the Migratory Bird Memorandum of Understanding.

Big Game

Direct Effects and Indirect Effects

Browse species will passively recovery in this alternative as described in alternative 1. Cover in areas with high and moderate vegetation severity burn with salvage or site preparation and planting will recovery more quickly than under the no action alternative. This is because planting will increase the speed at which conifer forest is recovered on the landscape. This along with the re-sprouting of shrubs and hardwoods will more quickly recover browse species and adjacent cover needed by big game.

Cumulative Effects

The private land salvage in the Beaver fire area will limit the availability of both cover and foraging on more than 9,900 acres of the fire area. The private land salvage is focused on reforestation for timber production so efforts will likely be made to discourage shrub and hardwood re-sprouting which would provide both forage and cover. When added to the effects of alternative 1 the recovery of understory browse and cover species will be primarily limited to Forest Service lands in the Beaver fire area.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Alternative 2 will result in an increase in risk to reproduction for nine ACs; seven ACs (0241, 1030, 1121, 1130, 1214, 1266, 4099, and 9991) went from low risk to moderate risk while the remaining two ACs (4133 and 9992) went from moderate to high risk. The seven ACs that went from low to moderate risk are a result of salvage, roadside hazard, and fuels treatments; each of these treatments will affect each AC at different proportions but the combination of treatments will affect many acres of habitat. The two ACs that went from moderate to high risk have different levels and types of treatment but both ACs have a resulting increase in risk; one AC had mostly salvage and roadside hazard while the other AC had mostly fuels treatments. Regardless of the treatment, the estimate of risk to reproduction is based on the effects to habitat within each AC.

Generally, ACs with very low or low risk to reproduction are likely to have enough resources based on habitat to support reproduction without much difficulty; an AC in the moderate risk category has less habitat that is likely more fragmented than an AC with low risk. Therefore, moderate risk ACs can still support reproduction but resources are likely less abundant and more effort may be required

for an owl pair to find enough resources to support themselves and their offspring. The high risk category represents the ACs with very little habitat; reproduction will be very difficult and possibly not occur. However, an owl pair can move to a nearby location, typically within the AC home range, where the distribution, quality, and quantity of habitat is better and possibly improve the probability of successful reproduction.

All reproductively active ACs, or ACs that provide enough habitat to support reproduction but are not currently active, are important for maintaining NSO populations. The increased risk for the nine ACs in the Happy Camp analysis area is likely to affect reproduction. The effects to the seven low risk ACs may be more critical to the local population as compared to the moderate and high risk ACs. Low risk ACs are more likely to persist despite small natural disturbances because these ACs typically have excess habitat to possibly absorb small changes in habitat while still retaining enough habitat to continue to support reproduction over the long term as compared to moderate risk ACs. Even though moderate risk ACs typically contain habitat conditions that may support reproduction, any change in habitat will likely diminish the possibility of reproduction; moderate risk ACs are still important for NSO populations. The two AC that are estimated to have an increase in risk from moderate to high will receive treatment that will reduce habitat; this will likely result in these ACs having difficulty providing sufficient resources for reproduction as a result of alternative 2.

Table 76: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 2 in the Happy Camp fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	7 (7)
Moderate	42 (42)
High	6 (6)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat on the Happy Camp analysis area is 844 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 495 acres while the fire affected critical habitat was reduced by 3,306 acres.

Table 77: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 2 in the Happy Camp fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat

	(acres)				(acres)
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-103 (-184)	-198 (-344)	+201 (+427)	-2,808 (-2,808)
KLW7	28,876	-115 (-115)	-428 (-428)	+294 (+294)	-498 (-498)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of alternative 2 plus cumulative effects resulting from other actions within the Happy Camp analysis area will not change the risk level for any of the activity centers.

Changes to Critical Habitat

The direct and indirect effects of alternative 2 plus cumulative effects resulting from other actions within the Happy Camp analysis area will result in 1,071 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 721 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The level of disturbance to the Fryingpan, Muck-a-Muck and Caroline Creek nest sites is mitigated by a limited operating period and will be low.

Risk to Future Potential Nest Trees

The risk to future potential nest trees is low for Fryingpan and Muck-a-Muck nest sites. The risk for the Caroline Creek nest site would be high but the snag retention requirements mitigate the risk and it becomes a moderate risk.

Cumulative Effects

Level of Disturbance to Nest Sites

Thom Seider and Happy Camp Fire Protection Phase Ii have a limited operating period design feature. The design feature is intended to limit disturbance to active Bald Eagle nests during the nesting period. There will be no cumulative effect to the Dona nest as a result of cumulative effects. Project Design Feature (PDF) will be used to avoid disturbance of these nests through the sensitive part of nesting for all actions considered for cumulative effects. Therefore, this alternative will have a low risk of disturbing known goshawk nests.

Risk to Future Potential Nest Trees

Thom Seider and Happy Camp Fire Protection Phase II project intersect the Caroline nest site and the Fryingpan nest site respectively. These projects have project design features that will limit the removal of potential nest trees. The effects of these actions are small and will not add to the risk to potential nest tree sites.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

Project Design Feature (PDF) will be used to avoid disturbance of these nests through the sensitive part of nesting. Therefore, this alternative will have a low risk of disturbing known goshawk nests.

Risk to Reproduction

The project has activities proposed in all nine of the potentially occupied territories in the fire area. The effects to habitat are not enough to increase the risk of any of the territories over existing conditions.

Cumulative Effects

Level of Disturbance to Nest Sites

Since there is no direct or indirect disturbance of nest sites there is no cumulative effects.

Risk to Reproduction

The Lovers Canyon project will increase the risk of the Kelsey territory from a moderate risk to a high risk. This is likely an overestimate of effects but since the Lovers Canyon project is still in early stages of planning worst case was assumed in this analysis. All other territories will remain at their current risk levels as described in the affected environment.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 2 will affect the level of habitat connectivity within 14 of the 36 watersheds analyzed. Thirteen watersheds were reduced in the level of habitat connectivity from “moderate” (Caroline, Cougar, China, Horse, Lower Grider, Middle, O’Neil, Schutts Gulch, Tompkins, Upper East Fork Elk, Upper Elk, Upper Grider, and Walker Creeks) to “low” (9) or “very low” (4). The remaining watershed (Lower East Fork Elk Creek) had reduced level of habitat connectivity from “low” to “very low”.

