Camp Lick Project

Wildlife Report

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for:

Blue Mountain Ranger District
Malheur National Forest

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DRAFT

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Summary of Effects Determinations

Table 1. Species and habitat occurrence for proposed, endangered, threatened, and Regional Forester's sensitive species (PETS) known or suspected to occur on the Malheur National Forest

Species	Stats[1]	Malheur National Forest[2,3]	Blue Mountain Ranger District[3]	Camp Lick planning area[4]	Addressed in this biological Evaluation	Effects determination alternative 1 (no action)[5]	Effects determination alternative 2 (proposed action)[5]
American peregrine falcon *Falco peregrinus anatum*	S	D	K	P	Y	NI	NI
Bald eagle *Haliaeetus leucocephalus*	S	D	K	N	N	NI	NI
Bufflehead *Bucephala albeola*	S	D	D	N	N	NI	NI
Bobolink *Dolichonyx orizyvorus*	S	D	N	N	N	NI	NI
Grasshopper sparrow *Ammodramus savannarum*	S	S	N	N	N	NI	NI
Greater sage-grouse *Centrocercus urophasianus*	S	D	N	N	N	NI	NI
Lewis' woodpecker *Melanerpes lewis*	S	D	K	P	Y	NI	NI
Upland sandpiper *Bartramia longicauda*	S	D	N	N	N	NI	NI
Wallowa rosy finch *Leucosticte tephrocotis wallowa*	S	S	N	N	N	NI	NI
White-headed woodpecker *Picoides albolarvatus*	S	D	K	K	Y	MIIH	MIIH/BI
Canada lynx *Lynx canadensis*	T	S	N	N	Y	NE	NE
Fringed myotis *Myotis thysanodes*	S	S	K	P	Y	MIIH	MIIH
Gray wolf *Canis lupus*	S	D	K	P	Y	NI	NI
Pallid bat *Antrozous pallidus*	S	S	K	P	Y	MIIH	MIIH
Pygmy rabbit *Brachylagus idahoensis*	S	S	P	N	N	NI	NI
Townsend's big-eared bat *Corynorhinus townsendii*	S	D	K	P	Y	MIIH	MIIH
Wolverine *Gulo gulo*	P	S	N	N	N	NE	NE

Species	Stats[1]	Malheur National Forest[2,3]	Blue Mountain Ranger District[3]	Camp Lick planning area[4]	Addressed in this biological Evaluation	Effects determination alternative 1 (no action)[5]	Effects determination alternative 2 (proposed action)[5]
Johnson's hairstreak *Callophrys johnsoni*	S	D	K	P	Y	MIIH	MIIH/BI
Silver-bordered fritillary *Boloria selene*	S	S	K	P	Y	MIIH	MIIH/BI
Western bumblebee *Bombus occidentalis*	S	D	K	K	Y	MIIH	MIIH/BI

[1]T = Threatened; E = Endangered; P = proposed (Federal candidate); S = Region 6 Sensitive.
[2]MAL= Malheur National Forest
[3]D = documented occurrence, S= suspected occurrence
[4] K = Known habitat; P = Potential habitat; N = No habitat
[5]**Listed species**: NE = No effect, LAA = May affect-likely to adversely affect, NLAA = May affect – not likely to adversely affect, BE = Beneficial effect
Sensitive species: NI = No impact, MIIH = May impact individuals or habitat but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species, WIFV = Will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species, BI = Beneficial impact

Acronyms

BCR	bird conservation region
BE	beneficial effect
BI	beneficial impact
CFR	Code of Federal Regulations
DBH	diameter at breast height
DecAID	decayed wood advisor
DOG	dedicated old growth
EA	environmental assessment
ESA	Endangered Species Act
FEIS	final environmental impact statement
FSM	Forest Service manual
FWS	Fish and Wildlife Service
GIS	geographic information system
HEI	habitat effectiveness index
HRV	historical range of variability
LOS	late and old structure
LWD	large woody debris
PETS	proposed endangered, threatened, and sensitive (species)
MA	management area
MIIH	may impact individuals or habitat but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species
MOU	memorandum of understanding
MPB	Mountain pine beetle
MIS	management indicator species
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NI	No Impact
ODFW	Oregon Department of Fish and Wildlife
PAG	plant association group
PCE	primary cavity excavators
PDCs	Project design criteria
PWFA	pileated woodpecker feeding area
ROG	replacement old growth
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WHT	wildlife habitat types
WPB	western pine beetle
WUI	wildland urban interface

Introduction

This report discloses the impacts of the Camp Lick Project on US Forest Service Region 6 Regional Forester's Sensitive species, Malheur National Forest management indicator species (MIS), featured species and migratory birds.

This biological evaluation (BE) satisfies Forest Service Manual 2672.4 requirements to review all planned, funded, executed, or permitted programs and activities for possible effects on proposed, endangered, threatened, or sensitive species.

Regulatory Framework

The following sections describe the management and policy directions that apply to wildlife. Malheur National Forest Land and Resource Management Plan (hereafter referred to as the Malheur Forest Plan) direction ranges from broad to site-specific. Further direction may come from regional authority or other regulation, or other regulating agencies, like the U.S. Fish and Wildlife Service.

Statute, Regulation, Forest Plan, Other Direction

Direction relevant to the proposed action as it affects terrestrial wildlife includes:

Endangered Species Act (ESA). The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires the Forest Service to ensure that any authorized actions will not jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. If a proposed action may affect the population or habitat of a listed species then consultation with the U.S. Fish and Wildlife Service (FWS) is required.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act, signed in 1918, and amended in 1936, 1974, and 1989, implements the United States' commitment to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of migratory birds (16 USC 661-666c). As described in Executive Order 13186 (Office of the President 2001), it is the responsibility of federal agencies, among other things, to "(1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions; [and] (6) ensure that environmental analyses of Federal actions required by the [National Environmental Policy Act] NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern."

Forest Service Manual 2600 (chapter 2670). The Forest Service Manual provides numerous directives related to wildlife management. It directs the Regional Forester to identify sensitive species occurring within the region. Special management emphasis must be placed on sensitive species of native plants and animals to ensure their viability and to preclude trends toward endangerment that would result in the need for federal listing.

Forest Service Manual 2672.4 requires the Forest Service to review all of its planned, funded, executed, or permitted programs and activities for possible effects on proposed, endangered, threatened, and sensitive (PETS) species. The U.S. Fish and Wildlife Service provided a list of PETS that potentially occur in Grant County for consideration in this analysis which are listed inTable 14. There is no designated or proposed critical habitat for threatened or endangered terrestrial wildlife species in the affected subwatersheds.

Malheur National Forest Land and Resource Management Plan (USDA Forest Service 1990). The current Malheur Forest Plan went into effect in 1990 and was developed under the 1982 planning rule (36 CFR 215). The 1982 planning rule directed the identification of management indicator species (MIS) which are selected because changes in their populations are believed to indicate the effects of management activities (36 CFR 215). The rule also required that Forests manage fish and wildlife habitats "to maintain viable populations of existing native and desired non-native vertebrate species" (36 CFR 215). The Malheur Forest Plan specifies Forest-wide standards for wildlife and direction for specific management areas (MAs) such as Big Game Winter Range Maintenance (MA4A) and Old Growth (MA13).

Regional Forester's Amendment 2 (Eastside Screens) (USDA Forest Service 1995). In 1995 the Regional Forester's Eastside Forest Plan Amendment 2 (hereafter referred to as the Eastside Screens) amended the Malheur Forest Plan. This amendment provides additional direction for wildlife habitat management related to timber sale activities. The Regional Forester has periodically distributed letters clarifying direction for Amendment 2 (Regional Forester, October 2, 1997; October 23, 1997; June 11, 2003).

Methodology

National Forest Management Act (NFMA) regulations adopted in 1982, require that habitat be managed to support viable populations of native and desired non-native vertebrates within the planning area (36 CFR 215). U.S. Departure of Agriculture (USDA) regulation 9500-004 (USDA Forest Service 2008), re-enforces the NFMA viability regulation by requiring that habitats on national forests be managed to support viable populations of native and desired non-native plants, fish, and wildlife. The following 4-step process is used in this analysis to assess changes in species or their habitat:

Step 1: Pre-field Assessment

The analysis process related to wildlife species started prior to identification of proposed activities. For example, unique habitats such as critical habitat, or uncommon habitats, were identified. As these areas are of public interest and are important to maintaining species viability and biodiversity, they were avoided for inclusion within proposed activities. Once the proposed actions were identified, information was collected and reviewed to identify species' present conditions or affected environment. This information included species literature searches, Malheur National Forest project files, geographical information systems (GIS) data, aerial photos, past activities, relevant survey data (biological species surveys within and near the planning area), and monitoring and observation databases for locations of known wildlife species and habitats within the planning area.

Step 2: Field Assessment

The author reviewed existing project record data to better understand the purpose and need of the proposed activities; observations, and incidental sign of wildlife use, and validated habitat conditions identified in the pre-field assessment. Wildlife technicians spent the summer of 2014 surveying for raptors, pine marten, and unique habitats in the planning area. The project wildlife biologist spent several weeks visiting possible pine marten habitat where silvicultural and fuels reduction activities were proposed in order to verify the query data on the ground.

Step 3: Wildlife Screening

The wildlife analysis was done using a multi-scale assessment that included the following basic strategies: 1) a coarse filter approach (described below) which is used to identify wildlife

communities across a wide area (this approach assumes that if the species, genetics, functions, and processes are protected at the community level, then the bulk of the biotic species, both known and unknown, will also be protected), 2) an assessment of habitat and effects to those species considered most at risk and/or those species with potential viability concerns.

See Table 1 for the list of proposed, threatened, endangered, and sensitive species considered in this document along with their effects determinations. See Table 4 for a list of management indicator species considered in this document. If a species has no habitat in the planning area, would not be expected to be found in the planning area, or would not be affected by the project, then it was eliminated from further analysis and indicated with a "no effect" determination. Species with suitable habitat or those likely or known to occur are discussed in more detail along with a determination summary.

Using information from steps one through three, anticipated changes in habitat and the associated communities were predicted under the activities considered and associated effects to wildlife and wildlife habitat evaluated. Information from steps one and two were used to complete the coarse filter analysis, identify and evaluate spatial relationships between habitat(s), assess changes in landscape diversity, and predict changes and effects to species in general context. Site-specific data was used to assess specific project level changes in habitat and ensure that unique vegetative and physical habitat conditions were maintained and protected.

Step 4A – Environmental Baseline

The "environmental baseline" as defined under the Endangered Species Act (ESA) includes past and present impacts of all federal, state, or private human activities in the action area. This discussion should describe the current baseline conditions, with emphasis on the important risk factors and habitat relationships that were described in the previous section. This analysis includes other influences on the landscape as well, such as wildfire. Within the NEPA analysis, this can also be referred to as "existing condition."

Step 4B – Scales of Analysis

The appropriate methodology and level of analysis needed to determine effects are influenced by a number of variables including the presence of species or habitat, the scope and nature of activities associated with the proposed actions, and the potential risks that could ultimately result in adverse effects. Wildlife distribution and use of an area is largely determined by the availability of suitable habitat and can be influenced by site specific needs such as the vegetative structure or physical features on a site, as well as by landscape considerations such as the proximity to other habitat or the need for isolation or seclusion. As a result, a multi-scale analysis that looks at site-specific conditions in areas proposed for treatment (fine filter), as well as landscape considerations such as the proximity and availability to other habitat (coarse filter), will be considered.

The duration of effects on the wildlife resource is described generally according to the following terms and definitions unless otherwise noted:

- Immediate – Approximately one growing season of several months or less
- Short-term – 0 to 5 years
- Mid-term – 5 to 25 years
- Long-term – 25+ years

Step 4C – Project Level Assessment

Wildlife use of an area is often influenced by specific conditions that can only be identified at the stand or site scale. This assessment is also used to identify habitat features that may need to be protected or enhanced and is used to identify site-specific mitigation measures for project design criteria (see Camp Lick EA Appendix C).

Direct and indirect effects to wildlife are assessed by evaluating potential effects to individuals and changes in habitat or conditions on National Forest System lands within the planning area boundary. If species requirements are such that adjacent areas outside the project boundary need to be considered, they will be addressed in the cumulative effects section. Project level assessment of direct and indirect effects on wildlife species includes all areas proposed for activities and contains an adequate diversity of habitat conditions (vegetative and topographic) to assess wildlife distribution and use.

The existing condition of vegetation and the changes that would likely occur as a result of the proposed action as it relates to wildlife habitat suitability, are quantified to the extent practicable in this document; if quantification is not suitable, then a qualitative discussion is given. Changes in conditions are correlated to changes in habitat suitability. This correlation provides a useful tool to estimate the direction and magnitude of changes in wildlife habitat suitability caused by changes in condition. Note that some specific analysis tools are required by the Malheur Forest Plan (e.g. habitat effectiveness index for elk) and their use and results are discussed in their relevant sections.

Professional judgment is the principal method used to forecast effects. This judgment is backed by applying the most applicable scientific information related to wildlife on the Malheur National Forest and through experience assessing impacts from proposed activities to wildlife and wildlife habitat from similar proposed actions.

Step 4D – Cumulative Effects Assessment

Under the NEPA, the cumulative effects discussion includes the effects from past, present, and reasonably foreseeable future actions. The past activities are generally considered to form a part of the existing, or baseline, conditions.

The environmental baseline (existing conditions) takes into account all activities and naturally occurring events, such as wildfires, that have occurred prior to the present, and which have led to the existing condition of habitat. If there are notable circumstances expected as a result of project implementation (e.g., the introduction of non-native plant species or habitat conversion), they will be brought forward in the effects discussion on a species-by-species basis.

Spatiotemporal scales for analyzing effects can vary for each species. Generally, for species with limited mobility or small home ranges or territories, a smaller cumulative effects analysis area is required. Conversely, for wide-ranging species, a larger analysis area may be necessary. Effects were analyzed within the context of the Camp Lick planning area, unless otherwise noted.

There are no other activities on the current schedule of proposed actions for the Malheur National Forest in the planning area, although the County Rd 18 project (currently ongoing) overlaps the project area in the southwestern quadrant. Adjacent to the planning area, the Malheur National Forest has several projects scheduled or ongoing, including Magone, Ragged Ruby, and Big Mosquito.

Species presence or absence determinations were based on one or a combination of the following: habitat presence, review of wildlife sightings recorded in District and Forest wildlife databases, the National Resources Information System wildlife database, non-Forest Service databases, Oregon Department of Fish and Wildlife (ODFW) reports, as well as notes, maps, and summary reports of wildlife observations made during field reconnaissance, and status, trend, and source habitat trend documentation for the Interior Columbia Basin.

There is a high confidence level that species discussed in this document are currently present, or their habitat is present, in the planning area.

Incomplete and Unavailable Information

Formal wildlife surveys were not conducted for most species and data gaps may include a lack of up-to-date Natural Resources Information System data, project scale surveys or survey data for difficult to access areas.

Resource Elements

As outlined in the analysis framework section, species addressed in this analysis are those requiring focus under one or more management directions. Categories are summarized below:

- **Proposed, Endangered. Threatened, and Sensitive (PETS) Species** – This analysis uses the 2015 Regional Forester's special status species list, US Fish and Wildlife Service listing information, and Malheur Forest Plan standards (USDA Forest Service 1990, Forest-wide standards 62-67, pages IV-32 to IV-33). Species in this category will be analyzed here even if they also occur in another category (e.g., management indicator species).
- **Management Indicator Species (MIS)** – Defined in the Malheur Forest Plan (USDA-Forest Service 1990), various species are defined either to represent specific habitats or because they are of high public interest or value. Regional direction in how to assess habitat in addition to associated species results in these analyses having their own sections. Effects to MIS species (which are not discussed in the Proposed, Endangered, Threatened, and sensitive Species section) are discussed in this MIS section:
    - Rocky Mountain elk represent species commonly hunted and also have direction under big game summer range, elk calving habitat, and Big Game Winter Range Maintenance (MA4A).
    - Dead and defective wood habitat represents the specific habitat for primary cavity excavators.
    - Dead and defective wood species addresses ten primary cavity excavators (most woodpeckers) following this habitat determination (USDA Forest Service 1990, Forest-wide standard 61, page IV-32).
    - Old growth habitat (USDA Forest Service 1990, IV-105 to IV-107, and IV-31) represents the specific habitat for three MIS species plus the Northern Goshawk (USDA Forest Service 1995).
    - Connectivity corridors addresses connectivity of old growth forest stands to allow free movement and interaction of adults and dispersal of young (USDA Forest Service 1995).
    - Old growth species addresses American (pine) marten, pileated woodpecker, three-toed woodpecker, and Northern Goshawk following the old growth habitat determination.

- **Featured Species** – Six featured species habitats are defined in the Malheur Forest Plan. Of these six, only the blue (dusky) grouse occurs in the Camp Lick planning area (USDA Forest Service 1990, Forest-wide standards 50-55, pages IV-30 to IV-31).
- **Migratory and Resident Birds -** Defined in the Migratory Bird Treaty Act, landbirds, including neotropical migratory birds, and their associated habitat are addressed in this section.

Table 2. Resource elements, indicators and measures for assessing effects.

Resource element	Resource indicator	Measure (quantify if possible)	Source
Proposed, endangered, threatened, and sensitive species	Effects to species and habitat.	Effects determination	Endangered Species Act; U.S. Fish and Wildlife Service's listed species believed to or known to occur in Oregon (USDI Fish and Wildlife Service 2015); Region 6 Regional Forester's special status species list (USDA Forest Service 2015a); Malheur Forest Plan (USDA Forest Service 1990, Forest-wide standards 62-67, pages IV-32 to IV-33)
Management indicator species – species commonly hunted (Rocky Mountain elk)	Cover quality, cover spacing, forage, and open road densities	Habitat effectiveness index (HEI) results for percent of satisfactory and marginal cover	Malheur Forest Plan (USDA Forest Service 1990, Forest-wide standards 28-37, pages IV-27 to IV-29; Forest-wide standard 61, page IV-32; MA4A standards 4-13, pages IV-69 to IV-71)
Management indicator species –dead and defective wood habitat	Dead and defective wood habitat availability	Decayed wood advisor analysis combined with FSVeg data analyzer projections for snag habitat plus on-the-ground exams for snag numbers	Malheur Forest Plan (USDA Forest Service 1990, Fish and Wildlife Objectives, page IV-18; Forest-wide standard 61, page IV-32); decayed wood advisor (DecAid) analysis; Snag exams
Management indicator species – primary cavity excavators; dead and defective wood dependent species	Dead and defective wood habitat availability	Decayed wood advisor analysis combined with FSVeg data analyzer projections for snag habitat plus on-the-ground exams for snag numbers	Malheur Forest Plan (USDA Forest Service 1990, Fish and Wildlife Objectives, page IV-18; Forest-wide standard 61, page IV-32); decayed wood advisor (DecAid) analysis; Snag exams
Management indicator species – old growth habitat	Old growth habitat extent and condition	Management Area (MA) 13 stand type, size, and distribution criteria	Malheur Forest Plan (USDA Forest Service 1990, Forest-wide standard 61, page IV-32; MA13 standards 3-8, pages IV-105 to IV-106); Regional Forester's Eastside Forest Plan Amendment #2, Standard #6 (d and e)
Connectivity corridors – connectivity of old growth forest and late and old structure stands	Stand level connectivity pattern in two directions within watershed and extending to adjacent watershed(s)	GIS mapping to confirm all possible effective connections have been designated.	Regional Forester's Eastside Forest Plan Amendment #2, Standard #6 (d and e), Scenario A,3

Resource element	Resource indicator	Measure (quantify if possible)	Source
Management indicator species – old growth dependent species	Old growth habitat extent and condition	Management Area (MA) 13 stand type, size, and distribution criteria	Malheur Forest Plan (USDA Forest Service 1990, Forest-wide standard 50, page IV-32; MA13 standards 3-8, pages IV-105 to IV-106); Regional Forester's Eastside Forest Plan Amendment #2, Standard #6 (d and e)
Featured species	Habitat for blue (dusky) grouse	Preservation and improvement of habitat for blue (dusky) grouse	Malheur Forest Plan (USDA Forest Service 1990, Forest-wide standard 61, page IV-30
Migratory and Resident Birds	Presence of species or habitat	Analysis of impacts to habitats and species	Migratory Bird Treaty Act; US Forest Service and US Fish and Wildlife Service Memorandum of Understanding; Partners-In-Flight

Overview of Direct and Indirect Effects

Alternative 1 (No Action)

No activities associated with this project would occur under the no action alternative, and therefore there can be no direct effects as a result. However, a consideration of what may reasonably occur under this alternative as it applies to all addressed species and habitats is discussed here. For species or habitats which have differing or additional potential effects there is additional verbiage in their respective sections.

For wildlife resources, two things are considered within the framework of the no action alternative. The first is that the existing conditions and management direction would remain unchanged in the near term. Secondly, the current condition and susceptibility to a large, stand-replacing event, allows analysis of the effects of said event. This analysis will consider the no action alternative in terms of:

- The existing forest vegetative conditions continuing along their current trajectories
- The likelihood of a stand-replacing wildfire of mixed to high severity, or an insect or disease outbreak occurring as a result of the current conditions

In general, it is expected that early-seral stands would continue to decrease in the planning area. Early seral forest is typified by young, open stands with a high shrub component and a variety of living and dead legacy structures, such as trees, snags, and downed wood. Early seral forests are as important for wildlife as old-growth forests (Swanson et al. 2014) and the decline in early-seral habitat adversely affects early-seral dependent bird species, many of which are migratory.

Large overstory ponderosa pine would continue to weaken due to moisture stress resulting from competition in overstocked stands (Spiegal and Johnson 2015). Western larch would continue to lose vigor due to dense stand conditions that reduce crown width and crown height (Spiegal and Johnson 2015). Both of these tree species and size classes are important to a wide variety of wildlife. Susceptibility to insect and disease disturbances in excess of the historical range of variability (HRV) would continue to increase. Large snags would likely increase due to mortality from the above causes, benefiting snag-dependent species in areas where roads do not provide access for firewood cutting.

Fire effects would result in higher stand loss as seen in the Canyon Creek Complex fire (2015) which burned in similar fuels profiles. The majority of the planning area is currently prone to

high mortality through cambium kill and crown fire. Disturbances would be of a higher severity, increased mortality of larger trees, and over a larger area than under historic conditions (see Camp Lick Fuels Report). Specifically, patch sizes of high severity would be larger. Recent fires in eastern Oregon, including on the Malheur National Forest in 2013, 2014, and 2015 indicate that in similar conditions as those in the planning area, tree mortality through cambium kill and crown scorch could burn through a majority of the planning area. Historically, these stands burned with low large tree mortality, as surface fires with average flame lengths less than 4 feet and occasional single tree torching. Severe fire affecting a large portion of the planning area would negatively impact a majority of species.

Alternative 2 (Proposed Action)

Effects of the proposed action are discussed here as they apply to all addressed species and habitats. For species and habitats which have differing or additional effects, those will be addressed with that specific species or habitat. Effects on species are determined by assessing how the alternative would affect the structure and function of habitat relative to current, projected, and reasonably foreseeable future actions. Effects on habitats are discussed with the assumption that if appropriate habitat is available for a species, then that species occupies or could occupy the habitat (assumed presence).

Silviculture Treatments

Implementation of silvicultural treatments would transition stands towards species composition and stand structure reflective of historical conditions, particularly in the drier forest types. Restoration of historic stand density levels would reduce moisture stress (which has weakened large overstory ponderosa pines), reduce overcrowding and competition stress (which has caused loss of vigor in Western larch trees), move the incidence of insects and disease toward the HRV, and reduce the potential for higher severity wildfire events within these stands (see Silviculture and Fuels reports). Wildlife dependent on open mature pine-dominated habitat would benefit from increased stand health. Conversely, wildlife dependent on denser forest conditions, post-fire habitat, or insect outbreaks may experience a mid-term reduction in habitat within the planning area.

Variable density thinning, prescriptions retaining higher densities, blocks of no treatment, skips within units, and a network of connectivity corridors with denser forest areas are all designed to retain heterogeneity within the planning area and ultimately at the landscape level, and provide for a diversity of habitat types across the landscape.

Proposed activities are likely to result in some loss of snags, future snags, and downed wood, all of which are important stand attributes of healthy forests and critical components of wildlife and invertebrate habitat (Pilliod et al. 2006). While project design criteria would be utilized to mitigate large snag loss, some loss may occur and would be a long-term impact.

Riparian and Upland Watershed Restoration Treatments

Some old and decadent aspen may be directly reduced as a result of prescribed fire, which could affect species preferring hardwoods or hardwood snags in the short-term. However, aspen stand acreage proposed for restoration in the planning area is minimal (approximately 80 acres) and therefore unlikely to result in significant effect overall.

Prescribed fire in aspen stands would enhance natural regeneration as soil heating stimulates root suckering and promotes vigor in existing suckers and saplings. In the long-term, saplings would grow in size class, becoming resistant to ungulate browsing as fences (where applicable) start to

deteriorate. Overstory composition would change. Understory grass and forb cover would increase, as would deciduous riparian shade, root structure, and soil-holding capacity within the stands. Diversity of habitat would increase, especially foraging and nesting opportunities for neo-tropical migrants and cavity nesters. Genetic diversity of treated aspen stands would be maintained and preserved.

Although there may be some disruption of nesting activities during implementation, depending on season, species preferring riparian habitats and hardwoods would benefit as a result of activities associated with the proposed aspen and riparian treatments.

Ecological riparian treatments

Of the approximately 40,000 acre planning area there are approximately 2,300 acres of ecological riparian treatments which would have some thinning components.

Riparian treatments (see Aquatics and Watershed Reports) would open up areas in riparian corridors to promote deciduous species in areas with a high likelihood of success.

Ecological riparian treatments would be implemented in multiple phases. The phases would limit treatments to no more than 25 percent of acreages per subwatershed per year. No consecutive reaches of a given stream would be treated in a given year. This would allow wildlife species to relocate to nearby undisturbed habitat during project activities. Project design criteria (see Camp Lick EA Appendix C – Project Design Criteria) is in place to limit disturbance activities during critical periods for wildlife species dependent on these areas.

Inner riparian habitat conservation area (RHCA) thinning, resulting in large wood being placed in, across, and adjacent to streams would improve wildlife habitat by increasing insect prey and increasing structure, cover, and winter refugia for small mammals (both prey and predator). Enhancing deciduous shrubs and trees in applicable riparian areas would move these areas toward the HRV and have multiple beneficial impacts for wildlife, both short and long-term, varying by species.

Outer RHCA thinning would blend the inner RHCA into the upland areas, moving the treated area toward the HRV and thus improving forage for ungulates and other ground-foraging species while improving large tree vigor. This benefits many species relying on large trees (and eventual snags) over the long-term.

The 8 locations proposed for headwaters restoration treatments would likely cause short-term localized displacement of some wildlife species in these areas; however, the acreages are small and sufficient similar habitat exists nearby to provide refuge for most displaced species. In the long-term, these treatments are intended to facilitate improved ecological functioning and thus would be a long-term benefit for wildlife as a whole.

Meadow treatments would specifically benefit meadow-dependent species however, the overall goal of improving hydrologic processes related to meadows would benefit the ecosystem as a whole and any wildlife species which utilize functioning meadow areas.

Prescribed Burning and Unplanned Ignitions

Prescribed burning can alter or remove vertical and horizontal stand structure including snags and downed wood. Studies by Hardy and Reinhardt (1998) document both the loss of existing snags during prescribed burning and recruitment of new snags through fire-caused mortality. Variation in the severity of the burn influences residual stand characteristics, including the spatial

distribution and availability of litter, downed wood, snags, and vegetation (Jain et al. 2004). In most cases, prescribed fire results in increased structural complexity and habitat heterogeneity over time (Pilliod et al. 2006). The level of loss and the replacement is dependent on fire intensity, time of year, local weather conditions, and fuel load. Prescriptions using only prescribed burning would exhibit the largest number of snags recruited from direct mortality, but burning activities have the potential to both consume existing snags and down logs and to create new snags. Any snag creation as a result of fire would benefit post-fire dependent species like the black-backed woodpecker. Although this pulse of snags would provide foraging for numerous woodpecker species, most snags would likely be too small to provide suitable nesting habitat. Design features are included to minimize consumption of existing habitat, especially large trees, snags, and down logs. Although some snags are expected to be lost as a result of implementation, losses are expected to be minor across the landscape.

The season selected for implementation of prescribed fire activities in various habitat types has important consequences for wildlife and invertebrates. Wintering bird communities in mature managed pine stands show no differences in abundance or species richness between growing and dormant season prescribed fire (King et al. 1998). Spring burns are limited via project design criteria so as to minimize impact to breeding birds and wildlife.

Road Activities

Reopening of currently closed and grown-in roads and construction of new temporary roads needed for project access and timber hauling converts forest habitat to roadway. Snag densities may be reduced along roads where dead trees are designated as hazards and felled for contractor and public safety. The larger of these trees provide important nest and roost sites for cavity-dependent wildlife and are not easily replaced, taking decades if not hundreds of years to develop. Traffic and activity along previously closed roads reduces wildlife security during project implementation. Species requiring remote areas and refuge from human activity could be detrimentally affected in the short-term. If temporary roads or roads designated for closure are not effectively closed, this becomes a long-term impact.

Temporary roads and previously closed roads are to be closed after activities are completed. Effective road closures or decommissioning of roads would secure potential habitat from vehicle access and disturbance. Scarifying roadbeds and seeding with native seed would rehabilitate bare ground to forage in the short-term, and allow conifer recruitment in the mid- to long-term. Disturbances to wildlife would be expected to decrease. Closing or decommissioning roads would reduce road densities and move toward Malheur Forest Plan goals (USDA Forest Service 1990, page III–15), secure habitat from the risks of additional firewood cutting and danger tree removal, reduce habitat fragmentation, reduce potential for invasive plant establishment, and increase security for wildlife.

Interpretive Sign Installation

Interpretive sign installation along National Forest System (NFS) Road 3600 between the junctions of NFS Road 3650 at Cougar Creek and NFS Road 2045 at Lick Creek would have minimal, if any, impacts to wildlife or habitat.

Range Fence Construction

Range fence construction along Upper Camp Creek and Cougar Creek would benefit sensitive riparian areas by excluding livestock while allowing ungulates to access these areas.

Proposed, Endangered, Threatened, and Sensitive (PETS) Species

Twenty species on the 2015 Regional Forester's special status species list occur on the Malheur National Forest. Only PETS, or their habitats, that are known, or suspected to occur in or immediately adjacent to the analysis area, are addressed in this biological evaluation (BE) (Table 1).

Although Canada lynx, as listed in Table 1, may have potential habitat on the Forest, the species is not considered to occupy territory on the Forest[1]. Ten of these species have documented suitable or marginal habitat within the vicinity of the planning area and warrant further analysis. These PETS species are gray wolf, Townsend's big-eared bat, fringed myotis, pallid bat, American peregrine falcon, Lewis's woodpecker, white-headed woodpecker, western bumblebee, Johnson's hairstreak, and silver-bordered fritillary.

American Peregrine Falcon

Life History, Habitat, and Distribution

Nesting habitat for peregrines usually consists of ledges on vertical rocky cliffs, commonly with a sheltering overhang, a wide view, near water and close to plentiful prey (NatureServe 2015). Prey consists primarily of other bird species (medium-size passerines up to small waterfowl) (NatureServe 2015).

Existing Condition

No known peregrine falcon nest sites have been verified on the Malheur National Forest; however, observations of birds in flight have been made near potential natural nesting habitat at Ragged Rocks, just east of the eastern edge of the planning area.

Environmental Consequences

Alternative 1 (No Action Alternative)

Direct and Indirect Effects

There would be no direct effects to the peregrine falcon from the no action alternative as there are no activities planned. Below is a discussion of the possible implications of a severe wildfire, insect, or disease outbreak on peregrine falcons and their habitat.

Insect and disease outbreaks are unlikely to have adverse impacts on peregrine falcons. Nesting habitat is not affected (being non-vegetative) and primary prey species are not dependent on dense conifer stands.

The consequences of a severe fire are more likely to impact this species. A severe wildfire over the larger watershed could eliminate nesting and foraging habitat for prey species across a large area. It would take several years for the riparian hardwoods to regrow to a size and structure suitable for prey species nesting and foraging.

[1] There is no designated or proposed critical habitat for Canada lynx in the affected area. Based upon the National Lynx Survey, the Malheur National Forest falls under the designation of "Unoccupied Mapped Lynx Habitat" (USFWS 2009). There is no effect (NE) expected to Canada lynx.

Cumulative Effects

Because no direct or indirect effects are anticipated as a result of the no action alternative, there would be no cumulative effects to American peregrine falcons.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

No documented nest sites occur within the planning area. Furthermore, activities are not proposed near any potentially suitable nesting habitat. Therefore, no direct or indirect effects are expected.

Cumulative Effects

Because no direct or indirect effects are anticipated as a result of the proposed action alternative, there would be no cumulative effects to American peregrine falcons.

American Peregrine Falcon Determination

The determination for American peregrine falcons is **no impact (NI)** for both alternatives based on the following rationale:

- The minimal potential nesting habitat in the area indicates there would be no loss of species viability even in the event of a large severe wildfire or insect and disease outbreak (no action alternative).
- No activities are proposed in or adjacent to potential suitable nesting habitat (proposed action).

Bald Eagle

Life History, Habitat, and Distribution

Bald eagle populations are managed under the Pacific States Bald Eagle Recovery Plan (USDI FWS 1986), the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the National Bald Eagle Management Guidelines (USDI FWS 2007).

Bald eagles generally nest near rivers, large lakes, or streams that support an adequate food supply, which generally consists of fish, waterfowl, and/or carrion. Potential nesting habitat is generally located within one mile of water (Marshall et al. 2006) and nest trees are normally mature or old-growth trees, with a large and open branch structure that can support the large nests. They shelter at winter roost sites, utilizing large trees with open branching patterns in the crown. The birds show a preference for the largest trees or snags in roosting areas (USDI FWS 2007).

Major threats include habitat loss, disturbance by humans, biocide contamination, decreasing food supply, and illegal shooting (NatureServe 2015).

Existing Condition

There are no known roosts or nests documented in the planning area and no documented sightings. This species will not be considered further in this analysis.

Bald Eagle Determination

The determination for bald eagle is **no impact (NI)** for both alternatives.

Gray Wolf

Life History, Habitat, and Distribution

Gray wolves occupy diverse habitats, from open meadows to heavily forested stands. Wolves occupy broad territories (50 to 200 square miles) and travel extensively in search of prey, generally medium to large ungulates, especially elk (USDI FWS 1987). They are adaptable to human and land management activity in general, but sensitive to disturbance at denning and rendezvous sites.

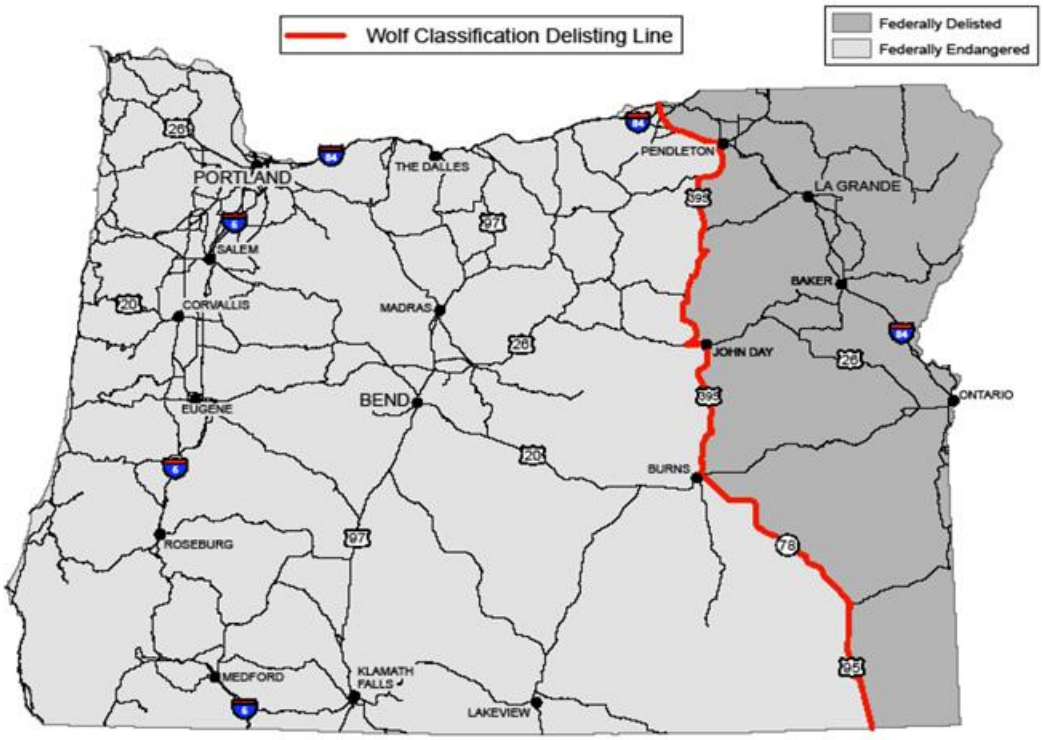
The Northern Rocky Mountain population of wolves (which includes wolves in the eastern third of the state of Oregon) were granted protection under the federal Endangered Species Act (ESA) in 1973 (Federal Register 1973). On May 5, 2011, wolves in the eastern third of Oregon (east of Highway 395) were delisted under the Federal ESA (Federal Register 2011) and management authority for wolves in this portion of Oregon (which includes the planning area) now belongs to the Oregon Department of Fish and Wildlife (ODFW). This classification dictates that wolves will be analyzed as a sensitive species (USDA Forest Service 2015a) for the Camp Lick Project.

