United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Medford District Office
3040 Biddle Road
Medford, Oregon 97504
http://www.blm.gov/or/districts/medford

May 21, 2020

6840 (ORM0010)

FEDEX EXPRESS PACKAGE (8107 7902 1460)

Jim Thrailkill
U.S. Fish and Wildlife Service
Roseburg Field Office
777 NW Garden Valley Blvd
Roseburg, Oregon 97471

Dear Mr. Thrailkill:

This Biological Assessment describes and evaluates the potential effects from projects on the Medford District: the Bear Grub Project in the Ashland Field Office (ASFO) and the Round Oak Project in the Butte Falls Field Office (BFFO). Both of these projects *may affect, and are likely to adversely affect* spotted owls (*Strix occidentalis caurina*) and their designated critical habitat. No other listed wildlife species or critical habitats are affected. A final rule for the proposed Federal listing of the Franklin's bumble bee (*Bombus franklini*) is expected in the summer of 2020. The District will submit a Conference Report addressing potential effects from the projects to the Franklin's bumble bee as an amendment to this Assessment prior to the completion of the Medford BLM FY20 Batch Biological Opinion. Listed plants are evaluated under other consultation documents.

The Medford BLM FY 20 Batch Biological Assessment for these projects is attached.

We request formal consultation with the US Fish and Wildlife Service for these projects. We look forward to working with the US Fish and Wildlife Service to meet our joint obligations under the Endangered Species Act 7(a) 1 and 7(a) 2.

For additional information, please contact Robin Snider 541-618-2496.

Sincerely,

ELIZABETH BURGHARD
Digitally signed by ELIZABETH BURGHARD
Date: 2020.05.21 12:56:31 -07'00'

Elizabeth Burghard
District Manager
Medford District Office

Enclosure

Biological Assessment
for
Medford BLM FY20 Batch of Projects

(Cite as FY 20 Batch BA)

An Assessment of Effects to the Northern Spotted Owl and Franklin's Bumble Bee

Medford District
Bureau of Land Management
May 2020

Prepared by:

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Table of Contents

List of Appendices

List of Tables

List of Figures

1. INTRODUCTION

1.1 Purpose of the Assessment

The Medford District of the Bureau of Land Management (BLM) is submitting this Biological Assessment (Assessment) to the US Fish and Wildlife Service (Service) pursuant to Section 7 (a)(2) of the Endangered Species Act (ESA). Section 7 (a)(2) requires federal agencies to consult with the Service to ensure agency actions will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. This Assessment describes and evaluates the potential effects from acres of spotted owl habitat-altering projects on the northern spotted owl (spotted owl) (*Strix occidentalis caurina*) within the Medford District BLM. A Conference Report addressing potential effects from the proposed actions to the Franklin's bumble bee (*Bombus franklini*) will be provided in a future amendment to this Assessment.

The following projects are included in this Assessment:

Forest Management Projects:

- Bear Grub (Ashland Field Office – ASFO) (4,958 acres)
- Round Oak (Butte Falls Field Office – BFFO) (3,184 acres)

The proposed action (or projects) would remove and downgrade 3,978 acres of spotted owl habitat (nesting-roosting, foraging, and dispersal-only) and would adversely affect spotted owls. The projects are within the 2012 Revised Designated Northern Spotted Owl (NSO) Critical Habitat (USDI FWS 2012b, pp. 71876-72068). BLM requests formal consultation for these projects because, as described below, the BLM has determined the proposed actions *may affect, and is likely to adversely affect (LAA)* the northern spotted owls and their designated critical habitat.

The Bear Grub and Round Oak projects have been designed under the Southwestern Oregon Resource Management Plan (SWO RMP/ROD) (USDI BLM 2016a) to accomplish management directions such as harvest timber, reduce competition, and promote forest resiliency. Timber products produced from these projects would be sold in support of the District's Allowable Sale Quantity (ASQ) declared in the 2016 SWO RMP/ROD (USDI BLM 2016a).