Table 78: Number of 7th field watersheds within each level of connectivity for alternative 2 for the Happy Camp fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	13 (13)	18 (17)	5 (6)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

Alternative 2 will result in reducing the number of home ranges by 7 in the Happy Camp analysis area.

Table 79: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 2 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
11 (11)	25 (25)

The watersheds that met the home range potential criteria for alternative 1 that do not as a result of the effects of alternative 2 are Cougar Creek, Franklin Gulch, Horse Creek, O'Neil Creek, Schutts Gulch, Upper East Fork Elk and Upper Elk Creek.

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in reducing the habitat connectivity of one watershed (Big Ferry – Swanson) from “low” to “very low” habitat connectivity. Private land Timber Harvest Plans are the reason for the downgrade in connectivity.

Change in Fisher Home Range

None of the cumulative actions considered in the fire area, which include Happy Camp Fuels Reduction Phase II, Lovers Canyon or private land salvage, reduce the habitat enough move any additional watersheds from meeting the home range potential criteria to not meeting the criteria when added to the effects of the alternative.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects on the risk of disturbance to hibernacula in the fire area is the same as described in the DEIS (page 157) and Biological Evaluation (page 60). The treatments are not likely to overlap with times of hibernation but may overlap with the use of maternities. Potential hibernacula/maternities with a moderate risk could affect maternity roosts but the effects are likely to affect only individuals. Potential hibernacula/maternities with a high risk are the most vulnerable to abandonment. (Table 80)

Table 80: Risk of disturbance for potential hibernacula for alternative 2 in the Happy Camp fire area.

Happy Camp Fire Area	Alt. 2	Alt. 2 Cumulative

High	5	7
Moderate	5	5
Low	18	16

Cumulative Effects

Risk of Disturbance

Adding the effects of this alternative to those of the actions considered for cumulative effects moved one low risk potential hibernacula to a high risk, one low risk potential hibernacula to a moderate risk and one moderate risk to a high risk (Table 80). The majority of this effect is because of the uncertainty of mitigations occurring on private land. Therefore, the cumulative effects may be an overestimate, especially if private lands are implementing mitigation to minimize the negative effects on roost sites.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

There are twenty-six watersheds with a low level of habitat alteration as a result of alternative 2. There are three with a moderate level of habitat alteration. These are Deep Creek, Hoop and Devil Creek and Schutts Creek. The nine with a high level of habitat alteration are Caroline, China, Cougar, Doolittle, Lower East Fork Elk, O'Neil, Upper East Fork, Upper Elk, and Walker Creeks. Project design features intended to protect water quality, including ground-based equipment exclusion zones and harvest restrictions will mitigate this effect but not enough to reduce the level of habitat alteration.

Cumulative Effects

Level of Habitat Alteration

When adding the effects of this alternative to those of other projects to predict cumulative effects, the level of habitat alteration remains the same for all of the watersheds except Rancheria Creek. The amount of potential habitat in Rancheria Creek is less than 30 acres, so the small amount of private land salvage that overlaps about five acres of Riparian Reserves leads to about 17% of potential habitat altered; this is a high level of alteration.

Siskiyou Mountains Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

There are fourteen known Siskiyou Mountains Salamander sites in the project area that are in treatment units with the potential for ground disturbance. There are no known sites in salvage units with proposed ground-based harvest. Eleven of the sites are in hazard tree removal units and three are in site preparation units where mechanical preparation is proposed. In order to minimize effects to these known sites, a project design feature is incorporated into the alternative that will buffer the sites

and maintain live or dead trees within the buffer. This project design feature will make the risk of habitat disturbance of known sites low.

Cumulative Effects

Risk of Habitat Disturbance

Adding the direct and indirect effects of this alternative to the effects of actions on private land that may affect talus habitat will result in four known sites potentially being cumulatively affected. The level of risk of disturbing a known site is cumulatively low and the cumulative effects may be overestimated if mitigations to reduce effects are used on private land projects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

Tehama chaparral snail dispersal habitat consists of some type of physical structure to provide cooler and moisture conditions during dispersal. Providing this structure is most important for snails that are dispersing across areas without canopy cover. Project design features provide varying sizes of woody debris of trees equal to or greater than 12 inches in diameter after fuels treatments so that treatment units have sufficient woody debris. In addition, project design features will retain live and dead trees in the treatment units to provide future woody debris, and the known sites of Tehama chaparral snails will not be treated so that remaining habitat will be retained. Therefore, given the project design features, the likelihood of dispersal will be a high for alternative 2 and the risk of habitat alteration that negatively affects snails will be low.

Cumulative Effects

Likelihood of Dispersal

There are no other actions that will affect snail dispersal because no known sites in the project area overlap with any other project. Therefore, there will be no cumulative effects to snail dispersal or risk of habitat alteration.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

There are eighteen watersheds in the fire area that will have a low level of disturbance as a result of this alternative. Lower East Fork Elk, Middle Creek, Rancheria and Upper Grider Creek will have a moderate level of disturbance. China, Cliff Valley, Tom Martin and Tompkins Creeks will have a high level of disturbance.

Cumulative Effects

Level of Habitat Disturbance

None of the levels of disturbance change as a result of adding the effects of this alternative to those of the other actions considered for cumulative effects in the fire area.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 2 varies between individual species but about 14% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 2 are 19,873 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 20,090 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 2 will affect 443 acres of hardwood habitat. This is about 11% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 2 are 443 acres of hardwood habitat will be affected by the project; 10 acres will be affected by actions considered for cumulative effects. This is a total of 453 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

The effects are the same as described in the Beaver Fire area.

Cumulative Effects

The effects are the same as described in the Beaver Fire area.

Big Game

Direct Effects and Indirect Effects

The direct and indirect effects are the same as described in the Beaver fire area.