Existing Condition

Historically, wolves occupied all habitats of the Malheur National Forest (Wisdom et al. 2000), and although wolf presence (primarily transitory) has been documented on the Forest (in 1999, 2011, and 2014-2016), there are currently no confirmed areas of known wolf activity on the forest (ODFW 2015).

Because any habitat types are suitable so long as primary prey is present, the whole planning area may be considered potential suitable habitat.

The rationale for addressing wolves in regard to this project is the presence of wolf packs on adjacent forests, the large home range of this species, and the potential for dispersing wolves to form a pack in the area.



ODFW 03/2008

Figure 1. Oregon wolf classification delisting line

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. The no action alternative is unlikely to substantially impact wolves. Due to the increased risk of severe fire in the planning area with this alternative, there could be a loss of prey cover and forage habitat that could affect potential use of this area by wolves. However, because wolves range through a wide variety of habitats, and there are no known denning or rendezvous sites in or near the planning area, any habitat changes due to fire would likely have no impacts on gray wolves or their habitat.

Cumulative Effects

Because no direct or indirect effects are anticipated as result of the no action alternative, therefore there would be no cumulative effects to gray wolf

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action is unlikely to substantially impact wolves, either directly or indirectly. Because wolves range through a wide variety of habitats, vegetation changes from the proposed action would not cause the affected areas to become unsuitable. There are no known denning or rendezvous sites in or near the planning area.

Silvicultural treatments and prescribed burning are designed to move forest stands towards health and historical conditions and are not expected to reduce habitat suitability for wolves. In the planning area, this would primarily result in improved big game forage as a result of the opening of the canopy combined with the restorative effects of fire. Prey distribution would change, but overall availability of prey in the area is not expected to be impacted in the short-term. In the long-term, there would be an increase in the habitat value for deer and elk, and thus for wolves.

The decreased threat of a stand replacement wildfire benefits wolf prey populations, and thus benefits wolves.

Road accessibility in the planning area would not increase, and as such, there would be no increased threat to wolves being harmed or killed as a result of this project.

If a pack, "four or more wolves traveling together in winter," or a breeding pair, "a pack of wolves with an adult male and an adult female with at least two pups surviving to the end of December" (ODFW 2010), is identified in the planning area, the only land use restriction would be limiting the operating period around den sites and any known rendezvous sites, which would be coordinated with ODFW.

Cumulative Effects

Treatment of the planning area would initiate the return of all structural stages to within historical proportions and consequently provide habitat for prey species according to historical conditions. Because no direct or indirect effects are anticipated as result of the proposed action, there would be no cumulative effects to gray wolf.

Gray Wolf Determination

The determination for gray wolf is **no impact (NI)** for both alternatives.

Currently a **no impact (NI)** determination is recommended by ODFW for projects within the Malheur National Forest (east of Highway 395).

Informal consultation with ODFW and the U.S. Fish and Wildlife Service was conducted for management activities on the Malheur National Forest. The two management agencies recommended that the Malheur National Forest follow guidelines described in *The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho Final Environmental Impact Statement (FEIS)* (USDI Fish and Wildlife Service 1994) when considering effects to the gray wolf.

The FEIS defines occupied gray wolf range as follows: "areas of confirmed presence of resident breeding packs or pairs of wolves are areas consistently used by greater than one resident wolf or wolves over a period of at least one month" (USDI Fish and Wildlife Service 1994, page 76). Confirmation of wolf presence is to be made or corroborated by Oregon Department of Fish and Wildlife (ODFW).

Until an active pack or confirmed pair is identified within the Camp Lick planning area, there would be no effect to gray wolf as a result of the proposed project.

Lewis's Woodpecker

Life History, Habitat, and Distribution

Lewis's woodpecker inhabits primarily open forests and woodlands, with breeding habitat typically characterized by open canopy and brushy understory, with perch sites and abundant insects (Abele et al. 2004). This species is strongly associated with post-fire habitats, particularly high burn severity areas with clumps of decaying large diameter snags.

This species is considered a weak excavator and seldom excavates its own nest cavity; instead it relies on cavities created by other woodpeckers (Bock 1970). Nesting habitat consists of two distinct types in eastern Oregon: riparian areas with large cottonwoods, and fire maintained or burned old-growth ponderosa pine forests (NatureServe 2014). Burned ponderosa pine stands appear to represent the highest quality breeding habitat for Lewis's woodpeckers, based on reproductive success and nest-site selection (Saab and Vierling 2001). Presence of Lewis's woodpecker is also connected with unburned ponderosa pine forests with open canopies and large trees; however, it is generally at lower abundance in these habitats than in post-fire habitat. For purposes of analysis, primary source habitat is defined as post-fire habitat and secondary source habitat is defined as old forest single-stratum and riparian areas with large tree structure.

Existing Condition

Primary habitat for Lewis's woodpecker is defined as post-fire habitat. This habitat has increased significantly on the Forest due to the fires of 2014 and 2015, but there is little to none of this habitat existing in the Camp Lick planning area.

There are approximately 6,200 acres of riparian habitat conservation area within the planning area; however, most acres lack the cottonwood component desirable for Lewis's woodpecker. Combined with the lack of primary source (post-fire) habitat, Lewis's woodpeckers would be expected to have minimal suitable breeding habitat within the planning area.

Lewis's woodpeckers are not documented within the Camp Lick planning area but it is possible that they may occur in low densities in the approximately 2,200 acres of secondary habitat present in the planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of taking no action. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Habitat for Lewis's woodpecker would not be treated and current trends in habitat condition would continue. Habitat would remain below the HRV, and Lewis's woodpecker habitat would be expected to decline with the ingrowth of understory trees and subsequent reduction in the amount of open habitats. Trends in risk of habitat loss to insect, disease, and wildfire would not be altered. Refer to the Silviculture and Fuels reports for detailed discussion of risk of loss to these disturbance agents. This alternative could ultimately lead to an elevated risk of high-intensity wildfire, which could provide an increase in habitat for the Lewis's woodpecker.

Cumulative Effects

There would be no cumulative effects to the existing condition resulting from the no action alternative.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action (alternative 2) would include silvicultural treatments and prescribed burning to reduce the understory fir component on acres dominated by ponderosa pine and western larch. Prescriptions are designed to increase the abundance of more open stand structure, with ponderosa pine contributing a relatively larger percentage of the species composition. This would help restore Lewis's woodpecker secondary habitat and bring levels closer to the historical range of variability (HRV). Implementation of alternative 2 would result in a 3,415 acre increase of old forest single stratum secondary habitat in the planning area.

Loss of snags are likely to result from prescribed burning, temporary opening of closed roads for log haul, construction of temporary roads, and hazard tree removal. Prescribed burning has the potential to modify the size, abundance, and condition class of snags in treated areas, which could yield both positive and negative results to habitat for this species.

The proposed road decommissioning and closure activities for the Camp Lick Project would have a beneficial effect on snag retention by reducing access for firewood cutting, thus increasing potential nesting and foraging habitat for Lewis's woodpecker.

Expanding and enhancing riparian habitats through ecological riparian treatments would benefit the Lewis's woodpecker. See Watershed Report for treatment details. The extent of project activities and expected outcomes should provide for a net increase of secondary habitat acres. In the short-term habitat would remain below the HRV, however, modeling predicts that by 2045 habitat would be within the HRV as identified by Powell (1998).

Table 3. Warm Dry forest structural stages, displaying old forest single-stratum by alternative and historical range of variability, based on modeling for years 2025 and 2055

Year	Description	Alternative 1 (no action)	Alternative 2 (proposed action)	Historical range of variability
2017	Old forest single-stratum	5%	15%	15-55%
2045	Old forest single-stratum	10%	24%	15-55%

Source: Compiled from the Camp Lick Silviculture report.

During project operations, a degree of disturbance and displacement of Lewis's woodpeckers would be possible, though is unlikely given the minimal existing habitat and lack of treatments planned for those habitats.

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area and adjacent subwatersheds to include other proposed projects. All of the activities in Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions have been considered for their cumulative effects on Lewis's woodpecker.

Past timber harvest, thinning, road construction, fire suppression, wildfires, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities as well as other disturbance events.

Past timber harvest targeted and removed many of the most valuable, largest diameter ponderosa pine, reducing potential roosting and nesting habitat. However, the Malheur Forest Plan, as amended in 1995, directs the Malheur National Forest to conduct timber sales in a manner that moves stands towards historical conditions. Timber sales planned since that time would not have contributed to loss of mature and old growth forest. Proposed commercial harvest within and adjacent to the planning area that may continue include the County Road 18 Healthy Forest Restoration Act Project and the adjacent Magone, Ragged Ruby, and Big Mosquito projects. All of these projects propose to reduce hazardous fuels and would retain and develop future old trees. The County Road 18 Project includes commercially thinning 1,200 acres, non-commercially thinning 1,600 acres, and applying prescribed fire throughout the corridor. The result is open pine stands suitable for Lewis's woodpeckers. Cumulatively, the effects of the County Road 18 and adjacent projects would likely increase secondary source habitat but inhibit the development of primary (post-fire) source habitat.

Current livestock grazing in the uplands and along streams is affecting nesting and foraging habitat for Lewis's woodpecker. Cattle may shift plant species composition and abundance through selection of more palatable forage species. Cattle reduce ground cover through trampling or consuming vegetation and decreasing insect availability. Past grazing in stream corridors has also reduced riparian shrub habitat. The conditions of some riparian areas and aspen habitats have been improved by new management practices and restoration activities in recent years, but some areas still lack suitable habitat for Lewis's woodpecker.

The road network in the analysis area (largely a result of past harvest) has impacted snag densities by decreasing habitat due to road construction and increased accessibility of the area to firewood cutting. Public firewood cutting is expected to continue along open roads and all ineffectively closed roads. The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on snag retention, by reducing access for firewood cutting.

Within the cumulative effects boundary, invasive plant treatments, as currently proposed by the Malheur National Forest Site-Specific Invasive Plant Treatment (USDA Forest Service 2015b), would be beneficial to the persistence of native vegetation but would have little to no impacts to the Lewis's woodpecker or its habitat. Cumulative effects when combined with invasive plant treatments would be negligible.

Lewis's Woodpecker Determination

The no action alternative (alternative 1) would have **no impact (NI)** because: with no documented occurrences of Lewis's woodpecker in the planning area and no primary habitat and very little secondary habitat, the lack of treatments would continue to support some secondary habitat only. In the event of a severe wildfire event, primary habitat would be created, yielding a **beneficial impact (BI).**

The proposed action (alternative 2) would have **no impact (NI)** because: In the short-term, current conditions would persist; lack of primary habitat and very little secondary habitat,

although treatments should increase the amount of secondary habitat. In the long-term, treatments would help retain and promote growth and longevity of large trees and would have a **beneficial impact (BI)** on Lewis's woodpecker.

White-Headed Woodpecker

Life History, Habitat, and Distribution

The white-headed woodpecker occurs mainly in open ponderosa pine or mixed conifer forests dominated by ponderosa pine (Marshall et al. 2003, 2006). Landscapes with a mosaic of open habitat for nesting in close proximity to closed-canopy forests that provide foraging habitat seem to be important for white-headed woodpeckers (Mellen-McLean et al. 2013). This species relies on seeds from ponderosa pine cones and insects gleaned off ponderosa pine and mixed conifer trees for its foraging needs.

Large ponderosa pine snags, mean diameters ranging from 25 to 31 inches, are utilized for nesting (Frenzel 2004 in Marshall et al. 2003, 2006). Nest cavities are relatively low to the ground, and can fail as a result of predation from small mammals.

Preferred habitat components include an abundance of mature pines (with large cones and abundant seed production), with relatively open canopy cover (Garrett et al. 1996). Adjacency to burned forest has been documented (Hollenbeck et al. 2011) as preferred for nest site selection, possibly due to the reduction of nest predators. Post-fire habitat has increased significantly on the forest due to the fires of 2014 and 2015, but there is little to none of this habitat existing in the Camp Lick planning area.

Habitat degradation and loss of large diameter ponderosa pine stands continue to be the greatest threats to white-headed woodpeckers. Habitat for white-headed woodpeckers in Oregon and Washington is probably less than 10 percent of what existed prior to European-American settlement (Henjum et al. 1994, in Marshall et al. 2003, 2006). Historically, white-headed woodpeckers were well distributed throughout the Blue Mountains.

A conservation assessment for the white-headed woodpecker (Mellen-McLean et al. 2013) includes the following management considerations for restoration of habitat used by white-headed woodpeckers:

- Retaining and producing large, older ponderosa pine used for foraging
- Retaining and producing large snags used for nesting
- Reducing shrub cover and excess downed wood to reduce numbers of small mammals that prey on nests
- Reducing canopy density to provide interspersion of open and closed pine stands
- Maintaining within stand heterogeneity

Existing Condition

White-headed woodpeckers have been documented throughout their habitat in the planning area, though observations have been less numerous since the 1980s.

The majority of the planning area (approximately 23,900 acres or 60 percent) is the ponderosa pine/Douglas-fir habitat type. The majority of these stands in the planning area are in need of restoration to improve health and vigor and consequently restore primary white-headed woodpecker habitat. Approximately 3,400 acres of this habitat type are proposed for restoration treatments in the planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects if taking no action. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. This alternative would maintain the existing acres of fir-dominated understories and the trend toward fir-dominated habitats. Habitat for the white-headed woodpecker would not be treated and current trends in habitat condition would continue. Habitat for the white-headed woodpecker would remain below the HRV.

In the long-term, there would be a continued decline in habitat for white-headed woodpecker, which prefers open pine-dominated stands. Mortality of large ponderosa pine due to stand densities being above sustainable levels would likely result in loss of foraging habitat for white-headed woodpeckers (live pine) as the overstory pine trees succumb to stress from competition in overstocked stands. Open road density would remain the same, thus firewood cutting (snag removal) is not likely to change, decreasing suitable nesting habitat.

Over time, stand conditions are expected to decline on sites that cannot sustain high densities of conifers. As trees on such sites succumb to insect invasion they would stop producing seeds and sap and would cease to host invertebrates associated with foliage, which are listed as important food resources for this species (Marshall et al. 2003, 2006).

The road network in the planning area (largely a result of past harvest) has impacted snag densities by decreasing habitat due to road construction and increased accessibility of the area to firewood cutting. Public firewood cutting is expected to continue along open roads and all ineffectively closed roads.

This alternative would have no direct effects on the white-headed woodpecker. Indirectly, it could lead to an elevated level of risk of habitat loss in some areas, though in the event of a large-scale wildfire (an elevated risk with this alternative), habitat would likely be created for the white-headed woodpecker.

Lack of treatment in ponderosa pine habitats to reduce stand density and create single-stratum habitats would maintain the current projection of reduced habitat suitability for the white-headed woodpecker.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there would be no direct or indirect effects. However, habitat for the white-headed woodpecker would continue to decline in the absence of management to move the landscape toward the HRV.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The purpose and need of the Camp Lick Project identifies transitioning the drier forest landscapes to more historically present fire resistant tree species, and retaining and developing future old

trees. Therefore, the proposed action would likely promote high quality habitat for white-headed woodpeckers as compared to the no action alternative.

Restoration thinning and prescribed fire to reduce the understory fir component on acres dominated by ponderosa pine and western larch would improve or increase habitat preferred by the white-headed woodpecker. Prescriptions are designed to increase the abundance of more open stand structure (in accordance with the HRV), with ponderosa pine contributing a relatively larger percentage of the species composition.

Additional protected acreage of old growth status ponderosa pine stands would also benefit white-headed woodpeckers.

Loss of snags are likely to result from prescribed burning, the temporary opening of closed roads for log haul, construction of temporary roads, and danger tree removal, reducing potential nesting structures. Prescribed fire has the potential to modify the size, abundance and condition class of snags in treated areas, which could yield both positive and negative results to habitat for this species.

The proposed road decommissioning and closure activities for the Camp Lick Project would have a beneficial effect on snag retention by reducing access for firewood cutting, thus increasing potential nesting and foraging habitat for white-headed woodpecker

Malheur Forest Plan standards for green tree replacements would be met during restoration thinning activities. These replacement trees would be available to meet future snag needs in all harvest units. Forest Plan standards for retention of snags within activity units would also be met (see Camp Lick EA Appendix C – Project Design Criteria).

In the short-term, habitat would remain below the HRV; however, modeling (see Camp Lick Silviculture Report) predicts that by 2045 habitat would be within the HRV for white-headed woodpecker as identified by Powell (1998).

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area and adjacent subwatersheds, to include other proposed projects. All of the activities in Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions have been considered for their cumulative effects on the white-headed woodpecker.

Past timber harvest, thinning, road construction, fire suppression, wildfires, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities as well as other disturbance events.

Past timber harvest targeted and removed many of the most valuable, largest diameter ponderosa pine, reducing potential roosting and nesting habitat. However, the Malheur Forest Plan, as amended in 1995, directs the Malheur National Forest to conduct timber sales in a manner that moves stands towards historical structural stages. Timber sales planned since that time would not have contributed to loss of mature and old growth forest. Proposed commercial harvest within and adjacent to the planning area that may continue include the County Road 18 Healthy Forest Restoration Act Project and the adjacent Magone, Ragged Ruby, and Big Mosquito Projects. All projects propose to reduce hazardous fuels and would retain and develop future old trees.

The County Road 18 Healthy Forest Restoration Act Project adjacent to and overlapping the western Camp Lick Project boundary is ongoing, and will ultimately thin and prescribed burn 2,800 acres within and adjacent to the project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands with little to no component of snags or downed wood from high levels of mechanical treatment and repeated burning. The result is generally open pine stands suitable for white-headed woodpeckers. Cumulatively, the effects of the County Road18, Camp Lick, and adjacent projects would likely increase high-quality habitat for the white-headed woodpecker.

Current livestock grazing in the uplands and along streams may have caused shifts in plant species composition and abundance through selection of more palatable forage species; however, grazing does not alter snag densities or the number of mature pine so there are no anticipated effects as a result of implementation of the proposed action. Therefore, there would be no cumulative effects on white-headed woodpecker as a result of livestock grazing.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on snag retention, by reducing access for firewood cutting.

Within the cumulative effects boundary, invasive plant treatments, as currently proposed by the Malheur National Forest Site-Specific Invasive Plant Treatment, would be beneficial to the persistence of native vegetation but would have little to no impacts to the white-headed woodpecker or its habitat. Cumulative effects when combined with invasive plant treatments would be negligible.

White-headed Woodpecker Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability to the population or species (MIIH)** because: lack of treatments means no additional introduced disturbance that might displace individuals, although the current trend which moves the forest stands further from the HRV and habitat suitable for the white-headed woodpecker would continue. In the event of a severe wildfire event, primary habitat would likely be created, yielding a **beneficial impact (BI).**

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability to the population or species (MIIH)** because: in the short-term, treatment activities might displace some individuals due to physical disturbance. In the long-term, treatments would help retain and promote growth and longevity of large trees in the old forest single-stratum which would have a **beneficial impact (BI)** on white-headed woodpecker.

Townsend's Big-Eared Bat

Life History, Habitat, and Distribution

Townsend's big-eared bat is associated with a wide range of vegetative types, including forests, desert scrub, pinyon-juniper woodlands, and agricultural development (Gruver and Keinath 2006). They forage above and within the canopy (Pierson et al. 1999), often along forest edges and riparian areas (Piaggio 2005), and seem to be well-adapted to a moderately cluttered canopy (Gruver and Keinath 2006). Roost structure is believed to be more important than the local

vegetation (Gruver and Keinath, 2006; Pierson et al. 1999) and the presence of suitable caves or cave-like structures defines the distribution of this species more so than does suitable foraging habitat (Pierson et al. 1999; Gruver and Keinath, 2006). They do not use rock crevices and cracks as roosting sites but instead hang pendulum-like by one or both feet from roost ceilings as listed below (Dalquest 1947; Genter 1986).

Roost habitat includes caves, mines, hollow trees, and man-made structures (Woodruff and Ferguson 2005). Snags and large trees may be important roosts for this species, although maternity colonies and winter hibernacula are usually associated with caves, mines, or buildings (Woodruff and Ferguson 2005).

Townsend's big-eared bats forage in and around foliage at mid and upper canopy levels where they generally capture insects in the air. They seem to prefer foraging along the edge of vegetation in riparian zones and other ecotones[2] (Dobkin et al. 1995; Kunz and Martin 1982). They avoid open areas, and if it is necessary to cross such an area, they drop to within 1 meter of the ground and fly straight and fast across it (Fellers and Pierson 2002). Their diet is comprised almost exclusively of small moths (Lacki et al. 1996; Ross 1967; Whitaker et al. 1977).

In eastern Oregon, ponderosa pine, mixed conifer forest, and riparian-wetland habitats are used by Townsend's big-eared bats.

Existing Condition

Townsend's big-eared bats are documented to occur on the Malheur National Forest, though there are no documented sightings within the Camp Lick planning area. Large trees and snags which may have sufficiently large tree hollows for roosting, and canopied foraging habitat occur within the planning area. There are no known caves or mines which might provide for winter hibernacula.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there are no direct or indirect effects of no action. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition. In the absence of disturbance in the long-term, open pine stands would continue to transition to denser multi-story stands and large snag creation would be expected due to mortality of large ponderosa pine and western larch from moisture stress and competition. Roosting habitat in the form of large hollow trees could increase and foraging would likely not be affected.

In the event of a large-scale fire event (more likely with this alternative) loss of forested landscape would result in a decline in both roosting and foraging habitat.

[2] An ecotone is a region of transition between two biological communities.

Closed roads currently receiving unauthorized use would continue receiving use, resulting in loss of potential roost snags from firewood cutting.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Project design criteria would help retain snags within silvicultural treatment units and during prescribed burning operations, but there could be some loss of large snags during these activities. The proposed action could decrease roosting habitat in the short-term and increase roosting habitat in the long-term, as improved large tree health would eventually result in more large snags with possible roost cavities over time.

The proposed action allows for removal of some trees greater than or equal to 21 inches in diameter and less than 150 years of age in some locations, which could result in the loss of some trees which could become hollow and useful for roosting. Trees targeted for removal would generally be those that affect the survivability of older pine or western larch and the overall ecological sustainability of the stand. This would be expected to be a short- to long-term effect. Conversely, moving stand structure towards the HRV by restoring natural vegetation conditions and fire regimes would improve the sustainability of these habitats for associated wildlife species, and lower the risk of large scale insect infestation and higher severity wildfire. In the long-term, larger and older stand structure would provide snags valuable as roosting habitat.

Although prescribed fire proposed for the Camp Lick Project could potentially consume a small number of smaller snags, it would also be expected to contribute small pulses of additional snag and potential roost habitat, benefiting Townsend's big-eared bat.

The proposed action would move younger stands toward old forest structure, ultimately developing either large snags or large green trees, either of which could develop hollow cavities suitable for the unique roosting requirements of this species in the long-term.

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area and adjacent subwatersheds. All activities in the Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions have been considered for their cumulative effects on Townsend's big-eared bat.

Past timber harvest, thinning, road construction, fire suppression, wildfire, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities as well as other disturbance events.

Past timber harvest targeted and removed many of the largest diameter trees reducing old forest structures (old forest multi-strata and old forest single-stratum) in the Warm Dry biophysical environment. Large green replacement trees removed during this time reduced future snag potential and subsequent large snag densities throughout the planning area.

The County Road 18 Healthy Forest Restoration Act Project adjacent to and overlapping the western Camp Lick Project boundary is ongoing, and will ultimately thin and prescribed burn 2,800 acres within and adjacent to the project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands with little to no component of snags or downed wood from high levels of mechanical treatment and repeated burning. This project could add snag and old forest structure habitat suitable for bats.

Public firewood cutting is expected to continue along open roads and closed roads with unauthorized use and contribute to loss of snags in the planning area.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on snag retention, by reducing access for firewood cutting.

Overall, the combined effects of the Camp Lick Project with the effects of past, present, and reasonably foreseeable future actions would not be expected to adversely affect populations of Townsend's big-eared bat.

Townsend's Big-Eared Bat Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: suitable roosting habitat in the planning area consists solely of large trees (i.e., not caves, mines, or buildings) capable of forming cavities sufficient for this species to hang inside of. With the increase risk of severe wildfire associated with this alternative there is the potential for the loss of both roosting and foraging habitat in the planning area, but very little impact otherwise to this species, as it forages well in a cluttered canopy environment.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: it would likely result in a reduction of some tree roosting habitat in the near to mid-term, while likely improving foraging opportunities in the mid to long-term. With the minimal suitable roosting habitat in the planning area (i.e., not caves, mines, or buildings) the project activities could at most result in a shifting of individuals to other suitable roost or forage areas in or adjacent to the planning area.

Pallid Bat

Life History, Habitat, and Distribution

Habitat for pallid bats in eastern Oregon includes drier shrub/steppe habitat and grasslands, often near rocky outcrops and water. Open ponderosa pine forest with cliff habitat is also used (Ferguson and Azerrad 2004, WildlifeViewer 2016). Day roosts, night roosts, and maternity roosts have different criteria, with maternity roosts needing a higher and more stable ambient temperature. Roosts include rock crevices, caves, cliff overhangs, buildings, bridges, trees and snags (Gervais 2016). Pallid bats typically forage in open, uncluttered habitat with little vegetation at or within a few meters of the ground near suitable roosting sites. They are primarily ground gleaners eating arthropods and insects that are available throughout the season (Gervais 2016). Pallid bats do not use echolocation to locate prey but instead locate their victim by listening for the sounds it produces, particularly walking sounds (Fuzessery et al. 1993).

Pallid bats are metabolically best adapted for roosting at temperatures near 30 degrees Celsius (86 degrees Fahrenheit) (Trune and Slobodchikoff 1976). They tend to change roosts every 1 to 2 days in Oregon (Lewis 1996).

Pallid bats may be found at the same sites with several other bat species, including the two other species addressed in this report (Townsend's big-eared bat and fringed myotis) (Orr 1954).

Existing Condition

There are no documented sightings of pallid bats on the Malheur National Forest, though presence of the species is suspected based on the existence of potentially suitable habitat.

Within the Camp Lick planning area, some roost habitat exists in rock outcrops/crevices, hollow trees, and cavities within ponderosa pine. Foraging habitat within the planning area occurs in open ponderosa pine stands and rocky terrain with grass and juniper.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition. Fire hazard would remain elevated for some stands and a severe fire could produce additional forage area for this species which preys on more open-landscape invertebrates. In the absence of disturbance in the long-term, open pine stands would continue to transition to denser closed stands resulting in loss of foraging area for this species. Closed roads currently receiving unauthorized use would continue receiving use, resulting in loss of roost snags from firewood cutting.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Project design criteria would help retain snags within thinning units and during prescribed fire operations. Prescribed burning may also create both foraging habitat and roosting habitat (if live trees are killed that subsequently yield hollow cavities).

The proposed action would likely increase foraging habitat in the short-term (as canopy is opened up in ponderosa pine stands). Some roosting habitat could be decreased in the short-term, as some large trees which might have become hollow over time are removed.

The proposed action would provide increased diversity in upland shrub habitats because of conifer or juniper removal prescriptions designed to enhance mountain mahogany and bitterbrush

stands. This expected increase in plant diversity would result in an increase in prey diversity and abundance, and an increase in overall foraging habitat.

Increased understory and plant vigor from thinning and prescribed fire would also likely increase insect populations, providing higher quantities of insects and conceivably a more diverse prey base for pallid bats in treated areas across the planning area.

Any roosting habitat which exists in rocky outcroppings would not be impacted.

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area and adjacent subwatersheds. All activities in the Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions have been considered for their cumulative effects on pallid bats.

Past timber harvest, thinning, road construction, fire suppression, wildfire, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities and other disturbance events.

Past timber harvest targeted and removed many of the largest diameter trees reducing old forest structures (old forest multi-strata and old forest single-stratum) in the Warm Dry biophysical environment. Large green replacement trees removed during this time reduced future snag potential and subsequent large snag densities throughout the planning area.

The County Road 18 Healthy Forest Restoration Act Project adjacent to and overlapping the western Camp Lick Project boundary is ongoing, and will ultimately thin and prescribed burn approximately 2,800 acres within and adjacent to the Camp Lick project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands with little to no component of snags or downed wood from high levels of mechanical treatment and repeated burning. This project could add cumulative effects by increasing large snag habitat potentially suitable for pallid bat roost sites, while likely improving foraging habitat.

In the long-term, larger and older stand structure would provide snags valuable as roosting habitat.

Public firewood cutting is expected to continue along open roads and closed roads receiving unauthorized use, contributing to loss of snags in the planning area.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on snag retention, by reducing access for firewood cutting.

Overall, the combined effects of the Camp Lick Project with the effects of past, present, and reasonably foreseeable future actions would not be expected to adversely affect populations of pallid bats.

Pallid Bat Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species**

(MIIH) because: it would likely result in a reduction of foraging habitat over time, displacing pallid bats to more suitable habitat.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: there could be a degree of displacement or disturbance for pallid bats during project implementation; some trees providing roosting habitat could be removed while the enhancement of foraging areas could provide foraging benefit. Treatments could potentially change current pallid bat distribution and use of the affected habitat.

Fringed Myotis (bat)

Life History, Habitat, and Distribution

Fringed myotis are mostly found in dry habitats where open areas (e.g., grasslands and deserts) are interspersed with mature forests (usually ponderosa pine, pinyon-juniper, or oak), creating complex mosaics with ample edges and abundant snags (Keinath 2004). The best roosting habitat contains an abundance of large snags (minimum 12 inches in diameter) and low canopy cover (Keinath 2004). Foraging habitat includes a heterogeneous mix of conifer forest, including ponderosa pine, Douglas-fir, and shrubland/grassland, with ample water sources and an abundance of insect prey (Keinath 2004). In Oregon, moths and spiders constitute the majority of their diet (Whitaker et al. 1977). They are highly maneuverable flyers and forage close to the vegetative canopy or about the face of small cliffs.

Existing Condition

While not documented in the planning area, this bat is suspected to occur on the Malheur National Forest due to the presence of potentially suitable roosting and foraging habitat.

Within the planning area some roosting habitat exists in the form of rock crevices and snags, although this species tends to roost in more open areas of caves and mines (of which there are none in the planning area) and not in hidden crevices.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there are no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition. In the absence of disturbance in the long-term, open pine stands could continue to transition to denser multi-story stands.

In the event of a large-scale fire event (more likely with this alternative) loss of forested landscape would result in a decline in both roosting and foraging habitat.

Closed roads currently receiving unauthorized use would likely continue receiving use, resulting in loss of roost snags from firewood cutting.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Some loss of existing large snags is possible during thinning and burning operations, however, project design criteria would help retain snags. The proposed action could decrease roosting habitat in the short-term and increase roosting habitat in the long-term, as improved large tree health would eventually result in more large snags with possible roost cavities over time.

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area and adjacent subwatersheds. All activities in Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Activites have been considered for their cumulative effects on fringed myotis.

Past timber harvest, thinning, road construction, fire suppression, wildfire, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities as well as other disturbance events.

Past timber harvest targeted and removed many of the largest diameter trees reducing old forest structures (old forest multi-strata and old forest single-stratum) in the Warm Dry biophysical environment. Large green replacement trees removed during this time reduced future snag potential and subsequent large snag densities throughout the planning area.

The County Road 18 Healthy Forest Restoration Act Project adjacent to and overlapping the western Camp Lick Project boundary is ongoing, and will ultimately thin and prescribed burn approximately 2,800 acres within and adjacent to the project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands with little to no component of snags or downed wood from high levels of mechanical treatment and repeated burning. This project could decrease roosting habitat in the short-term due to potential large snag loss during burning operations and increase roosting habitat in the long-term, as improved large tree health would eventually result in more large snags with possible roost cavities over time

Public firewood cutting is expected to continue along open roads and closed roads receiving unauthorized use and contribute to loss of snags in the planning area.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on snag retention, by reducing access for firewood cutting.

Overall, the combined effects of the Camp Lick Project with the effects of past, present, and reasonably foreseeable future actions would not be expected to adversely affect populations of fringed myotis.

Fringed Myotis Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: suitable roosting habitat in the planning area consists solely of large snags (i.e., not caves, mines, or buildings). With the increase to severe fire risk associated with this alternative there is the potential for the loss of both roosting and foraging habitat in the planning area, but very little impact to this species otherwise.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: it would likely result in a reduction of some tree roosting habitat in the near to mid-term and likely have little to no effect on foraging opportunities. With the minimal suitable roosting habitat in the planning area (i.e., not caves, mines, or buildings) the project activities could at most result in a shifting of individuals to other suitable roost/forage areas in or adjacent to the planning area.

Johnson's Hairstreak

Life History, Habitat, and Distribution

Johnson's hairstreak butterflies range from southwestern British Columbia, south through Washington, Oregon, and western Idaho to central California. Scattered sightings in Oregon occur in the Coast Range, the Siskiyou Mountains, the Blue Mountains, and the Wallowas.

These butterflies spend the majority of their time in the top of the forest canopy, so are infrequently seen. Adults feed on nectar of flowers from numerous genera including Actostophylos, Ceanothus, Cornus, Fragaria, Rorrippa, and Spraguea. In northern parts of the range, or at higher altitudes, adults fly from late May through mid-July. At lower elevations, adults fly from mid-May to early September, with peaks occurring in May and August (Pyle 2002 in Andrews 2010). In northeast Oregon, Johnson's hairstreak larvae have been documented feeding on western dwarf mistletoe (*Arceuthobium campylopodum*) on ponderosa pine. Other dwarf mistletoes occurring in the Blue Mountains include dwarf mistletoes on lodgepole pine, western larch, and Douglas-fir. While these other dwarf mistletoes are possible hosts, use of these species by Johnson's hairstreak larvae have not been confirmed (Spiegel 2014). Dwarf mistletoe does not occur on grand or white fir in the Blue Mountains (Spiegel 2014).

Hessburg et al. (1999) investigated changes from historical to current insect and disease vulnerabilities of selected subbasins within the Columbia River Basin, including subbasins in the Blue Mountains ecological reporting unit, which covers the area reported to host Johnson's hairstreak (Spiegel 2014). The Hessburg analysis reveals the slow decline of dwarf mistletoe-infected ponderosa pine through the loss of much of the pine overstory and the encroachment of shade-tolerant species into once pine-dominated stands (Spiegel 2014). Additionally, the analysis determined that the maintenance of healthy populations of Johnson's hairstreak requires the maintenance of ponderosa pine and possibly western larch (Spiegel 2014).

Existing Condition

No documented occurrences of Johnson's hairstreak have been recorded within the planning area; however, suitable habitat does exist. Dwarf mistletoe supporting caterpillar larvae could occur on ponderosa pine forested stands within the planning area. The ponderosa pine plant associations (as well as Douglas-fir plant associations, and drier grand fir plant associations where ponderosa pine is often common along with the fir) were used to determine potential habitat for Johnson's

hairstreak. Approximately 27,722 acres of potential habitat is found within the planning area. Ponderosa pine, drier grand fir, and Douglas-fir plant associations comprise 4,465 acres, 15,129 acres, and 8,128 acres, respectively, of this potential habitat. Nectar plants used by adult butterflies are generally widespread and common within the planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed for the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition, and provide for the existing species diversity, density, and distribution. Over the long-term, increased stand densities and related stress would result in a greater incidence of insects and disease in the planning area. Dwarf mistletoe, one of the diseases that increases with increasing stand densities, would increase where present within the planning area. In the event of a wildfire, however, uncharacteristically intense burns could effectively sanitize stands of dwarf mistletoe. When all trees are killed, reestablishment of dwarf mistletoe in stands could take decades, as seeds are reintroduced by birds and the mistletoe spreads slowly (Spiegel 2014).

Cumulative Effects

There would be no direct additive effects as a result of the no action alternative, since there are no direct or indirect effects. However, the absence of habitat management to reduce severe risk would compound the risk already present from years of fire suppression. A severe fire would negatively impact habitat for this species.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action was developed to meet the purpose and need of the Camp Lick Project, which includes: transitioning the drier forest landscapes to more historically present fire resistant tree species (ponderosa pine and western larch); and restoring the ecological structure and function of forest ecosystems within the planning area to improve forest health and increase resilience to drought, fire, insects, diseases, and other disturbances. Additionally, Malheur Forest Plan standards include: 1) avoid the creation of vegetation conditions which could promote insect and disease infestations (USDA Forest Service 1990, Forest-wide standard 187, page IV-45); and, 2) apply integrated pest management principles to minimize the impacts of the mountain pine beetle, western spruce budworm, tussock moth, and other insect and disease infestations to the extent necessary to achieve the overall goals and objectives (USDA Forest Service 1990, Forest-wide standard 186, page IV-45).