The proposed actions analyzed in this Assessment are within two action areas and will be implemented over several years and will impact 1.2 percent of the nesting-roosting and foraging (NRF) habitat on the District. There are 60,178 acres of BLM managed lands combined within these two action areas (6.9 percent of the Medford District) and approximately 0.9 percent of the total BLM managed lands within the District are proposed for treatment under this consultation. The impacts will not occur within a short-time frame, but rather metered out temporally and spatially. The projects in this Assessment are anticipated to result in multiple timber sales, as well as stewardship and service contracts.

The projects are described in more detail in Section 2.3 below and will be planned and implemented consistent with the project descriptions, Project Design Criteria (PDC), and Conservation Measures described in this Assessment. If any changes occur to the proposed

action under this consultation, new proposals will be presented to the Rogue Basin Level 1 team for evaluation to determine if reinitiation of consultation is necessary. The Level 1 team includes the Rogue River-Siskiyou National Forest Wildlife Biologist, the Medford BLM District Wildlife Biologist, and the U.S. Fish and Wildlife Service's Roseburg Office Wildlife Office Biologist.

1.2 Species Not Addressed

No other listed wildlife species or designated critical habitat will be affected by the activities identified in this Assessment. Below is a summary of the rationale why these species are not included in this Assessment (covered under other consultation or No Effect from the proposed action):

Gray Wolf (*Canis lupus*), Endangered
The gray wolf is a federally listed species in Oregon west of highways 395 and 78. Consultation for the gray wolf is covered in the *Biological Assessment and Letter of Concurrence for Medford Bureau of Land Management and Rogue River-Siskiyou National Forest activities affecting the Gray Wolf (USDA Forest Service /USDI BLM 2016 and USDI FWS 2017, and 2020 amendment).*

Oregon Spotted Frog (*Rana pretiosa*), Threatened – No Effect
The projects in this Assessment will not affect habitat and will not occur within the Upper Klamath and Upper Klamath Lake subbasins, where Oregon Spotted frogs are known to occur.

Marbled Murrelet (*Brachyramphus marmoratus*), Threatened – No Effect
The projects in this Assessment will not affect habitat and will not occur within the range of the marbled murrelet.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), Threatened – No Effect
The projects in this Assessment will not affect habitat and will not occur within the range of the vernal pool fairy shrimp.

Humboldt Marten *(Martes caurina humboldtensis)*, Proposed for Federal Listing – No Effect
The projects in this Assessment will not will not occur within the Extant Population Areas of the Humboldt marten.

Fisher (*Pekania pennanti*), NCSO DPS - Not Warranted for Federal Listing
On November 7, 2019, FWS released a proposed rule to list the West Coast Distinct Population Segment (DPS) of fisher (*Pekania pennanti*) as a threatened species under the Endangered Species Act (as amended 1973) (FWS 2019). The 2019 West Coast DPS included two extant historically native subpopulations, Northern California/Southern Oregon (NCSO) and Southern Sierra Nevada (SSN), as well as the Northern Sierra Nevada (NSN) and the Southern Oregon Cascades (SOC) subpopulations. On May 15, 2020, the USFWS determined that the Northern California/Southern Oregon (NCSO) DPS, which includes the SOC subpopulation, did not warrant listing under the Endangered Species Act (USDI FWS, 2020).

Federally Listed Plants and Fish
Consultation for federally listed plants in the Bear Grub and Round Oak Action Areas is covered in the Biological Assessment: Assessment of activities that may affect the federally listed plant species, Gentner's Fritillary, Cook's Lomatium, and Large-flowered Woolly Meadowfoam, on the Medford District BLM (USDI BLM 2020, in press). Federally listed fish species will be evaluated separately through consultation with the National Marine Fisheries Service

1.3 Consultation History

The Bear Grub and Round Oak projects are considered new projects. The Bear Grub and Round Oak projects were presented at a Level 1 team briefing at the Medford Interagency BLM Office on March 4, 2020. A Level 1 field trip to the Bear Grub Project occurred on March 4, 2020, and a Level 1 field trip to the Round Oak Project occurred on December 5, 2019.

A draft of the FY20 Batch of Projects Biological Assessment for formal consultation was submitted to the Level 1 team for review on April 20, 2020. Recommendations from the Level 1 team were incorporated into the preparation of the final Assessment.