Cumulative Effects

The private land Timber Harvest Plans and small amount of private land salvage is focused on timber production so resprouting shrubs and hardwoods are discouraged in these areas. Forest Service projects will have a limited effect on big game species because they are mainly fuels reduction and thinning from below actions. There is only 700 acres of private Timber Harvest Plans and private land salvage in the Happy Camp fire area so the effects to browse and cover recovery will be localized and small.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Alternative 2 will result in an increase in risk to reproduction for two ACs (1030 and 99912); both ACs are estimated to go from low risk to moderate risk. Although the effects result in the same level of risk for these two ACs, the level of effects in each AC is very different. One AC (1030) contains habitat levels close to the minimum amount in the low risk category before treatment and alternative 2 affects a small amount of habitat that results in an increase in risk level. The other AC (99912) is well above the habitat minimums for the low risk category but treatment downgrades or removes many acres of habitat, thus resulting in an increase risk level. Despite the differences in amount of habitat acres affected by alternative 2, these two ACs are likely to have difficulty providing enough resources to support NSO reproduction.

Table 81: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 2 in the Whites fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	0 (0)
Low	9 (9)
Moderate	6 (6)
High	0 (0)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat on the Whites analysis area is 357 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 320 acres while the fire affected critical habitat was reduced by 784 acres.

Table 82: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 2 in the Whites fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLW8	30,148	-130 (-237)	-227 (-343)	+320 (+543)	-784 (-784)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of alternative 2 plus cumulative effects resulting from other actions within the Whites analysis area will not change the risk level for any of the activity centers.

Changes to Critical Habitat

The direct and indirect effects of alternative 2 plus cumulative effects resulting from other actions within the Whites analysis area will result in 580 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 543 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

Project Design Feature (PDF) will be used to avoid disturbance of these nests through the sensitive part of nesting. Therefore, this alternative will have a low risk of disturbing known goshawk nests.

Risk to Reproduction

The project has activities proposed in all three of the potentially occupied territories in the fire area. The effects to habitat are not enough to increase the risk of any of the territories over existing conditions.

Cumulative Effects

Level of Disturbance to Nest Sites

There is no direct or indirect disturbance to any of the nest sites so there are not cumulative effects.

Risk to Reproduction

None of the actions considered for cumulative effects overlap in space with the potentially occupied territories in the White Fire area.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 2 will affect the level of habitat connectivity within 1 of the 18 watersheds analyzed. One watershed (Whites Gulch) was reduced in the level of habitat connectivity from “low” to “very low”.

Table 83: Number of 7th field watersheds within each level of connectivity for alternative 2 in the Whites fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	6 (4)	7 (9)	5 (5)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

Alternative 2 will result in a reduction of 5 home ranges in the Whites analysis area.

Table 84: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 2 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
9 (8)	9 (10)

The alternative moves Lower North Russian Creek, Lower South Russian Creek, Robinson Gulch, Upper North Russian Creek and Upper South Russian Creek from meeting the home range potential criteria to not meeting the criteria.

Cumulative Effects

Level of Habitat Connectivity

Direct, indirect, and cumulative effects resulted in 2 watersheds (Jessups Gulch and Music Creek) being reduced in habitat connectivity from “moderate” to “low”. Jessups Gulch has a downgrade in connectivity because of the estimated effects of the Jess project and Music Creek from the private land salvage in the watershed.

Change in Fisher Home Range

The Jess project moves Jessups Gulch from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects on the risk of disturbance to hibernacula in the fire area is the same as described in the DEIS (page 157) and Biological Evaluation (page 60). The treatments are not likely to overlap with times of hibernation but may overlap with the use of maternities. Potential hibernacula/maternities with a moderate risk could affect maternity roosts but the effects are likely to affect only individuals. Potential hibernacula/maternities with a high risk are the most vulnerable to abandonment. (Table 85)

Table 85: Risk of disturbance to potential hibernacula for alternative 2in the Whites fire area.

Whites Fire Area	Alt. 2	Alt. 2 Cumulative
High	3	4
Moderate	3	5
Low	7	4

Cumulative Effects

Risk of Disturbance

Adding the effects of this alternative to those of actions considered for cumulative effects moved one low risk potential hibernacula to a high risk, and low risk potential hibernacula to a moderate risk (Table 85). The majority of this effect is because of the uncertainty of mitigations occurring on private land. Therefore, the cumulative effects may be an overestimate, especially if private lands are implementing mitigation to minimize the negative effects on roost sites.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

There are twelve watersheds that have a low level of alteration as a result of alternative 2. There are no moderate levels of risk. The six watersheds with a high level of alteration are Lower North Russian Creek, Lower South Russian Creek, Robinson Gulch, Upper North Russian, Whites Gulch and Yellow Dog Creek. Project design features intended to protect water quality, including ground-based equipment exclusion zones and harvest restrictions will mitigate this effect but not enough to reduce the level of habitat alteration.

Cumulative Effects

Level of Habitat Alteration

None of the levels of habitat alteration are changed by the addition of actions considered for cumulative effects in the Whites fire area.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Whites fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there are no direct or indirect effects on this species.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Whites fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

Tehama chaparral snail dispersal habitat which consists of some type of physical structure to provide cooler and moisture conditions during dispersal. Providing this structure is most important for snails that are dispersing across areas without canopy cover. Project design features provide varying sizes of woody debris of trees equal to or greater than 12 inches in diameter after fuels treatments so that treatment units have sufficient woody debris. In addition, project design features will retain live and dead trees in the treatment units to provide future woody debris, and the known sites of Tehama

chaparral snails will not be treated so that remaining habitat will be retained. Therefore, given the project design features, the likelihood of dispersal will be a high for alternative 2.

Cumulative Effects

Likelihood of Dispersal

There are no other actions that will affect snail dispersal because no known sites in the project area overlap with any other project. Therefore, there will be no cumulative effects to snail dispersal.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

Nine of the watersheds in the fire area with Bumble Bee habitat will have a low level of disturbance as a result of this alternative. Music Creek and Robinson Gulch will have a moderate level of disturbance. There are no watersheds with a high level of disturbance in this fire area.

Cumulative Effects

Level of Habitat Disturbance

None of the levels of disturbance change as a result of adding the effects of the actions considered for cumulative effects in the fire area.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 2 varies between individual species but about 9% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 2 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 2 are 4,347 acres of snag habitat will be affected by the project; 194 acres will be affected by actions considered for cumulative effects. This is a total of 4,541 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 2 will affect 23 acres of hardwood habitat. This is about 3% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 2 are 23 acres of hardwood habitat will be affected by the project; 4 acres will be affected by actions considered for cumulative effects. This is a total of 27 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

The effects are the same as described in the Beaver Fire area.