The proposed action would utilize silvicultural treatments combined with prescribed burning to reinstate appropriate stand densities designed to achieve the overall goals and objectives of the Malheur Forest Plan and meet the purpose and need of the Camp Lick Project.

Maintaining, reestablishing, or enhancing ponderosa pine in areas where it was historically dominate would benefit Johnson's hairstreak in the long-term. In ponderosa pine, and drier Douglas-fir and grand fir plant associations, restoration thinning would result in more open stands favoring ponderosa pine. Trees targeted for removal on drier, more southerly exposure sites would generally be grand fir. Consequently, host ponderosa pine and western dwarf mistletoe are anticipated to be retained on the landscape.

Removal of some mistletoe-infected trees potentially providing habitat for Johnson's hairstreak would likely occur. This would result in a direct reduction of potential habitat, and may impact Johnson's hairstreak individuals, but would not impact the ability of the species to survive in the Blue Mountains (Spiegel 2014). Many larger, older trees (over 150 years old) would be retained. Skips within units and no treatment units would also retain ponderosa pine trees that could potentially host dwarf mistletoe. Further, project design criteria would leave an adequate number of mistletoe infested trees for wildlife habitat.

Because larvae feed on all exposed plant parts of dwarf mistletoe and can be found on host leaves April through October, prescribed burning may impact Johnson's hairstreak in the short-term. Heat and smoke from prescribed burning operations may affect larvae, depending on the intensity of the burn and how the smoke and heat are moved by wind. The butterflies themselves would be mobile and able to shift from an area being underburned. Not all areas within the planning area would be burned at any given time. Burn blocks would not be contiguous, providing unburned refugia where butterflies and caterpillar larvae would be expected to persist. While short-term impacts could occur, prescribed burning that reduces fuels, and future fire intensity, would maintain ponderosa pine on the landscape and benefit potential Johnson's hairstreak habitat in the long-term.

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area. All of the activities in the Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions have been considered for their cumulative effects on Johnson's hairstreak butterfly.

Past timber harvest, thinning, road construction, fire suppression, wildfire, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities as well as other disturbance events.

The County Road 18 Healthy Forest Restoration Act Project adjacent to and overlapping the western Camp Lick Project boundary is ongoing, and will ultimately thin and prescribed burn approximately 2,800 acres within and adjacent to the project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands suitable for Johnson's hairstreak, although some mistletoe could be reduced.

Johnson's Hairstreak Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: with the increase to severe fire risk associated with this alternative there is the potential for the loss of habitat in the planning area, but very little impact otherwise to this species.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** in the short-term because the harvest of mistletoe-infected trees would occur and heat and smoke from prescribed burning could affect larvae and adult individuals. In the long-term, Alternative 2 would maintain healthy levels of large ponderosa pine and mistletoe and therefore have a **beneficial impact (BI)** on the Johnson's hairstreak.

Silver-Bordered Fritillary

Life History, Habitat, and Distribution

Habitat for this butterfly species consists of open wet meadows, bogs, and marshes. Caterpillar host plants consist of violets, including pioneer violet (*Viola glabella*) and northern bog violet (*V. nephrophylla*). Adult nectar plants are composite flowers including goldenrod (*Solidago* spp.) and black-eyed Susan (*Rudbeckia* spp.). Emergence and flight of adults begins in June and continues through July, with a second generation flight occurring in August through September (Miller and Hammond 2007).

The silver-bordered fritillary is dependent upon the maintenance of wet meadow habitat and its associated food plants. Incision of creeks and subsequent draining and drying out of meadow habitat, loss of native plant species due to overgrazing or trampling by domestic cattle, loss of meadow habitat due to conifer encroachment, and invasion of non-native grasses and other invasive plant species remain the dominant threats to habitat.

Existing Condition

Two primary colonies of the silver-bordered fritillary occur in Oregon; one at Big Summit Prairie on the Ochoco National Forest and one in the Strawberry Mountains on the Malheur National Forest (Miller and Hammond 2007). Other potential habitat on the Forest exists as moist and wet meadows. Within the planning area approximately 6,300 acres of riparian and/or moist meadow habitat is present. No silver-bordered fritillaries have been documented within the planning area, and no formal surveys for the butterfly have been conducted.

Drying of moist to wet meadows has already occurred in the planning area resulting in conifer succession and loss of potentially suitable habitat.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environment outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed for the Camp Lick Project would occur. In the short- to mid-term, the suitable meadow habitat that currently exists within the planning area would be expected to persist in its current condition. Effects would be primarily from ongoing cattle grazing. Open road densities would remain about the same, potentially resulting in invasive plant establishment from seeds brought in by vehicles. The continued use of off-road vehicles has the potential to degrade meadow habitat both from compaction and rutting as well as introduction of invasive plants.

In the mid to long-term, suitable meadow habitat acres would continue to decline due to the continued drying out of moist to wet meadows combined with conifer succession.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects. However, habitat for the silver-bordered fritillary would continue to decline in the absence of management to move the landscape toward the HRV.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The effects of the proposed action (alternative 2) for silver-bordered fritillary are expected to be beneficial in the long-term. Moist and wet meadow habitat restoration in the form of conifer removal and prescribed fire would restore these habitats in the mid to long-term, although project activities could result in short-term disturbance of habitat during implementation.

Open roads have the potential to introduce invasive plants to meadow habitats, degrading native plant communities. Road closures after project implementation and project design criteria to reduce the spread of invasive plant species by requiring cleaning of equipment prior to entry to the project area would offset road effects, but would not alleviate off-road travel impacts. Meadow areas are protected from vehicle traffic and road construction during project implementation (see Camp Lick EA Appendix C – Project Design Criteria).

Proposed road closures and decommissioning near sensitive meadow habitats would have a beneficial effect in the reduction of potential invasive plant establishment. Spring prescribed burning would have limited potential for burning in wet meadows. Fall prescribed burning would generally occur late enough in the season to avoid affecting nectar plants important to adult butterflies. Riparian restoration that would influence adjacent meadow habitat would likely benefit silver-bordered fritillary.

Cumulative Effects

The area considered for cumulative effects is the Camp Lick planning area. All of the activities listed in the Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions were considered for their cumulative effects on silver-bordered fritillary or their habitat.

Unregulated livestock grazing earlier in the last century may have affected grass, forb, and sedge composition within meadow habitat in the planning area. Introduction of non-native grasses and invasive plant species may have also affected meadow habitat. In the past several decades, with changes in grazing management, habitat has improved. Cattle grazing is ongoing within the planning area. It is expected that at current use levels there would be a continued upward trend in healthier riparian and associated moist to wet meadow habitat, though overall acreage of these habitats would further decline as conifer encroachment continues.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off-road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on native plant communities important as silver-bordered fritillary habitat, due to reduction in invasive plant establishment from seeds carried in on vehicles.

Invasive weed treatments, as currently authorized by the Malheur National Forest Site-Specific Invasive Plant Treatment (USDA Forest Service 2015b), would be beneficial to the persistence of native vegetation and thus would have a beneficial impact to the habitat of the silver-bordered fritillary.

Overall, the combined effects of the Camp Lick Project proposed action with the effects of past, present, and reasonably foreseeable future actions would not be expected to adversely affect populations of silver-bordered fritillary and would likely have a beneficial impact.

Silver-bordered Fritillary Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: with the increasing acreage loss of these habitats due to continued conifer encroachment associated with this alternative there is the potential for the loss of habitat in the planning area, but very little impact otherwise to this species.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** in the short-term because of physical disturbance during conifer removal which could disturb individuals and trample native plant species. Prescribed burning would occur in the fall and would not affect nectar plants for adult butterflies. In the long-term, alternative 2 would restore moist or wet meadow habitat and therefore have a **beneficial impact (BI)** on the silver-bordered fritillary.

The determination for silver-bordered fritillary and its habitat would be **beneficial impact (BI)**. The silver-bordered fritillary is not known to occur within the planning area although habitat is present. The proposed action alternative would have beneficial effects to moist and wet meadow habitat because of improvement and increase in acres of said habitat.

Western Bumblebee

Life History, Habitat, and Distribution

Bumblebees inhabit a wide variety of natural, agricultural, urban, and rural habitats, although species richness tends to peak in flower-rich meadows of forests and subalpine zones. Relatively recent changes in land usage have compromised this habitat, putting pressure on bumblebee populations. In addition to habitat loss and fragmentation, overgrazing, climate change, pesticide use, competition with honey bees, and the introduction of nonnative pathogens are all thought to contribute to the population decline of all North American bumblebees. It is known to feed on sweet clover, rabbit brush, thistle, buckwheat, and clover (Koch et al. 2011).

The western bumblebee is rare throughout much of its range and is in decline. Historically it was found from the Pacific coast to the Colorado Rocky Mountains, but has seen severe population decline west of the Sierra-Cascade Crest. In Oregon, this species has been documented on Deschutes, Fremont-Winema, Malheur, Mt. Hood, Ochoco, Rogue River-Siskiyou, Siuslaw, Umatilla, Umpqua, Willamette, and Wallowa-Whitman national forests, and Bureau of Land Management land in the Burns, Lakeview, and Medford Districts, but many of these documented sites are considered historic and the status of the western bumblebee in many of these sites is currently unknown.

Existing Condition

Surveys have not been conducted for this species on the Malheur National Forest, however the presence of meadows indicates potential habitat.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects from the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed for the Camp Lick Project would occur. In the short- to mid-term, the suitable meadow habitat that currently exists within the planning area would be expected to persist in its current condition. Effects would be primarily from ongoing cattle grazing. Open road densities would remain about the same, potentially resulting in invasive plant establishment from seeds brought in by vehicles. The continued use of off-road vehicles has the potential to degrade meadow habitat both from compaction and rutting as well as introduction of invasive plants.

Under this alternative, the risk of uncharacteristic wildfire, disease, or insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Large stand replacing fires do have the potential to reduce available habitat in the short term for this species, though fire has been shown to be beneficial for pollinators (Panzer 2002). The impact to habitat would depend on the size and severity of the disturbance. Without active management, conifer encroachment into meadows would reduce the amount of habitat for bumblebees.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects. However, habitat for the western bumblebee would continue to decline in the absence of management to move the landscape toward the HRV.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The effects of the proposed action (alternative 2) for western bumblebee are expected to be beneficial in the long-term. Meadow habitat restoration in the form of conifer removal and prescribed burning would restore these habitats in the mid to long-term, though project activities could result in short-term disturbance of habitat during implementation.

Open roads have the potential to introduce invasive plants to meadow habitat, degrading native plant communities. Road closures after project implementation and project design criteria to reduce the spread of invasive plant species would offset road effects. Meadow areas would be protected from vehicle traffic and road construction during project implementation (see Camp Lick EA Appendix C – Project Design Criteria).

Spring prescribed burning would have limited potential for burning in wet meadows. Fall prescribed burning would generally occur late enough in the season to avoid affecting nectar

plants important to adult bumblebees. Riparian and upland watershed restoration treatments that would influence adjacent meadow habitat would likely benefit western bumblebees.

Invasive plant species that affect native vegetation may be spread by vehicles. Project design criteria requiring cleaning of equipment would limit potential additive invasive plant establishment within units or along haul routes during project work.

Fuels treatments would reduce the risk of stand replacing fire and encourage the return of low severity fire that can enhance meadow habitat and forb species.

Cumulative Effects

All of the activities listed in the Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions were considered for their cumulative effects on Western bumblebees or their habitat.

Unregulated livestock grazing earlier in the last century may have affected grass, forb, and sedge composition within meadow habitat in the planning area. Introduction of non-native grasses and invasive plant species may have also affected meadow habitat. In the past several decades, with changes in grazing management, habitat has improved. Cattle grazing is ongoing within the planning area. It is expected that with current use levels and management there would be a continued upward trend in healthier riparian and associated moist to wet meadow habitat.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off road vehicles (with the exception of accessing dispersed camping sites from open roads), which would ultimately have a beneficial cumulative effect on native plant communities important as western bumblebee habitat, due to reduction in invasive plant establishment from material carried in on vehicles. In addition, proposed road closures and decommissioning near sensitive meadow habitats would have a beneficial cumulative effect in the reduction of potential invasive plant establishment.

Invasive plant treatments, as currently authorized by the Malheur National Forest Site-Specific Invasive Plant Treatment (USDA Forest Service 2015b), would be beneficial to the persistence of native vegetation and thus would have a beneficial impact to the habitat of the western bumblebee.

Overall, the combined effects of the Camp Lick Project proposed action with the effects of past, present, and reasonably foreseeable future actions would not be expected to adversely affect populations of western bumblebee and would likely have a beneficial impact.

Western Bumblebee Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** because: with the increasing acreage loss of these habitats due to continued conifer encroachment associated with this alternative, there is the potential for the loss of habitat in the planning area, but very little impact otherwise to this species.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species (MIIH)** in the short-term because of physical disturbance during conifer removal which could disturb individuals and trample native plant species. Prescribed burning occurring in the spring or

fall would not affect nectar plants for adult butterflies. In the long-term, alternative 2 would restore meadow habitat and therefore have a **beneficial impact (BI)** on the western bumblebee.

The determination for western bumblebee and its habitat would be **beneficial impact (BI)**. The western bumblebee is not known to occur within the planning area although habitat is present. The proposed action alternative would have beneficial effects to meadow habitat because of improvement and increase in acres of said habitat.

Compliance with Forest Plan and Other Relevant Laws, Regulations, and Policies

Proposed, Threatened, Endangered and Sensitive Species

Forest Service Manual 2672.4 requires the Forest Service to review all of its planned, funded, executed, or permitted programs and activities for possible effects on proposed, endangered, threatened, and sensitive (PETS) species. The U.S. Fish and Wildlife Service provided a list of PETS that potentially occur in Grant County for consideration in this analysis. There is no designated or proposed critical habitat for threatened or endangered terrestrial wildlife species in the affected subwatersheds.

This analysis used the 2015 Regional Forester's special status species list, US Fish and Wildlife Service listing information, and Malheur Forest Plan standards (USDA Forest Service 1990, Forest-wide standards 62-67, pages IV-32 to IV-33).

Anticipated changes in habitat and the associated communities were predicted under the activities considered and associated effects to wildlife and wildlife habitat evaluated. Site-specific data was used to assess specific project level changes in habitat and ensure that unique vegetative and physical habitat conditions were maintained and protected.

Based on the analysis methods described above, the proposed action is consistent with the Endangered Species Act.

The Endangered Species Act addresses actions taken and by definition the no action alternative would not directly modify habitat. No designated or proposed critical habitat occurs in the affected subwatersheds and thus the no action alternative would be consistent with the Endangered Species Act.

Management Indicator Species

The National Forest Management Act (NFMA) regulations require that: "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired nonnative vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to ensure continued existence in the planning area. In order to ensure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area" (36 CFR 219.19).

All vertebrate species in the Pacific Northwest Region (Oregon and Washington) were assessed with regard to population numbers and/or distribution that could result in either Forest or Regional extinction during the Forest Plan period for the next five decades. Management requirements were developed for species whose viability would be at risk if no management actions were taken to protect their habitats. The focus was on habitats that were likely to be

limiting in the future (in short supply either in total acreage or in distribution) and on identification of particular species that could be used to represent all species dependent on those habitats (USDA Forest Service 1990; Appendix G). These representative species are included in the list of management indicator species (MIS) outlined in the Malheur Forest Plan (USDA Forest Service 1990, page IV-32).

Table 4 lists the terrestrial species selected as MIS in the Malheur Forest Plan. All 12 species have potential habitat present or have been documented in the analysis area. Species will be addressed under the habitat group they represent.

Table 4. Management indicator species identified in the Malheur Forest Plan

Species	Habitat group	Habitat description	Habitat present in analysis area	Species present in analysis area
Rocky Mountain elk	Big game habitat - public hunting interest	A mosaic of cover and forage areas with adequate water	Yes	Documented
Lewis's woodpecker	Dead and defective wood habitat	Open, late-seral ponderosa pine forest, post-fire habitat, cottonwood	Marginal (secondary)	Not suspected
Red-naped sapsucker*	Dead and defective wood habitat	Riparian habitat with aspen, cottonwood	Marginal (secondary)	Not suspected
Williamson's sapsucker	Dead and defective wood habitat	Open, late-seral ponderosa pine and mixed conifer forest, aspen and cottonwood	Yes	Documented
Downy woodpecker	Dead and defective wood habitat	Riparian habitat with aspen, cottonwood	Yes	Documented
Hairy woodpecker	Dead and defective wood habitat	Coniferous forests from low to mid elevation, post-fire habitat	Yes	Documented
Black-backed woodpecker	Dead and defective wood habitat	Post-fire habitat, beetle killed forest, conifer forests from subalpine to low elevations	Yes (secondary)	Documented
Northern flicker	Dead and defective wood habitat	Forest habitat generalist	Yes	Documented
Pileated woodpecker	Old growth; dead and defective wood habitat	Closed canopy, late-seral subalpine, montane and lower montane forests	Yes	Documented
American pine marten	Old growth	Closed canopy, late-seral subalpine and montane forests	Yes	Documented
Three-toed woodpecker	Old growth lodgepole; dead and defective wood habitat	Subalpine and montane forests, lodgepole pine, post-fire habitat	Yes (secondary)	Suspected

Species	Habitat group	Habitat description	Habitat present in analysis area	Species present in analysis area
White-headed woodpecker	Dead and defective wood habitat, Old Forest Single Strata (OFSS)	Open, late-seral forests with ponderosa pine, near post-fire habitat	Yes	Documented

*Current taxonomy – replaces yellow-bellied and red-breasted sapsucker listed in the Malheur Forest Plan.

Viability of MIS is being assessed using the historical range of variability (HRV) concept, which compares current amounts and distribution of habitat to historical conditions (Wisdom et al. 2000; Suring et al. 2011). Scientists assume that species are more likely to persist into the future under the conditions that remain most similar to the conditions that they persisted in during the past (Landres et al. 1999). By managing habitat within the HRV, it is assumed that adequate habitat would be provided because species survived at those habitat levels in the past. Thus, if current habitats are managed within the HRV, population viability is likely to be maintained for those species that remain, by providing quality habitat. The further current habitat conditions are from the HRV, the more likely it is that population viability would be compromised

The HRV for dead wood is informed by the decayed wood advisor (DecAID) tool, using unharvested vegetation plots for the Blue Mountains only (Malheur, Ochoco, Umatilla, and Wallowa-Whitman National Forests).

Rocky Mountain Elk/Big Game Habitat

Rocky Mountain elk were selected as a management indicator species (MIS) for the Malheur National Forest due to a strong public hunting interest.

One of the wildlife issues of most concern to the public deals with elk habitat for elk hunting opportunities. Habitat quality for big game populations is determined by cover quality, size and spacing, and by forage and road density (disturbance) factors. The Forest activity that most affects the management actions of the Oregon Department of Fish and Wildlife (ODFW) to meet its population objectives is the control of access for hunters using motorized vehicles (USDA Forest Service 1990, page III-7).

Life History, Habitat, and Distribution

The original elk on the Malheur National Forest came from the native Trout Meadows herd on the Wallowa-Whitman National Forest. In 1921, a few elk were found on the Malheur National Forest. They increased slowly in numbers from natural reproduction and drift to approximately 220 by 1935. By 1944, the number on the Forest had jumped to an estimated 2,200 head. The first hunting season for Malheur National Forest elk was in November 1938 (Miller H.D. 1944).

The Malheur Forest Plan defines elk and deer habitat by four broad categories based on vegetative conditions: satisfactory cover, marginal cover, hiding cover, and forage. These categories generally reflect the gradation of forest vegetation from late structural stages to early structural stages. A mosaic of cover and forage areas with adequate water is preferred. Definitions follow:

- Forage areas are all areas that do not meet the definition of satisfactory or marginal cover. Forage consists of all woody and non-woody plants available as a food source. In general, elk prefer forage dominated by grasses.

- Satisfactory cover is a stand of coniferous trees 40 feet tall, or taller, with an average canopy closure greater than or equal to 50 percent for ponderosa pine and 60 percent for mixed conifer. Satisfactory cover must be at least 30 acres in size and 600 feet wide except where smaller acreage blocks of 10-30 acres are known to provide adequate habitat and the larger block size is not achievable. Satisfactory cover is considered superior to marginal cover.
- Marginal cover is a stand of coniferous trees 10 feet tall, or taller, with an average canopy closure greater than or equal to 40 percent. As with satisfactory cover, marginal cover must be at least 30 acres in size and 600 feet wide except where smaller acreage blocks of 10-30 acres are known to provide adequate habitat and he larger block size is not achievable. Marginal cover and satisfactory cover are sometimes referred to as thermal cover. Often, marginal cover also provides suitable hiding cover.
- Hiding cover, also referred to as security cover, is vegetative cover that hides at least 90 percent of an adult elk at 200 feet. Hiding cover provides a visual barrier between big game animals and potential predators or sources of disturbance, and is especially important during hunting season when big game alter their travel patterns to avoid humans.

Big game management on the Malheur National Forest is a cooperative effort between the Forest Service and ODFW. The Forest Service manages habitat while ODFW manages big game populations. The Camp Lick planning area occurs within the Northside Big Game Management Unit, which is currently about 700 elk above the management objective for the population in that management unit.

Environmental Consequences

Methodology

The Malheur Forest Plan directs that big-game habitats will be managed to maintain deer and elk populations at approximately the State's population management objective levels. In order to balance cover quality, cover spacing, forage, and security (open road densities) the Malheur Forest Plan directs the application of the elk habitat effectiveness model (Thomas et al. 1988) combined with cover standards and road management techniques (USDA Forest Service 1990, page III-8). Minimum standards for habitat effectiveness index (HEI) and road densities are designated for both summer range (USDA Forest Service 1990, pages IV–27 to IV–29) and winter range (pages IV–69 to IV–73).

Thomas et al. (1988) developed the HEI model for estimating elk habitat effectiveness on the landscape. The existing condition and the effects analysis, by alternative, for elk habitat effectiveness were evaluated using the HEI model, marginal and satisfactory cover percentages, and open road densities. Current open road densities were calculated using the Forest's access travel management database. Values were estimated by winter range and summer range in the three subwatersheds which comprise the planning area (Upper Camp Creek, Lower Camp Creek, and Lick Creek).

For analysis, the planning area was divided into winter range and summer range in the three subwatersheds (see Figure 2).

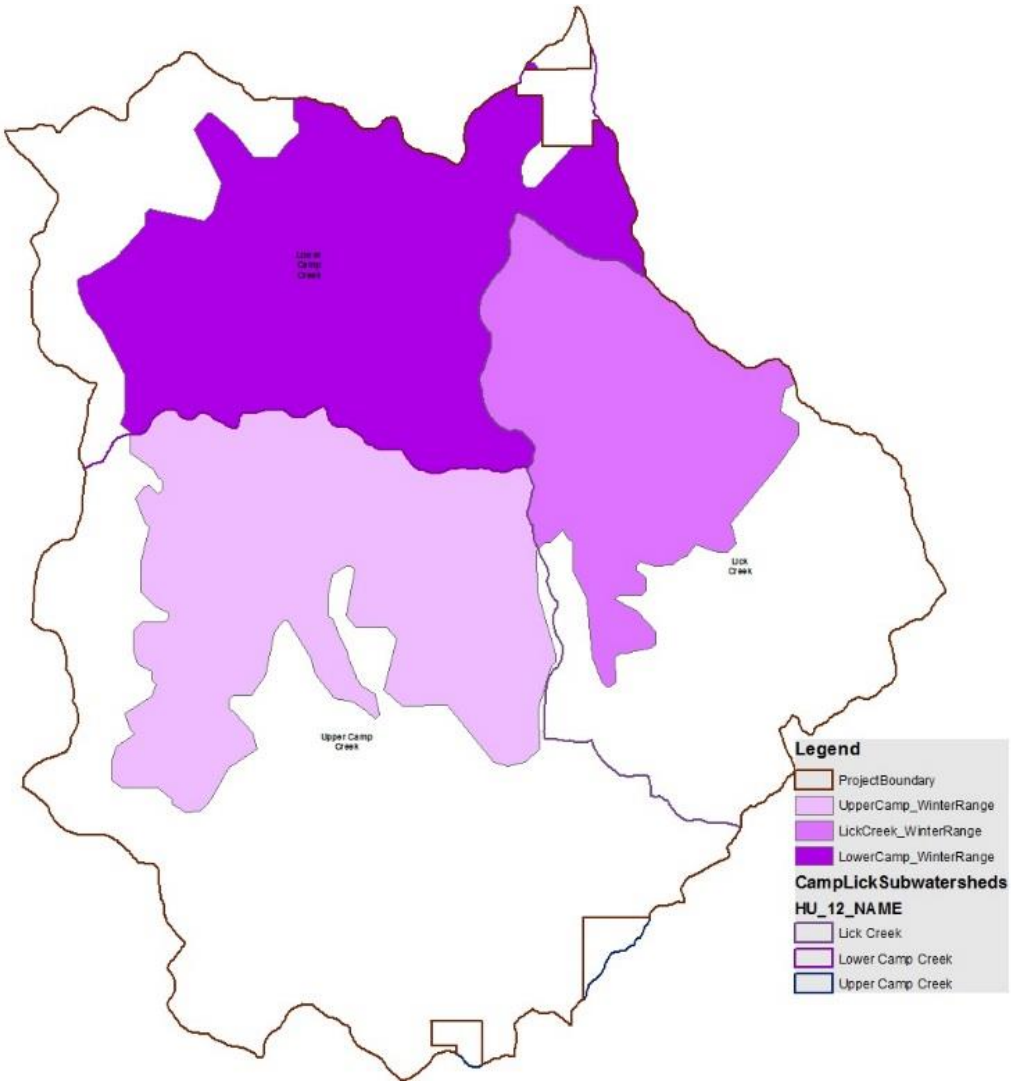


Figure 2. Lower Camp, Upper Camp, and Lick Creek subwatersheds showing breakout of winter and summer range areas (non-colored areas are summer range for each subwatershed)

The winter range management areas are intended to be updated via consultation with ODFW (USDA Forest Service 1990, page IV-71). This analysis was done with the result that winter range acres in Camp Lick, as defined in the Forest Plan, encompass 19,888 acres spanning portions of all three subwatersheds in the planning area. Winter range acres in Camp Lick as defined by ODFW encompasses 406 acres, confined to the Lower Camp subwatershed. Adopting the ODFW winter range boundaries would reclassify 19,482 acres from winter range to summer range, affecting all three subwatersheds. The decision was made not to alter boundaries at this time (see Camp Lick EA chapter 2 – Alternatives Considered but Eliminated from Detailed Study).

Malheur Forest Plan HEI standards are different for summer range and winter range. Table 5 displays the existing HEI values in the Camp Lick planning area. In summer range (which is defined as all area that is not winter range), forage is not considered a limiting factor, therefore a forage value is not used in calculations.

Table 5. Existing habitat effectiveness index values, cover percentages, and open road densities for the three subwatersheds.

Summer Range (non-MA4a)

Subwatershed	HE_c	HE_s	HE_r	HE_{src}	Percent S	Percent M	Percent total cover	Open road density miles/mile^2
Malheur Forest Plan Standard	*0.3*	*0.3*	*0.4*	*0.4*	*12*	*5*	*20*	*3.2**
Upper Camp Creek	0.86	0.45	0.34	0.51	63.7	24.3	87.9	**3.55**
Lower Camp Creek	0.79	0.47	0.42	0.53	53.1	37.8	91.0	2.65
Lick Creek	0.84	0.46	0.45	0.54	57.0	27.6	84.6	2.34

Winter Range MA-4a

Subwatershed	HE_c	HE_s	HE_f	HE_r	HE_{srfc}	Percent S	Percent M	Percent total cover	Open road density miles/mile^2
Malheur Forest Plan Standard	*0.4*	*0.3*	*0.4*	*0.5*	*0.5*	*10*	*10*	*25*	*2.2**
Upper Camp Creek	0.79	0.5	0.5	0.3	0.5	51.4	37.5	88.9	**3.9**
Lower Camp Creek	0.78	0.52	0.5	0.41	.054	47.6	38.2	85.8	**2.77**
Lick Creek	0.85	0.57	0.5	0.43	0.57	55.9	24.5	80.4	**2.62**

*Desired open road density based on Malheur Forest Plan Record of Decision for Summer range is 1.5 miles/mile^2.

*Desired open road density based on Malheur Forest Plan Record of Decision for Winter range is 1.0 miles/mile^2.

HE_c = habitat effectiveness derived from the quality of cover

HE_s = habitat effectiveness derived from the size and spacing of cover

HE_f = habitat effectiveness derived from the quantity and quality of forage; HE_f is not used in summer range calculations and a forage value is not available for winter range so a neutral value of 0.5 is used.

HE_r = habitat effectiveness derived from the density of roads open to vehicular traffic

HE_{srfc} = habitat-effectiveness index, allowing for the interaction of HE_s, He_r, HE_f, and HE_c $(HE_s \times HE_r \times HE_f \times HE_c)^{1/N}$

HE_{src} = habitat-effectiveness index, allowing for the interaction of HE_s, He_r, and HE_c $(HE_s \times HE_r \times HE_c)^{1/N}$

1/N = Nth root of the product taken to obtain the geometric mean, which reflects the compensatory interaction of the N factors in the HE model.

Percent S = Satisfactory cover, Percent M = Marginal cover, Percent total cover = percent S + percent M

Existing Condition

Fire suppression and overall lack of management and disturbance has created late seral and, in some areas, heavily degraded conditions for upland shrub species due to competing stem densities and canopy closure (primarily from western juniper and young ponderosa pine), as well as heavy browse pressure (from both wild and domestic ungulates). Upland shrub plant communities, such as mountain mahogany and antelope bitterbrush, are important big game forage species that have historically existed on these sites.

Aspen stands occupy less than 50 acres in the planning area (buffered to 80 acres to include treatment acres around the existing stands) and many are in a degraded condition due to fire suppression, conifer encroachment, and browsing by both domestic and wild ungulates. Aspen are an important food source for elk, especially during winters when deep snow prevents access to other forage.

In summer range, forage values (total cover, satisfactory and marginal cover) in all three subwatersheds meet or exceed Malheur Forest Plan standards. The Upper Camp Creek subwatershed fails to meet the standard for open road density (less than 3.2 miles of open road per square mile) for summer range. The Lower Camp and Lick Creek subwatersheds meet the standard for open road density in the summer range portion of these subwatersheds.

Winter range, as currently defined, occurs in all three subwatersheds. Forage values (total cover, satisfactory and marginal cover) in winter range for all three subwatersheds meet or exceed Malheur Forest Plan standards. Winter range open road densities fail to meet Malheur Forest Plan standards in all three subwatersheds.

It should be noted that the actual number of "used" roads would be expected to be higher than those officially in "open" status (maintenance level 2 and above) as many officially closed roads on the Malheur National Forest regularly experience unauthorized use.

Although open road densities are evaluated against Malheur Forest Plan standards, the Forest Plan also provides a *desired* road density for summer and winter range (less than 1.5 miles per square mile and less than 1.0 mile per square mile, respectively). All three subwatersheds fail to meet the desired condition in both summer and winter range.

Although cover requirements are meeting or exceeding Malheur Forest Plan, cover requirements are not always compatible with the historical range of variability. This conflict is apparent in Hot Dry and Warm Dry forests dominated by ponderosa pine. Historical conditions and fire return intervals favored large blocks of trees with canopy closure too low to support satisfactory or marginal cover. Today, cover requirements are being met on many ponderosa pine sites; however, stands are overstocked and at uncharacteristically high risk to bark beetle attack and severe wildfires. Cover levels may not be sustainable. This inherent conflict may be even more relevant in winter range, which is often located in low elevation, Hot Dry and Warm Dry forests dominated by ponderosa pine.

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. With no activities proposed, values utilized to evaluate habitat effectiveness for elk, such as cover percentages, quantity and quality of forage, and open road densities, would remain in their current condition in the short-term. Cover and forage would continue to meet or exceed Forest Plan standards in the short-term.

In the mid- to long-term, development of late and old structure and/or multi-strata stands could create additional satisfactory and marginal cover stands, while forage would decrease as tree canopies close and shade the ground.

In the event of a large-scale wildfire event (more likely with this alternative) loss of forested landscape would result in a decline in both cover and foraging habitat.

Open road densities would be maintained at current levels. Open road densities do not meet Malheur Forest Plan standards (USDA Forest Service 1990, pages IV-9 and IV-29) in winter range in any of the subwatersheds and do not meet standards in summer range in one of the

subwatersheds. Relationships between the spatial distribution and disturbance associated with open roads and hiding cover habitat would also not change, as existing road densities and levels of use are expected to remain the same in the short-, mid-, and long-term.

Aspen stands would remain in their current condition in the short- to mid-term. Grazing and browsing of aspen stands would likely continue. Conifer encroachment into aspen groves would remain and continue to increase. The overstory of each stand could remain even aged and approach the end of their life cycle. Aspen would continue to decline and stands would slowly disappear over the mid to long-term.

Upland shrub enhancement (conifer removal) treatments would not occur under this alternative and mahogany/bitterbrush communities would continue to be encroached and could ultimately be lost in the mid to long-term. These communities provide critical quality browse and hiding cover for big game species. Allowing these upland shrub areas to continue to be overtopped and diminished could result in a substantial loss of quality habitat for elk and mule deer.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects.

However, assuming no large fire event occurs in the planning area, forage habitat would continue to decline in the absence of management to move the landscape toward the HRV.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Table 6. Proposed action habitat effectiveness index values, cover percentages, and open road densities for the three subwatersheds

Summer Range Subwatershed	HE_c	HE_s	HE_r	HE_{src}	Percent S	Percent M	Percent total cover	Open road density miles/mile^2
Malheur Forest Plan Standard	*0.3*	*0.3*	*0.4*	*0.4*	*12*	*5*	*20*	*3.2 **
Upper Camp Creek	0.85	0.8	0.39	0.6	30.9	13.8	44.8	3.03
Lower Camp Creek	0.81	0.75	0.45	0.61	22.9	14.4	37.2	2.4
Lick Creek	0.84	0.66	0.45	0.6	47.3	22.2	69.5	2.34

Winter Range (MA-4a)

Subwatershed	HEc	HE_s	HE_f	HE_r	HE_{srfc}	Percent S	Percent M	Percent total cover	Open road density miles/mile^2
Malheur Forest Plan Standard	*0.4*	*0.3*	*0.4*	*0.5*	*0.5*	*10*	*10*	*25*	*2.2**
Upper Camp Creek	0.85	0.82	0.5	0.39	0.61	34.7	15.0	49.7	**3.02**
Lower Camp Creek	0.82	0.8	0.5	0.47	0.63	18.5	10.6	29.1	**2.15**
Lick Creek	0.84	0.78	0.5	0.43	0.61	33.6	15.3	48.9	**2.62**

*Desired open road density based on Malheur Forest Plan Record of Decision for Summer range is 1.5 miles/mile^2.

*Desired open road density based on Malheur Forest Plan Record of Decision for Winter range is 1.0 miles/mile^2.

HE_c = habitat effectiveness derived from the quality of cover

HE_s = habitat effectiveness derived from the size and spacing of cover

HE_f = habitat effectiveness derived from the quantity and quality of forage; HE_f is not used in summer range calculations and a forage value is not available for winter range so a neutral value of 0.5 is used.

HE_r = habitat effectiveness derived from the density of roads open to vehicular traffic

HE_{srfc} = habitat-effectiveness index, allowing for the interaction of HE_s, He_r, HE_f, and HE_c $(HE_s \times HE_r \times HE_f \times HE_c)^{1/N}$

HE_{src} = habitat-effectiveness index, allowing for the interaction of HE_s, He_r, and HE_c $(HE_s \times HE_r \times HE_c)^{1/N}$

1/N = Nth root of the product taken to obtain the geometric mean, which reflects the compensatory interaction of the N factors in the HE model.

Percent S = Satisfactory cover, Percent M = Marginal cover, Percent total cover = percent S + percent M

Habitat Effectiveness Index

The results of the HEI analysis (Table 6) shows that all cover values would be maintained at or above the Malheur Forest Plan standards with the implementation of the proposed actions.

Silviculture Treatments

Stand improvement biomass thinning of small trees would have the greatest impact on hiding cover in the short-term. Through variable density thinning, the potential negative effects of the loss of hiding cover due to stand density reduction would be reduced in many areas by retaining un-thinned patches of dense trees throughout the planning area. Approximately 30 percent of the planning area has some form of treatment proposed (see Silviculture Report for details on type and percentage of planning areas treated). Untreated areas would remain outside of HRV and continue to be at high risk of uncharacteristic levels of bark beetle attack and severe wildfire. In these events, affected areas would be unlikely to provide cover if tree mortality were high, though forage is expected to increase. The designation of connectivity corridors and expansion of old-growth designated acres proposed in the planning area would provide elk cover and permeability across the landscape. The proposed action improves old growth designations by adjusting existing boundaries to correlate with actual old growth on the ground and allocating previously undesignated stands that meet old growth criteria (see the Old Growth Habitat section for details).