1.4 Definitions

The terms and definitions listed below are integral to the clear understanding of the proposed action and the analyses in this Assessment.

Land Use Allocations – 2016 SWO RMP
There are five land use allocations designated in the 2016 Southwestern Oregon Resource Management Plan (USDI BLM 2016a) in the project area: Congressionally Reserved Lands, District-Designated Reserves, Harvest Land Base, Late-Successional Reserve, and Riparian Reserve.

Congressionally Reserved Lands are lands set aside to conserve, protect, and restore the identified outstanding cultural, ecological, and scientific values of National Conservation Lands and other congressionally designated lands. These include Designated and Suitable Wild and Scenic Rivers and Designated Wilderness and Wilderness Study Areas.

District-Designated Reserves (DDR) is the Federal land in which the primary objective is to maintain the values and resources for which the BLM has reserved these areas from sustained-yield timber production. The DDR contains further sub-allocations to guide management based on site-specific values identified; Lands Managed for their Wilderness Characteristics (DDR-LMWC), Areas of Environmental Concern (ACEC), and Timber Production Capability Class (DDR-TPCC).

Harvest Land Base (HLB) has specific objectives for sustained-yield timber production. The HLB contains further sub-allocations to guide forest management based on large-scale forest conditions; Uneven-Aged Timber Area (UTA), Low Intensity Timber Area (LITA), and Moderate Intensity Timber Area (MITA).

Late-Successional Reserve (LSR) is the Federal land in which the primary objective is to maintain and promote the development of habitat for the northern spotted owl and other late-successional species. The LSR is comprised of two sub-allocations: Dry Forest and Moist Forest.

Riparian Reserve (RR) is the Federal land in which the primary objectives are to maintain and restore riparian functions, maintain water quality, and contribute toward the conservation and recovery of ESA-listed fish species (USDI BLM 2016a, p. 75). The RR is comprised of two sub-allocations: Dry and Moist.

Activity Periods for the Northern Spotted Owl

Table 1. Northern Spotted Owl Breeding Periods	
Entire Breeding Period	**Critical Breeding Period**
March 1-September 30	March 1- July 15

Northern Spotted Owl Sites

Northern spotted owl site occupancy is defined as locations with evidence of continued use by spotted owls (including breeding), repeated location of a pair or single birds, presence of young before dispersal, or some other strong indication of continued occupancy. Spotted owls are generally monogamous and primarily mate for life (Courtney 2004). They are also known to exhibit high site fidelity. However, owls often switch nest trees and use multiple core areas over time, possibly in response to fluctuations of prey availability, loss of a particular nest tree, or presence of barred owls. Spotted owl sites used in this consultation are based on historic information, recent protocol surveys, incidental observations or a combination thereof. For the purposes of this consultation and its analysis, these multiple nest locations (original and alternates) are combined to represent one spotted owl pair territory. For this assessment, survey history was used to determine whether the original or alternate nest locations (or both) would be analyzed in this Assessment to represent the territory.

Home Range Circle is an approximation of the median home range size used by spotted owls. The Medford District uses the median home range estimated for southwestern Oregon of 2,895 acres or a circle with a radius of 1.2 for the West Cascades Province and 3,400 acres or a circle with a radius of 1.3 miles for the Klamath Province (Thomas et al., 1990; Courtney et al., 2004). The Home Range Circle provides a coarse but useful analogue of the median home range for northern spotted owl (Lehmkuhl and Raphael 1993; Raphael et al., 1996). Although it provides an imprecise estimate of actual home ranges, the home range circle approach has been used to show that stand age/structure, patch size, and configuration within the circle influences the likelihood of occupancy. The provincial home ranges of several owl pairs may overlap.

Core Area Circle has a radius that captures the approximate core use area, defined as the area around the nest tree that receives disproportionate use (Bingham and Noon 1997). The Medford District uses a 0.5-mile radius (≈500 acre) circle to approximate the core area. Core areas represent the areas that are defended by territorial owls and generally do not overlap the core areas of other owl pairs (Wagner and Anthony 1998; Dugger et al., 2005; Zabel et al., 2003; Bingham and Noon 1997).