Cumulative Effects

The effects are the same as described in the Beaver Fire area.

Big Game

Direct Effects and Indirect Effects

The direct and indirect effects are the same as described in the Beaver fire area.

Cumulative Effects

The primary action considered for cumulative effects within the fire area that may affect big game habitat is the Eddy Late Successional Reserve. The other projects considered for cumulative effects have a very small footprint in the fire area. The Eddy Late Successional Reserve project is intended to promote, protect and connect old growth habitat which includes openings, brush component and multi-layered understory. These are compatible with browse and cover species big game use. The areas in the Eddy Late Successional Reserve project treatment units will provide browse and cover conditions.

Alternative 3

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Although salvage is removed in the Beaver project area for this alternative, the resulting level of risk for each AC is the same as alternative 2. Although the amount of habitat affected within five ACs is less than alternative 2, the resulting risk level doesn't display a difference between alternatives. This result is likely related to the dispersed habitat distribution and dispersed proposed activities.

Table 86: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 3 in the Beaver fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	6 (5)
Moderate	8 (9)
High	7 (7)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat on the analysis area is 63 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres decrease of 24 acres while the fire affected critical habitat was reduced by 152 acres.

Table 87: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 3 in the Beaver fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	7,429	-35 (-35)	-28 (-28)	-24 (-24)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

Unlike alternative 2, the direct and indirect effects resulting from alternative 3 plus the effects resulting from other projects are expected to result in one AC (4143) having an increase in risk from the low to moderate risk level.

Changes to Critical Habitat

The direct and indirect effects of alternative 3 plus cumulative effects resulting from other actions within the analysis area will result in 63 acres of nesting/roosting and foraging habitat being downgraded or removed and a net decrease 152 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The level of disturbance to the Dona nest site is mitigated by a limited operating period and will be low.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The cumulative effects are the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Although the number of acres affected in alternative 3 is different from alternative 2, the effects didn't rise to the level to result in a reduction of the level of connectivity. The watersheds and the associated level of connectivity is the same as alternative 2.

Table 88: Number of 7th field watersheds within each level of connectivity for alternative 3 for the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	4 (3)	6 (1)	3 (9)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 3 resulted in the same effects as described in alternative 2 for this analysis area.

Table 89: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Beaver fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

The watersheds not meeting the home range potential criteria are the same as for alternative 1.

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in the same watersheds and associated level of habitat connectivity as those presented in alternative 2.

Change in Fisher Home Range

Just as in alternative 1, none of the cumulative actions considered in the fire area (private land salvage and timber harvest plans) reduce the habitat enough move any watersheds from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Beaver fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there are no direct or indirect effects of the alternative on these species.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Beaver fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 3 varies between individual species but about 8% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 3 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 3 are 1,834 acres of snag habitat will be affected by the project; 2,786 acres will be affected by actions considered for cumulative effects. This is a total of 4,620 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 3 will affect 196 acres of hardwood habitat. This is about 5% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 3 are 196 acres of hardwood habitat will be affected by the project; 327 acres will be affected by actions considered for cumulative effects. This is a total of 523 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Alternative 3 will result in an increase in risk to reproduction for six ACs; five ACs (0241, 1121, 1214, 1266, and 4099) went from low risk to moderate while the remaining AC (9992) went from moderate to high risk. Alternative 3 has two fewer ACs (4133 and 9991) with an increase in risk level when compared to alternative 2; alternative 3 has one less AC (9991) going from low to moderate and one AC (4133) going from moderate to high risk level.

Table 90: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 3 in the Happy Camp fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	9 (9)
Moderate	41 (41)
High	5 (5)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 844 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 501 acres while the fire affected critical habitat was reduced by 3,129 acres.

Table 91: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 3 for Happy Camp fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-103 (-184)	-198 (-344)	+207 (+433)	-2,631 (-2,631)
KLW7	28,876	-115 (-115)	-428 (-428)	+294 (+294)	-498 (-498)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will not change the risk level for any of the activity centers. Adding the direct and indirect effects of this alternative to the effects resulting from other projects is not expected to increase the cumulative risk to reproduction for any of the ACs in the Happy Camp analysis area.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in 1,071 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 727 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effects are the same as described in alternative 2.

Risk to Future Potential Nest Trees

The cumulative effects are the same as described in alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Even though alternative 3 typically affects fewer acres of habitat within each watershed when compared to alternative 2, the watersheds and the associated level of connectivity is the same as alternative 2.

Table 92: Number of 7th field watersheds within each level of connectivity for alternative 3 in the Happy Camp fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	13 (13)	18 (17)	5 (6)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 3 resulted in the same effects as described in alternative 2 for this analysis area.

Table 93: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
11 (11)	25 (25)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in the same watersheds and associated level of habitat connectivity as those presented in alternative 2.

Change in Fisher Home Range

The cumulative effects are the same as for alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects of this alternative are the same as for alternative 2.

Cumulative Effects

Risk of Habitat Disturbance

The cumulative effects of this alternative are the same as for alternative 2.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 3 varies between individual species but about 13% of snag-associated species habitat will be affected by roadside hazard and

salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 3 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 3 are 18,463 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 18,680 acres affected..

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 3 will affect 437 acres of hardwood habitat. This is about 11% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 3 are 437 acres of hardwood habitat will be affected by the project; 10 acres will be affected by actions considered for cumulative effects. This is a total of 447 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Like alternative 2, alternative 3 will result in an increase risk to reproduction for two ACs (1030 and 99912); both ACs are estimated to go from low risk to moderate risk. The proposed activities for alternatives 2 and 3 are very similar in the Whites analysis area; thus, the estimated effects are the same for these two ACs. As a result of this alternative, these two ACs are likely to have difficulty providing enough resources to support NSO reproduction.

Table 94: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 3 in the Whites fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	0 (0)
Low	9 (9)
Moderate	6 (6)
High	0 (0)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 357 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 320 acres while the fire affected critical habitat was reduced by 320 acres.