Areas where thinning would occur are expected to transition back to at least marginal cover in approximately 25 to 50 years depending on the residual stand density, species composition, and site potential. Many areas are expected to recover to marginal or satisfactory cover much sooner than the 25 to 50 years because of accelerated growth rates and understory response.

The proposed juniper encroachment treatments would enhance mountain mahogany and bitterbrush, primarily along ridge tops and scabby openings where these upland shrub species were historically prevalent. These activities would include project design criteria to protect snags, decadent trees, and older legacy trees of all species. Due to these protective measures, many of the conifers targeted for removal would be young and smaller diameter, therefore this treatment is not expected to have any effects to current or future snag density or distribution.

The planning area includes approximately 1,900 acres of elk priority area which includes an elk nursery area. Treatments in these areas would be adjusted to maintain elk security patches as well as timing restrictions on activities to minimize disturbance. Five priority elk road crossing locations were identified in consultation with ODFW and would have treatment adjustments to provide denser cover while the adjacent areas are treated as primary fire corridors.

The proposed activities would be conducted over a period of several years. At any one time, management activities would be localized in portions of the subwatersheds, and elk may shift use areas as a result. Disturbance from logging operations and associated traffic from log haul may cause animals to move to undisturbed security areas (i.e., non-treatment areas, corridors). In areas

where topography is steep or ridges separate logging operations, big game movement is expected to be minimal. Edge (1982) reported that elk moved 0.67 miles and Lieb (1981) found average displacement of 0.9 miles from logging operations in Montana. Under most circumstances, displacement of elk by human activities during logging is temporary. Some animals may return during night and weekends, when logging operations cease (Edge 1982). Elk and deer become habituated to logging in the non-hunting seasons due to the influx of quality food from lichens and moss on the felled trees. This has been noted across the Blue Mountain Ranger District. Winter and late autumn logging benefits big game because food can be limiting during these seasons. Disturbance to big game is a concern in winter range and elk calving areas. All management activities would be restricted where appropriate in big game winter range and known elk calving areas to minimize disturbance (see Camp Lick EA Appendix C – Project Design Criteria).

Analysis assumes that the greater the reduction in cover, the greater the increase in forage. Although, this may not necessarily be the case in the Cool Moist biophysical environments where woody understory recovery is expected with little value as forage. Juxtaposition of cover and forage patches is also important, because big game use in openings decreases with increased distance from cover and forage edge areas.

Riparian and Upland Watershed Restoration Treatments

Aspen stands throughout the planning area are proposed for treatment (see Silviculture Report for details). Fencing would occur after treatment activities are completed in suitable areas to protect suckers from ungulate browsing. Aspen fencing would initially make these areas off-limits to elk, but as new regeneration becomes established and protective fences deteriorate or are removed, available browse should increase. Aspen groves would be larger and healthier and more likely to remain as a viable component of the landscape.

Ecological riparian treatments

Riparian treatments (see Aquatics and Watershed Reports) would open up areas in riparian corridors to promote deciduous species in areas with a high likelihood of success. Elk in the immediate area could be displaced short-term during riparian treatment.

Enhancing deciduous shrubs and trees in applicable riparian areas could potentially increase forage for elk and deer in the short-term, and potentially provide additional vertical structure for cover.

Prescribed Burning and Unplanned Ignitions

Prescribed fires are expected to burn relatively cool, move slowly, and burn in a mosaic of burned and unburned patches. Large, highly mobile animals like deer and elk tend to move calmly about the periphery of low-intensity fire (Smith 2000). Burning by ground crews is generally approached in units requiring approximately 5-10 people. However, if all-terrain vehicles with drip torches were used to traverse the area, deer and elk may move further out from the fire perimeter; and if a helicopter were used, deer and elk may move an even greater distance from the fire perimeter. Disturbance would be short-term, unlikely to last more than 2 or 3 days on the larger burning operations. Elk and deer could return to burn areas as soon as the ground cools.

Direct fire-caused mortality of elk would be unlikely as mortality typically occurs only in uncontrolled wildfire where fire fronts are wide and fast moving, fires are actively crowning, and thick smoke occurs.

Prescribed burning can reduce hiding cover when allowed to burn at moderate or high intensity in thickets of young understory. Understory tree mortality would vary considerably but monitoring during prescribed burning will occur to ensure that widespread mortality levels do not exceed mortality limits described in the silviculture prescription. In areas where mechanical treatments preceded prescribed fire, hiding cover would likely be reduced to the point that prescribed fire would have minimal additional effects.

Because prescribed fire is expected to burn in a mosaic, ground vegetation would be reduced but not entirely eliminated. Temporarily, forage opportunities may be better elsewhere until ground vegetation is reestablished.

Burning would eventually improve forage conditions as more open canopies allow more light to reach the forest floor. Most native grasses and forbs and many shrubs respond positively to increased light and fire. Plants tend to sprout vigorously from their roots if the above ground portions are killed by fire. Fires usually increase some nutrients in Rocky Mountain forests for one to three years (Severson and Medina 1983) Species that respond favorably to fire include pinegrass, elk sedge, wild rose, snowberry, ceanothus, serviceberry, chokecherry, and currant.

Roads Activities

Road densities after implementation of alternative 2 would move toward the Forest Plan desired condition but would not meet it in all subwatersheds.

Within the first few years (approximately 2 to 10), temporary road construction and use would increase open road densities. During timber harvest, log haul activities would temporarily increase local traffic levels. Disturbances to big game would be expected to increase over the current condition. Many roads proposed for closure would be improved to function as haul routes before being closed after treatment, making them more attractive for use by the public until such time as they are effectively closed. Over 5 miles of these closures/haul route sections are within an elk high priority use/elk calving area. Elk are likely to shift use areas as activities progress across the watershed (USDA Forest Service 2006). As road closures were completed, disturbances to deer and elk from vehicular traffic and mortality from hunting would be expected to decrease, however, the decrease in disturbances to deer and elk would only occur if road closures were effective. Closures would in part mitigate losses in hiding cover that occur due to timber harvest and prescribed fire. A wildlife biologist would review all road closures to determine effectiveness.

Seasonal restrictions in winter range and elk calving areas would minimize effects from proposed activities during the most sensitive seasons. Disturbance is less of a concern to summer range where more of the land base is available for use.

Cumulative Effects

All of the activities listed in the Camp Lick EA Appendix E – Past, Present, and Reasonably Foreseeable Future Actions were considered for their cumulative effects on Rocky Mountain elk or their habitat.

The following discussion focuses on those past, ongoing, and foreseeable future activities that may contribute positive or negative effects. Past activities such as grazing, timber harvest, road construction associated with timber harvest, wildfire, fire suppression, and firewood cutting have impacted the quantity, quality, and distribution of cover and forage across the analysis area.

Past timber harvest activities in the analysis area affected elk habitat by decreasing hiding cover and increasing forage in the short to mid-term timeframe post-harvest. In the 20 to 30 years since the bulk of the last harvest activities ended (1980's through 1996), canopies have grown back in and understory has grown up, reducing the forage gains while increasing hiding cover.

Fire suppression has been ongoing and the planning area has experienced only one wildfire exceeding one-acre in size in the past 150+ years (this occurred in 1910, affecting approximately 800 acres in the northwestern corner of the planning area). This ongoing suppression has rendered much of the project planning area outside of the HRV. This has likely created higher cover values and lower forage values than would have been seen within the HRV. As a result, baseline HEI values are likely higher than would be expected historically.

Road construction associated with timber harvest increased human accessibility to the area, increasing pressure and disturbance to elk.

Present and future actions include thinning and burning activities in the County Road 18 Healthy Forest Restoration Act Project. The 18 Road Project borders the southwestern portion of the Camp Lick planning area, wholly within or adjacent to the summer range portion of the Upper Camp subwatershed. Approximately 920 acres within the Camp Lick planning area overlap with the 18 Road Project, however for analysis any treatments within 300 feet of the planning area boundary were considered. The 18 Road Project includes approximately 1600 acres of silvicultural treatments within 300 feet of the Camp Lick planning area boundary (southwest corner). Of this 1600 acres, approximately 1200 acres have a prescribed burning treatment. The Camp Lick Project would cumulatively add to the effects of the reduction in cover from the implementation of the 18 Road Project.

Prescribed fire activities within close proximity to the Camp Lick planning area (e.g., County Road 18 project) are currently providing increased forage to elk and other big game species in and around the planning area. Big game animals would continue to benefit from the effects of these fires in the short- to mid-term.

Rocky Mountain Elk Determination

The no action alternative (alternative 1) **may impact individuals or habitat, but will not likely adversely affect population or species** because: elk habitat would remain the same in the short-term. In the mid- to long-term, forage would likely decrease as a result of increasing cover, and critical habitats such as upland shrub areas and aspen could be degraded and eventually lost.; in the event of a large severe fire (more likely with this alternative) resultant loss of cover over large extents of the planning area would cause a redistribution of elk. However, because of their high mobility, extensive distribution, and the ability of elk and other big game species to find and use a variety of suitable habitats, there would be no negative trend in viability on the Malheur National Forest for Rocky Mountain elk.

The proposed action (alternative 2) **may impact individuals or habitat, but will not likely adversely affect viability to the population or species** because: there could be a degree of displacement or disturbance for elk during project implementation; some trees providing cover habitat could be removed while the enhancement of foraging areas would provide foraging benefit. Treatments, and especially improved roads, if not effectively closed, could potentially change current elk distribution and use of the affected habitat.

Primary Cavity Excavator/Dead and Defective Wood Habitat

This section will discuss the dead and defective wood habitat for which 10 management indicator species (MIS) species were chosen to represent. Following the habitat discussion will be a section for eight of those MIS species (two of these woodpeckers overlap with the Regional Forester's Sensitive Species List and are discussed in the PETS section [Lewis's woodpecker and white-headed woodpecker]).

See the overview of species selection criteria under the Management Indicator Species section for a discussion of how these species were initially chosen for the Forest Plan.

Life History, Habitat, and Distribution

In the Blue Mountains of Oregon and Washington, 62 vertebrate species utilize cavities as either primary or secondary users. These include thirty-nine birds and twenty-three mammals (Thomas et al. 1979).

The presence of tree cavities influences the abundance and diversity of cavity users in forests, and conservation efforts often focus on woodpeckers because of their cavity excavating activities.

It is estimated that 30 to 45 percent of the total bird population of forested areas is comprised of cavity-nesting birds (Jackman 1974). Studies have shown a correlation between woodpecker richness and richness of other forest birds, not only at the landscape scale but also in most forest stands and conditions (Drever et al. 2008).

Field surveys were completed throughout planning area during 2014 and 2015 field seasons with snag exams performed on contract through the silviculture department. Detections of management indicator species (MIS) were recorded. Areas of potential old growth (identified using LiDAR tree height values), existing dedicated old growth (DOG), proposed replacement old growth (ROG), and potential pine marten habitat were surveyed more intensively.

Because these MIS were selected to represent dead and defective wood habitat, this analysis and discussion focuses primarily on that habitat component. Individual species discussions follow in the next section. Additional information on cavity-excavating bird's habitat associations, distribution, and life history requirements is summarized in Mellen-McLean (2012a).

Current Malheur Forest Plan direction, as amended by the Eastside Screens, is to maintain snags at 100 percent of biological potential for all woodpecker species that occur on the Forest throughout the stand rotation. This equates to 2.25 snags per acre greater than 12 inches diameter at breast height (DBH) and 0.14 snags per acre greater than 20 inches DBH. Snags can be averaged over an area no larger than 40 acres. Snags should be left in a clumped distribution.

Rose et al. (2001) report that results of monitoring indicate that biological potential models are a flawed technique. New information about the ecology, dynamics, and management of decayed wood has been published since the biological potential concept was developed, and the state of the knowledge continues to change. However, until the Malheur Forest Plan is amended to reflect new science, 100 percent biological potential is the minimum number of snags that need to be maintained through the life of the stand rotation.

Environmental Consequences

Methodology

The latest science is incorporated into this analysis using decayed wood advisor (DecAID) (version 2.2) (Mellen-McLean et al. 2012). DecAID is an internet-based summary, synthesis, and integration (a "meta-analysis") of the best available science: published scientific literature, research data, wildlife databases, forest inventory databases, and expert judgment and experience. This region-wide DecAID analysis was updated in November 2015 to include post-fire snag and downed wood data resulting from fires greater than 1,000 acres (through October 2015). In addition to data showing wildlife use of dead wood, DecAID also contains data showing amounts and sizes of dead wood across the landscape based on vegetation inventory data. The term "reference condition" refers to an approximation of the historical range of variability (HRV) of dead wood. In the Camp Lick planning area a snag analysis on the ground was performed in 2015 in order to compare actual snag exam results to DecAID results. This effort confirmed the accuracy and effectiveness of using the DecAid analyzer (Lindsay 2015).

For a full discussion on DecAID, see: http://www.fs.fed.us/r6/nr/wildlife/decaid-guide/hrv-dead-wood-comparison.shtml.

The analysis area for the snag distribution is larger than the planning area for all wildlife habitat types, since the DecAID analysis product uses an entire watershed and the Camp Lick planning area encompasses only a portion of the Camp Creek/Middle Fork John Day River watershed. Even so, for all wildlife habitat types other than eastside mixed-conifer, the full watershed did not yield the minimum number of acres required for DecAID analysis and an additional watershed (Grub Creek-John Day River) had to be added to meet the minimum analysis area size per habitat type of 12,800 acres recommended by the authors of DecAID (Mellen-McLean et al. 2012). See Figure 3 for locations of these watersheds and the planning area.

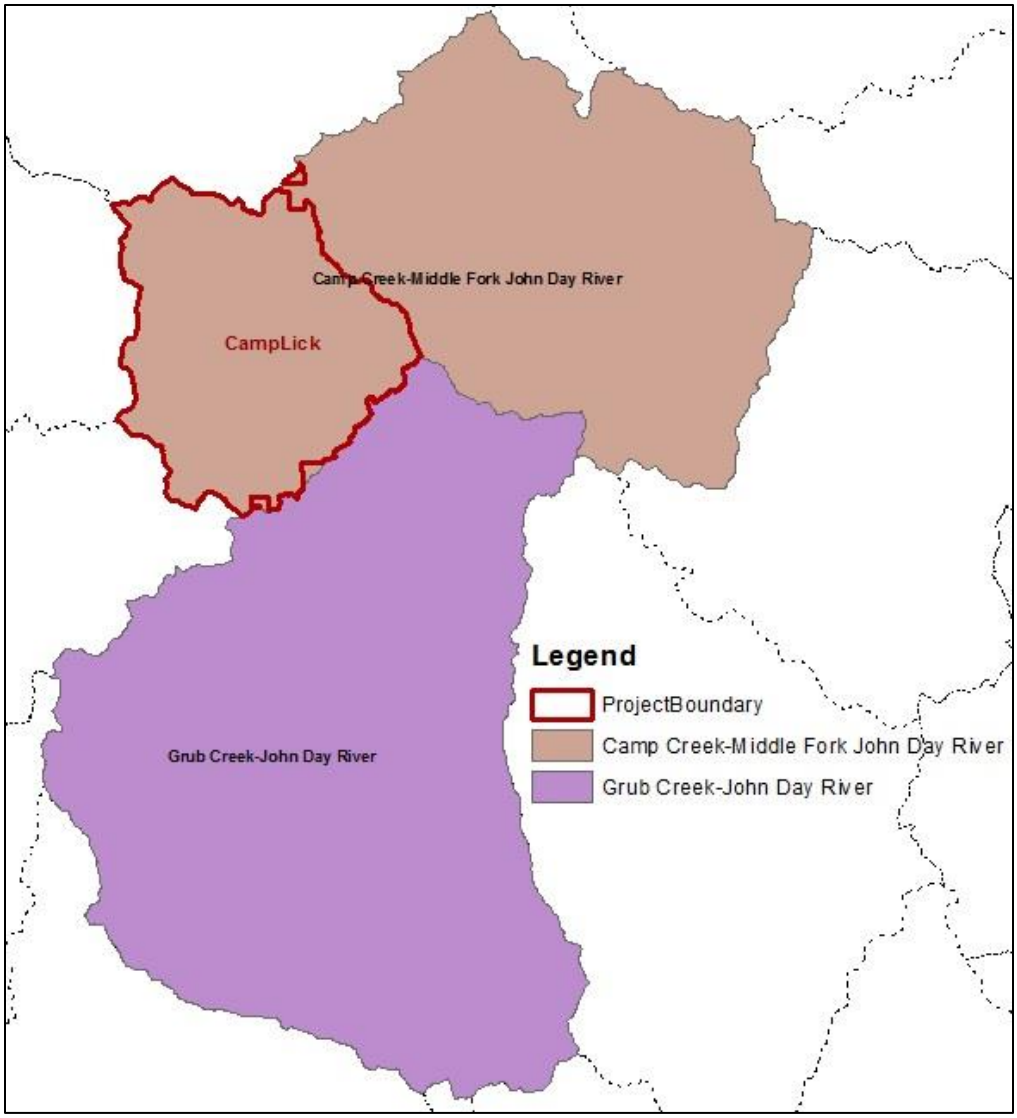


Figure 3. The Camp Lick planning area (outlined) on the Camp Creek – Middle Fork John Day River watershed and the adjacent Grub Creek – John Day River watershed

The Camp Creek-Middle Fork John Day River watershed comprises approximately 126,100 acres of which the Camp Lick planning area encompasses approximately 40,000 acres in the westernmost portion of the watershed. The Grub Creek-John Day River watershed (approximately 149,800 acres), which is adjacent to the planning area and south of the Camp Creek-Middle Fork John Day River watershed, was added for DecAID analysis of wildlife habitat types ponderosa pine/Douglas-fir and lodgepole pine. Eastside mixed-conifer had enough acres in the Camp Creek-Middle Fork John Day River watershed to allow use of that watershed alone. Montane mixed-conifer comprises only 41 acres within the planning area and therefore is not included in this analysis.

In addition to DecAID analysis, the forest vegetation spatial data analyzer was used to calculate snag densities within the planning area. This tool provides a growth simulator, using the structural classes of the stands, and is capable of showing vegetation change over time both for no action and for proposed action management. Refer to the Silviculture Report for full details.

Existing Condition

In 2014 and 2015 a review of the Camp Lick planning area was made by the Blue Mountain Pest Management Service Center which evaluates for both insect and disease presence and potential. These findings are relevant to the future creation of dead wood discussed in alternative 1 (no action).

Findings include:

- Western pine beetle (WPB) and mountain pine beetle (MPB) attacks in ponderosa pine.
- Outbreaks of MPB in lodgepole pine occur in several places and will likely continue to increase for the next several years.
- Fire suppression has allowed fire intolerant firs to become more widespread, providing habitat for defoliators that were not previously active in pine-dominated stands as pine is not a host species. The grand fir/white fir habitat is very susceptible to root diseases and defoliators. Outbreaks of western spruce budworm and Douglas-fir tussock moth have become active in areas not previously impacted due to the expansion of grand fir/white fir habitat.
- Many overstory western white pine have dead tops caused by white pine blister rust, and most of the abundant understory seedling and saplings support high levels of infection.
- Large overstory ponderosa pines are presently in a weakened condition resulting from moisture stress due to competition. They are at elevated risk to mortality from MPB and WPB attack.
- Western larch trees have lost vigor resulting from dense stand conditions that reduce crown width and crown length.

Ponderosa Pine/Douglas-fir Wildlife Habitat Type

Based on DecAID analysis, in the ponderosa pine/Douglas-fir wildlife habitat type, the landscape in the watershed containing the planning area combined with an adjacent watershed is near or above reference conditions for densities of large snags (greater than20 inches DBH). See Figure 4.

For small snags (greater than10 inches DBH) these watersheds are above reference conditions for the higher densities (8-12, 12-24, greater than24 snags per acre) and below reference conditions for the lower densities (0, 0-4, 4-8). See Figure 5.

This wildlife habitat type makes up approximately 60 percent (23,884 acres) of the Camp Lick planning area.

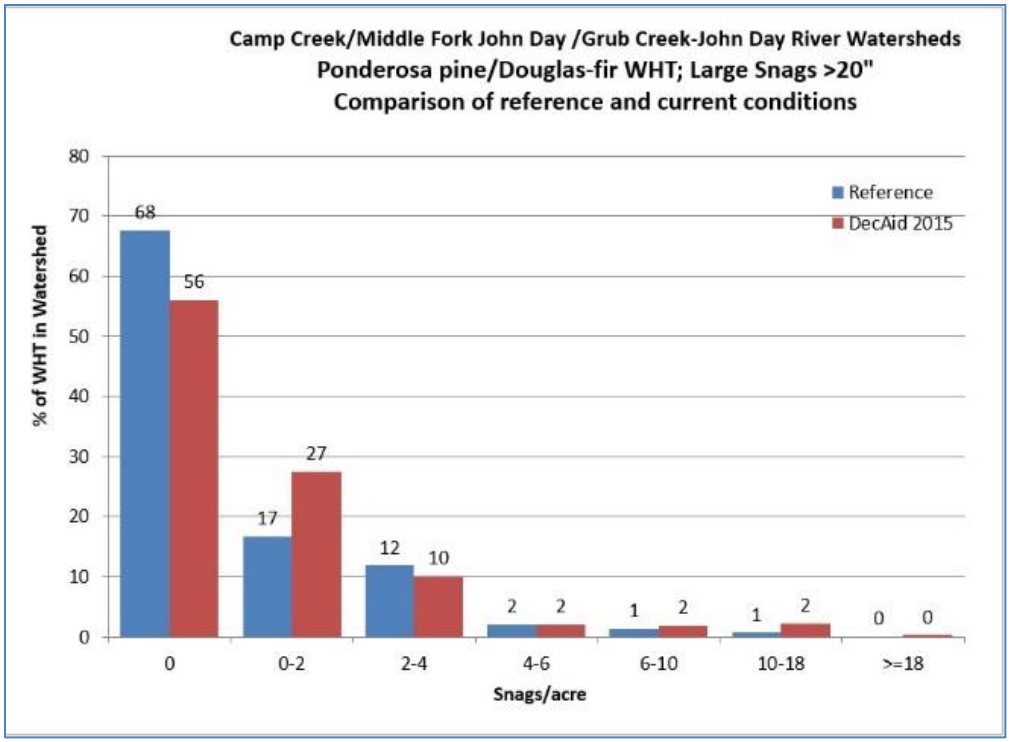


Figure 4. Reference condition (historical range of variability) compared to current condition for large snag density classes in the ponderosa pine/Douglas-fir wildlife habitat type portion of the Camp Creek/Middle Fork John Day and Grub Creek-John Day River watersheds. Displays snags greater than 20 inches diameter at breast height.

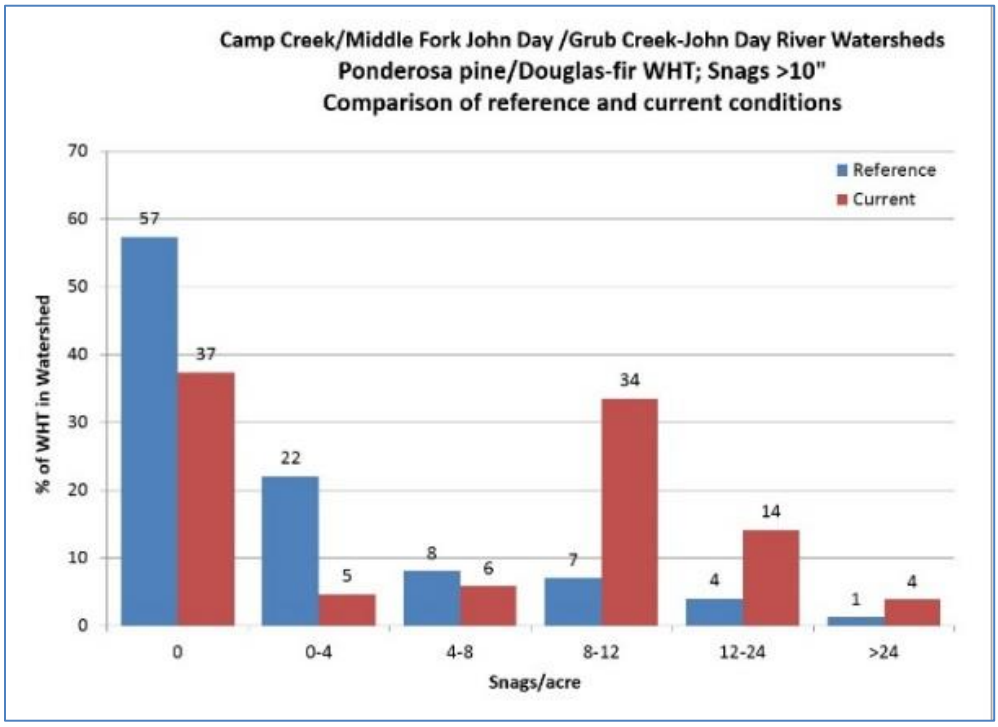


Figure 5. Reference condition (historical range of variability) compared to current condition for small snag density classes in the ponderosa pine/Douglas-fir wildlife habitat type portion of the Camp Creek/Middle Fork John Day and Grub Creek-John Day River watersheds. Displays snags greater than10 inches diameter at breast height.

Most woodpecker species using this wildlife habitat type should currently have an adequate amount of snag habitat in the planning area. Large snag habitat for pileated woodpecker and Williamson's sapsucker is currently well represented in this wildlife habitat type and generally exceeds reference conditions.

A weighted average between Camp Creek/Middle Fork John Day and Grub Creek/Middle Fork John Day watersheds was used to calculate current conditions in this wildlife habitat type so that enough acres were included for the most accurate analysis.

Eastside Mixed-Conifer Wildlife Habitat Type

The Eastside mixed-conifer wildlife habitat type makes up approximately 24 percent (9,638 acres) of the planning area. In this habitat type, the landscape in the Camp Creek-Middle Fork John Day River watershed is deficit in snag density classes above two snags per acre for large snags (greater than20 inches DBH), as compared to reference conditions, and deficient for small snags (greater than10 inches DBH) in all classes except 0 and 24-36 snags per acre. See Figures 6 and 7.

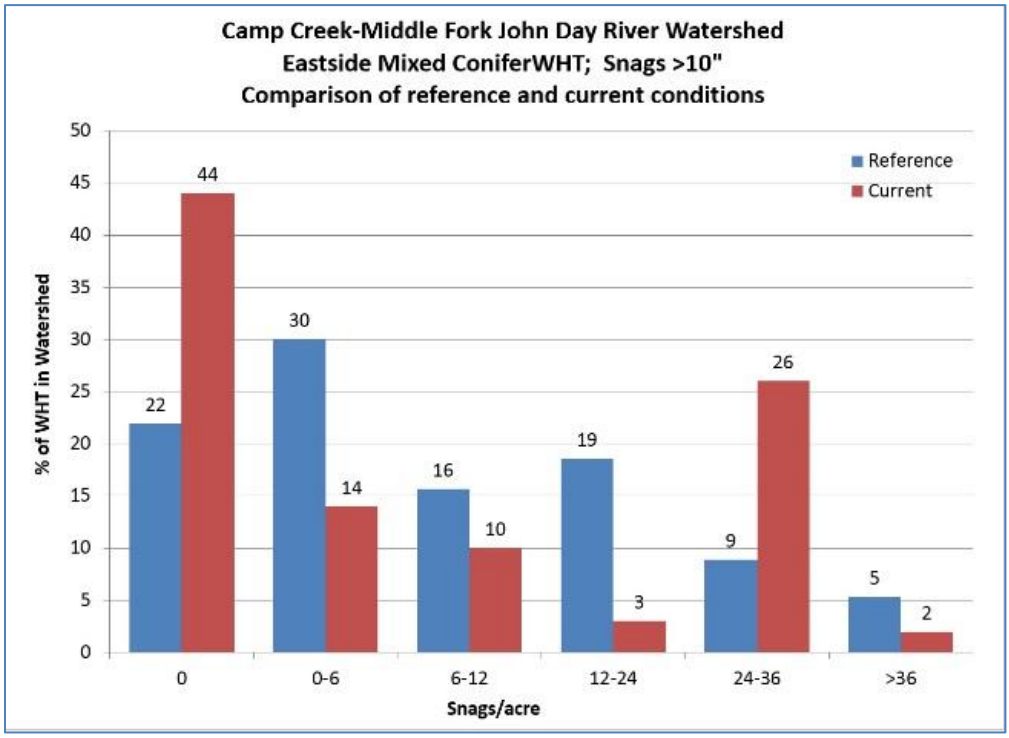


Figure 6. Current and reference condition (historical range of variability) for snag density classes in the eastside mixed-conifer wildlife habitat type portion of the Camp Creek/Middle Fork John Day River watershed. Displays snags greater than 10 inches diameter at breast height

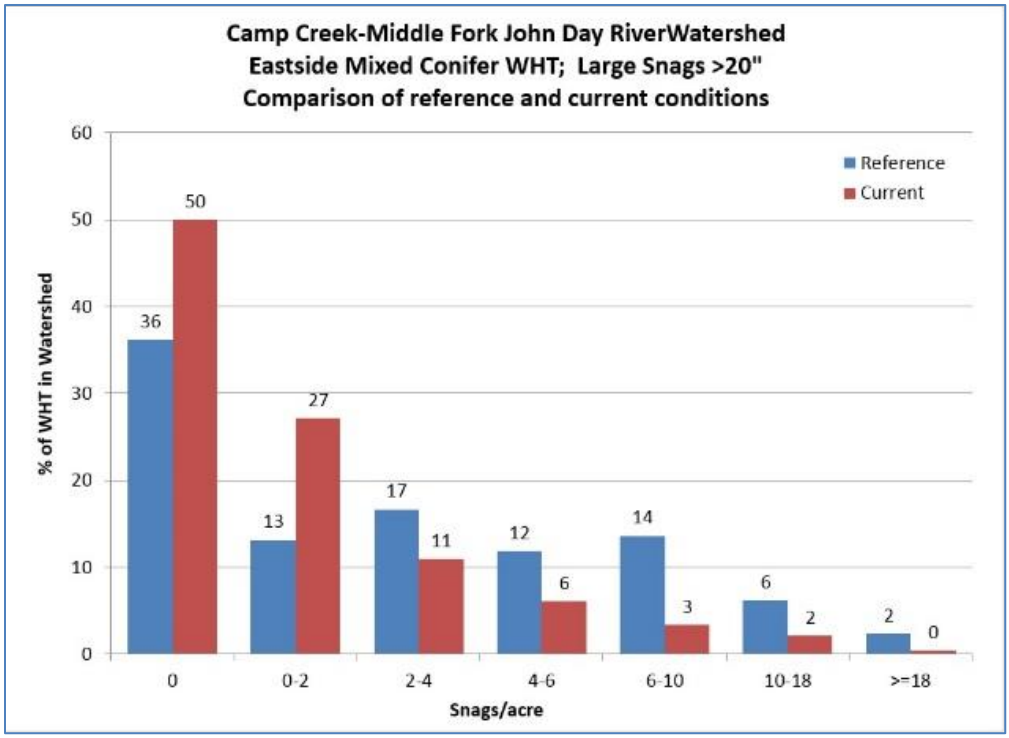


Figure 7. Current and reference condition (historical range of variability) for large snag density classes in the eastside mixed-conifer wildlife habitat type portion of the Camp Creek/Middle Fork John Day River watershed. Displays snags greater than 20 inches diameter at breast height

Lodgepole Pine Wildlife Habitat Type

The lodgepole pine wildlife habitat type makes up approximately 6 percent (2,424 acres) of the planning area. In this habitat type, the landscape in the planning area is deficit in all snag density classes except 0-2, 6-10, and 10-18 snags per acre for large snags (greater than 20 inches DBH), as compared to reference conditions (Figure 8). For small snags (greater than 10 inches DBH), the landscape is below reference conditions for all snag density classes except 0 and 24-36 (Figure 9).

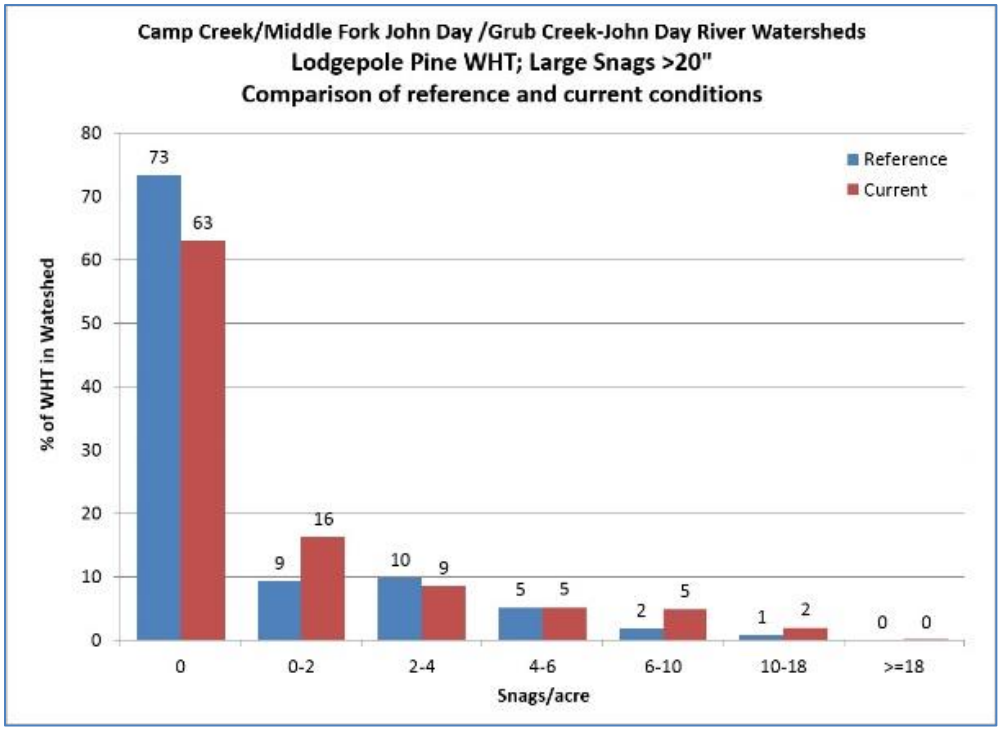


Figure 8. Current and reference condition (historical range of variability) for snag density classes in the lodgepole pine wildlife habitat type portion of the Camp Creek/Middle Fork John Day and Grub Creek-John Day River watersheds. Displays snags greater than 20 inches diameter at breast height.

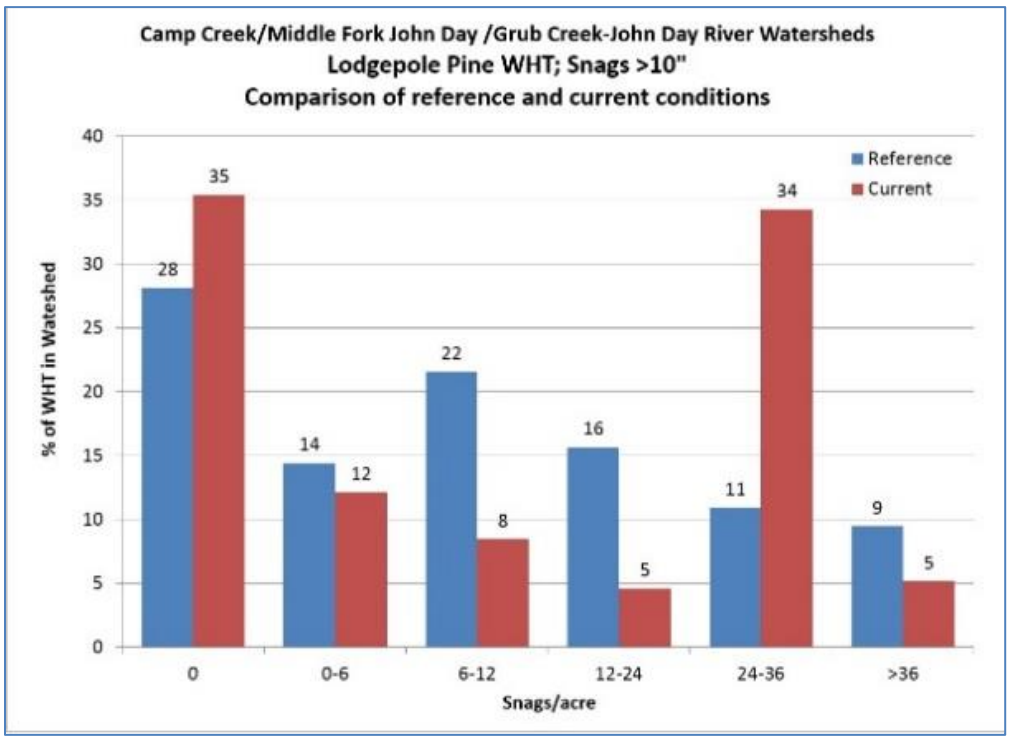


Figure 9. Current condition for snag density classes in the lodgepole pine wildlife habitat type portion of the Camp Creek/Middle Fork John Day and Grub Creek-John Day River watersheds. Displays snags greater than 10 inches diameter at breast height.