Nest Patch is the 300-meter radius (70 acres) around a known or likely nest site and is included in the core and home range areas. Nest area arrangement and nest patch size have been shown to be an important attribute for site selection by spotted owls (Swindle et al., 1997; Perkins 2000; Miller et al., 1989; Meyer et al., 1998). Models developed by Swindle et al. (1997) and Perkins, (2000) showed that the amount of older forest within the 200- to 300-meter radius (and sometimes greater), is positively associated with likelihood of nesting by spotted owls. The nest patch size also represents key areas used by juveniles prior to dispersal. Miller et al. (1989) found that the extent of forested area used by juvenile owls prior to dispersal averaged approximately 70 acres.

Northern Spotted Owl Habitat

Canopy Cover is considered the area of the ground covered by a vertical projection of the canopy (Jennings et al., 1999). Based on best available information, the Rogue Basin Level 1 team uses canopy cover to measure canopy levels important to spotted owl habitat function. Canopy cover is important for spotted owls because it provides dispersal/connectivity, thermal cover, and protection from avian predators (Forsman et al., 1984, Thomas et al., 1990). The Rogue Basin Level 1 team calculates canopy cover averaged at the scale of the treatment unit (see Treatment Unit definition below), which includes a distribution of overstory trees across the unit.

Nesting-Roosting (NR) Habitat for the northern spotted owl consists of forest cover types used by owls for nesting, roosting, and foraging. Generally, this habitat is multistoried, 80 years old or older (depending on stand type and structural condition), has high canopy cover (generally $\geq$ 60 percent), and has sufficient snags and down wood to provide opportunities for nesting, roosting, and foraging. Other attributes that may be present include large trees with various deformities (e.g. large cavities, broken tops, mistletoe infestations, and other evidence of decadence), large snags, large fallen trees and other woody debris on the ground, and sufficient open space below the canopy for owls to fly (Thomas et al., 1990). Not all of these habitat components need to be present to qualify as NR habitat. Sometimes only some of the habitat components are present, or all of them are present, but at lower quantities. The basal areas in nesting-roosting habitat can range from approximately180 to 240 ft^2/acre, but is typically greater than 240 ft^2/acre.

In southwest Oregon, NR habitat varies greatly, but common components include mixed-conifer forest, recurrent fire history, patchy habitat components, and a higher incidence of woodrats. It may consist of somewhat smaller tree sizes. One or more important habitat components, such as dead down wood, snags, dense canopy, multistoried stands, or mid-canopy habitat, might be lacking or even absent in portions of southwest Oregon NR. NR habitat also functions as dispersal habitat.

Foraging (F) Habitat has large trees and high canopy, but is often single storied, lacks decadent features, and while basal areas may vary in SW Oregon, foraging habitat usually has at least 150 ft^2/acre basal area and could range from 150 -240 ft^2 / acre basal area. Currently, the Rogue Basin Level 1 team uses NRF habitat in consultation to represent both NR and Foraging habitat. The Medford District classifies NR and Foraging habitat separately, which also helps inform the effects determinations and planning for all projects.

Dispersal-Only Habitat at a minimum consists of stands with adequate tree size and canopy cover to provide protection from avian predators and at least minimal foraging opportunities. Dispersal habitat may include younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, but such stands should contain some roosting structures and foraging habitat to allow for temporary resting and feeding for dispersing juveniles (USDI FWS 1992). Dispersal habitat is generally forest stands with an average stand canopy cover of 40 percent or greater and an average diameter at breast height (DBH) of 11 inches or greater. It provides temporary shelter for owls moving through the area between NR and F habitats and some opportunity for owls to find prey; but it does not provide all of the requirements to support an owl throughout its life. NR and F habitat can also function as dispersal habitat. However, dispersal (or dispersal-only) will be used throughout this document to refer to habitat that does not meet the criteria to be NR or F habitat, but has adequate canopy cover to facilitate movement between blocks of NR and F habitat.