Table 95: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 3 in the Whites fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLW8	30,148	-130 (-237)	-227 (-343)	+320 (+543)	-320 (-320)

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will not change the risk level for any of the activity centers.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in 580 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 543 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Even though alternative 3 typically affects fewer acres of habitat within each watershed when compared to alternative 2, the watersheds and the associated level of connectivity is the same as alternative 2.

Table 96: Number of 7th field watersheds within each level of connectivity for alternative 3 in the Whites fire area

Level of Connectivity			
High	Moderate	Low	Very Low
0	13 (13)	18 (17)	5 (6)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 3 resulted in the same effects as described in alternative 2 for this analysis area.

Table 97: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
9 (8)	9 (10)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in the same watersheds and associated level of habitat connectivity as those presented in alternative 2.

Change in Fisher Home Range

The direct, indirect, and cumulative effects of this alternative resulted in the same effects as described in alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Whites fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there are no direct or indirect effects on this species or habitat.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Whites fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 3 varies between individual species but about 8% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 3 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 3 are 4000 acres of snag habitat will be affected by the project; 194 acres will be affected by actions considered for cumulative effects. This is a total of 4,194 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 3 will affect 23 acres of hardwood habitat. This is about 3% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 3 are 23 acres of hardwood habitat will be affected by the project; 4 acres will be affected by actions considered for cumulative effects. This is a total of 27 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Alternative 4

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Like alternative 2, alternative 4 didn't change the level of risk for the ACs in the Beaver analysis area. This result is likely related to the dispersed habitat distribution and dispersed proposed activities.

Table 98: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 4 in the Beaver fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	6 (5)
Moderate	8 (8)
High	7 (8)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 62 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres reduced by 24 acres while the fire affected critical habitat was reduced by 152 acres.

Table 99: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 4 for the Beaver fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	7,429	-35 (-35)	-27 (-27)	-24 (-24)	-152 (-152)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

Like alternative 2, adding the direct, indirect effects of this alternative to effects generated by other projects cumulatively resulted in two ACs changing risk level. One AC went from low to moderate risk level that is primarily a result of the cumulative effects resulting from other projects. The second AC went from moderate to high risk level primarily as a result of the proposed activities of this project; the other projects had a small effect but the cumulative effect was large enough to increase the risk level.

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will change the risk level for two activity centers.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in the same acres of critical habitat being downgraded or removed as presented in the direct and indirect effects. Additionally, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The cumulative effects are the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Even though alternative 4 affects fewer acres when compared to alternative 2, the watersheds and the associated level of connectivity is the same as alternative 2.

Table 100: Number of 7th field watersheds within each level of connectivity for alternative 4 for the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	4 (3)	6 (1)	3 (9)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 4 resulted in the same effects as described in alternative 2 for this analysis area.

Table 101: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 4 for Beaver fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in the same watersheds and associated level of habitat connectivity as those presented in alternative 2.

Change in Fisher Home Range

Just as in alternative 1, none of the cumulative actions considered in the fire area (private land salvage and timber harvest plans) reduce the habitat enough move any watersheds from meeting the home range potential criteria to not meeting the criteria. The direct, indirect, and cumulative effects resulted in the same effects presented in alternative 2.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Beaver fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there will be no direct or indirect effects of this alternative on the species or habitat.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Beaver fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 4 varies between individual species but about 8% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 4 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of "good" snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 4 are 1,875 acres of snag habitat will be affected by the project; 2,786 acres will be affected by actions considered for cumulative effects. This is a total of 4,661 acres affected..

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 4 will affect 158 acres of hardwood habitat. This is about 4% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 4 are 158 acres of hardwood habitat will be affected by the project; 327 acres will be affected by actions considered for cumulative effects. This is a total of 485 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Like alternative 2, alternative 4 will result in an increase in risk to reproduction for nine ACs; seven ACs (0241, 1121, 1130, 1214, 1266, 4099, and 9991) went from low risk to moderate risk while the remaining two ACs (4133 and 9992) went from moderate to high risk. The seven ACs that went from low to moderate risk are a result of salvage, roadside hazard, and fuels treatments that will affect each AC at different proportions; the combination of treatments will affect many acres of habitat. The two ACs that went from moderate to high risk have different levels and types of treatment but both ACs have a resulting increase in risk; one AC had mostly salvage and roadside hazard while the other AC had mostly fuels treatments. Regardless of the treatment type, the estimate of risk to reproduction is based on the effects to habitat within each AC.

Table 102: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 4 for the Happy Camp fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	7 (7)
Moderate	42 (42)
High	6 (6)

Changes to Critical Habitat

The change to critical habitat in the analysis area is 698 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 387 acres while the fire affected critical habitat was reduced by 3,047 acres.

Table 103: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 4 for the Happy Camp fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat

	(acres)				(acres)
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-101 (-181)	-185 (-331)	+186 (+412)	-2,669 (-2,669)
KLW7	28,876	-107 (-107)	-305 (-305)	+201 (+201)	-378 (-378)

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will not change the risk level for any of the activity centers.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in 924 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 613 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effect to the Dona nest site is the same as described in the DEIS (page. 152).

Risk to Future Potential Nest Trees

The cumulative effect to the Dona nest site is the same as described in the DEIS (page. 152).

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 4 has 4 fewer watersheds (China, Horse, Upper Elk, and Grider) that had a reduced level of connectivity when compared to alternative 2. These four watersheds will remain at a moderate level of connectivity despite the treatment.

Table 104: Number of 7th field watersheds within each level of connectivity for alternative 4 in the Happy Camp fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	17 (17)	14 (13)	5 (6)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 4 resulted in the same effects as described in alternative 2 for this analysis area.

Table 105: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
11 (11)	25 (25)

Cumulative Effects

Level of Habitat Connectivity

Like alternative 2, the direct, indirect, and cumulative effects for alternative 4 resulted in one watershed (Big Ferry-Swanson) to have a reduced level of connectivity. The rest of the watersheds did not change the level of connectivity.

Change in Fisher Home Range

The cumulative effects are the same as alternative 2.