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, existing levels of snags and downed wood would likely remain fairly constant in the area in the short- to mid-term. There would be no creation or loss of existing snags or downed wood due to implementation activities. In the absence of large-scale disturbance (e.g., fire, insect outbreaks) snags would continue to be recruited at or near existing rates. In the short- to mid-term, large diameter snags would continue to exist at their current levels, except for snags lost to firewood cutting. In the long-term, forest vegetation, modeled with spatial data analyzer for a 30-year period, shows a 31 percent increase in large snag densities in year 2045 with small snag densities more than doubling in the same timeframe (see Table 7). Without treatment, moisture stress and overcrowding in the dry biophysical environments would continue, increasing the loss of large pine and larch and increasing the risk of insect infestations and disease above HRV (which are not considered by forest vegetation spatial data analyzer modeling). Mortality of pine and larch due to moisture stress and overcrowding, as well as insect and disease infestation, could potentially increase snag densities over time. Downed wood densities would be expected to increase as existing snags fall. Insect infestations would increase foraging habitat for primary cavity excavating birds and other insectivorous species.

Fire effects would result in higher stand loss as seen in the Canyon Creek Complex fire (2015) which burned in similar fuels profiles. The majority of the planning area is currently prone to high mortality through cambium kill and crown fire.

Disturbances would be of a higher severity, increased mortality of larger trees, and over a larger area than under historical conditions (see Camp Lick Fire, Fuels, and Air Quality Report). Specifically, patch sizes of high severity would be larger. Recent fires in eastern Oregon, including on the Malheur National Forest in 2013, 2014, and 2015, indicate that in similar conditions as those in the planning area, tree mortality through cambium kill and crown scorch could burn through a majority of the planning area. Historically these stands burned with low large tree mortality, as surface fires with average flame lengths less than 4 feet and occasional single tree torching.

Table 7. Expected snag densities by size class for Alternative 1 from FVS analysis.

Year	10-20 inches diameter at breast height (snags/acre)	Over 20 inches diameter at breast height (snags/acre)
2015	25.03	7.84
2045	66.06	11.08

The no action alternative would continue to increase dead and defective wood habitat and therefore would not contribute to a negative trend in viability for MIS dead and defective wood habitat dependent species, such as primary cavity excavators, on the Malheur National Forest.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects. However, snag loss via firewood cutting from open and ineffectively closed roads would continue.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

In the short- to mid-term, the silvicultural treatments and prescribed burning proposed would likely maintain or slightly decrease snag numbers due to removal of hazard trees and potential direct loss from prescribed fire.

In the ponderosa pine/Douglas-fir wildlife habitat type, where snag levels are near or above HRV, the incidental snag loss from project activities would not be expected to create levels below HRV. Similarly, in the eastside mixed conifer wildlife habitat type, no substantial decrease in snag abundance is expected; losses from activities are expected to be minor because project activities would not target snags, and only hazard trees would be intentionally removed.

In the long-term, forest vegetation spatial data analyzer 30-year modeling shows a 64 percent increase in large snag densities by year 2045 with small snag densities more than doubling in the same timeframe (see Table 8).

In the long-term, (50+ years), increased growth rates in treated stands, protection of snags and older trees (see Camp Lick EA Appendix C – Project Design Criteria), additional mortality from prescribed and potential wildfire, incidental damage of trees from equipment in treatment units, retention of late and old structure and connectivity corridors, expansion of the old growth areas, and increased snag quantity, larger snags, and higher quality snags would be expected to be distributed across the landscape.

Inner RHCA thinning, resulting in large wood being placed in, across, and adjacent to streams would improve wildlife habitat by increasing insect prey and increasing structure, cover, and winter refugia for small mammals (both prey and predator).

Table 8. Expected snag densities by size class for alternative 2, from forest vegetation spatial data analyzer analysis

Year	10-20 inches diameter at breast height (snags/acre)	Over 20 inches diameter at breast height (snags/acre)
2017	37.05	10.94
2045	61.99	12.9

Silviculture Treatments

Wildlife and invertebrate species that depend upon downed wood, snags, dwarf mistletoe brooms, dense forest with abundant saplings and small poles, and closed canopy forests for survival and reproduction are likely to be detrimentally affected by thinning activities that alter these habitat elements due to the short-term loss in downed wood. These treatments affect only 30 to 35 percent of the planning area, allowing for movement of some species to untreated habitat in the short-term. The old growth designations, discussed in the following Old Growth Habitat section, provide for new protections of additional acres.

Project design criteria would retain snags and downed wood habitat for primary cavity excavators. Some new snags may be created during implementation where equipment could damage live trees. Where only harvest and thinning occurs, treatment methods may provide more control over tree mortality and snag creation as opposed to burning. Silvicultural management practices such as variable density thinning prescriptions, which are being utilized for the project, would be expected to decrease project impacts to primary excavator species such as Williamson's sapsucker and northern flicker due to the expected mosaic it would create, and the potential to retain "clusters" of snags as part of the leave patches.

In the short- to mid-term (1 to 25 years), treatments involving tree removal may affect species dependent on high canopy cover and structure, such as the Williamson's sapsucker. However, approximately 70 percent of the planning area would have no treatment, providing habitat nearby for these species to occupy.

Species preferring large trees in open habitat types (e.g., hairy woodpecker, Lewis's woodpecker, and northern flicker) would immediately benefit as a result of treatments. In areas treated exclusively with fire, the anticipated large pulse of small diameter snags would benefit black-backed woodpeckers for up to 5 years post-fire.

Treatments are considered beneficial to old-growth dependent species in the long-term (25+ years) as treated stands would better mimic historic, more resilient conditions. Old forest multi-strata would be converted back to old forest single-stratum stands where they occurred historically. Tree species and stand structure would better mimic historical more sustainable conditions. Younger structural stage stands (young forest multi-strata, stem exclusion closed canopy, stem exclusion open canopy, stand initiation, and understory re-initiation) would be thinned to accelerate development of large diameter trees and restoration of old forest structure similar to historical conditions. However, untreated patches up to several acres in size would be left in treatment areas to mimic historical mosaics common with low- to mid-severity fires. Retention of these 'patches' of trees combined with the effects of prescribed fire would continue to provide avenues for snag creation, foraging, and nesting habitat in the short-term. Patches with higher densities of snags would be priority for leaving.

Of the approximately 40,000 acre planning area only 30 percent is proposed for thinning treatments, which includes approximately 1,200 acres of juniper reduction. The unthinned acres would retain some overstocked multi-strata conditions, providing for species preferring these conditions. In addition, areas proposed for treatment would not all be treated at the same time, or even in the same year, allowing regeneration of treated areas in a phased timeline.

Prescribed Burning and Unplanned Ignitions

Any snag creation as a result of fire would benefit post-fire dependent species like the black-backed woodpecker. Although this pulse of snags would provide foraging for numerous woodpecker species, most snags would likely be too small to provide suitable nesting habitat. Design features are included to minimize consumption of existing habitat, especially large trees, snags and down logs. Although some snags are expected to be lost as a result of implementation, losses are expected to be minor across the landscape.

The season selected for implementation of prescribed fire activities in various habitat types has important consequences for wildlife and invertebrates. Wintering bird communities in mature managed pine stands show no differences in abundance or species richness between growing and

dormant season prescribed fire (King et al. 1998). Spring burns are limited via project design criteria so as to minimize impact to breeding birds and wildlife.

Road Activities

The effective closing or decommissioning of roads would secure potential habitat from the risks of firewood cutting and hazard tree removal. However, new and temporary road construction and road maintenance for haul would affect potential dead and defective wood habitat as snags could be removed along these roads due to hazard tree removal and firewood cutting.

Cumulative Effects

Past activities such as timber harvest, road construction associated with timber harvest, wildfire, fire suppression, and firewood cutting have impacted the quantity, quality, and distribution of dead wood habitats across the analysis area.

The County Road 18 Healthy Forest Restoration Act Project is adjacent to and overlaps the southwestern project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands. Approximately 2,800 acres were thinned, and prescribed burning along this corridor is ongoing. The treated stands in this project will be more resilient and less susceptible to insect and fire disturbance; likely contributing to fewer snags being created in these stands in the short- to mid-term. The Camp Lick Project combined with the effects of hazard tree removal and unauthorized firewood cutting along the County Road 18 corridor would result in additive effects to snag density departures.

Past timber harvest activities and associated road construction in the planning area affected snag densities by decreasing habitat from road construction and increasing accessibility of the area to firewood cutting.

Firewood cutting is having a negative effect on species requiring snags and downed wood, such as raptors, pine marten, and cavity-nesting species. Recent increases in the amount of large pine snags permitted for woodcutting have increased these impacts and may affect the amount of available nesting and roosting habitat for a variety of species. The inability to quantify the loss of dead wood habitat from firewood cutting has a significant impact on accurate analysis.

Although the Camp Lick planning area has averaged 5 fire starts per year over the last 25 years, no fires over 25 acre in size have occurred in this area since 1910. Fire suppression has resulted in dense, multi-strata stands, and snag and down log densities are generally higher in these stands than less dense ponderosa pine stands. Fire suppression has led to the buildup of ground fuels and overstocked stands. These overstocked stands are at risk of competition pressure, which increases the potential for insects, disease, and wildfires. These characteristics provide habitat for primary cavity excavators. However, these stands are at risk of a large-scale fire. Project design criteria were established to retain and recruit a sufficient amount of dead and defective wood; therefore, the Camp Lick Project would decrease the risk of large-scale fire, while retaining habitat for primary cavity excavators. Decreasing the risk of large-scale fires could potentially decrease the potential for increased post-fire habitat, within the planning area, desirable to some species such as the black-backed woodpecker.

Under the proposed action alternative, changes in dead wood habitats would be considered minor on a forest scale. In the short- to mid-term, the actions would contribute cumulatively to the loss of snag and downed wood habitat from other similar projects being implemented or analyzed

across the Forest, and a potential decrease in green tree mortality rates. Project design criteria would aid in mitigating the initial loss of snags in the planning area.

As trees respond to proposed activities, increased vigor and health would have cumulative effects on those species which prefer dead, insect infested trees susceptible to fire. However, in the long-term, stand structure would better mimic historical sustainable conditions, and snag levels would be similar to those reported by Matz (1927).

When the past, present, and reasonably foreseeable actions are considered in combination with the action alternative, changes in snag densities across the watershed are expected to be minor. Forest vegetation spatial data analyzer 30-year modeling shows a 64 percent increase in large snag densities in year 2045 with small snag densities more than doubling in the same timeframe as a result of the proposed action silvicultural treatments.

The high-density snag categories are typically created from wildfires and are not expected to occur from prescribed fire activities proposed. Returning fire to the watershed has the potential to create small snag patches within the watershed but is not expected to move overall snag densities in the high-density category towards HRV.

Together with fire suppression and other landscape objectives that limit or discourage large beetle outbreaks, the project would contribute to a small negative trend in black-backed woodpecker habitat in the planning area and adjacent planning areas where similar treatments are proposed or in progress, but would not contribute to a negative trend across the Forest due to the large amount of habitat created in recent large-scale wildfires (Canyon Creek Complex 2015; Murderer's South Complex 2014). While some additive cumulative effects may be anticipated, projects are consistent with Malheur Forest Plan objectives because the project is consistent with the standards and guidelines relating to MIS – primary cavity excavator species.

Dead and Defective Wood Habitat Determination

In the short-term, there could be some negative effects to cavity excavating species from disturbance and direct loss of snags during implementation through hazard tree removal and consumption from prescribed fire. However, snags would not be targeted with thinning treatments and true hazard trees needing removal are expected to be rarely encountered during vegetation actions.

Project design criteria are in place to decrease or prevent loss from prescribed fire, and fire would likely add snags from direct mortality. Thinning overstocked stands could eventually help move multi-strata habitat towards older, single-strata habitat, benefitting cavity-dependent species. More resilient stands would be less susceptible to mortality due to uncharacteristic stress, insects, or fire, but snag creation expected via forest vegetation spatial data analyzer analysis (which does not include insect and disease mortality projections) shows an increase in snag density in all size classes both short and long-term. Combined with recent creation of snag and dead wood habitat from large fires, no overall forest-wide decline in this habitat is expected from implementation of the action alternative.

In the long-term (50+ years), stand structure would better mimic historical conditions, become comprised of larger, older trees, and eventually become more decadent. At this point, these stands would likely start producing higher quantities of larger, better quality snags of more desirable species, and therefore would ultimately be beneficial to cavity excavating species.

Once implemented, effective road closures combined with road decommissioning would protect snags near those roads from firewood harvesting.

Primary Cavity Excavators/Dead and Defective Wood Dependent Species

This section will discuss eight of the MIS species assigned to represent the dead and defective wood habitat type (see the PETS section for a discussion of the two species (Lewis's woodpecker and white-headed woodpecker) also classified as "sensitive").

Table 9. Conservation status of cavity-nesting management indicator species (MIS) based on Nature Serve Ranks[1]

Species	USFS Sensitive	Global[1]	OR[1]	IUCN[1]
Black-backed woodpecker	No	G5	S3	LC
Downy woodpecker	No	G5	S4	LC
Hairy woodpecker	No	G5	S4	LC
Lewis's woodpecker	Yes	G4	S2 S3B	LC
Northern flicker	No	G5	S5	LC
Three-toed woodpecker	No	G5	S3	LC
Red-naped sapsucker	No	G5	S4B S3N	LC
White-headed woodpecker	Yes	G4	S2S3	LC
Williamson's sapsucker	No	G5	S4B S3N	LC

[1] NatureServe 2015
G5 or S5 – Widespread, abundant, secure
G4 or S4 – Apparently secure
G3 or S3 – Vulnerable
G2 or S2 – Imperiled
B – Breeding range
N – Non-breeding range
LC – Least Concern

In general, populations of cavity-nesting birds have declined across the Blue Mountains compared with historical conditions, primarily due to reductions in the numbers of large snags (Wisdom et al. 2000). Of the cavity-excavating MIS, breeding bird surveys in Oregon have detected a statistically significant decrease in populations of the northern flicker between 1966 and 2010 (Sauer et al. 2011).

Red-naped Sapsucker[3]

Life History, Habitat, and Distribution

The red-naped sapsucker is considered a "double keystone" species for its role excavating nest cavities and drilling sap wells, both of which are subsequently use by other species. Nest cavities

[3] Current taxonomy – replaces yellow-bellied and red-breasted sapsucker listed for MIS in the Malheur Forest Plan.

are subsequently used by secondary cavity nesters, such as tree swallows, violet-green swallows, mountain bluebirds, chickadees, northern flickers, and house wrens. Sap wells are used by 40+ species, including hummingbirds, warblers, chipmunks, squirrels, wasps, and butterflies (NatureServe 2015).

This species is a primary cavity nester that excavates nest holes in snags or living trees with a dead or rotten interior, and it shows a strong preference for aspen but also uses paper birch, cottonwood, alder, western larch, ponderosa pine, Jeffrey pine, and lodgepole pine. It especially favors aspen with heartwood decay brought about by shelf fungus, a heart rot that infects roots and dead branch stubs and spreads from the base of trees upward, but leaves the sapwood intact. Breeding habitat is primarily coniferous forest that includes aspen and other hardwoods (NatureServe 2015).

In Oregon and Washington, the species is reported to nest in snags greater than or equal to 10 inches DBH at nest heights of at least 15 feet (Thomas et al. 1979).

A long-distance migrant, the red-naped sapsucker is a breeding resident in northeast Oregon arriving in spring, with breeding and nesting likely occurring in May through July.

Reuse of same nest tree with a new cavity each year suggests strong site fidelity (USDA Forest Service 1994).

Foraging techniques include sap feeding at wells (including drilling), feeding on aspen buds, gleaning insects (including bark removal), and fly-catching. Feeding on aspen buds and fly-catching has been observed exclusively in quaking aspen, and gleaning is performed on quaking aspen, Douglas-fir, and black cottonwood (Walters 1996).

Existing Condition

There are no documented sightings of red-naped sapsuckers in the planning area nor any adjacent planning areas. Sightings of these sapsuckers tend to occur on the southern portion of the district, south of Highway 26.

There is very little preferred nesting habitat (aspen) in the planning area (approximately 50 acres). This species has been documented using non-hardwood tree species for nest cavities and early season (pre-budding of deciduous trees) foraging, but relies on hardwoods for foraging once these bud out.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution. The risk of uncharacteristic wildfire, disease, or insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Conversely, wildfire would likely also produce

snags, but newly-created snags are usually hard and not easily excavated. Disease-free live trees killed by fire do not contain the rot and defects that exist in other snags and logs that die more slowly from other causes. Aspen stands would likely continue to decline, further reducing preferred nesting habitat.

Cumulative Effects

By definition, cumulative effects (40 CFR 1508.7) would not occur for the no action alternative, as there are no direct or indirect effects. However, current management practices would continue into the reasonably foreseeable future, compounding past and present actions. Riparian vegetation within and adjacent to the planning area has been altered by a variety of past management activities, including timber harvest, road construction, mining and livestock. Livestock grazing has negatively affected riparian areas where cattle have been allowed to concentrate. Livestock grazing also negatively affected grasslands by reducing native species' abundance and diversity. Fire suppression allowed encroachment of conifers, which shaded out hardwoods such as aspen. The condition of some riparian areas and grasslands have been improved by new management practices and restoration activities in recent years, but many still lack suitability for associated native wildlife species. In the foreseeable future, fire suppression and livestock grazing will continue to adversely affect habitat in the planning area.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action would likely increase nesting habitat as aspen restoration treatments improve and expand existing stands. Similarly, the ecological riparian treatments would improve the age classes and species diversity of riparian hardwoods.

In the short-term there could be some displacement of individuals during project implementation work in riparian areas and aspen stands, depending on the time of year this work is implemented.

Cumulative Effects

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning would help restore open dry forest habitats, benefiting the landbird species that use them. All ongoing projects have considered design features in the Northern Rocky Mountains Bird Conservation Plan (low intensity/low severity burns, retention of snags and large trees, and mosaic patterns with refuge areas of untreated habitat, among others), which should allow for restoration while reducing short-term impacts on birds. In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

Red-naped Sapsucker Determination

The proposed action (alternative 2) would have minimal adverse effects to the riparian and aspen habitats this species relies upon in the short-term. In the long-term, project activities would be expected to provide a greater abundance of suitable breeding habitat for this species.

Williamson's Sapsucker

Life History, Habitat, and Distribution

A long-distance migrant, Williamson's sapsucker is a breeding resident in northeast Oregon arriving in spring, with breeding and nesting likely occurring in April to May with fledging in mid-June to mid-July in northeast Oregon (Bull et al. 1986). This species commonly breeds in middle to high elevation conifer and mixed-conifer deciduous forests. It is also common in

montane western larch (e.g., Bull et al. 1986, Gyug et al. 2007), Douglas-fir (Winternitz 1976), ponderosa pine (e.g., Conway and Martin 1993, Crockett and Hadow 1975), and pine-fir forests (e.g., Bull et al. 1986, Raphael and White 1984, Kratter 1991).

Nesting occurs in tree cavities; individuals usually excavate a hole 2 to 18 meters above ground, in dead or decaying pine, fir, larch, or aspen. Suitable nesting snags are more common in old forests than in younger ones (NatureServe 2015).

The degree of fungal infection plays a role in nest tree selection because infected trees tend to have a softer core, making them easier to excavate (Conner et al. 1975). Williamson's sapsucker will not excavate cavities in trees that are not softened (Gyug et al. 2009).

Where forest composition and tree suitability changes over time, the preferred nest tree species may change as well. In northeast Oregon, preferred nest trees (in decreasing order) were western larch, ponderosa pine, Douglas-fir and grand fir (Bull et al. 1986), but in the same study area 25 to 28 years later, the preferred nest trees were Douglas-fir, grand fir, western larch, and ponderosa pine (Nielsen-Pincus and Garton 2007). In the first study, Williamson's sapsucker were capitalizing on abundant suitable ponderosa pine killed by a mountain pine beetle (*Dendroctonus ponderosae*) outbreak in the 1970s (Bull et al. 1986). Twenty-five years later, western spruce budworm (*Choristoneura occidentalis*) outbreaks that killed many Douglas-fir and grand fir in the 1980s had, by 2003 to 2004, made those species the most abundant and suitable nest trees available, and much of the dead standing pine previously suitable had either fallen or been logged (Nielsen-Pincus and Garton 2007).

Wherever Williamson's sapsuckers nest in conifers, average nest tree diameters are relatively large (19.7 to 32 inches DBH; see six studies summarized by Gyug et al. 2009). Where they nest in quaking aspen, average tree diameters are smaller (9 to 15.7 inches DBH; see five studies summarized by Gyug et al. 2009). Western larch nest trees are predominantly live trees (74 to 100 percent), while other conifer nest trees are predominantly dead (40 to 100 percent, see Gyug et al. 2009) because of different decay patterns in different conifer species. Quaking aspen nest trees may be either live or dead depending on local forest stand age and tree conditions (percentage of live varied between 14 and 100 percent in five studies, see Gyug et al. 2009).

Foraging occurs mainly in live conifers, less commonly in snags (dead trees), and rarely in aspen (Stallcup 1968, Smith 1982). In northeast Oregon, this species foraged most frequently in ponderosa pine and Douglas-fir, and less frequently in western larch and lodgepole pine; greater than 90 percent of all foraging observations were in live trees (Bull et al. 1986). In northeast Oregon, trees used for foraging had average DBH of 16 inches and height of 69 feet (Bull et al. 1986) although this average did not differentiate between gleaning insects and tending sap wells.

Williamson’s sapsuckers are omnivorous with high seasonal specialization. They feed exclusively on conifer sap and phloem during the pre-nestling period, shifting to mainly ants after their young hatch (Stallcup 1968, Crockett 1975). Williamson's sapsucker has the highest dependence on ants of any North American woodpecker (Beal 1911).

Existing Condition

Williamson’s sapsuckers sightings have been documented in the planning area. In 2014, a nest with young was documented in the southern end of the planning area, near what is locally known as “Four Corners.”

Habitat is abundant for this species in the planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects resulting from the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution. The risk of uncharacteristic wildfire, disease, or insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Wildfire would likely produce snags, but newly created snags are usually hard and not easily excavated. Trees that die more slowing from other causes may contain the necessary rot to provide ideal cavity excavating conditions for this species and thus would create additional nesting habitat. Foraging opportunities would not be negatively impacted.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects. FVS modeling shows that snag numbers would continue to increase, providing adequate habitat for the Williamson's sapsucker.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action would likely not decrease preferred nest trees in the short-term since primarily larger diameter trees (especially western larch) would not be removed. In the long-term, improved stand stocking levels and pine vigor might reduce the number of preferred nesting trees in the treated areas, but is unlikely to have any significant adverse effects on the species.

Cumulative Effects

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning would help restore open dry forest habitats, benefiting the landbird species that use them. All ongoing projects have considered design features in the Northern Rocky Mountains Bird Conservation Plan (low intensity/low severity burns, retention of snags and large trees, and mosaic patterns with refuge areas of untreated habitat, among others), which should allow for restoration while reducing short-term impacts on birds. In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

Williamson's Sapsucker Determination

With their ability to utilize widely diverse habitats neither alternative is likely to adversely affect habitat for this species.

Downy Woodpecker

Life History, Habitat, and Distribution

The smallest and one of the most widespread of North American woodpeckers, the downy woodpecker is a year-round resident with a range covering the entire North American continent.

The downy woodpecker is equally at home in urban woodlots as wilderness forests, and is readily attracted to backyard bird feeders. It is primarily insectivorous, focusing its foraging activities on surfaces, bark crevices, and shallow excavations of trees, shrubs, and woody invasive plants.

Nesting usually occurs in a dead stub of a living or dead tree (Jackson 1976, Harestad and Keisker 1989), and characteristically in wood with an advanced stage of heart rot (Conner and Adkisson 1976, Conner et al. 1976, Jackson 1976). Nesting generally occurs in May through June at the latitude of the planning area.

This species is a very active forager, moving over tree, shrub, and large weedy stem surfaces to glean from the surface, probe into crevices, and excavate for shallow subsurface prey (Jackson 1970).

Existing Condition

Downy woodpeckers have been documented in the planning area. Habitat is abundant for the downy woodpecker owing to this species ability to utilize a broad range of habitat types.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution. The risk of uncharacteristic wildfire, disease, or insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management.

There would be no additional introduced disturbances from project activities that might displace individuals during project implementation.

Cumulative Effects

There would be no direct additive effects as a result of the no action alternative, since there are no direct or indirect effect.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action activities could displace individuals in the short-term if performed during the nesting season in areas occupied by this species. With the abundance and flexibility this species shows in habitat use, project activities are not expected to have adverse effects on habitat or species viability.

Cumulative Effects

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning, would help restore open dry forest habitats, benefiting the landbird species

that use them. All ongoing projects have considered design features in the Northern Rocky Mountains Bird Conservation Plan (low intensity/low severity burns, retention of snags and large trees, and mosaic patterns with refuge areas of untreated habitat, among others), which should allow for restoration while reducing short-term impacts on birds. In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

Downy Woodpecker Determination

With their ability to utilize widely diverse habitats neither alternative is likely to adversely affect habitat for this species.

Hairy Woodpecker

Life History, Habitat, and Distribution

The hairy woodpecker is primarily a forest bird, widely distributed in regions where mature woodlands are prevalent. This species also occurs in small woodlots, wooded parks, cemeteries, shaded residential areas, and other urban areas with mature shade trees. It is a year-round resident of whichever habitat in utilizes, but is most common in medium-aged forests, as well as mature woods with large old trees or snags suitable for cavity nesting.

Nesting occurs in most areas; however, this species favors dead or dying parts of live trees, especially where fungal heart rot has softened the heartwood. Hairy woodpeckers tend to begin nesting earlier than downy woodpeckers with a range of about March 21 to July 30 (McNair 1987).

Foraging sites clearly reflect the availability of tree species, trees of greater stature (e.g., Weikel and Hayes 1999), and tree species hosting concentrations of potential prey (e.g., Kilham 1961, Kilham 1973). Hairy woodpeckers eat mainly insects (beetles, ants, caterpillars), especially boring larvae obtained from bark or wood of trunks and branches of trees, or from soft shrubs or old giant thistle stalks. They also eat other invertebrates and some fruits and nuts (Terres 1980). Hairy woodpeckers may concentrate feeding in areas of insect outbreaks. Sometimes they feed upon sap from wells drilled in trees by sapsuckers. Seeds may be important food in winter. This species uses various foraging substrates, ranging from dead and live trees, to downed wood and the ground (Sousa 1987).

Existing Condition

Hairy woodpeckers have been documented in the planning area. Habitat is abundant in the planning area for this species.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution. The risk of uncharacteristic wildfire, disease, or insect outbreaks would continue

to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management.

There would be no additional introduced disturbances during project implementation that might displace individuals.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action activities could displace individuals in the short-term if performed during the nesting season in areas occupied by this species. With the abundance and flexibility this species shows in habitat use, project activities are not expected to have adverse effects on habitat or species viability.

Cumulative Effects

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning would help restore open dry forest habitats, benefiting the landbird species that use them. All ongoing projects have considered design features in the Northern Rocky Mountains Bird Conservation Plan (low intensity/low severity burns, retention of snags and large trees, and mosaic patterns with refuge areas of untreated habitat, among others), which should allow for restoration while reducing short-term impacts on birds. In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

Hairy Woodpecker Determination

With their ability to utilize widely diverse habitats neither alternative is likely to adversely affect habitat for this species.

Black-Backed Woodpecker

Life History, Habitat, and Distribution

Black-backed woodpeckers require conditions that produce bark and wood-boring beetles. They reach highest densities and reproductive success in areas with high densities of recently dead trees (less than 5 years), and occur in low densities in unburned forests. The low densities of woodpeckers in unburned forests may be sink populations that are maintained by birds that move into these areas as conditions on post-fire habitats become less suitable over time (Hutto 1995).

Foraging occurs in northeast Oregon, 97 percent of foraging occurred on ridges; the birds prefer to forage in lodgepole pine and ponderosa pine, and feed almost equally on live and dead trees. The species use trees averaging 12.4 inches in diameter and 59 feet tall, with more than 40 percent of their needles intact, suggesting that they preferred live or recently dead trees (Bull et al. 1986).

The bulk of this species' diet is wood-boring beetle larvae (including Monochamus spp. and Englemann spruce beetle, Dendroctonus engelmanni), but the species also feeds on other insects (e.g., weevils, beetles, spiders, ants) and occasionally eats fruits, nuts, sap, and cambium. Woodpeckers may be attracted by the clearly audible chewings of wood-boring insects in recent

burns (NatureServe 2015). They obtain food by flaking bark from trees (usually dead conifers) and logs and sometimes by picking and gleaning. They feed primarily on logs and on the lower sections of tree trunks (more than 7.5 centimeter DBH; but most often 15 to 25 centimeter DBH) (Villard 1994). Females feed young more often than males, but carry less food in each visit; males visit less often but they come with more food, and perhaps supply 50 to 75 percent of food to nestlings (Short 1974, Kilham 1965).

In northeast Oregon, 66 percent of nests sites were located in dead trees (ponderosa pine, lodgepole pine, or western larch). Nests usually occurred in smaller (less than 19.8 inches diameter), tall (greater than 49 feet), and recently dead (less than 5 years) trees. Seventy-three percent of nests occurred in ponderosa pine forest types with a mean canopy closure of 46 percent, a basal area of 87 square feet per acre, less than five stumps per quarter acre, less than 10 percent log cover, and more than five dead trees per quarter acre (Bull et al. 1986). Studies in other states have recorded nest tree diameters ranging from 3-5 inches in diameter (McClelland et al. 1979) to greater than 16 inches in diameter and over 33 feet tall (Raphael and White 1984).

Nesting rarely occurs in burned areas where salvage logging has occurred due to the loss of food resources caused by snag removal (Cahall and Hayes 2008; Hutto and Gallo 2006; Saab et al. 2007).

Black-backed woodpeckers are considered a species of least concern by the International Union for Conservation of Nature (IUCN) and demonstrably secure (G5) by NatureServe (NatureServe 2015).

Existing Condition

The petition to list the black-backed woodpecker under the Endangered Species Act is confined to the Oregon Cascades-California population and the Black Hills population (Federal Register 2013) and does not affect the Malheur National Forest.

There were two documented sightings of black-backed woodpeckers foraging in the Camp Lick planning area in 2014, although typical primary, post-fire habitat is currently lacking.

On the forest, large-scale wildfires have recently occurred (Canyon Creek Complex 2015, Murderer’s South Complex 2014) which have created abundant foraging habitat for black-backed woodpeckers on the Malheur National Forest.

In the ponderosa pine/Douglas-fir wildlife habitat type, large snag densities are slightly below the reference value in the quantity preferred by black-backed woodpeckers, while small snag densities are well above the reference value in the quantity preferred by black-backed woodpeckers in the two watersheds used for the analysis (see methodology in the Primary Cavity Excavator/Dead and Defective Wood Habitat section for details).

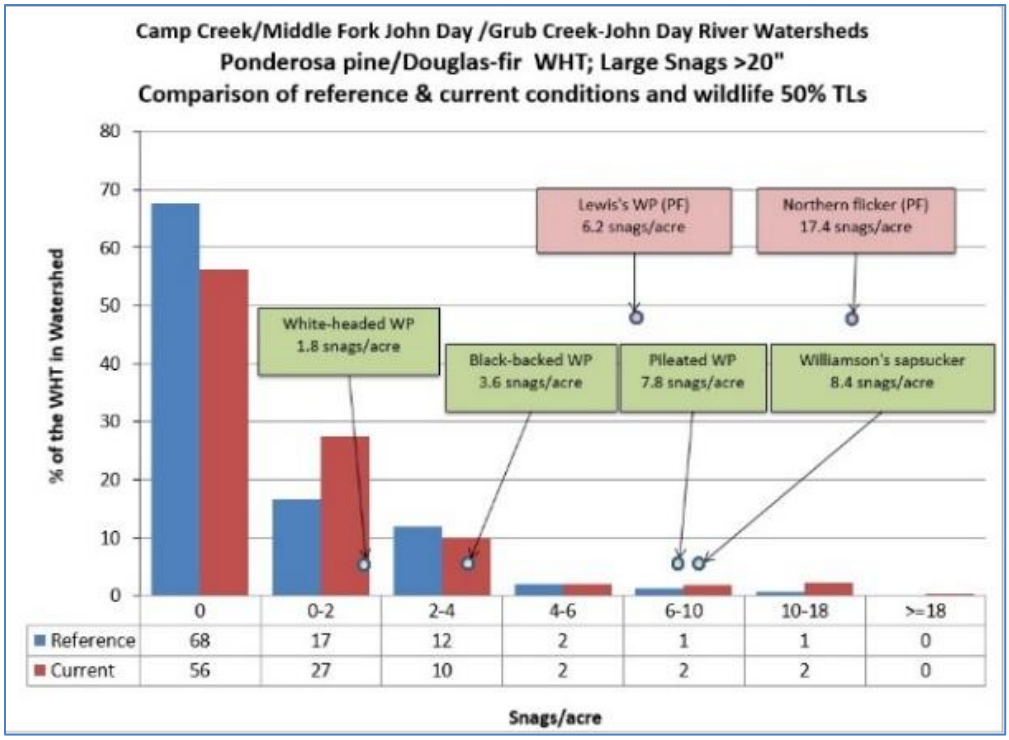


Figure 10. Comparison of reference (historical range of variability) and current conditions of large ponderosa pine/Douglas-fir snags in Camp Creek/Middle Fork John Day/Grub Creek-John Day River watersheds showing wildlife 50 percent tolerance levels

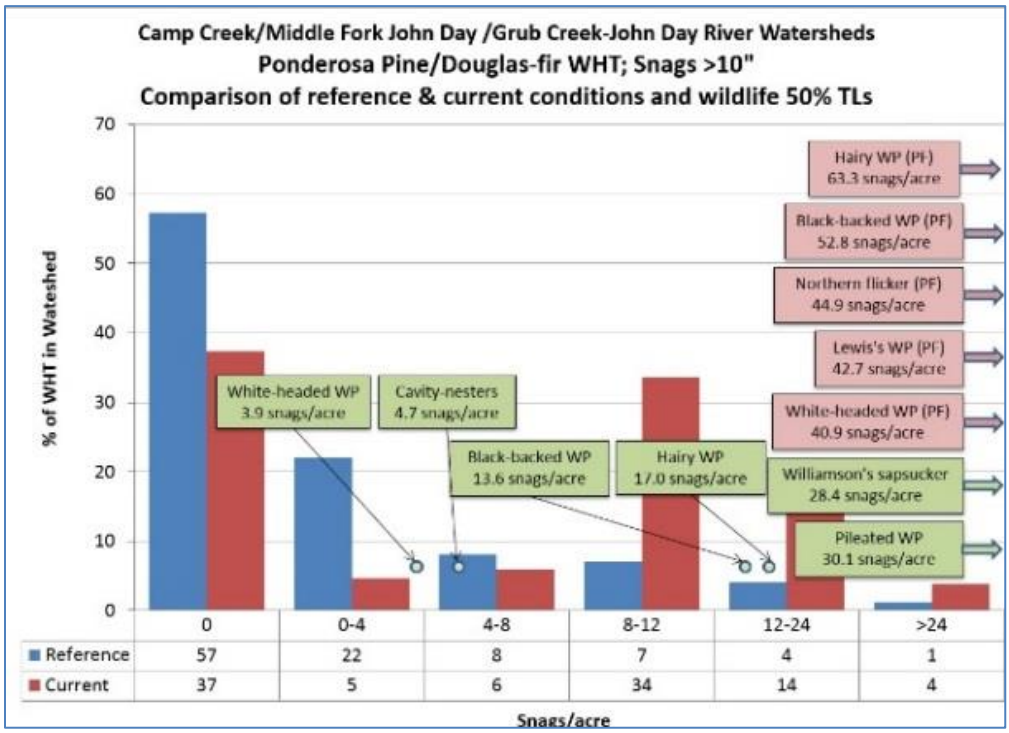


Figure 11. Comparison of reference (historical range of variability) and current conditions of small ponderosa pine/Douglas-fir snags in Camp Creek/Middle Fork John Day/Grub Creek-John Day River watersheds showing wildlife 50 percent tolerance levels

In the eastside mixed-conifer wildlife habitat type, snag densities are well above the reference value in the quantity preferred by black-backed woodpeckers, while small snag densities are well below the reference value in the quantity preferred by black-backed woodpeckers in the watershed used for the analysis (see methodology in the Primary Cavity Excavator/Dead and Defective Wood Habitat section for details).