Dispersal Function for the spotted owl consists of an assemblage of conifer-dominated forest stands that the owls can use for dispersal movements across the landscape. Dispersal habitat for spotted owls includes nesting-roosting, foraging, and dispersal-only habitat. Dispersal habitat and dispersal-only habitat are not synonymous. The term "dispersal habitat" is generally used when describing and discussing the opportunities (e.g., acres of dispersal habitat) for spotted owls to move across the landscape. The Service has generally recommended using a fifth field or larger landscapes for assessing dispersal habitat conditions because watersheds or provinces offer a more biologically meaningful way to evaluate dispersal function. More recent information (Davis, et al. 2016), suggests that landscapes having at least 40 percent of dispersal habitat conditions (including both older and younger forests) would be sufficient to support spotted owl dispersal across the landscape.

Capable Habitat for the northern spotted owl is forestland that is currently not habitat but can become NR, F, or dispersal-only habitat in the future, as trees mature and the canopy closes.

Non-habitat does not currently provide habitat for northern spotted owls and will not develop into NR, F, or dispersal-only habitat in the future.

Northern Spotted Owl Habitat Alteration

Treatment Unit (or cutting unit) is the footprint of where trees are actually being cut. Trees left standing outside the perimeter of where cutting is authorized, are by definition, not in the cutting unit and do not count toward canopy cover or basal area retention levels. The cutting unit includes new roads and landings within and adjacent to the cutting unit because the results of these actions also contribute to canopy cover and basal area retention values. It does not include existing roads outside the cutting units or riparian reserves, unless, thinning in the riparian reserve. Larger treatment units may be subdivided into separate effects determinations based on the extent of the prescriptions and existing habitat conditions. The overall goal of defining the cutting unit this way informs an analysis of habitat function pre and post treatment and effects.

Modify NR, F, or Dispersal-Only Habitat is the treatment defined when an action or activity in nesting-roosting, foraging, or dispersal-only habitat removes some trees or reduces the

availability of other habitat components, but does not change the current function of the habitat because the conditions that would classify the stand as NR, F, or dispersal-only habitat would remain post-treatment. The treated stand is expected to still function as NR or F habitat because it will continue to provide at least 60 percent canopy cover (treatment unit average), large trees, multistoried canopy, standing and down dead wood, diverse understory adequate to support prey, and may have some mistletoe or other decay. The treated stand will still function as dispersal habitat because it will continue to provide at least 40 percent canopy cover (treatment unit average), flying space, and an average of trees 11 inches DBH or greater. In order to maintain function at treatment unit scale, habitat variables should be distributed within that defined area. For example, the stand or unit would not function as NR, F, or dispersal-only habitat if all of the canopy retention was concentrated on the side or middle of the unit, leaving large gaps that do not provide spotted owl habitat/function. Depending on the scale and intensity of harvest, the results may have adverse effects to spotted owls.

Downgrade NR or F alters the condition of spotted owl NR or F habitat so the habitat no longer contains the variables associated with nesting, roosting, and foraging. Downgraded units would contain trees > 11 inches in diameter and enough tree canopy cover to support spotted owl dispersal. Downgrade is defined when the canopy cover in a NR or F stand is reduced to 40-60 percent (treatment unit average) and other key habitat elements are removed, such as hunting perches. Conditions are altered such that an owl would be unlikely to continue to use that unit for nesting, or roosting and foraging. The removal of these key habitat features would reduce the roosting and foraging opportunities for owls and may lead to increased predation risk by exposing owls to other raptors. Downgraded NR or F continues to provide habitat for dispersal.

Remove NR or F alters known spotted owl NR or F habitat so the habitat no longer functions as nesting, roosting, or foraging habitat. Removal generally reduces canopy cover to less than 40 percent (treatment unit average), alters the structural diversity and dead wood in the stand or otherwise changes the unit so it no longer provides nesting, roosting, or foraging, or even dispersal habitat for owls. The removal of these key habitat features would reduce the roosting, foraging, and dispersal opportunities for owls in the action area, and lead to increased predation risk. These treatment acres would not be expected to provide functioning NR or F habitat for decades post-treatment.

Remove Dispersal alters known spotted owl dispersal-only habitat so the habitat no longer functions as dispersal habitat. Removal generally drops canopy cover to less than 40 percent (treatment unit average) and otherwise changes the stand so it no longer provides dispersal habitat for owls. The post-harvest stand would be too open to provide protection from predators.