Pallid Bat, Townsend’s Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects on the risk of disturbance to hibernacula in the fire area is the same as described in the DEIS (page 157) and Biological Evaluation (page 60). The treatments are not likely to overlap with times of hibernation but may overlap with the use of maternities. Potential hibernacula/maternities with a moderate risk could affect maternity roosts but the effects are likely to affect only individuals. Potential hibernacula/maternities with a high risk are the most vulnerable to abandonment. Compared to alternative 2, this alternative leads to one potential hibernacula moving from a high to a moderate risk of disturbance, and one that moves from a moderate to a low risk (Table 75).

Table 106: Risk of disturbance for potential hibernacula in the Happy Camp fire area

Happy Camp Fire Area	Alt. 4	Alt. 4 Cumulative
High	4	6
Moderate	5	5
Low	19	17

Cumulative Effects

Risk of Disturbance

The private lands salvage and other timber harvest plans move many of the potential hibernacula from a moderate risk to a high risk (Table 75). The majority of this effect is because of the uncertainty of mitigations occurring on private land. Therefore, the cumulative effects may be an overestimate, especially if private lands are implementing mitigation to minimize the negative effects on roost sites.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The effects of this alternative are the same as for alternative 2.

Cumulative Effects

Risk of Habitat Disturbance

The cumulative effects of this alternative are the same as for alternative 2.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 4 varies between individual species but about 13% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 4 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 4 are 18,732 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 18,949 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 4 will affect 442 acres of hardwood habitat. This is about 11% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 4 are 442 acres of hardwood habitat will be affected by the project; 10 acres will be affected by actions considered for cumulative effects. This is a total of 452 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Like alternative 2, alternative 4 will result in an increase in risk to reproduction for two ACs (1030 and 99912); both ACs are estimated to go from low risk to moderate risk.

Table 107: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 4 in the Whites fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	0 (0)
Low	9 (9)
Moderate	6 (6)
High	0 (0)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 329 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 292 acres while the fire affected critical habitat was reduced by 784 acres.

Table 108: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 4 in the Whites fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)

KLW8	30,148	-123 (-230)	-206 (-322)	+292 (+515)	-784 (-784)
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*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will not change the risk level for any of the activity centers.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in 552 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 515 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 4 resulted in the same level of connectivity for each of the associated watersheds as alternative 2. Even though alternative 4 resulted in fewer number of affected habitat acres in several of the watersheds, the level of connectivity is the same as alternative 2.

Table 109: Number of 7th field watersheds within each level of connectivity for alternative 4 in the Whites fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	6 (4)	7 (9)	5 (5)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 4 resulted in the same effects as described in alternative 2 for this analysis area.

Table 110: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 3 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
9 (8)	9 (10)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in the same level of connectivity as described in alternative 2.

Change in Fisher Home Range

The cumulative effects are the same as alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Whites fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there will be no direct or indirect effects on the species or habitat from this alternative.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Whites fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 4 varies between individual species but about 9% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 4 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 4 are 4,236 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 4,453 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 4 will affect 23 acres of hardwood habitat. This is about 3% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 4 are 23 acres of hardwood habitat will be affected by the project; 4 acres will be affected by actions considered for cumulative effects. This is a total of 27 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Alternative 5

Project Area A: Beaver Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Like alternative 2, alternative 5 didn't change the level of risk for the ACs in the Beaver analysis area. This result is likely related to the dispersed habitat distribution and dispersed proposed activities.

Table 111: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 5 in the Beaver fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	6 (5)
Moderate	8 (7)
High	7 (9)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 188 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 102 acres while the fire affected critical habitat was reduced by 190 acres.

Table 112: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 5 in the Beaver fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	7,429	-102 (-102)	-86 (-86)	+102 (+102)	-190 (-190)
KLE7	650	0 (0)	0 (0)	0 (0)	0 (0)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will change the risk level for one (0283) of the activity centers. The additional fuels treatments (compared to alternative 2) in the Beaver project area increase the level of risk from moderate to high. The other ACs in the Beaver project area didn't increase in risk level as a result of the cumulative effects.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in the same acres of critical habitat being downgraded or removed as presented in the direct and indirect effects. Additionally, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The risk to future potential nest trees is low for Dona nest site.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effects are the same as alternative 2.

Risk to Future Potential Nest Trees

The cumulative effects are the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as for alternative 2.

Risk to Reproduction

The effects are the same as for alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 5 overall affects less area than alternative 2, but the Beaver project area contained similar amount of treatment as alternative 2. Therefore, the watersheds and the associated level of connectivity is the same as alternative 2.

Table 113: Number of 7th field watersheds within each level of connectivity for alternative 5 in the Beaver fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	4 (3)	6 (1)	3 (9)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 5 resulted in the same effects as described in alternative 2 for this analysis area.

Table 114: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 5 for Beaver fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
4 (4)	9 (9)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects resulted in the same level of connectivity as presented in alternative 2.

Change in Fisher Home Range

Just as in alternative 1, none of the cumulative actions considered in the fire area (private land salvage and timber harvest plans) reduce the habitat enough move any watersheds from meeting the home range potential criteria to not meeting the criteria.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2. The additional prescribed fire in this alternative in the Beaver fire area increases the percent of habitat disturbed in Doggett Creek and Soda Creek by less than 2%; this is not enough to increase the level of habitat alteration. The two watersheds remain in the low habitat alteration category.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Beaver fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there are no direct or indirect effects on species or habitat from this alternative.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Beaver fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 5 varies between individual species but about 8% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 5 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 5 are 1,875 acres of snag habitat will be affected by the project; 2,786 acres will be affected by actions considered for cumulative effects. This is a total of 4,661 acres affected..

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 5 will affect 158 acres of hardwood habitat. This is about 4% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 5 are 158 acres of hardwood habitat will be affected by the project; 327 acres will be affected by actions considered for cumulative effects. This is a total of 485 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area B: Happy Camp Complex

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Three ACs (0239, 1214, and 4099) increased in risk level from low to moderate level and one AC (9992) went from moderate to high level of risk. However, compared to alternative 2, alternative 5 has four fewer ACs going from low risk to moderate risk and one fewer AC going from moderate to high risk.

Table 115: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 5 in the Happy Camp fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	2 (2)
Low	11 (11)
Moderate	39 (39)
High	5 (5)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 505 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 580 acres while the fire affected critical habitat was reduced by 1,056 acres.