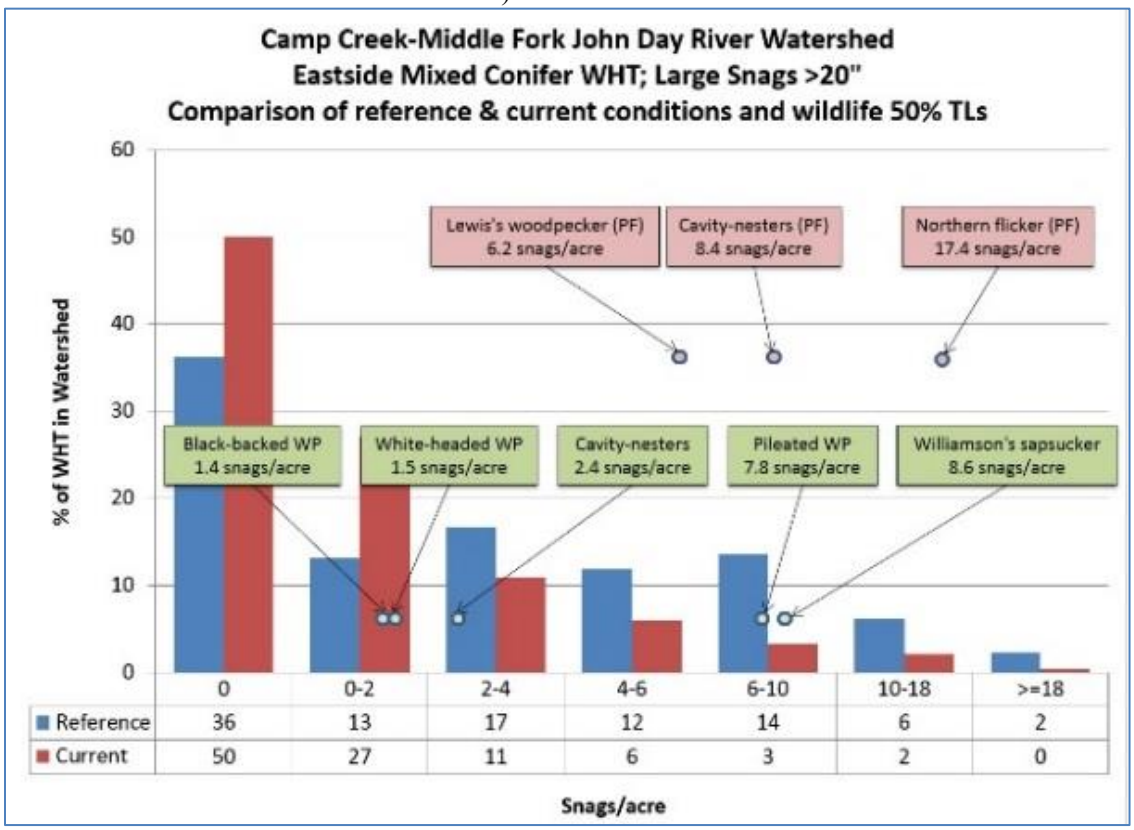


Figure 12. Comparison of reference (historical range of variability) and current conditions of large eastside mixed conifer snags in Camp Creek/Middle Fork John Day watershed showing wildlife 50 percent tolerance levels

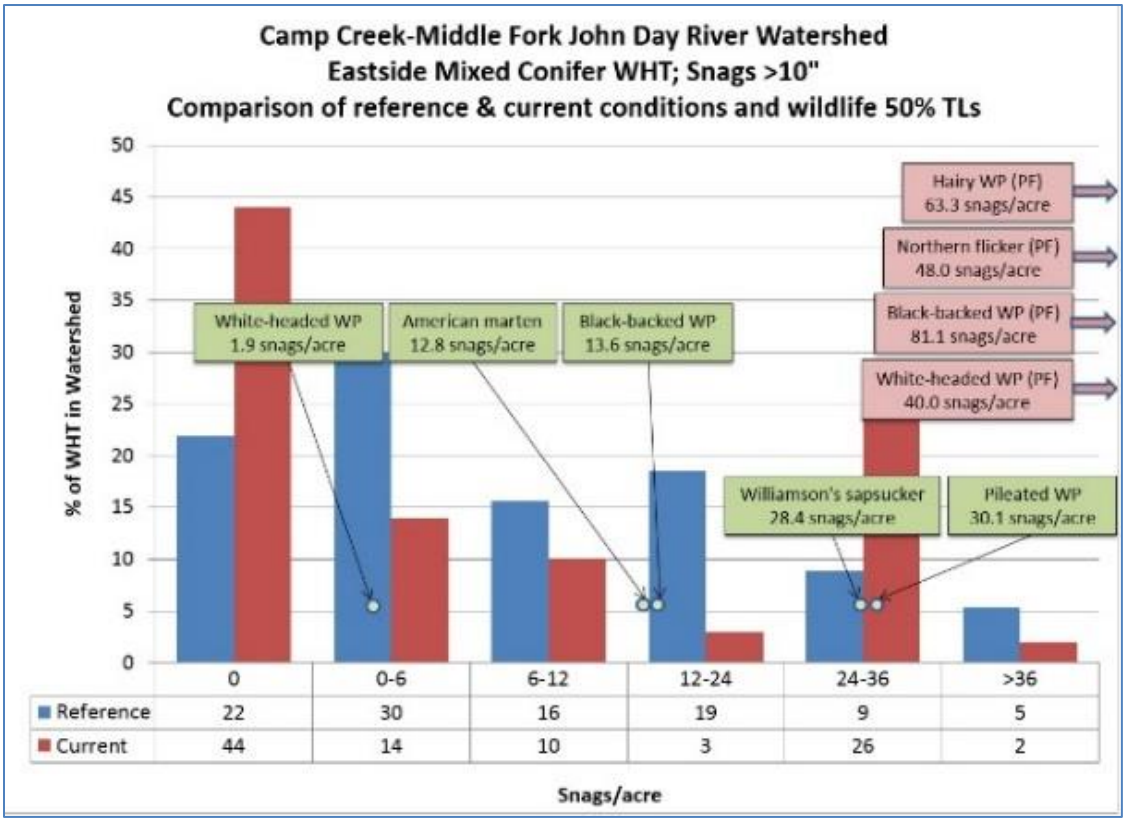


Figure 13. Comparison of reference (historical range of variability) and current conditions of small eastside mixed conifer snags in Camp Creek/Middle Fork John Day watershed showing wildlife 50 percent tolerance levels

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution.

Fire hazard would remain elevated for some stands and a severe fire could produce additional forage area for this species for about 5 years post fire. A large-scale fire may be detrimental in the long-term since replacement trees that ultimately provide future snags take a long time to develop.

In the absence of disturbance in the long-term, open pine stands would continue to transition to denser closed stands, likely resulting in increased foraging area as tree mortality increases due to competition, insects, and disease. Closed roads currently receiving unauthorized used would continue receiving use, resulting in loss of foraging and nesting snags from firewood cutting.

On the forest, large-scale wildfires have recently occurred (Canyon Creek Complex 2015, Murderer's South Complex 2014) which have created abundant foraging habitat for black-backed woodpeckers on the Malheur National Forest through approximately 2020.

In the short-term, the no action alternative is unlikely to alter habitat conditions for the black-backed woodpecker within the planning area. In the mid to long-term, large-scale fire could result in a creation of extensive habitat areas, ultimately yielding a short-term beneficial impact. Alternative 1 would not contribute to a negative trend in viability on the Malheur National Forest for black-backed woodpeckers.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects. However, the absence of habitat management to reduce severe wildfire risk will compound the risk already present from years of fire suppression. A severe fire would positively impact habitat for this species.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Generally, combined thinning and fuel reduction treatments would render treated stands unsuitable for black-backed woodpeckers. Although some tree mortality would be expected in burn units providing small pockets of nesting or foraging habitat for black-backed woodpeckers, thinning and burning would have overall negative effects to black-backed woodpecker by reducing stand density and cover, thus reducing overall nesting and foraging habitat.

Project activities rendering stands less susceptible to fire and insect outbreaks would reduce the likelihood of future fires or natural disturbances and therefore reduce potential black backed woodpecker habitat. However, the extensive old growth areas and connectivity corridors would continue to provide potential habitat for nesting and foraging. The planning area has historically experienced a frequent, mixed severity fire history (see Camp Lick Fuels report) so it would be expected that some of these untreated areas would eventually burn and provide habitat.

Cumulative Effects

Cumulative effects for black-backed woodpecker mirrors the cumulative effects described under the Primary Cavity Excavator/Dead and Defective Wood Habitat section.

Black-Backed Woodpecker Determination

The no action alternative (alternative 1) means there would be no additional introduced disturbance that might displace individuals during project implementation. In the mid to long-term the increasing risk of severe fire would result in the creation of suitable habitat in the event of a severe wildfire.

The proposed action (alternative 2) might displace some individuals due to physical disturbance in the short-term. In the long-term, treatments would help retain and promote growth and longevity of large trees in the old forest single-stratum and would reduce the wildfire risk, resulting in a negative trend for creation of suitable habitat in the planning area. With large quantities of suitable habitat recently created on the forest, lack of primary habitat in this planning area is not a concern for species viability.

Northern Flicker

Life History, Habitat, and Distribution

The northern flicker is a common, primarily ground-foraging woodpecker that occurs in most wooded regions of North America. This species is a year-round resident on the Malheur National Forest that prefers forest edge and open woodlands approaching savannas, though its habitation of variation in tree species composition is broad.

Nest-tree species are strikingly variable; flickers have been reported nesting in most tree species in the wide range of woodlands they inhabit. Northern flickers usually excavate nest cavities in dead or diseased tree trunks and large branches. Open or savanna-like structures of the habitat provides space for foraging and are more important than species of tree (Rodewald 2015). In many northern mixed-wood boreal forests, flickers are particularly common in quaking aspen stands, presumably because aspen is preferred as a nesting tree. Eggs are generally laid in early to mid-May.

Foraging occurs primarily on ground, in soil, or especially anthills. Ground cover that facilitates access to ants (bare ground, short grass) is favored while tall grass and thick grass thatch layers are avoided (Rodewald 2015). Flickers tend to forage near forest edges or near small clumps of trees, probably seeking escape cover from predators. This species rarely forages on the trunks and branches of trees.

Existing Condition

Northern flickers have been documented throughout the planning area. Preferred habitat varies across the planning area but the more open areas are utilized by this species.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities are proposed. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution. The risk of uncharacteristic wildfire, disease, or insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management.

There would be no additional introduced disturbances from project activities that might displace individuals.

Cumulative Effects

There would be no cumulative effects as a result of the no action alternative, since there are no direct or indirect effects. However, assuming no large fire event occurs in the planning area, forage habitat would continue to decline in the absence of management to move the landscape toward the HRV.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action activities could displace individuals in the short-term if performed during the nesting season in areas occupied by this species. With the abundance and flexibility this species shows in habitat use, project activities are not expected to have any adverse effect on habitat or species viability. Conversely, the proposed activities would increase the open foraging habitat preferred by this species.

Cumulative Effects

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning would help restore open dry forest habitats, benefiting the landbird species that use them. All ongoing projects have considered design features in the Northern Rocky Mountains Bird Conservation Plan (low intensity/low severity burns, retention of snags and large trees, and mosaic patterns with refuge areas of untreated habitat, among others), which should allow for restoration while reducing short-term impacts on birds. In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

Northern Flicker Determination

The no action alternative (alternative 1) would likely result in a reduction of foraging habitat over time, displacing northern flickers to more suitable habitat.

The proposed action (alternative 2) may result in some degree of displacement or disturbance for Northern flickers during project implementation; some trees providing nesting habitat could be removed while the enhancement of foraging areas could provide foraging benefit. Treatments could potentially change current northern flicker distribution and increase their use of the affected habitat.

Old Growth Habitat

History, Habitat, and Distribution

Designation of old growth stands on the Malheur National Forest were initially made (in the 1980s) based on a 3 to 5 mile grid with a goal to have one old growth area for every 12,000 acres. The grid system was intended to meet a distribution pattern throughout the forest, which was the goal at the time. Old growth areas were defined as meeting management requirements for pileated woodpeckers, pine marten, or a combination of the two species.

Direction was incorporated into the Forest Plan for assessing and managing old growth habitat; “Inventory and validate all old growth areas. Correct previously dedicated old growth unit designations that are not meeting management requirement direction where possible” (USDA Forest Service 1990, page IV-105).

The Malheur Forest Plan identifies three management indicator species for old growth habitat (primarily old forest multi-strata structured stands): pileated woodpecker, pine marten, and three-toed woodpecker (Table 10). In addition, the Eastside Screens added northern goshawk habitat standards for areas with commercial tree harvest. Goshawks are known to use interior forest habitats of mature or old growth structure (USDA Forest Service 1995). Old growth connectivity standards were also introduced in Eastside Screens, the intent of which is to allow interaction of adults and dispersal of young for species associated with late and old structural conditions.

Table 10. Old growth management indicator species

Management indicator species	Representing	Habitat requirements	Habitat present in analysis area
Pine marten (*Martes Americana*)	Old growth	Adequate cover (trees/shrubs) to minimize travelling in open areas, Adequate ground structure to provide thermal refuge in winter. Water. Downed wood.	Yes. Limited due to large proportion of open, dry forest which meets summer hunting needs but not winter refugia.
Pileated woodpecker (*Dryocopus pileatus*)	Old growth, primary cavity nester, snags and downed wood	Extensive areas of dense coniferous forests with tall closed canopy, high basal area and large diameter snags	Yes
Three-toed woodpecker (*Picoides tridactylus*)	Old growth, primary cavity nester, snags and downed wood	Higher elevation (above 4,500 feet) lodgepole pine and mixed conifer forests with a lodgepole component	Limited due to lack of montane mixed conifer and lodgepole habitat.
Northern goshawk (*Accipiter gentilis*)	Old growth/mature structure	A mosaic of mature, mixed conifer stands, with closed canopies and interspersed openings suitable of supporting a wide array of prey. Interior forest of mature/old growth structure	Yes, two (2) designated northern goshawk territories. Additional habitat present in planning area.

Existing Condition

Designated Old Growth

The result of the method used in the 1980s to designate old growth stands was a lack of protection for many stands meeting old growth criteria, and protection of stands which lacked old growth characteristics and in some cases did not have the potential to ever become old growth.

Henjum (1996) reported that "In the Malheur National Forest, only 50% of the designated areas were actually old-growth habitat . . . The extent of old-growth forest ecosystems on the Eastside has been greatly diminished during the 20th century," and these habitats are essential for many species.

Key issues related to old growth in the planning area, per the Camp Lick insect and disease review (Spiegel and Johnson 2015), include moisture stress to ponderosa pines (due to competition) putting them into a weakened state and making them more susceptible to pine beetles, loss of vigor in western larch resulting from dense stand conditions that reduce crown width and crown length, and overstocking in western white pine causing moisture stress and increasing susceptibility to pine beetle attack.

Stand composition should be aligned with HRV (with a goal to address future range of variability as well) and as such, many old growth sites would historically have been single-stratum ponderosa pine dominated with an open park-like understory due to frequent low-intensity fires. Moister sites might have been more dominated by western larch. Few sites in the planning area would approach the type of moist mixed conifer seen west of the Cascades. "Historically, there is no statistical difference between dry ponderosa pine and mixed conifer density in east slope Cascades sites because it was equalized by fire. Frequent fire trumped productivity" (Franklin 2015).

Balancing species needs with historical stand compositions may mean leaving stands in the 'boom or bust' condition discussed by Franklin (2015) and as such these stands remain highly susceptible to stand-replacing fire. Marten-specific old growth areas, designed to provide winter and reproductive habitat, are the most likely of our current forest plan old growth designations to persist in this high fire severity regime.

Pileated woodpecker old growth areas, especially feeding areas, provide more leeway to perform active management to improve old growth characteristics and health. Pileated woodpeckers are one of the few woodpecker species able to excavate in sound wood. By exposing healthy trees to infection by heart-rot fungi, they may contribute to the creation of future nesting, roosting, and foraging habitat for both themselves and other species (Aubry and Raley 2002). They also use decadent trees and snags for both nesting and foraging. Restoration thinning and even prescribed fire can benefit some of these old growth areas, addressed on a site-specific basis. Feeding areas tend to be aligned with drier pine sites where management for larger trees not only benefits the pileated but the white-headed woodpecker and other cavity users.

Truly large trees are vital to wildlife, in both their green state and later as snags or logs. Outside of old growth areas there are occurrences of large ponderosa pine and western larch, and in some places Douglas-fir. It is critical that these be maintained. The Eastside Forest Panel found that low elevation ponderosa pine late successional-old-growth was the most endangered type of eastside forest and that both large and small patches of late successional-old-growth habitat are critical for conservation of both wildlife and plant species (Henjum 1996).

There are currently no old-growth lodgepole pine forests in the Camp Lick planning area, nor any areas or lodgepole which would be likely to achieve old growth status due to ongoing insect attack (see Camp Lick Silviculture Report). For the Management Area (MA) 13 (Old Growth), there are nine designated old growth areas (DOG) totaling 3,232 acres occurring within the Camp Lick planning area. There are no replacement old growth areas designated, nor pileated woodpecker feeding areas, both of which are required to accompany DOG acres based on a minimum formula contained in Appendix G of the Forest Plan (USDA Forest Service 1990; Appendix G).

The minimum replacement old growth acreage required by the Forest Plan is 50 percent of the acres classified as designated old growth.

Table 11. Designated old growth (Management Area 13) – Malheur Forest Plan minimum requirements

Old growth target species	Old growth management types	Minimum acres required	Notes on allocations
Pileated woodpecker (PW)	Reproductive area	300	Reproductive acres plus Feeding area acres must total a minimum of 600 acres
Pileated woodpecker (PWFA or PWRF)	Feeding area or Replacement Feeding area	300	Feeding area acres can overlap replacement acres as long as total acres meet the minimum of 600 acres
Pileated woodpecker (PWRO)	Replacement area	300	Replacement acres must be at least 50 percent of the designated acres but can overlap the feeding area
American pine marten (MM)	Reproductive area	160	American (Pine) marten reproductive areas must be a minimum of 160 acres

Old growth target species	Old growth management types	Minimum acres required	Notes on allocations
American pine marten (MMRO)	Replacement area	80	Replacement old growth acres for American (Pine) marten must be at least 80 acres
Combined pileated woodpecker and pine marten (PP)	Reproductive area	300	Since this type must meet the needs of two species, the larger size requirement needs to be met.
Combined pileated woodpecker and pine marten (PPFA or PPRF)	Feeding area or Replacement Feeding area	300	Since this type must meet the needs of two species, the larger size requirement needs to be met
Combined pileated woodpecker and pine marten (PPRO)	Replacement area	300	Since this type must meet the needs of two species, the larger size requirement needs to be met

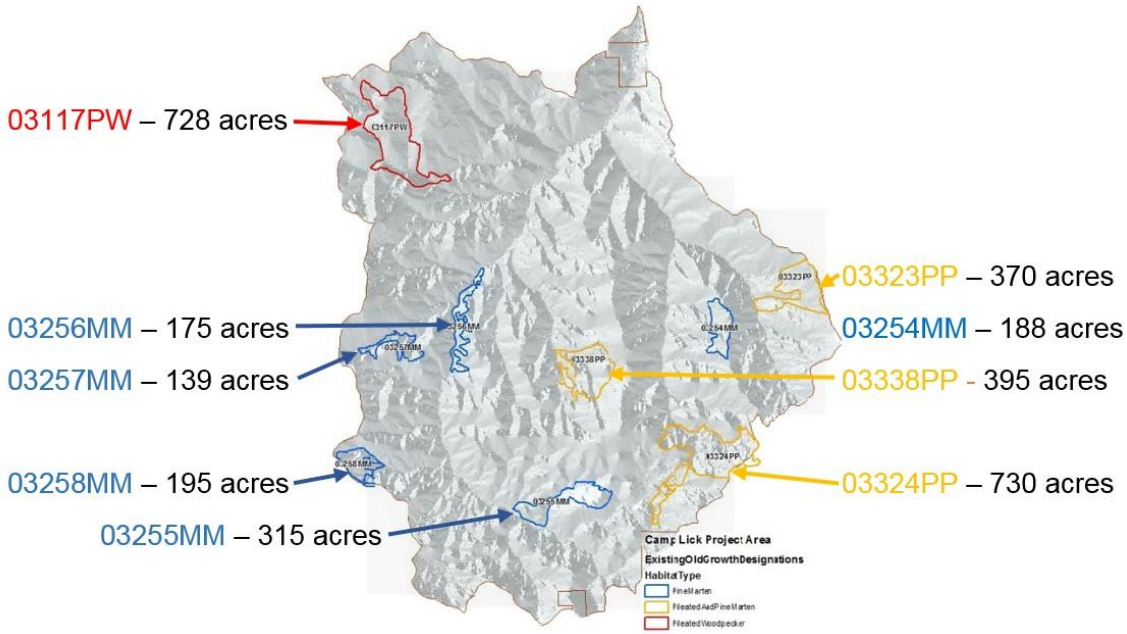


Figure 14. Existing (no action) designated old growth areas and acres in the Camp Lick planning area

Field surveys were completed throughout planning area during 2014 and 2015 field seasons and detections of management indicator species (MIS) were recorded.

Areas of potential old growth (initially identified using LiDAR tree height values of 130+ feet) and existing dedicated old growth (DOG) and proposed replacement old growth (ROG) stands were surveyed more intensively (site visits, trees per acre), as well as evaluating for potential pine marten habitat.

All or part of four current DOGs failed to meet old growth criteria, had no availability to conjoin with additional suitable acreage to meet plan requirements for adjacent ROG areas and/or had no feeding areas (required for the pileated woodpecker old growth type). MA13 areas designated for American pine marten were especially poor in providing suitable habitat for their target species. Remote camera surveys failed to show any occurrence of pine martens.

Late and Old Structure

Eastside Screens also amended the Malheur Forest Plan to manage late and old structure (LOS) stands within HRV, including areas inside and outside of the DOG/ROG network. Late and old structure within the planning area provides suitable habitat for pileated woodpeckers; however, most LOS stands (including old growth areas) are not currently providing ideal or adequately connected habitat for pine marten. Pine marten presence in LOS could not be determined in the planning area. Traditional pine marten habitat, montane mixed conifer, comprises only 41 acres in the planning area.

Interior Columbia Basin habitat evaluations for white-headed woodpeckers—a species that shows a strong preference for mature, single-stratum ponderosa pine dominated habitats—indicated that roughly 70 percent of the watersheds in the Blue Mountains showed a decreasing trend in the preferred habitat type, with a 30 percent static and/or increasing trend (Wisdom et al. 2000). Results from the evaluation also indicated declines in large trees (greater than or equal to 20 inches DBH) and open canopied forest types (less than 40 percent crown closure) in the dry biophysical environment. Habitats for species closely associated with these mature open-canopied forest types, such as white-headed woodpecker, pygmy nuthatch, and western bluebird, have likely declined across the landscape from historical levels. However, the Camp Lick planning area has approximately 5,160 acres of old forest single-stratum, and these species have been documented throughout the old forest single-stratum habitat. White-headed woodpeckers were commonly encountered during field reconnaissance and surveys of the Camp Lick planning area.

Connectivity Corridors

In the 2012 planning rule (36 CFR 219), connectivity is defined as "Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movement of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change" (36 CFR 219.19).

Connectivity corridors are but one component of the overall goal for ecosystem integrity. They may have specific requirements for at-risk species, and more general requirements for overall ecosystem health and function. They facilitate movement of species between resource patches; supporting security, interaction, dispersal, and exchange of genetic diversity. They reduce habitat loss and fragmentation by conserving and managing linkages, and ultimately they provide support for biodiversity adaptations to changing conditions.

No connectivity corridors are currently designated in the planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental consequences resulting from the no action alternative warrants discussion. Under alternative 1, there would be no changes to MA13 designations. Malheur Forest Plan standards regarding the MA13 acres would not be met. Stands not meeting old growth characteristics would continue to have protection as old growth (MA13) areas while other stands (LOS) meeting old growth characteristics would not receive protection. These undesignated stands are at heightened risk of loss due to firewood cutting.

Existing large overstory ponderosa pine would continue to weaken due to moisture stress in overstocked stands, reducing the potential old growth inventory of this species.

Western larch would continue to lose vigor as dense stand conditions continue.

Preferred nesting structures for pileated woodpeckers would continue to be lost as large overstory ponderosa pine and western larch fail to thrive due to overstocked conditions.

Increasing susceptibility to insect and disease disturbances in excess of HRV would ultimately affect the weakened ponderosa pine and western larch, which are needed for recruitment to old forest structure.

Fire effects would result in higher stand loss as seen in the Canyon Creek Complex fire (2015) which burned in similar fuels profiles. The majority of the planning area is currently prone to high mortality through cambium kill and crown fire.

Disturbances would be of a higher severity and increased mortality of larger trees, over a larger area than under historic conditions (see Fuels report). Specifically, patch sizes of high severity would be larger. Recent fires in eastern Oregon, including on the Malheur National Forest in 2013, 2014, and 2015 indicate that in similar conditions, tree mortality through cambium kill and crown scorch could burn through a majority of the planning area.

Cumulative Effects

Because there are no direct or indirect effects, there would be no cumulative effects as a result of the no action alternative.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action would designate 1,511 new acres of Old Growth protections (MA13) for LOS and would alter the location and/or stand boundaries of some currently designated old growth boundaries as directed in the Forest Plan (USDA Forest Service 1990, pages IV-105 to IV-107). **Error! Reference source not found.** details the proposed changes to Old Growth esignations (MA13) under the proposed action alternative and Figure 15 shows a comparison the existing and proposed old growth areas (MA13) in the planning area.

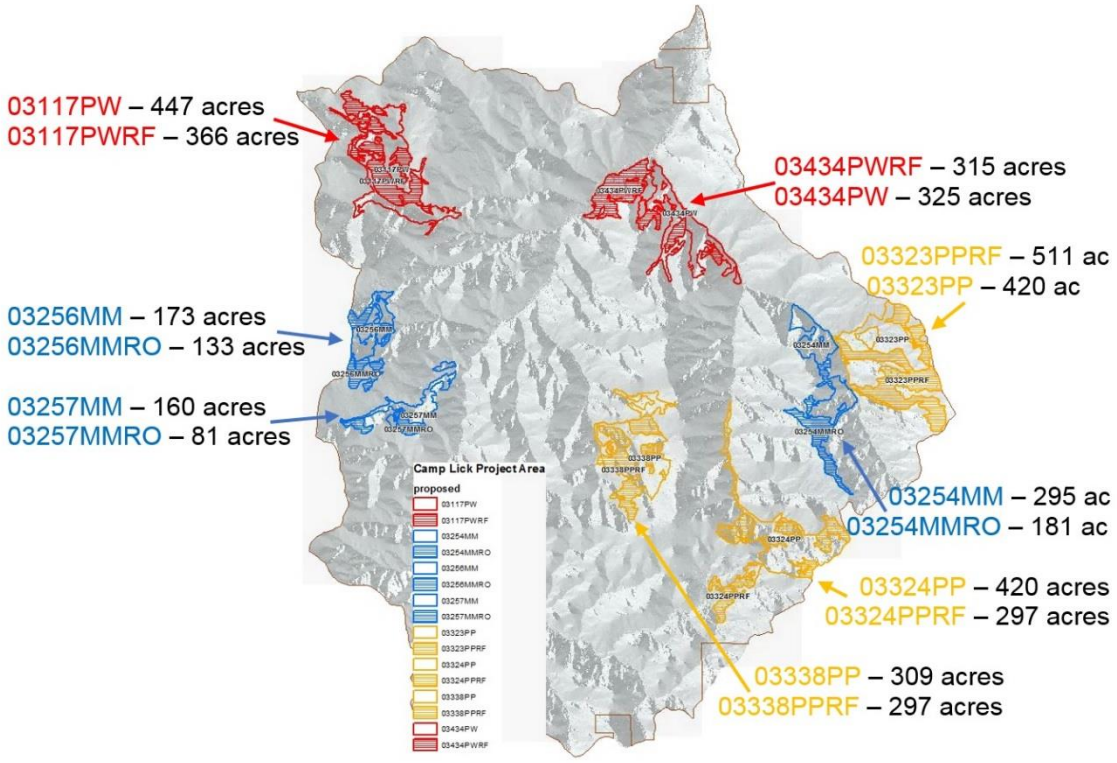


Figure 15. Proposed designated old growth (Management Area 13) areas and acres in the Camp Lick planning area.

Table 12. Proposed changes to old growth (Management Area 13) designations

Existing identification	Existing type and acres	Proposed action identification	Proposed action acres	Proposed Management Area 13 acres for Designated Old Growth / Replacement Old Growth combined
03117PW	DOG 728 acres	03117PW 03117PWRF	DOG 447 acres ROG/FA 366 acres	813 acres
03254MM	DOG 188 acres	03254MM 03254MMRO	DOG 295 acres ROG 181 acres	476 acres
03256MM	DOG 175 acres	03256MM 03256MMRO	DOG 173 acres ROG 133 acres	306 acres
03257MM	DOG 139 acres	03257MM 03257MMRO	DOG 160 acres ROG 81 acres	241 acres
03323PP	DOG 370 acres	03323PP 03323PPRF	DOG 403 acres ROG/FA 511 acres	914 acres
03324PP	DOG 730 acres	03324PP 03324PPRF	DOG 420 acres ROG/FA 327 acres	748 acres
03338PP	DOG 392 acres	03338PP 03338PPRF	DOG 309 acres ROG/FA 297 acres	606 acres
03255MM*	DOG	NONE	0	N/A
03258MM*	DOG	NONE	0	N/A

Existing identification	**Existing type and acres**	**Proposed action identification**	**Proposed action acres**	**Proposed Management Area 13 acres for Designated Old Growth / Replacement Old Growth combined**
NONE	NONE 0 acres	03434PW 03434PWRF	DOG 325 acres ROG/FA 315 acres	640 acres
Total acres	3,232 acres		4,743 acres	4,743 acres

* Existing DOG designations being removed as they do not meet old growth requirements.

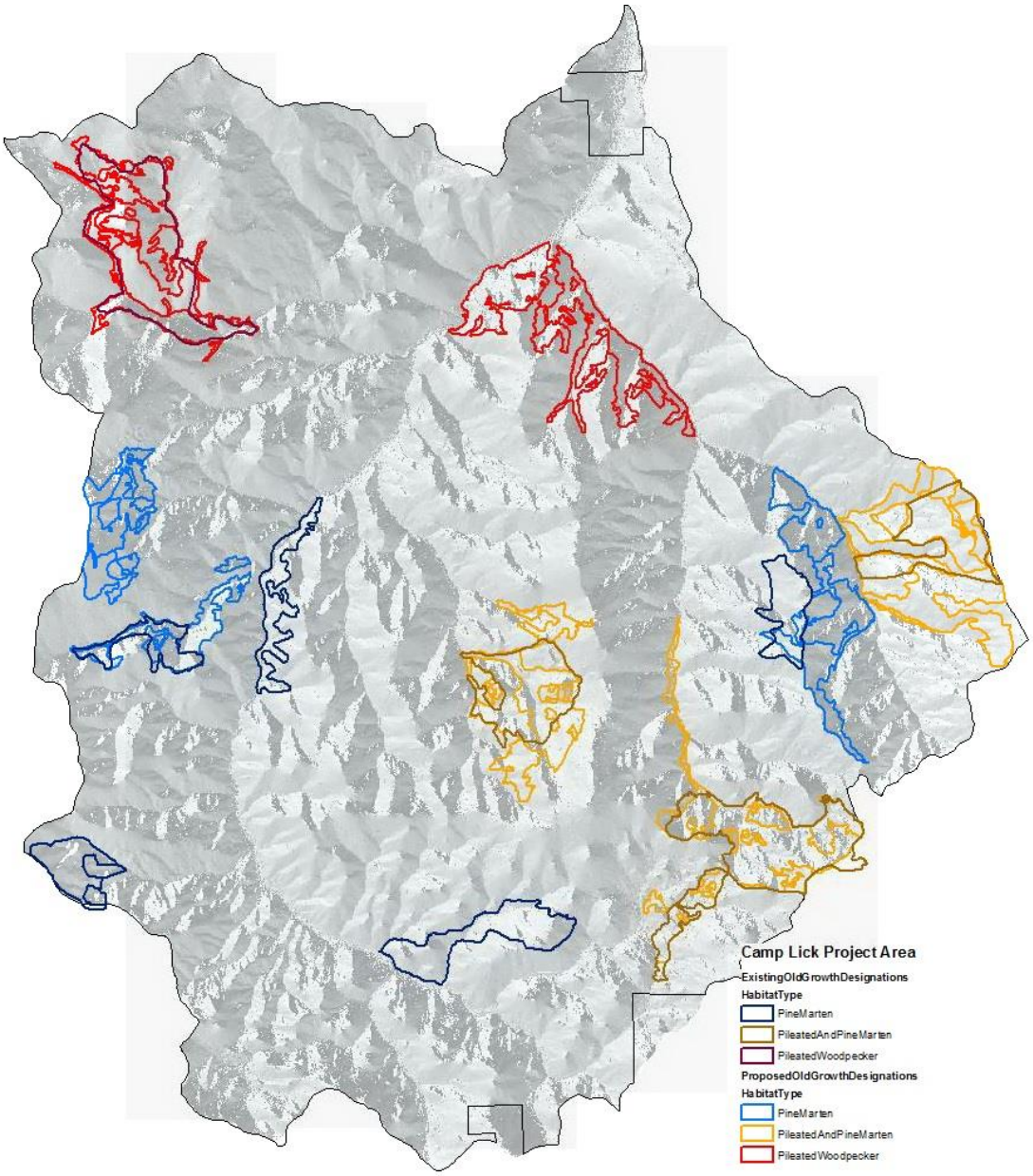


Figure 16. Comparison of existing and proposed old growth (Management Area 13) designations and acres in the Camp Lick planning area

Connectivity Corridors

Connectivity corridors were identified during project planning, linking late and old structure stands (as required by the Eastside Screens), and incorporating riparian areas as necessary, to facilitate the movement of old growth dependent species while allowing them to avoid predation.

Areas of structural connectivity between late and old structure habitats were identified with the goal of maintaining or enhancing functional connectivity such that linkage areas are fostered or maintained, permeability for wildlife species to move between stands and adjacent watersheds is maximized, and ecological processes are sustained.

Eastside screens requires that a contiguous network pattern with two or more connection points be maintained between all LOS forest stands greater than or equal to 10 acres, and all old growth habitats both within and extending into adjacent watersheds. This is the minimum starting point for designating connectivity corridors. However, in working with our existing old structure stands there are some areas where past activities have removed late and old structure to an extent that making the requisite two-way connections is not possible. These occur primarily the southern end of the planning area. See Figure 17 for visualization of LOS stands and connectivity network across the planning area.

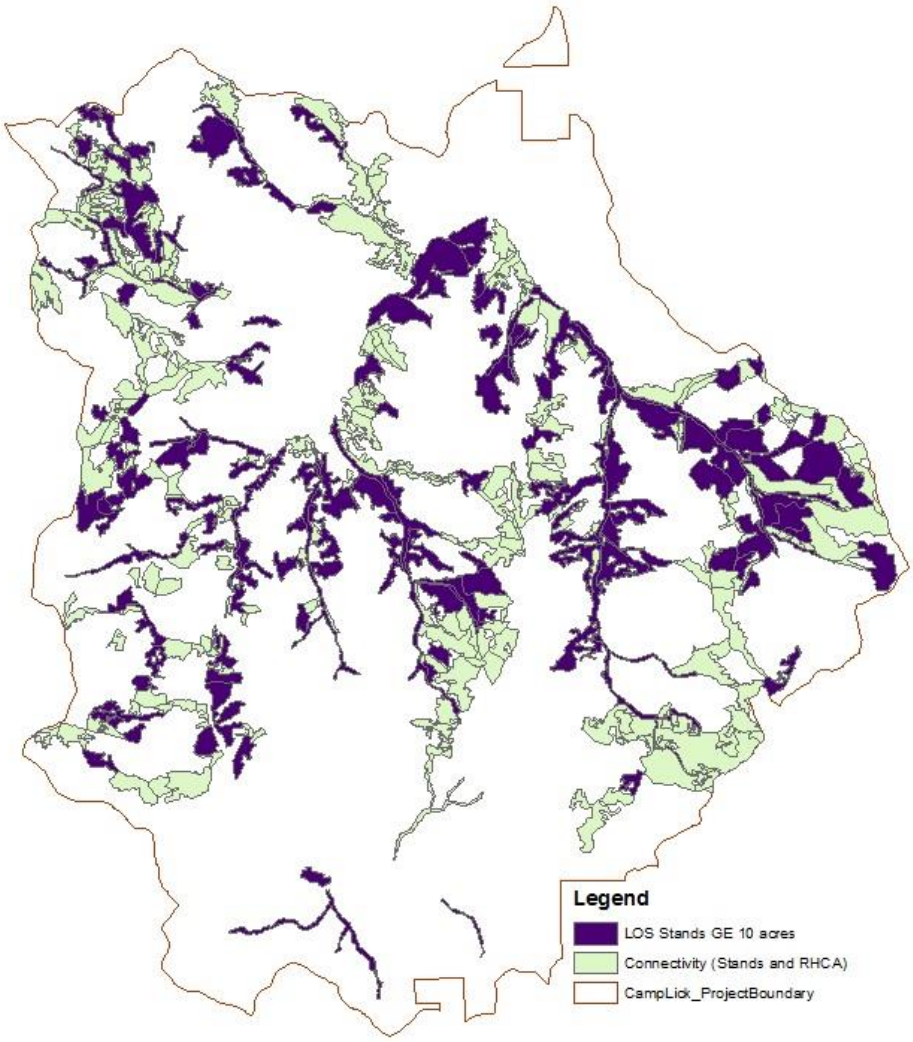


Figure 17. Proposed connectivity between late and old structure stands greater than or equal to 10 acres in size

Cumulative Effects

Past timber harvest, thinning, road construction, fire suppression, wildfire, prescribed fire, and grazing have combined to create the existing condition within the Camp Lick planning area. Existing forest structure compared with the historical range of variability (HRV) reflects the effects of past management activities and other disturbance events.