2. DESCRIPTION OF THE PROPOSED ACTION

The projects in this Assessment occur in the Ashland and Butte Falls field offices on the Medford District and were planned by different interdisciplinary teams.

2.1 Project Area History and Current Condition

There is a range of structural stages within a forest area at any given time, which can be analyzed against a historical reference condition to determine ecological departure. This reference

condition is a percentage of seral stages across biophysical settings. Each biophysical setting model is composed of a suite of five successional/structural stages (s-classes), based on vegetation condition, such as tree size and canopy cover. These classes typically include: (1) Early successional, (2) Mid-development Closed Canopy, (3) Mid-development Open Canopy, (4) Late Development Open Canopy, and (5) Late Development Closed Canopy. The definition of each s-class in terms of species composition, stand structure, and stand age is unique for each biophysical setting (USDI BLM, 2016b, p.1308). However, the approximate class thresholds are as follows: The early successional class includes Establishment vegetation comprised of grass, herbs, shrubs, and tree seedlings to saplings and poles. The mid successional class includes stands with pole (8" DBH) to large (20" DBH) sized conifers, while the late successional class includes stands with large sized (> 20"DBH) conifer. The open category represents overstory canopy cover that is < 40 percent and the closed canopy cover represents overstory canopy cover > 40 percent.

The reference condition of these seral stages does not represent a specific historical date, but instead approximates an equilibrium condition, or ecological reference condition, a Natural Range of Variability (NRV), based upon the natural biological and physical processes. Quantifying the departure of current vegetation structure and landscape composition patterns from this reference condition can inform where, how much, and what types of restoration are needed to move present day landscape scale forest structure towards NRV (Haugo et al. 2015). The BLM PRMP/FEIS analysis found that compared to this natural range of variability, there was an abundance of forest stands in the mid-closed successional stage and a severe deficit of stands in the late-open successional stage (USDI BLM 2015, pp. 223-242). The Medford District has an excess of early and mid-closed structural classes, the quantity of the latter being significantly greater. In contrast, there is a deficit of mid-open, late-open, and late-closed classes across the district (Figure 1).

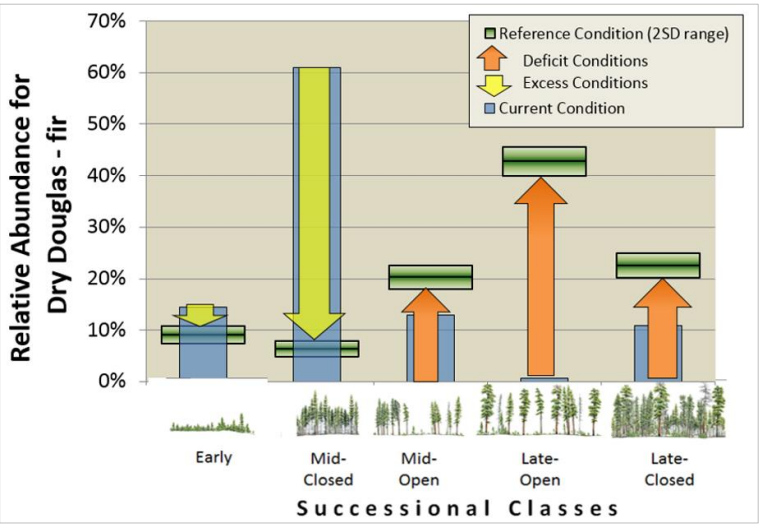

Figure 1: Medford District Structural Class departure from natural range of variability for Dry Douglas-fir (USDI BLM 2015)

Bear Grub Project Area Current Vegetation Conditions

The Bear Grub Project Area is located just south of the city of Jacksonville and east of the town of Ruch in Jackson County, Oregon. These lands are a mix of BLM-administered, Oregon

Department of Forestry, and private, or individual company ownership. The project is within three 5th field watersheds (Middle Applegate watershed, Little Applegate watershed, and Bear Creek watershed). The current landscape pattern of the vegetation here is a result of highly dissected topography, fires, wind events, timber harvesting, and forest pathogens.