Table 116: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 5 in the Happy Camp fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLE6	287	0 (0)	0 (0)	0 (0)	0 (0)
KLE7	39,962	-78 (-159)	-165 (-310)	+245 (+471)	-804 (-804)
KLW7	28,876	-88 (-88)	-174 (-174)	+335 (+335)	-252 (-252)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will not change the risk level for any of the activity centers.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in 731 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 806 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The level of disturbance to the Fryingpan, Muck-a-Muck and Caroline Creek nest sites are mitigated by a limited operating period and will be low.

Risk to Future Potential Nest Trees

The risk to future potential nest trees is low for Fryingpan, Muck-a-Muck and Caroline Creek nest sites.

Cumulative Effects

Level of Disturbance to Nest Sites

The cumulative effects are the same as for alternative 2.

Risk to Future Potential Nest Trees

The cumulative effects are the same as for alternative 2.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as alternative 2.

Risk to Reproduction

The effects are the same as alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as alternative 2.

Risk to Reproduction

The effects are the same as alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 5 has less salvage harvest in the Happy Camp project area when compared to alternative 2; consequently, this alternative has 7 fewer moderate level connectivity watersheds being reduced to low or very low habitat connectivity.

Table 117: Number of 7th field watersheds within each level of connectivity for alternative 5 for the Happy Camp fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	20 (20)	12 (11)	4 (5)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 5 resulted in the same effects as described in alternative 2 for this analysis area.

Table 118: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 5 for Happy Camp fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
11 (11)	25 (25)

Cumulative Effects

Level of Habitat Connectivity

The direct, indirect, and cumulative effects from private land Timber Harvest Plans resulted in reduced connectivity for one watershed (Big Ferry – Swanson).

Change in Fisher Home Range

The cumulative effects are the same as for alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Risk of Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Risk of Disturbance

The cumulative effects are the same as for alternative 2.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

There are twelve known Siskiyou Mountains Salamander sites in the project area that are in treatment units with the potential for ground disturbance. There are two fewer known sites in site preparation units with mechanical preparation proposed than in alternative 2. However, the same project design feature used to mitigate effects to known sites is included in this alternative so the effects to the twelve sites are the same as for alternative 2; the risk of habitat disturbance of known sites low.

Cumulative Effects

Risk of Habitat Disturbance

Adding the direct and indirect effects of this alternative to the effects of actions on private land that may affect talus habitat will result in four known sites potentially being cumulatively affected. The level of risk of disturbing a known site is cumulatively low and the cumulative effects may be overestimated if mitigations to reduce effects are used on private land projects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

There are eighteen watersheds with potential Bumble Bee habitat that will have a low level of disturbance as a result of this alternative. Lower East Fork Elk, Middle Creek, Rancheria, Tom Martin and Upper Grider will have moderate levels of disturbance. China, Cliff Valley and Tompkins Creeks will have a high level of disturbance as a result of this alternative.

Cumulative Effects

Level of Habitat Disturbance

None of the levels of disturbance change as a result of the actions considered for cumulative effects in the fire area so there are no cumulative effects of this alternative.

Management Indicator Species

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 4 varies between individual species but about 13% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 4 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 4 are 18,732 acres of snag habitat will be affected by the project; 217 acres will be affected by actions considered for cumulative effects. This is a total of 18,949 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 4 will affect 442 acres of hardwood habitat. This is about 11% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 4 are 442 acres of hardwood habitat will be affected by the project; 10 acres will be affected by actions considered for cumulative effects. This is a total of 452 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Project Area C: Whites Fire

Wildlife Biological Evaluation

Northern Spotted Owl

Direct Effects and Indirect Effects

Risk to Reproduction

Like alternative 2, alternative 5 will result in an increase in risk to reproduction for one AC (1030) which is estimated to go from low risk to moderate risk. However, unlike alternative 2, this is the only AC that has a change in the level of risk to reproduction.

Table 119: Number of ACs within each level of risk to reproduction as a result of direct and indirect effects plus cumulative effects for alternative 5 in the Whites fire area.

Risk to Reproduction	Number of Activity Centers
Very Low	0 (0)
Low	10 (10)
Moderate	5 (5)
High	0 (0)

*The number in the parentheses represents the number of activity centers at a particular level of risk to reproduction given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Changes to Critical Habitat

The change to critical habitat in the analysis area is 320 acres of nesting/roosting and foraging being downgraded or removed. The net number of dispersal habitat acres increased to 320 acres while the fire affected critical habitat was reduced by 743 acres.

Table 120: Change in NSO critical habitat as a result of direct and indirect effects plus cumulative effects for alternative 5 in the Whites fire area.

Critical Habitat Subunit	Critical Habitat area in Analysis Area (acres)	Change in NSO Critical Habitat from Current Condition			
		Nesting/roosting (acres)*	Foraging (acres)*	Dispersal (acres)*	Fire-Affected Critical Habitat (acres)
KLW8	30,148	-126 (-233)	-194 (-310)	+320 (+543)	-743 (-743)

*The number in the parentheses represents the number of critical habitat acres affected by cumulative effects which are calculated by adding present and reasonably foreseeable future actions to the effects of this alternative.

Cumulative Effects

Risk to Reproduction

The direct and indirect effects of this alternative and the effects resulting from other projects are not expected to cumulatively increase the risk to reproduction for any of the ACs in the Whites analysis area.

Changes to Critical Habitat

The direct and indirect effects of this alternative plus cumulative effects resulting from other actions within the analysis area will result in 543 acres of nesting/roosting and foraging habitat being downgraded or removed and a net increase of 543 acres of dispersal habitat. However, the fire affected critical habitat didn't change from the acres presented in the direct and indirect effects.

Bald Eagle

Direct Effects/Indirect and Cumulative Effects

There are no known eagle nest sites in the Whites project area so there are no effects to bald eagles from this alternative.

Northern Goshawk

Direct Effects and Indirect Effects

Level of Disturbance to Nest Sites

The effects are the same as alternative 2.

Risk to Reproduction

The effects are the same as alternative 2.

Cumulative Effects

Level of Disturbance to Nest Sites

The effects are the same as alternative 2.