Past timber harvest targeted and removed many of the largest diameter trees, reducing old forest structures (old forest multi-strata and old forest single-stratum). Large green replacement trees

removed during this time reduced future snag potential and subsequent large snag densities throughout the planning area.

The County Road 18 Healthy Forest Restoration Act Project adjacent to and overlapping the western Camp Lick Project boundary is ongoing, and will ultimately thin and prescribed burn 2,800 acres adjacent to and partially within the Camp Lick project boundary. The purpose of the County Road 18 Project is to create a strategic fuel break along County Road 18, and is expected to result in very open, single-stratum pine stands with little to no component of snags or downed wood from high levels of mechanical treatment and repeated burning. This project could add cumulative effects to large snag habitat suitable for a wide variety of wildlife species, while improving foraging habitat for a variety of species.

Public firewood cutting is expected to continue along open roads and closed roads with unauthorized use, contributing to loss of snags and large green trees (due to illegal girdling that kills trees which are subsequently cut for firewood) in the planning area.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off-road vehicles, with the exception of accessing dispersed camping sites from open roads, which would ultimately have a beneficial cumulative effect on snag retention by reducing access for firewood cutting.

Overall, the combined effects of the Camp Lick Project with the effects of past, present, and reasonably foreseeable future actions would provide a beneficial impact to the quality and quantity of old growth areas in the planning area.

Old Growth Habitat Determination

The no action alternative (alternative 1) would prevent protection of old growth stands that are not currently designated as old growth, would likely result in a reduction of potential old growth stands due to loss of existing large trees to competition and moisture stress, and would elevate the risk of high severity wildfire with increased mortality of larger trees.

The proposed action (alternative 2) would provide protection for old growth stands currently lacking formal designation, would improve the health and vigor of large trees currently weakened by competition and moisture stress, and would help mitigate the uncharacteristic wildfire risk associated with the current conditions.

Old Growth Dependent Species

Four old growth dependent species are addressed in this section (three are specified in the Forest Plan and one additional species is specified in the Eastside screens). Each of the four species have somewhat different old growth requirements and each will be addressed separately below. The Malheur Forest Plan Fish and Wildlife objectives (IV-18) state to maintain a total of 121,208 acres of old growth Forest-wide to provide habitat for at least 166 pairs of pileated woodpeckers, 120 pairs of American (pine) marten, and other old growth dependent species. Currently on the Forest there are approximately 104,600 acres of designated plus replacement old-growth areas.

Pileated Woodpecker

Life History, Habitat, and Distribution

Considered a keystone species, the pileated woodpecker plays a crucial role in many forest ecosystems in North America by excavating large nesting, roosting and foraging cavities that are subsequently used by a diverse array of birds and mammals—for shelter and nesting—particularly the larger secondary cavity users (e.g., boreal owl, wood duck, and American pine marten; (Bull et al. 1997, Bonar 2000, Aubry and Raley 2002).

Pileated woodpeckers accelerate wood decomposition and nutrient recycling by breaking apart snags and logs and may facilitate inoculation of heartwood in live trees with heart-rot fungi. They may also be important in helping control some forest beetle populations because their diet consists primarily of wood-dwelling ants and beetle larvae that are extracted from downed woody material and from standing live and dead trees. It is a year-round resident on the Malheur National Forest.

Pileated woodpeckers prefer late successional stages of coniferous or deciduous forest, but also use younger forests that have scattered, large, dead trees. Pileated woodpeckers typically roost in hollow trees with multiple entrances, allowing alternate escape routes from predators. Of 60 roost trees examined in northeast Oregon, 95 percent had a hollow interior created by decay rather than excavation.

Pileated woodpecker nest cavities are quite large, with a mean diameter of 8 inches and cavity depth of 22 inches, which are excavated at an average height of 50 feet above the ground; nest trees must have a large girth (average 33 inches DBH) to contain nest cavities at this height. In eastern Oregon, nest trees are predominantly ponderosa pine as well as western larch (Bull 1987).

Pileated woodpecker densities remained steady over 30 years in areas where canopy cover dropped below 60 percent due to mortality; older stands of grand fir and Douglas-fir consisting primarily of snags continued to function as nesting, roosting, and foraging habitat for pileated woodpeckers (Bull et al. 2007). Density of large snags (greater than 51 centimeters or 20 inches DBH) was the best predictor of density of pileated woodpeckers (Bull and Holthausen 1993).

In northeast Oregon, foraging occurred on 38 percent on logs, 38 percent on dead trees, 18 percent on live trees, and 6 percent on stumps. This species prefers Douglas-fir and western larch, avoids lodgepole pine, and uses ponderosa pine and grand fir in proportion to their availability (Rodewald 2015). It prefers logs greater than or equal to 15 inches in diameter and extensively decayed. Carpenter ants, the primary prey of this woodpecker in northeast Oregon, select western larch logs greater than or equal to 9.8 inches in diameter in a moderate stage of decay, so woodpecker preference of material probably reflects prey's preference for habitat. In northeast Oregon, diet was determined from 330 scat samples and consisted of: 6 percent carpenter ants, 29 percent thatching ants (Formica spp.), 0.4 percent beetles, and 2 percent other (including western spruce budworm, termites [Isoptera], and unknowns). Diet changes seasonally, with thatching ants predominate from June through September, mostly absent in winter, and reoccurring in March; carpenter ants are in diet all year.

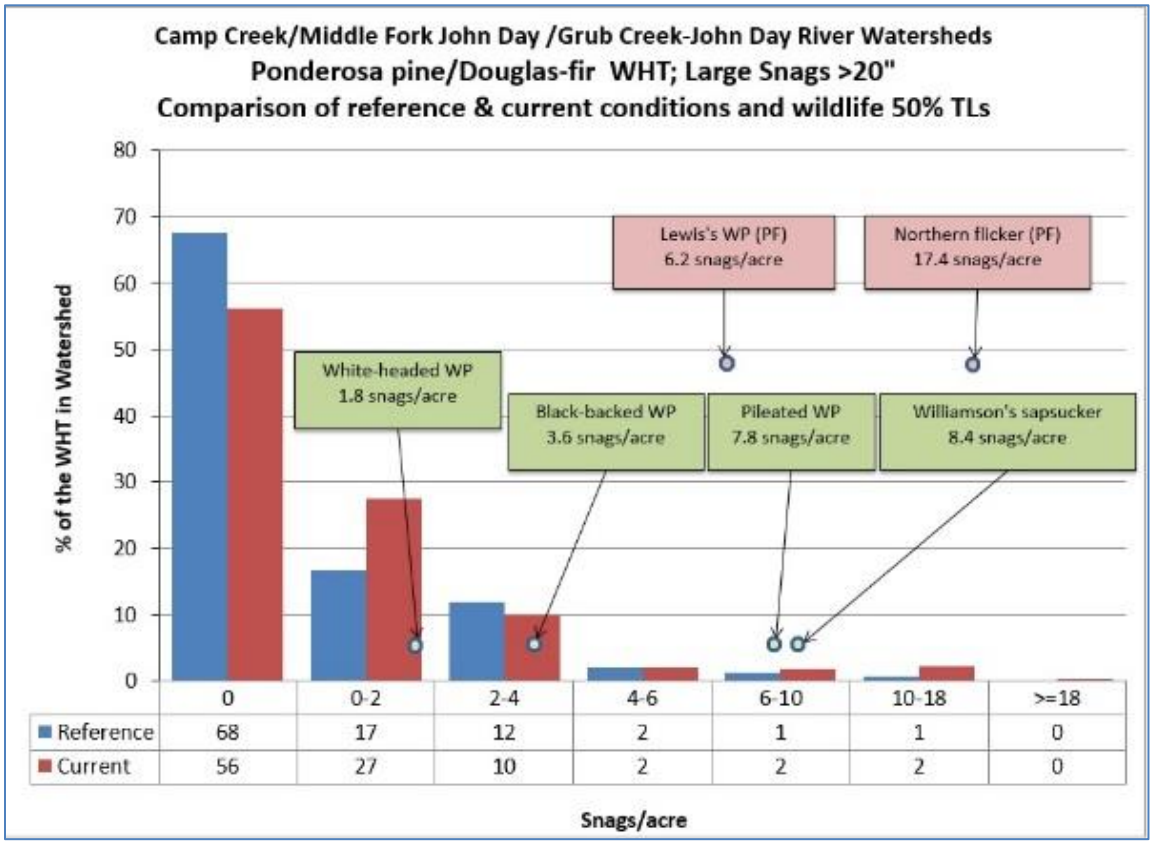
Existing Condition

The pileated woodpecker is a management indicator species for both dead and defective wood habitat and old growth habitats. The planning area contains substantial pileated woodpecker

habitat, and pileated woodpeckers have been documented throughout the planning area, including within dedicated old-growth areas.

Snag habitat is likely to be a limiting factor for pileated woodpeckers in the ponderosa pine/Douglas-fir habitat, as well as the eastside mixed conifer habitat type throughout the Camp Lick planning area, based on DecAID analysis of these wildlife habitat types. See methodology in the primary cavity excavator/dead and defective wood habitat section for a description of DecAID analysis.

While DecAID shows a deficit in both large and small diameter ponderosa pine/Douglas-fir snags in the densities preferred by this species (at the 50 percent of the tolerance level) the current levels exceed the reference condition for this wildlife habitat type. In eastside mixed conifer the large snags are well below reference conditions, while small snags are well above reference conditions.



	0	0-2	2-4	4-6	6-10	10-18	>=18
Reference	68	17	12	2	1	1	0
Current	56	27	10	2	2	2	0

Figure 18. Comparison of reference (historical range of variability) and current conditions of large ponderosa pine/Douglas-fir snags in Camp Creek/Middle Fork John Day/Grub Creek-John Day River watersheds showing wildlife 50 percent tolerance levels.

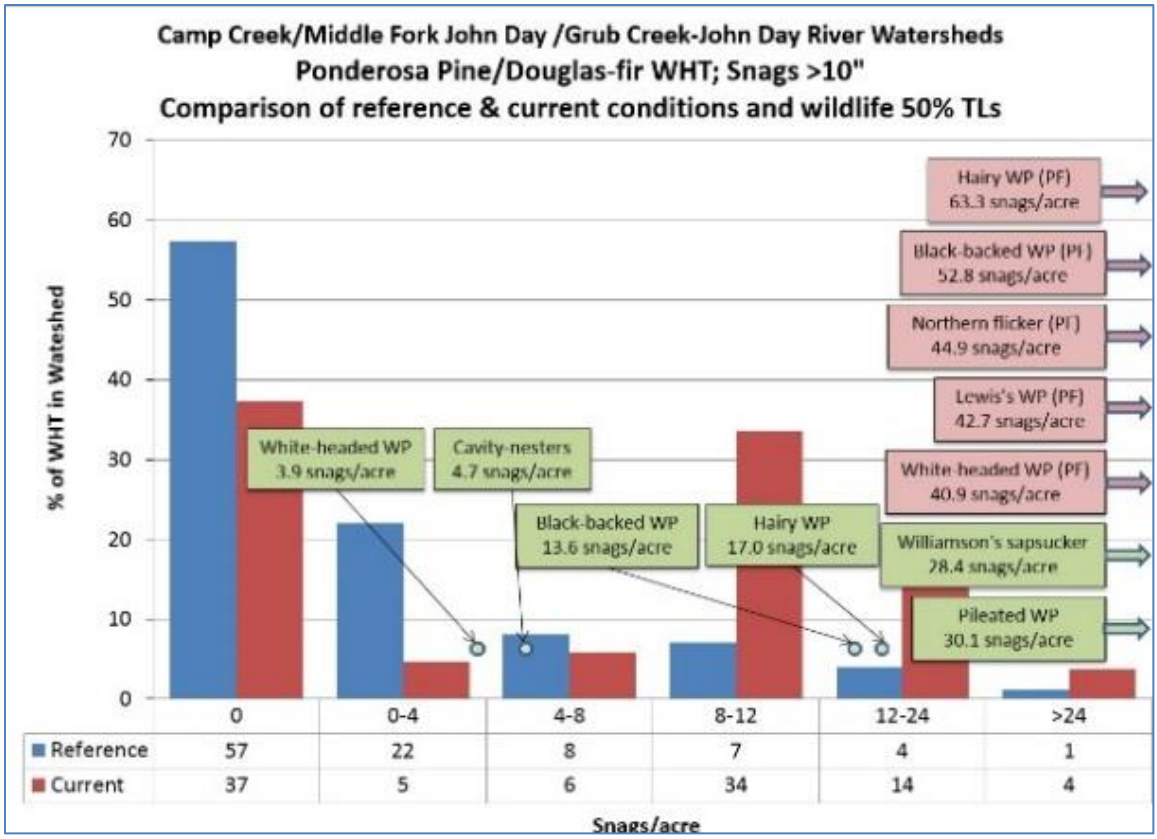


Figure 19. Comparison of reference (historical range of variability) and current conditions of small ponderosa pine/Douglas-fir snags in Camp Creek/Middle Fork John Day/Grub Creek-John Day River watersheds showing wildlife 50 percent tolerance levels.

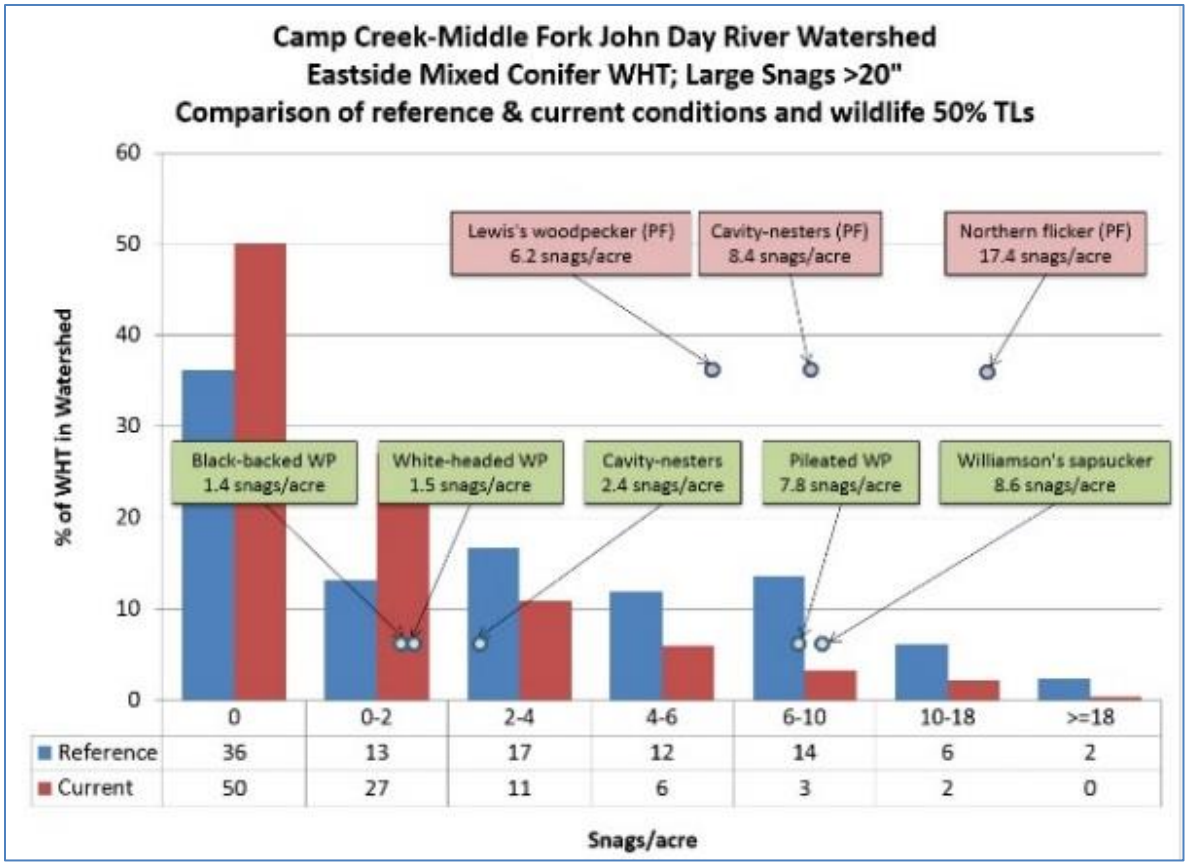


Figure 20. Comparison of reference (historical range of variability) and current conditions of large eastside mixed conifer snags in Camp Creek/Middle Fork John Day watershed showing wildlife 50 percent tolerance levels

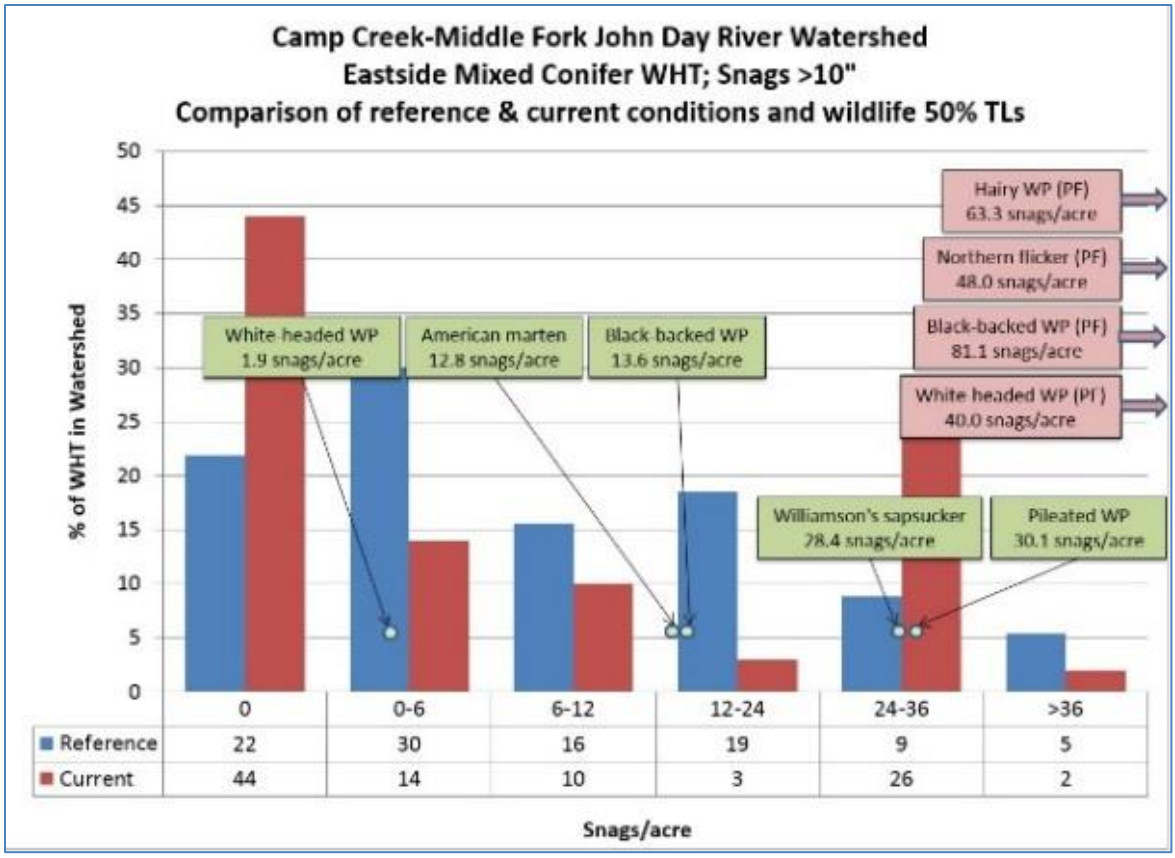


Figure 21. Comparison of reference (historical range of variability) and current conditions of small eastside mixed conifer snags in Camp Creek/Middle Fork John Day watershed showing wildlife 50 percent tolerance levels

Currently, there are 2,220 acres of dedicated old growth habitat for pileated woodpeckers in the Camp Lick planning area.

Pileated woodpeckers are considered vulnerable in the state by Oregon Department of Fish and Wildlife, "apparently secure" in Oregon by NatureServe, and a species of "Least Concern" by IUCN.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution. The risk of uncharacteristic wildfire, disease, or insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management.

There would be no additional introduced disturbances during project implementation that might displace individuals. There would likely be a reduction in preferred nesting structures for pileated woodpeckers as large overstory ponderosa pine and western larch fail to thrive due to overstocked conditions (Spiegal and Johnson 2015).

Cumulative Effects

By definition, cumulative effects (40 CFR 1508.7) would not occur for the no action alternative, because there are no direct or indirect effects. However, current management practices would continue into the reasonably foreseeable future, compounding past and present actions.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action would increase dedicated old growth habitat for pileated woodpeckers to 3,720 acres in the Camp Lick planning area. See the Old Growth Habitat section for full details.

The proposed action would likely not decrease preferred nest trees in the short-term since primarily larger diameter trees (especially western larch) would not be removed. In the long-term, improved stand stocking levels would improve pine and larch vigor, benefiting this species by ensuring large diameter trees continue to grow and provide future nesting and foraging opportunities.

The risk of uncharacteristic wildfire would be reduced, helping to protect this area from loss of habitat.

Together with other landscape objectives that limit or discourage large fires and insect outbreaks, the Camp Lick Project would help protect existing and newly designated old growth habitat from these disturbances. While it is expected that there may be some loss of dead and defective wood habitat resulting from project activities, forest vegetation spatial data modeling indicates that snags in all size classes would continue to increase.

Effective road closures implemented once the project activities are complete would improve the retention of large trees.

Cumulative Effects

Past timber harvest projects were generally very intensive, focusing upon the removal of the large, valuable ponderosa pine, Douglas-fir, and western larch trees (green tree replacements). Past activities were done with disregard to habitat fragmentation, leaving a sufficient amount of old growth habitat for wildlife, or maintaining connectivity between LOS habitats. The majority of restoration thinning and prescribed fire activities in the Camp Lick Project would be conducted in the dry forest types where much of the vegetation is outside the HRV.

Past fuels reduction and timber sale projects occurred within pileated woodpecker habitat. Proposed thinning and fuels treatments are additive to other similar projects in the larger cumulative effects area.

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning would help restore open dry forest habitats, benefiting the species that use them. All ongoing projects have considered design features in the Northern Rocky Mountains Bird Conservation Plan (low intensity/low severity burns, retention of snags and large trees, and

mosaic patterns with refuge areas of untreated habitat, among others), which should allow for restoration while reducing short-term impacts on wildlife. In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

All projects are consistent with Malheur Forest Plan objectives and with the standards and guidelines relating to pileated woodpecker (USDA Forest Service 1990, Forest-wide standards 38 to 49, pages IV-29 to IV-30) and habitat would remain above the HRV within the planning area.

Pileated Woodpecker Determination

The no action alternative (alternative 1) would prevent protection of suitable old growth stands that are not currently designated as old growth, would likely result in a reduction of potential old growth stands due to loss of existing large trees to competition and moisture stress, and would elevate the risk of high severity wildfire with increased mortality of larger trees. However, this impact is not expected to result in an adverse effect on the population viability of the pileated woodpecker.

The proposed action (alternative 2) would likely have a beneficial impact to the quality and quantity of pileated woodpecker habitat in the planning area because: it would provide protection for suitable old growth stands currently lacking formal designation, would expand the area of protected old growth for this species, would improve the health and vigor of large trees currently weakened by competition and moisture stress, and would help mitigate the uncharacteristic fire risk associated with the current conditions.

American Pine Marten

Life History, Habitat, and Distribution

The American (pine) marten is a management indicator species for old-growth habitats. Below is a summary of pine marten ecology important to providing information pertinent to assessing the impacts of the project on this species. For additional detail see Mellen-McLean (2012b) and the body of work led by Evelyn Bull (Bull 2000, Bull and Blumton 1999, Bull et al. 2005, Bull and Heater 2000, 2001a, and 2001b).

American (pine) marten are associated with old multi- and single-story, and unmanaged young multi-story, structural stages in subalpine and montane forests. Large snags and down logs provide rest and den sites for pine marten (Wisdom et al. 2000).

In the Blue Mountains, American (pine) marten typically select unharvested, closed canopy (50 to 75 percent), or old-structure stands in subalpine fir and spruce forests (Bull et al. 2005). Stands used by pine martens have higher densities of large snags (greater than 20 inches DBH), averaging 4.0 snags per acre. Snags used as resting and denning sites average from 26 to 38 inches DBH in eastern Oregon, depending on habitat type (Bull and Heater 2000, Raphael and Jones 1997).

In addition to providing rest and den sites, downed wood is an important component of American (pine) marten habitat because the primary prey of martens is small mammals associated with downed wood. These small mammals include voles (*Microtus* sp.) red-backed voles (*Clethrionomys gapperi*), snowshoe hares (*Lepus americanus*) and squirrels in northeast Oregon (Bull and Blumton 1999, Bull 2000). Subnivean (under snow) spaces created by logs provide marten with access to prey during the winter (Bull and Blumton 1999). Down wood used as rest and den sites in the Blue Mountains averaged 26 inches DBH (Bull and Heater 2000).

Existing Condition

Baited camera surveys were conducted for American (pine) marten in the most suitable habitats in the planning area with no current sightings made. Human observations of single adult pine martens were made in 2010 and 2014 in the planning area, however these did not coincide with designated pine marten old growth areas. The 2014 sighting was in open ponderosa pine forest where the marten was preying on newly fledged chipping sparrows.

Traditional American (pine) marten habitat, montane mixed conifer, comprises only 41 acres in the planning area.

Designated old growth for American (pine) marten exists in the planning area, but is of poor quality based on currently known ecology of the species (there is little to no spruce and no subalpine fir in these areas, nor in the planning area as a whole).

Currently, there are 1,194 acres of dedicated old growth habitat for American (pine) marten in the Camp Lick planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed as part of the Camp Lick Project would occur. In the short- to mid-term, the various habitats within the planning area would be maintained in the current condition and existing species diversity, density, and distribution.

Fire hazard would remain elevated for some stands and a severe fire could significantly reduce suitable habitat as this species tends to avoid open areas with little cover due to predation risk.

In the absence of disturbance in the long-term, open pine stands would continue to transition to denser closed stands, likely resulting in increased foraging area as tree mortality increases due to competition, insects, and disease. Closed roads currently receiving unauthorized use would continue receiving use, resulting in loss of snags which would ultimately fall and form winter refugia for this species.

In the short-term, the no action alternative is unlikely to alter habitat conditions for the American pine marten within the planning area. In the mid to long-term, large-scale fire could result in a loss of habitat areas. Alternative 1 would not contribute to a negative trend in viability on the Malheur National Forest for American pine marten.

Cumulative Effects

By definition, cumulative effects (40 CFR 1508.7) would not occur for the no action alternative, as there are no direct or indirect effects. However, current management practices will continue into the reasonably foreseeable future, compounding past and present actions.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed action would increase dedicated old growth habitat for American pine marten to 3,930 acres in the Camp Lick planning area. See the old growth habitat section for full details.

The risk of uncharacteristic wildfire would be reduced, helping to protect this area from loss of habitat.

Together with other landscape objectives that limit or discourage large fires and insect outbreaks, the Camp Lick Project would help protect existing and newly designated old growth habitat from these disturbances. While it is expected that there may be some loss of dead and defective wood habitat resulting from some project activities (e.g. thinning, burning, haul routes), other project activities (e.g. ecological riparian treatments) would increase downed wood habitat. In addition, forest vegetation spatial data modeling indicates that snags in all size classes will continue to increase.

Effective road closures implemented once the project activities are complete would improve the retention of large trees.

The proposed action would likely have little adverse effect on American pine marten in the short-term. Some individuals could be temporarily displaced due to project activities; however, with additional acres protected in the old growth network and designation of connectivity routes, the impact even in the short-term is expected to be beneficial. Ecological riparian treatments which would increase downed wood in and adjacent to riparian areas would benefit this species in the short- and long-term, providing hiding cover along preferred travel routes and providing winter refugia for both the pine marten and its prey (small mammals). In the long-term, improved stand stocking levels would improve pine and larch vigor, benefiting this species by ensuring large diameter trees continue to grow and provide future nesting and foraging opportunities as these trees age, eventually become snags, and then fall.

Cumulative Effects

Past timber harvest projects were generally very intensive, focusing upon the removal of the larger, more valuable ponderosa pine, Douglas-fir, and western larch trees (green tree replacements). Past activities were done with disregard to habitat fragmentation, leaving an insufficient amount of old growth habitat for wildlife, and failing to maintain connectivity between LOS habitats.

Past grazing practices may have impacted herbaceous and shrubby vegetation that provides important cover for both marten and their prey species. However, current livestock grazing practices, including Forest Plan standards, provide for a sustained production of palatable forage for grazing by livestock and dependent wildlife species. Overall forage is not considered a factor limiting American (pine) marten population viability, and consequently cumulative changes to foraging habitat, whether positive or negative, may not contribute to a measurable change in American (pine) marten populations.

Public firewood cutting is expected to continue along open roads and closed roads with unauthorized use, contributing to loss of snags and large green trees (due to illegal girdling that kills trees which are subsequently cut for firewood) in the planning area having a detrimental cumulative effect on snag retention.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off-road vehicles, with the exception of accessing dispersed camping sites from open roads, which would ultimately have a beneficial cumulative effect on snag retention by reducing access for firewood cutting.

All projects are consistent with Malheur Forest Plan objectives and with the standards and guidelines relating to American pine marten (USDA Forest Service 1990, Forest-wide standards 61, page IV- IV-32) and habitat would remain above the HRV within the planning area.

American Pine Marten Determination

The no action alternative (alternative 1) is unlikely to adversely impact the quality and quantity of American pine marten habitat in the planning area because: although no additional old growth areas would be protected for pine marten, there is very little suitable habitat or habitat potential in the planning area. Downed wood would continue to increase, including large size classes as stressed large trees die and fall. In the long-term, the elevated risk of high severity wildfire could reduce what exists for marginal habitat, but this impact is not expected to result in an adverse effect on the population viability of the American pine marten.

The proposed action (alternative 2) would likely have a beneficial impact to the quality and quantity of American pine marten habitat in the planning area because: it would provide protection for suitable old growth stands currently lacking formal designation, would expand the area of protected old growth for this species, would increase downed wood in riparian areas (a frequently preferred travel route for this species), would improve the health and vigor of large trees currently weakened by competition and moisture stress, and would help mitigate the uncharacteristic fire risk associated with the current conditions.

Three-Toed Woodpecker

Life History, Habitat, and Distribution

Three-toed woodpeckers are a management indicator species for both dead and defective wood habitat and old-growth lodgepole pine habitats. The three-toed woodpecker prefers stands where lodgepole pine is either dominant or co-dominant, and mostly uses trees 9 inches DBH and greater for both nesting and foraging (Bull et al. 1980, Goggans et al. 1988). Suitable habitat is tied to existing levels of diseased and decaying trees with heart rot for nesting and roosting, as well as decaying substrate to provide a prey base for wood-boring insects (Goggans et al. 1988). In particular, three-toed woodpeckers are attracted to areas with high concentrations of bark beetles, such as habitats created by stand replacing burns or blowdown. Three-toed woodpeckers are associated with locally abundant insect outbreaks, and their populations are irruptive as they follow beetle outbreaks across the landscape.

Three-toed woodpeckers are considered vulnerable in the state by Oregon Department of Fish and Wildlife and NatureServe.

In a study in northeast Oregon by Bull et al. (1986), three-toed woodpeckers were found to feed exclusively in lodgepole pine stands. Three-toed woodpeckers acquired food exclusively by scaling and 78 percent of the feeding sites were in dead trees. All characteristics of foraging sites except bark condition were significantly different than if the sites had been selected at random from available dead trees. Forest type and percent of needles remaining were the best discriminators between habitat used and not used. Three-toed woodpeckers scaled dead trees that averaged 9.5 inches DBH and 59 feet tall, and that retained most of their bark (93 percent), limbs

(76 percent), and a portion of the needles (21 percent). These conditions describe trees that had been dead less than 3 years. Koplin (1969) also observed this species feeding on insects in the bark of freshly killed trees. All feeding occurred on the trunk at an average height of 23 feet. All feeding activity took place on lodgepole pine trees and on flat terrain. Birds occurred only in grand fir forest types that contained lodgepole pine.

Existing Condition

There are no documented sighting of three-toed woodpeckers in the planning area nor in adjacent areas. No old growth lodgepole stands approaching seventy-five acres (Forest-wide standard 59, IV-31) occur in the planning area.

Lodgepole is dying across the planning area due to mountain pine beetle and seldom achieves the diameter (9+ inches) preferred by the three-toed woodpecker.

Lodgepole occurs in several areas across the planning area, but often not in concert with grand fir nor on flat terrain, nor in sizes large enough to be preferred by the three-toed woodpecker.

Lodgepole pine dominant stands and grand fir stands where lodgepole is likely (78 percent) to occur comprise approximately 2,300 and 1,800 acres respectively in the planning area. However, it is not possible to quantify the percent of adequate size trees that are alive, dead, or dead less than 3 years.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the proposed action. However, a discussion of potential environment outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed for the Camp Lick Project would occur. There would be no direct or indirect effects to three-toed woodpecker or its habitat as a result of management activities.

Tree mortality in some lodgepole pine stands, as well as grand fir and other plant association groups within the planning area, is occurring from insects and disease that is exacerbated by high stand densities. Most of this mortality is occurring in the size class less than 20 inches, although some larger trees are also being affected. Under the no action alternative, this trend would continue and mortality would likely increase into the future. Depending on the size and location of the trees affected, these mortality events could provide forage opportunities for three-toed woodpeckers. Likewise, wildfire events (which have an elevated risk with this alternative) could provide foraging habitat for this species depending on their extent and plant community types affected. Large-scale events outside the historical range of variability could provide some foraging habitat in the short- to mid-term, but the overall gap in snag recruitment or large down wood over extensive areas could be detrimental in the long-term, since replacement trees that ultimately provide future snags could take decades to develop.

Alternative 1 would not negatively affect three-toed woodpecker habitat and therefore would not contribute to a negative trend in viability on the Malheur National Forest.

Cumulative Effects

By definition, cumulative effects (40 CFR 1508.7) would not occur for the no action alternative, as there are no direct or indirect effects. However, current management practices would continue into the reasonably foreseeable future, compounding past and present actions, which may result in increased bark beetle infestations and/or severe wildfire.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Lodgepole treatments in the planning area would take place in less than 20-percent of lodgepole dominant stands. The majority of these stands, although affected by bark beetles, have smaller tree diameters than those preferred by the three-toed woodpecker.

While it is expected that there may be some loss of dead and defective wood habitat resulting from project activities, forest vegetation spatial data modeling indicates that snags in all size classes would continue to increase.

Effective road closures implemented once the project activities are complete would improve the retention of large trees.

No sightings of three-toed woodpeckers were made during field visits to the proposed treatment areas and it is not expected that project activities would result in viability concerns to three-toed woodpeckers.

Cumulative Effects

Public firewood cutting is expected to continue along open roads and closed roads with unauthorized use, contributing to loss of snags and large green trees (due to illegal girdling that kills trees which are subsequently cut for firewood) in the planning area having a detrimental cumulative effect on snag retention.

The proposed Malheur National Forest Access Travel Management Plan, if implemented, would restrict cross-country travel for off-road vehicles, with the exception of accessing dispersed camping sites from open roads, which would ultimately have a beneficial cumulative effect on snag retention by reducing access for firewood cutting.

Cumulatively, this project combined with other recent and ongoing prescribed burning and understory thinning would help restore open dry forest habitats, benefiting the species that use them. All ongoing projects have considered design features which should allow for restoration while reducing short-term impacts on wildlife (low intensity/low severity burns, retention of snags and large trees, and mosaic patterns with refuge areas of untreated habitat, among others). In addition, all projects treat only a portion of the planning area, leaving more acres untreated than those that are treated.

All projects are consistent with Malheur Forest Plan objectives and with the standards and guidelines relating to Three-toed woodpecker (USDA Forest Service 1990, Forest-wide standards 38-49 1, pages IV-29 to IV-30 and 61, page IV-32) and habitat would remain above the HRV within the planning area.

Three-Toed Woodpecker Determination

The no action alternative (alternative 1) is unlikely to adversely impact the quality and quantity of three-toed woodpecker habitat in the planning area because: there is very little suitable habitat or habitat potential in the planning area. What habitat exists would continue its current trajectory, with lodgepole continuing to succumb to mountain pine beetle (where these trees have reached sufficient size prior to death they would provide forage opportunities for 3 years). In the long-term, the elevated risk of high severity wildfire could reduce what exists for marginal habitat, but this impact is not expected to result in an adverse effect on the population viability of the three-toed woodpecker.

The proposed action (alternative 2) might impact some three-toed woodpecker habitat in the short-term due to removal of some larger diameter lodgepole, however, as the quantity of preferred lodgepole sizes and locations are very limited in the planning area this alternative is unlikely to result in an adverse effect on the population viability of the three-toed woodpecker.

Northern Goshawk

Life History, Habitat, and Distribution

The northern goshawk, a “true” hawk highly adapted for forested landscapes, is found throughout the intermountain west (Hanauska-Brown and Bechard 2003). In the Pacific Northwest, northern goshawks prefer to nest in mature, unlogged, or lightly managed forested habitats. These areas include sites with closed canopies (greater than 60 percent), northerly exposures, gentle slopes, and close proximity to water (Reynolds et al. 1992). Canopy closure is an important factor in nest site selection and, in the desired percentages, provides security from avian predators and decreases impacts from human disturbance. Nest trees are typically dominant trees in the canopy (10 to 58 inches DBH) and are usually in Douglas-fir, ponderosa pine, or western larch (McGrath et al. 2003). Prey consists of numerous mammal (squirrels, weasels, rabbits) and bird (ranging in size from passerines to grouse) species.

In 1995 the Regional Forester’s Eastside Forest Plan Amendment 2 (Eastside Screens) amended the Malheur Forest Plan. This amendment included interim management guidelines for northern goshawk in regards to timber harvest.

Amendment 2 established minimum standards for protection of the northern goshawk, stating that “until further information is known and management plans approved to ensure species viability, the following standards are to be met as a minimum.” The minimum standards which are still in effect are:

- Protect every known active and historically used goshawk nest site from disturbance. “Historical” refers to known nesting activity occurring at the site within the last 5 years. Seasonal restrictions on activities near nest sites will be required for activities that may disturb or harass a pair while bonding and nesting.
- Thirty acres of the most suitable nesting habitat surrounding all active and historical active nest tree(s) will be deferred from harvest.
- A 400-acre “post-fledging area” will be established around every known active nest site. While harvest activities can occur within this area, retain late and old structure (LOS) stands and enhance younger stands toward LOS condition, as possible.

Existing Condition

There are two known nesting territories within the planning area and two 400+ acre post-fledging areas (PFA) have been mapped for these territories. Nest stands have been delineated for the territories that meet the 30 acre requirement as required by the Eastside Screens.

The active northern goshawk nests in the Camp Lick planning area are within the Cool Moist upland forest type with a structure class of stem exclusion open canopy and the Warm Dry upland forest type with a structure class of young forest multi-strata.

Additional habitat exists within the planning area.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of the no action alternative. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. Under the no action alternative, no management activities proposed for the Camp Lick Project would occur. In the short- to mid-term, the northern goshawk habitat within the planning area would be maintained in the current condition. In the absence of disturbance, open pine stands would continue to transition to multi-story stands. In the long-term, habitat for northern goshawk could increase in some areas as stand density and canopy cover increases. Availability of habitat would depend on physical characteristics of the site as well, as nests are generally located near water in drainages or swales, and areas of gentle topography. Stand composition may deteriorate, as overstocking may actually retard the development of mature forests and larger trees, or reduce the mosaic of structural stages required for diversity of prey species. Similarly, as the understory becomes thicker, stands currently suitable for the northern goshawk foraging would degrade.

In the absence of disturbance within all of the northern goshawk territories, there would be a continued accumulation of surface fuels (litter and duff) and ladder fuels (small trees growing in and around larger trees). Wildfire hazard and risk of uncharacteristic insect outbreaks would continue to increase over time. Stand-replacing fires would represent a total loss of forest structure and would greatly reduce northern goshawk nesting and foraging habitat.

Open road density would remain the same, as would the loss of snags due to firewood cutting. This loss of snags may reduce northern goshawk prey habitat, perch sites, and plucking posts.

Cumulative Effects

By definition, cumulative effects (40 CFR 1508.7) would not occur for the no action alternative, as there are no direct or indirect effects. However, current management practices would continue into the reasonably foreseeable future, compounding past and present actions.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Northern goshawks are considered highly sensitive to disturbance during the breeding season; hence, design incorporates seasonal restrictions for activities on Forest lands located near known

nest sites. There are no mechanical project activities planned in the two northern goshawk post-fledging areas (PFAs). Prescribed burning is proposed, and would likely be beneficial. Project design criteria is in place to mitigate this activity in regards to timing and extent.

There are no silviculture treatments proposed in and around the northern-most existing northern goshawk nest site so there would be no direct effects to this known nest site or post-fledging area (PFA). In the southerly known nest site and post-fledging area, no treatments would take place within the 30-acre nest stand designation, and restoration thinning treatments within the 400-acre PFA would improve the under-canopy flyway for this species. Lodgepole treatments and harvest activities that fall within the 400-acre PFA would be adjusted so as to maintain any existing late and old structure stands and enhance younger stands towards LOS condition. Timing restrictions would apply for any activities in the PFA if the nest is occupied.

Prescribed burning would benefit this species by reducing thick understory which is an impediment to an open flyway for foraging and cover.

Restoration thinning and prescribed burning would assist in reducing the risk of stand-replacing fires.

Road development, associated with logging activities, has also contributed to habitat loss and has fragmented habitat important for prey species. The Camp Lick Project proposes temporary road construction, road decommissioning, and road closures. After project implementation, road closures and decommissioning would preserve snags which may be beneficial for northern goshawk prey habitat, perch sites, and plucking posts.

In the short-term, implementation of the proposed action would contribute to habitat loss and fragmentation for some prey species. In the long-term, the proposed action would contribute to possible acceleration of old forest multi-stratum (OFMS) and old forest single-stratum (OFSS) structure in some areas and reduce catastrophic fire risk in treatment areas.

Cumulative Effects

Past grazing practices may have impacted herbaceous and shrubby vegetation that provides important food for northern goshawk prey species. However, current livestock grazing practices, including Forest Plan standards, provide for a sustained production of palatable forage for grazing by livestock and dependent wildlife species. Overall forage is not considered a factor limiting northern goshawk population viability, and consequently cumulative changes to foraging habitat, whether positive or negative, would not contribute to a measurable change in northern goshawk populations.

Nesting habitat is typically the primary limiting factor for northern goshawks. Historical timber harvests within and adjacent to the planning area were largely related to area settlement and mining activities during the late 1800s. The highest percentage of timber harvest included clearcutting of old growth and was not geared toward retention of mature forest structure. Since 1995, the Malheur Forest Plan, as amended, has directed the Malheur National Forest to conduct timber sales in a manner that moves stands towards old forest multi-strata (OFMS) and old forest single-stratum (OFSS) structural stages. Project design adheres to Malheur Forest Plan standards and guidelines, therefore stands would be managed to promote old forest multi-strata OFMS and old forest single-stratum OFSS development.

Northern Goshawk Determination

The no action alternative (alternative 1) is unlikely to adversely impact the quality and quantity of northern goshawk habitat in the planning area because: habitat is abundant, and in the short-term would continue to persist in a state similar to the current condition. Although in the long-term the ingrowth of thicker understory could reduce the suitability of primary habitat, it is unlikely to affect the species viability overall. The increasing risk for severe wildfire would have a greater impact on available habitat, but the species has a broad presence across the forest and this alternative is not expected to result in an adverse effect on the population viability of the northern goshawk.

The proposed action (alternative 2) would likely have no effect to northern goshawk habitat overall because: known nesting areas are protected, additional old growth areas are being protected, the risk of catastrophic fire would be reduced, and the understory characteristics preferred by the northern goshawk would be improved.

Compliance with Forest Plan and Other Relevant Laws, Regulations, and Policies

Old Growth (Management Area 13)

The goals of this management area are to provide "suitable" habitat for old growth dependent wildlife species, ecosystem diversity, and preservation of aesthetic qualities, as defined by the Malheur Forest Plan Standards (USDA Forest Service 1990, Management Area 13, pages IV-105 to IV-107).

The Forest Plan directs the following in regards to old growth areas: "Inventory and validate all old growth areas. Correct previously dedicated old growth unit designations that are not meeting management requirement direction where possible" (USDA Forest Service 1990, page IV-105).

For the Management Area (MA) 13 (Old Growth), there are nine designated old growth areas (DOG) totaling 3,232 acres occurring within the Camp Lick planning area. There are no replacement old growth areas designated, nor pileated woodpecker feeding areas, both of which are required to accompany DOG acres based on a minimum formula contained in Appendix G of the Forest Plan (USDA Forest Service 1990; Appendix G). Therefore the existing conditions, and the no action alternative, do not comply with the Forest Plan standards for Old Growth.

The proposed action (alternative 2) complies with Forest Plan standards for Old Growth by recommending adjustments and additions which provide for the required quantity and quality of replacement old growth and pileated woodpecker feeding areas, designates new old growth areas and overall increases the old growth network by 1,511 acres.

Regional Forester's Eastside Forest Plan Amendment #2 (Eastside Screens)

Connectivity

In the 2012 planning rule (36 CFR 219), connectivity is defined as "Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movement of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change" (36 CFR 219.19).

There are currently no connectivity corridors designated in the Camp Lick planning area, therefore the existing condition and no action alternative would not comply with the requirements of the Regional Forester's Eastside Forest Plan Amendment #2, Standard #6 (d), Scenario A (3).

Connectivity corridors were identified during project planning, linking late and old structure stands (as required by the Regional Forester's Eastside Forest Plan Amendment #2, Standard #6 (d), Scenario A (3), and incorporating riparian areas as necessary, to facilitate the movement of old growth dependent species while allowing them to avoid predation.

Areas of structural connectivity between late and old structure habitats were identified with the goal of maintaining or enhancing functional connectivity such that linkage areas are fostered or maintained, permeability for wildlife species to move between stands and adjacent watersheds is maximized, and ecological processes are sustained.

Eastside screens requires that a contiguous network pattern with two or more connection points be maintained between all LOS forest stands greater than or equal to 10 acres, and all old growth habitats both within and extending into adjacent watersheds. This is the minimum starting point for designating connectivity corridors. However, in working with the existing old structure stands in the Camp Lick planning area there are some areas where past activities have removed late and old structure to an extent that making the requisite two-way connections is not possible. These occur primarily in the southern end of the planning area.

While it was not possible to designate adequate corridor blocks to meet the full requirements as directed in Eastside screens, silvicultural and prescribed burning treatments include design criteria to meet the movement and interaction needs of LOS forest associated wildlife species. Variable stand densities and smaller dense patches (skips) would be retained throughout proposed thinned areas to provide habitat diversity, hiding cover and movement opportunities for wildlife species. Denser patches would be preserved within burn blocks in areas where known wildlife movement corridors are known to exist.

Therefore the proposed action meets the intent of the Eastside screens by designating and treating appropriate habitat for connectivity where it exists on the landscape.

Snags and Down Logs

The Malheur Forest Plan Standards (USDA Forest Service 1990, Forest-Wide Standards, pages IV-29 to IV-30) direct the management of dead tree (snag) habitat and woody debris. The existing condition meets the Forest Plan guidelines and the FVS analysis for snag production indicates that snag densities would continue to increase with the both alternatives.

For alternative 2 (proposed action), a snag exchange is expected with some being lost and some created as a result of the proposed actions. Snags are not targeted for removal and design features have been incorporated to help minimize additional snag losses. During thinning activities snags greater than or equal to 12 inches DBH would be retained, except incidental snags lost during logging to meet operational/safety needs. Prescribed fire would likely increase snag densities although most would be smaller in diameter with an occasional large diameter snag created.

Inner RHCA thinning, resulting in large wood being placed in, across, and adjacent to streams would improve wildlife habitat by increasing insect prey and increasing structure, cover, and winter refugia for small mammals (both prey and predator).

Closure and decommissioning of roads would reduce snags cut for firewood. Overall snag and down log quantities are expected to stay about the same or decrease slightly in the short-term as a

result of thinning. Some recruitment from prescribed burning may offset those losses. Thinning prescriptions would accelerate growth of large diameter trees that would provide opportunities for snag replacements in the future. Denser areas within connectivity corridors would retain some untreated areas, providing for future snag creation from tree competition and stress.

In the long-term, forest vegetation spatial data analyzer 30-year modeling shows a 64 percent increase in large snag densities by year 2045 with small snag densities more than doubling in the same timeframe.

Therefore the proposed actions comply with the Forest-wide standards for dead tree habitat by protecting snag densities during project implementation and increasing snag densities in the long term.

Goshawk

The no action alternative would be consistent with the Forest Plan and Regional Forester's Eastside Forest Plan Amendments #2 for northern goshawks, as no activities would occur.

For northern goshawks, the Proposed Action alternative is consistent with the Forest Plan and the Regional Forester's Eastside Forest Plans Amendment #2. Nest stands would be protected. Design elements would maintain overall stand structure. Known territories would be monitored for nesting activity. If nest sites are active, management activities would be prohibited within a half mile of the nest sites from April 1 to August 15 to avoid disturbing goshawks during the breeding and rearing season.

Summer Range Cover (Forest-Wide Standard)

Forest-Wide standard #28 (pages IV-27 to IV-28) would be met in all subwatersheds for the no action alternative.

Forest-Wide standard #28 (pages IV-27 to IV-28) would be met in all subwatersheds for the proposed action.

This includes providing 20 percent cover and an elk habitat effectiveness index (HEI) of 0.4.

Habitat Effectiveness Index (HEI) is a relative value of habitat conditions which considers the quality of existing cover and miles of open road to vehicular travel. The HEI standard would be met in alternative 2 in all subwatersheds.

Winter Range Cover (Management Area 4A)

Management Area 4A, standard #4 (pages IV-69 to IV-70) would be met in all subwatersheds for the no action alternative.

Management Area 4A, standard #4 (pages IV-69 to IV-70) would be met in all subwatersheds for the proposed action.

This includes providing 25 percent cover and an elk habitat effectiveness index (HEI) of 0.5.

Habitat Effectiveness Index (HEI) is a relative value of habitat conditions which considers the quality of existing cover and miles of open road to vehicular travel. The HEI standard would be met in alternative 2 in all subwatersheds.

Featured Species

Featured species are identified in the Malheur Forest Plan as species that require special protections. The Malheur Forest Plan (USDA Forest Service 1990, pages IV–30 and IV-31) provides direction (Forest-Wide standards 50–55) for the protection of habitat for these species. Table 13 lists the seven featured species currently on the Malheur National Forest. The table also includes their habitat requirements and whether habitat exists in the planning area. Only species with habitat in the planning area are discussed in detail.

Table 13. Featured species of the Malheur National Forest – habitat requirements, and presence within the Camp Lick planning area. Only those species with a presence will be discussed.

Featured species	Habitat requirements	Habitat present in planning area
Blue (dusky) grouse (*Dendragapus obscurus*)	Coniferous forests (Douglas-fir, grand fir, subalpine fir) with a mixture of deciduous trees and shrubs near edges and openings with clumps of mistletoe infected Douglas-fir on ridge tops or upper slopes of ridges.	Yes
Sage grouse (*Centrocercus urophasianus*)	Open sagebrush plains ranging from 4,000-9,000 feet elevation.	No
Osprey (*Pandion haliaetus*)	Large, old growth trees with dead tops or large snags suitable for nesting (30 inches DBH and greater than 60 feet high) adjacent to large rivers or lakes.	No
Pronghorn antelope (*Antilocapra americana*)	Open grasslands with low sagebrush as an important component.	No
California bighorn sheep (*Ovis canadensis*)	Alpine-desert grasslands associated with mountains, cliffs, foothills, and river canyons.	No
Upland sandpiper (*Bartramia longicauda*)	Native prairie grasslands and montane meadows.	No

Blue (Dusky) Grouse

Life History, Habitat, and Distribution

Blue (dusky) grouse prefer coniferous forest (Douglas-fir, grand fir, and sub-alpine fir) with a mixture of deciduous trees and shrubs near edges and openings.

Blue (dusky) grouse nest in a variety of forest and shrub vegetation types, from foothills to timberline. Dense coniferous thickets of small trees, stumps, and down logs are used by blue (dusky) grouse for resting, drumming, and escape cover. Blue (dusky) grouse also utilize dense deciduous areas in riparian corridors.

The Malheur Forest Plan standard for the protection of blue (dusky) grouse habitat (USDA Forest Service 1990, Forest-wide standard 50, page IV–30) states that projects “maintain grouse winter roost habitat.” Winter range typically includes conifer forests from lower elevations to subalpine, and they generally utilize large, mistletoe infected Douglas-fir trees, typically located within the upper 1/3 of slopes, as winter roosts.

Existing Condition

Past fire suppression in parts of the planning area allowed encroachment of shade-tolerant conifer species, including Douglas-fir. Subsequently, increased stand densities have resulted in an

increase in insect damage, disease, and parasitism, including dwarf mistletoe in mixed conifer stands.

Formal surveys for blue (dusky) grouse have not been conducted in the planning area, but several individuals were documented during the breeding and nesting periods

Environmental Consequences

Alternative 1 (No Action)

Under the no action alternative, no management activities proposed for the Camp Lick Project would occur, therefore there would be no direct or indirect effects. Habitat conditions would remain unchanged in the short- and mid-term. Over the long-term, increased stand densities and related stress would result in a greater incidence of insects and disease in the planning area. Dwarf mistletoe, one of the diseases that increases with increasing stand densities, would increase where present within the planning area. Winter roost habitat would also increase given an increase in mistletoe-infected Douglas-fir. Heavy gnarled limbs and dense foliage ("witches brooms") created by dwarf mistletoe would create ideal roosting habitat for blue (dusky) grouse. In the event of a wildfire, however, uncharacteristically intense burns could effectively sanitize stands of dwarf mistletoe. When all trees are killed, reestablishment of dwarf mistletoe in stands could take decades, as seeds are reintroduced by birds and the mistletoe slowly spreads (Spiegel 2014).

Cumulative Effects

By definition, cumulative effects (40 CFR 1508.7) would not occur for the no action alternative, as there are no direct or indirect effects. However, current management practices would continue into the reasonably foreseeable future, compounding past and present actions.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Removal of some mistletoe-infected trees potentially providing winter roost habitat for blue (dusky) grouse would occur from restoration thinning. Activities that would remove Douglas-fir trees with mistletoe would reduce roost habitat and preferred forest structure. Since blue (dusky) grouse depend on needles and buds of Douglas-fir and ponderosa pine during the winter, thinning of mature Douglas-fir and ponderosa pine would also impact winter food supplies, specifically if this occurs along ridges. Trees over 150 years old would be retained. Younger trees, less than 150 years, regardless of size, could be removed in some treatment areas. Project design criteria are specified to maintain winter roost habitat. Skips within units and no treatment areas would also retain trees that could potentially host dwarf mistletoe. Consequently, dwarf mistletoe is anticipated to be retained on the landscape.

It is written in the silviculture prescription to "provide blue (dusky) grouse winter roosts" by "retaining large mistletoe infected or wolfy Douglas-fir trees, where available, along ridge tops and large scab openings." Overall, it is expected that forest health would increase from implementing thinning treatments, resulting in an overall decrease in dwarf mistletoe.

Prescribed burning could directly remove nesting habitat in the short-term and, if implemented during the primary nesting season, could cause direct mortality of blue (dusky) grouse adults and offspring. However, grasses and forbs suitable for blue (dusky) grouse nesting cover would be expected to establish and become denser and more vigorous within several years (2 to 5) after

ignition events, resulting in enhanced habitat. Herbaceous vegetation conceals the broods and contains insects, an important food source for blue (dusky) grouse (Mussehl 1963). In eastern Oregon, prescribed burning and additional methods that maintain park-like stands may benefit this species as open stands are also used for nesting habitat. Prescribed burning project design criteria would mitigate some expected direct impacts to blue (dusky) grouse.

Project implementation would result in some level of disturbance and displacement of wildlife in the short-term by thinning activities. The level of disturbance and displacement would depend on the time of year, extent, and the tolerance of the species and individuals involved. Not all areas of blue (dusky) grouse habitat would be impacted at any given time; any mistletoe-infected trees over 150 years old would be retained, and habitat where no treatment was occurring would be available for blue (dusky) grouse.

Roads opened during project implementation (temporary construction or maintenance of currently closed roads) may allow increased access for personal use firewood cutting. Firewood cutting reduces the number of snags adjacent to open forest roads. This activity does not affect live trees with a potential to be used by blue (dusky) grouse; however, recently dead mistletoe-infected trees may be removed. Woodcutting generally occurs where topography is gentle and provides easy access, thus not all areas with roosting habitat are accessible to woodcutters.

Project design criteria state that clumps of mistletoe-infected Douglas-fir would be maintained at the top or upper slopes of ridges for winter roost habitat and therefore would meet Malheur Forest Plan standards (USDA Forest Service 1990, Forest-wide standard 50, page IV-30).

Aspen and riparian treatment and protection would change overstory composition of aspen stands. Small openings would be created in selected riparian areas, which could also change overstory composition in very small patches. Understory grass, forb, shrub, and downed wood cover could increase in both aspen and riparian areas selected for treatments. This would be anticipated to increase potential nesting, feeding, hiding and loafing cover for blue (dusky) grouse, as well as insects, an important food source.

Project design criteria follows Eastside Screens standards for retaining blue (dusky) grouse winter roost habitat. Blue (dusky) grouse habitat may be affected; however, habitat would remain above the HRV and no adverse effects would be expected to blue (dusky) grouse habitat or populations from implementation of the proposed action.

Cumulative Effects

Cumulatively, where livestock grazing coincides with nesting and foraging, grazing would likely reduce the height of ground vegetation and possibly degrade habitat. This is an existing problem and project activities would not have an additive effect to this issue. Prescribed burning would benefit blue (dusky) grouse habitat in the long-term by encouraging reintroduction of native grasses and forbs and opening up dry forest canopy, providing additional nesting habitat.

Blue (Dusky) Grouse Determination

The no action alternative (alternative 1) would not contribute to substantial adverse cumulative effects to blue (dusky) grouse populations. The combined effects of the Camp Lick Project proposed action and past, present, and reasonably foreseeable future actions would not be expected to adversely affect populations or viability of blue (dusky) grouse within the analysis area.

The proposed action (alternative 2) might impact blue (dusky) grouse nesting habitat in the short-term due to prescribed fire, if implemented during the breeding and rearing season, but is expected to benefit blue (dusky) grouse in the mid to long-term by increasing nesting habitat. Mistletoe-infested Douglas fir trees removed along ridges would decrease some roosting habitat, but the quantity of this removal is expected to be low and overall would have no adverse effect on the population viability of the blue (dusky) grouse.

Compliance with Forest Plan and Other Relevant Laws, Regulations, and Policies

Blue (Dusky) Grouse

The no action alternative would not implement any activities, therefore meeting Forest Plan Management Direction #50 (page IV-30) for blue grouse winter roost habitat.

The proposed action alternative include Design Criteria to maintain blue grouse winter roost habitat on the landscape. These measures meet Forest Plan Management Direction #50 (page IV-30).

Migratory and Resident Birds

Under the National Forest Management Act (NFMA), the Forest Service is directed to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives." (Public Law 94-588, Sec 6 (g) (3) (B)). The Landbird Conservation Strategic Plan (USDA Forest Service 2000), Executive Order 13186 (2001), and the Partners in Flight North American Landbird Conservation Plan (Rosenberg et al. 2016) all reference goals and objectives for integrating bird conservation into forest management and planning.

A Memorandum of Understanding (MOU) between the USDA Forest Service and the US Fish and Wildlife Service to promote the conservation of migratory birds was signed in 2008 (USDA Forest Service and USDI FWS 2008). The purpose of this MOU is, *"to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the Parties, in coordination with State, Tribal, and local governments."*

Within the national forests, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales, ensuring that bird conservation is addressed when planning for land management activities.

The Birds of Conservation Concern 2008

In December 2008, the USFWS released a birds of conservation concern report that identifies species, subspecies, and populations of migratory and resident birds not already designated as federally threatened or endangered that represent the highest conservation priorities and are in need of additional conservation actions (USDI FWS 2008). The goal is to prevent or remove the need for additional Endangered Species Act bird listings by implementing proactive management and conservation actions. It is recommended that these lists be consulted in accordance with Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." In the Forest Service and USFWS MOU, both parties shall "work collaboratively to identify and address issues that affect species of concern, such as migratory bird species listed in the Birds of Conservation Concern (BCC) and USFWS's Focal Species initiative."

The report (2008) is intended to stimulate coordinated and collaborative proactive conservation actions among Federal, State, Tribal, and private partners. The hope is that, by focusing attention on these highest-priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities.

Partners-In-Flight Bird Conservation Regions

Bird conservation regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. BCRs are a hierarchical framework of nested ecological units delineated by the Commission for Environmental Cooperation.

The overall goal of BCRs are to list and identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities.

The Malheur National Forest is included in BCR 10 (Northern Rockies). BCR lists are updated every five years by the U.S. Fish and Wildlife Service.

BCR 10: (Northern Rockies U.S. portion only)

Bald eagle (b)
Williamson's sapsucker
Swainson's hawk
White-headed woodpecker
Ferruginous hawk
Olive-sided flycatcher
Peregrine falcon (b)
Willow flycatcher (c)
Upland sandpiper
Loggerhead shrike
Long-billed curlew
Sage thrasher
Yellow-billed cuckoo (w. U.S. DPS) (a)
Brewer's sparrow
Flammulated owl
Sage sparrow
Black swift
McCown’s longspur
Calliope hummingbird
Black rosy-finch
Lewis’s woodpecker
Cassin's finch

(a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of threatened or endangered species.

Avian Conservation Planning (Migratory and Resident Birds):

Migratory birds are those that breed in the United States and winter south of the border in Central and South America. Many of our well-known passerine songbirds, flycatchers, vireos, swallows, thrushes, warblers, and hummingbirds fall in this category. Most others are included in the resident category. Birds are a vital element of every terrestrial habitat in North America. Conserving habitat for birds will therefore contribute to meeting the needs of other wildlife and

entire ecosystems. Continent wide declines in population trends for many avian species have developed into an international concern and led to the creation of the North American Bird Conservation Initiative. Under this initiative, plans have been developed for the conservation of waterbirds, shorebirds, seabirds, and landbirds. The landbird initiative known as Partners-In-Flight has developed a series of bird conservation plans for every state. Partners-In-Flight has gained wide recognition as a leader in the landbird conservation arena.

The Oregon and Washington Chapter of Partners-In-Flight, formed in 1992, has developed a series of publications aimed at assisting private, State, Tribal and Federal agencies in managing for landbird populations. The most recent and applicable publications for the two state areas have been conservation plans for landbirds.

Partners-In-Flight Bird Conservation Plans:

Five conservation plans have been developed by Partners-In-Flight covering the various geographic regions found in Oregon and Washington. These documents have been prepared to stimulate and support a proactive approach to the conservation of landbirds throughout Oregon and Washington. They represent the collective efforts of multiple agencies and organizations within Oregon and Washington. Participants included biologists from federal and state agencies, industry, private consulting firms, environmental organizations, and academia in order to ensure a full range of ideas and practicalities were addressed by the plans.

Recommendations included in the documents are intended to inform planning efforts and actions of land managers, and stimulate monitoring and research to support landbird conservation. The recommendations are also expected to serve as a foundation for developing detailed conservation strategies at multiple geographic scales to ensure functional ecosystems with healthy populations of landbirds.

The plans can be found on the Oregon and Washington Partners-In-Flight web site at www.orwapif.org. The plan applicable to this planning effort is the *Conservation Strategy for Landbirds in the Northern Rocky Mountains of Eastern Oregon and Washington*.

The overall goal of Partners-In-Flight bird conservation planning is to ensure long-term maintenance of healthy populations of native landbirds. These documents are intended to facilitate that goal by identifying conditions and habitat attributes important to the landbird community, describing the desired landscape based on habitat relationships of a select group of species, providing interim management targets (i.e., biological objectives) to achieve desired conditions, and recommending management actions (i.e., conservation options) that can be implemented by various entities at multiple scales to achieve the biological objectives.

Implementation of parts or all of the conservation strategy should help prevent reactionary approaches typically needed to address listed species issues. When these ecosystem-driven conservation strategies are fully implemented at large geographic scales, the aggregated effect will be the creation of landscapes that should function to conserve landbird communities.

The strategy for achieving functioning ecosystems for landbirds is described through the habitat requirements of “focal species.” By managing for a group of species representative of important components in a functioning coniferous forest ecosystem, many other species and elements of biodiversity also will be conserved. Executive Order 13186 and the MOUs signed by the Forest Service and Bureau of Land Management with the U.S. Fish and Wildlife Service require agencies to incorporate migratory bird conservation into agency planning processes whenever practicable. The Partners-In-Flight plans assist federal agencies in achieving this direction.

The appropriate bird conservation plan and birds of conservation concern species list for the Camp Lick planning area was reviewed. Those species and habitats that are within the planning area are incorporated and effects disclosed in this analysis. See Table 15.

Alternative 1 (No Action)

By definition, direct and indirect effects (40 CFR 1508.8) result from a proposed action, therefore there would be no direct or indirect effects as a result of taking no action. However, a discussion of potential environmental outcomes resulting from the no action alternative warrants discussion. The no action alternative would not directly impact migratory birds because there would be no land management activities. However, early seral forests are as important for wildlife as old-growth forests (Swanson et al. 2014) and the decline in early-seral habitat adversely affects early-seral dependent bird species, many of which are migratory.
The risk of uncharacteristically severe fire would continue to increase and fire effects would result in higher stand loss as seen in the Canyon Creek Complex fire (2015) which burned in similar fuels profiles. The majority of the planning area is currently prone to high mortality through cambium kill and crown fire. Disturbances would be of higher severity, increased mortality of larger trees, and over a larger area than under historic conditions (see Camp Lick Fire, Fuels, and Air Quality Report). Specifically, patch sizes of high severity would be larger. Recent fires in eastern Oregon, including on the Malheur National Forest in 2013, 2014, and 2015 indicate that in similar conditions as those in the planning area, tree mortality through cambium kill and crown scorch could burn through a majority of the planning area. This scenario would result in a loss of habitats for many bird species in the short term, and likely a vegetation shift and loss of some habitat types over a long period of time.

Insect or disease impacts are less likely to cause a vegetation shift because seed sources of the present species would continue to be available for some time, and young trees of those species would replace the dying trees. However, if an outbreak is very severe, whole stands could be lost and any existing structure or potential future structure could be lost. For example, intermediate-aged stands would not develop into mature stands with large diameter trees, thus postponing development of those characteristics for perhaps several hundred years. This will affect the bird species distributions differently, depending on individuals' habitat preferences. Species that do well in dense young forests may do better than those preferring old, mature forests.

Alternative 2 (Proposed Action)

Direct impacts to migratory birds include loss of individuals, most likely juveniles that have not yet fledged, due to thinning and prescribed fire activities, should these activities take place in late spring to summer. Should prescribed fire treatments occur during the fall, these losses are unlikely. The potential timeframe would be over the course of project implementation, but would not occur over the entire planning area simultaneously. Certainly, given expected variation in burn intensity, not all of each burn unit is expected to burn completely, and there would be pockets of unburned or lightly burned areas within them. With the variable timing and spacing of treatments, it is expected there would remain ample suitable habitat for most of the species using the planning area.

Temporary losses in low cover (grasses, shrubs) would occur in parts of some burn units. However, light burning of the type intended is likely to result in vigorous re-sprouting. In forested stands, there may be an increase in fire-killed trees in some areas whereas there may be none in others.

At the Forest level, the changes in available habitat would be minor. By making part of the forested stands in this planning area more fire resilient, there may be a slight shift in bird species use and abundance, but not so great a shift as to cause a particular species to become absent in the planning area or on the Forest.

By far, there would be a largely beneficial impact from the proposed treatments for migratory birds. Many of the stands now present, in particular at lower elevations, are overly dense and will take many decades to develop into mature stands. Treatments would shorten the time frame for development. Furthermore, the proposed treatments would increase the resiliency of these stands to fire, insects, and disease, thus increasing the chances that the forest stands would remain on the landscape for a long time, providing a variety of habitats for migratory birds.

Table 14. U.S. Fish and Wildlife Service listed* terrestrial species for Oregon as of 2015, where species may occur or pass through the Malheur National Forest. [*Proposed, Endangered, Threatened]

Common name	Scientific name	Applies to Oregon population segment	Federal status	Year listed	Oregon critical habitat
Gray wolf	*Canis lupus*	West of highway 395	Endangered	1978	None
Canada lynx	*Lynx Canadensis*	All	Threatened	2000	None
North American wolverine	*Gulo gulo luscus*	All	Proposed	2015	Some. None on Malheur National Forest.
Cuckoo, yellow-billed	*Coccyzus americanus*	All	Threatened		Some. None in the Camp Lick planning area.

Table 15. The U.S. Fish and Wildlife Service birds of conservation concern found in the planning area. Bird Conservation Region 10 – Northern Rocky Mountains of eastern Oregon and Washington

Species	General habitat requirements	Impacts to habitat – alternative 1 (no action)	Impacts to habitat – alternative 2 (proposed action)
Flammulated owl	Associated with ponderosa pine forests and mixed conifer stands with a mean 67 percent canopy closure, open understory with dense patches of saplings or shrubs.	Continued decline of open forest and early seral species.	Increase in grassy openings from stand improvement commercial thinning and prescribed burning, but likely reduction of dense thickets from stand improvement biomass thinning. Although suitable habitat remains below historical range of variability, there would be an increase for alternative 2.
Calliope hummingbird	Predominantly a montane species found in open shrub sapling seral stages (8 to 15 years) at higher elevations and riparian areas.	Continued decline of habitat as result of increased stand densities.	Forest gaps would increase open shrub sapling stages on treated areas and across 730 acres of juniper encroachment treatments in alternative 2.
Lewis's woodpecker	Ponderosa pine, cottonwood riparian, or oak habitats with an open canopy, brushy understory,	See Threatened, Endangered, Proposed, and Sensitive Species section for analysis.	See Threatened, Endangered, Proposed, and Sensitive Species section for analysis.

Species	General habitat requirements	Impacts to habitat – alternative 1 (no action)	Impacts to habitat – alternative 2 (proposed action)
	dead and down material, available perches and abundant insects.		
Williamson's sapsucker	Eastern Cascades, mid- to high-elevation, mature open and mixed coniferous - deciduous forests. Snags are a critical component.	See Management Indicator Species –Dead and Defective Wood Species section for analysis.	See Management Indicator Species –Dead and Defective Wood Species section for analysis.
White-headed woodpecker	Open conifer forests (<40 percent canopy cover) and edge habitats where standing snags and scattered tall trees remain after a disturbance.	See Threatened, Endangered, Proposed, and Sensitive Species section for analysis.	See Threatened, Endangered, Proposed, and Sensitive Species section for analysis.
Olive-sided flycatcher *(Contopus cooperi)*	Open conifer forests (<40 percent canopy cover) and edge habitats where standing snags and scattered tall trees remain after a disturbance.	Suitable habitat condition would continue to be limited until suppression mortality created gaps and edge habitat.	Silvicultural treatments would create more open stand conditions and accelerate growth of larger trees that may become snags. Forest gaps would increase understory growth, contributing to increased insect production over the next 20 years. Increased forest edge habitat would also enhance foraging opportunities. Gaps created by thinning may allow foraging until the canopy eventually closes again and these opportunities are lost. Juniper encroachment treatments would create optimum foraging areas.
Willow flycatcher*	Associated with riparian shrub dominated habitats, especially brushy/willow thickets. In southeastern Washington also found in xeric brushy uplands.	Continued decline of riparian habitats. Stream channels would remain gullied. Riparian vegetation would be further departed from historical conditions.	Riparian and Upland Watershed Restoration Treatments combined with Ecological riparian treatments are designed to enhance hardwood species such as aspen, willow, alder, and cottonwood.
Cassin's finch	Open, mature coniferous forests of lodgepole and ponderosa pine, aspen, alpine fir, grand fir, and juniper steppe woodlands.	Continued risk of loss of habitat due to uncharacteristic wildfire.	Warm Dry late and old structure is moved from old forest multi-strata to old forest single-stratum post treatment. Increased habitat suitability from aspen restoration, stand improvement biomass thinning, and juniper encroachment treatment.

*Non-listed subspecies or population of threatened or endangered species.

Compliance with Forest Plan and Other Relevant Laws, Regulations, and Policies

Landbirds

The no action alternative would not implement any activities, therefore meeting the 1918 Migratory Bird Treaty Act (MBTA) and the Migratory Bird Executive Order 13186.

The Proposed Action includes design criteria to minimize disturbances to migratory and resident birds during project activities while pursuing opportunities to restore and enhance habitat and is thus consistent with the 1918 Migratory Bird Treaty Act (MBTA) and the Migratory Bird Executive Order 13186.

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