Risk to Reproduction

The effects are the same as alternative 2.

Fisher, Marten, and Wolverine

Direct Effects and Indirect Effects

Level of Habitat Connectivity

Alternative 5 has one less watershed that had a reduced level of connectivity when compared to alternative 2.

Table 121: Number of 7th field watersheds within each level of connectivity for alternative 5 in the Whites fire area.

Level of Connectivity			
High	Moderate	Low	Very Low
0	7 (4)	6 (9)	5 (5)

*The number in the parentheses represents the number of watersheds at a particular level of habitat connectivity given the cumulative effects of adding present and reasonably foreseeable future actions to the effects of this alternative.

Change in Fisher Home Range

The direct and indirect effects of alternative 3 resulted in the same effects as described in alternative 2 for this analysis area.

Table 122: Number of 7th field watersheds that do or do not meet home range potential criteria for alternative 5 for Whites fire area. Number in the parentheses represents the number that does or don't meet home range potential criteria when cumulative effects are considered.

Meets home range potential criteria	Does not meet home range potential criteria
9 (8)	9 (10)

Cumulative Effects

Level of Habitat Connectivity

The cumulative effects are the same as alternative 2.

Change in Fisher Home Range

The cumulative effects are the same as for alternative 2.

Pallid Bat, Townsend's Big-eared Bat, and Fringed myotis

Direct Effects and Indirect Effects

Risk of Disturbance

The effects on the risk of disturbance to hibernacula in the fire area is the same as described in the DEIS (page 157) and Biological Evaluation (page 60). The treatments are not likely to overlap with times of hibernation but may overlap with the use of maternities. Potential hibernacula/maternities with a moderate risk could affect maternity roosts but the effects are likely to affect only individuals. Potential hibernacula/maternities with a high risk are the most vulnerable to abandonment. Compared to alternative 2, this alternative would result in one potential hibernacula moving from a moderate to a low risk (Table 123).

Table 123: Risk of disturbance for potential hibernacula for alternative 5 in the Whites fire area.

Whites Fire Area	Alt. 5	Alt. 5 Cumulative
High	3	4
Moderate	2	4
Low	8	5

Cumulative Effects

Risk of Disturbance

The private lands salvage and other timber harvest plans move many of the potential hibernacula from a moderate risk to a high risk (Table 123). The majority of this effect is because of the uncertainty of mitigations occurring on private land. Therefore, the cumulative effects may be an overestimate, especially if private lands are implementing mitigation to minimize the negative effects on roost sites.

Willow Flycatcher

Direct Effects and Indirect Effects

Level of Habitat Alteration

The effects to willow flycatcher are the same as for alternative 2.

Cumulative Effects

Level of Habitat Alteration

The cumulative effects to willow flycatcher are the same as for alternative 2.

Siskiyou Mountain Salamander

Direct Effects and Indirect Effects

Risk of Habitat Disturbance

The Whites fire area is outside of the Siskiyou Mountain Salamander's range and, therefore, there will be no direct or indirect effects of this alternative on species or habitat.

Cumulative Effects

Risk of Habitat Disturbance

There are no direct or indirect effects to Siskiyou Mountain Salamander as a result of the treatments in the Whites fire area so there are no cumulative effects.

Tehama Chaparral Snail

Direct Effects and Indirect Effects

Likelihood of Dispersal

The effects to the Tehama Chaparral Snail are the same as for alternative 2.

Cumulative Effects

Likelihood of Dispersal

The cumulative effects to the Tehama Chaparral Snail are the same as for alternative 2.

Western Bumble Bee

Direct Effects and Indirect Effects

Level of Habitat Disturbance

The effects are the same as for alternative 2.

Cumulative Effects

Level of Habitat Disturbance

The cumulative effects are the same as for alternative 2.

Management Indicator Species

Snag Species Association

Direct Effects and Indirect Effects

Changes in Snag Habitat Abundance

The percent of snag-associated species habitat affected by alternative 5 varies between individual species but about 9% of snag-associated species habitat will be affected by roadside hazard and salvage treatments. The other treatments in this alternative are likely to have minor effects on snag-associated species habitat. With implementation of project design features, salvage treatment units will not provide five snags on every acre but the project will meet the Forest Plan standard of five snags per acre averaged over 100 acres. Therefore, alternative 5 is likely to provide a sufficient number of snags of varying decay classes to provide a habitat level of “good” snag-associated habitat.

Cumulative Effects

Changes in Snag Habitat Abundance

All of the removal will occur on private lands where snag retention is likely to be incidental. The actions considered for cumulative effects are assumed to downgrade snag habitat but not remove it because of the requirements to meet the Forest Plan standards for snag retention. The cumulative effects of alternative 5 are 4,236 acres of snag habitat will be affected by the project; 194 acres will be affected by actions considered for cumulative effects. This is a total of 4,430 acres affected.

Hardwood Species Association

Direct Effects and Indirect Effects

Changes in Hardwood Habitat Abundance

Alternative 5 will affect 23 acres of hardwood habitat. This is about 3% of the hardwood habitat in the project area. Estimates of effects are likely overestimated because roadside hazard treatments are likely to retain most of the hardwoods and the hardwoods in the salvage units may be damaged but are likely to remain in the units after treatment. The treatments are focused on conifer removal and maintaining hardwoods were possible but they may be damaged during implementation.

Cumulative Effects

Changes in Hardwood Habitat Abundance

The cumulative effects of alternative 5 are 23 acres of hardwood habitat will be affected by the project; 4 acres will be affected by actions considered for cumulative effects. This is a total of 27 acres affected.

Survey and Manage

Direct Effects and Indirect Effects

The effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Cumulative Effects

The cumulative effects to survey and manage species is the same as described in the DEIS (page 165) and Survey and Manage report (page 7).

Migratory Bird

Direct Effects and Indirect Effects

This is the same as described in alternative 2.

Cumulative Effects

This is the same as described in alternative 2.

Big Game

Direct Effects and Indirect Effects

The effects are the same as for alternative 2.

Cumulative Effects

The effects are the same as for alternative 2.

Compliance with Law, Regulation, Policy and the Forest Plan

All alternatives meet law, regulation, policy and Forest Plan requirements.

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