The Bear Grub project area is between 1,700 and 5,500 feet in elevation and lies within the Klamath Mountain Province as described by Franklin and Dyrness (1973). Moisture and temperature gradients differ between forest zones creating a unique pattern of various vegetation types throughout the project area, which are broadly correlated with elevation. Vegetation within this area is summarized according to Plant Associations Groups (PAG) of Southern Oregon (Atzet 1996). Douglas-fir plant associations comprise the majority of forestland in the Project Area. At the highest elevations on the eastside of the planning area the PSME (Douglas-fir)-ABCO (white fir) and PSME-ABCO/PIPO (ponderosa pine) plant associations are present. When rainfall is abundant, or the aspect is more conducive to cooler temperatures (such as north and east aspects), the plant associations most often found include PSME-PIPO, and PSME-BENE (dwarf Oregon grape). On the drier sites the PSME-RHDI (poison oak) and PSME-RHDI-BEPI (Piper's Oregon grape) plant associations are most prevalent. Pine and white oak series forests are usually found on south and west aspects and the lowest elevations (PIPO-QUKE (California black oak) and PIPO-PSME).

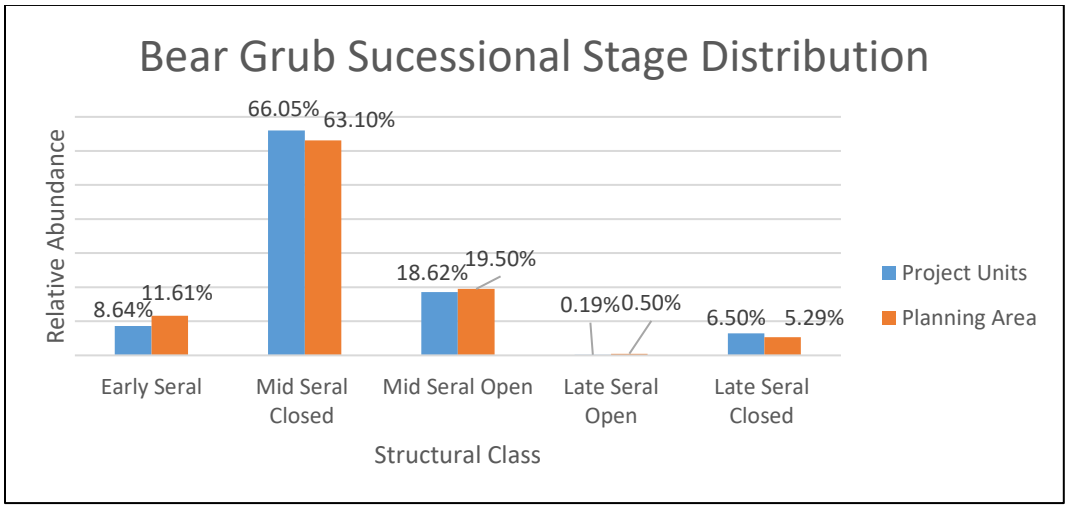

Figure 2: Current Bear Grub Structural Class Abundance

Round Oak Project Area Current Vegetation Conditions

The proposed Round Oak project area is roughly split between two fifth field watersheds the South Fork of the Rogue River to the north and Big Butte watershed to the south. The stands proposed for treatment are geographically bound in the north by Round Mountain at an elevation of approximately 5,000 ft and the west flank foothills of Oak Mountain in the southern portion of the project at ~3,000 ft. Aspects represented are moderately variable and have an influence on existing vegetation condition. South and west aspects tend to be the hotter and drier and have xeric forest conditions. Whereas the north and east aspects are cooler and relatively more moist throughout the growing season and in general have a higher carrying capacity for vegetation as compared to south and west slopes.

The Round Oak project is within one distinct ecoregion province: Cascades West (Thompson et al. 2003). Overstory dominate tree species and associated understory vegetation within the project area is summarized according to Plant Associations Groups (PAG) of Southern Oregon (Atzet 1990). There are four major forested PAGs found in the project area: White fir-Intermediate is the most dominant PAG accounting for approximately one third of the project area (36 percent), White fir – cool (26 percent) and Douglas fir-dry (24 percent) each account for a quarter of the project area. Western Hemlock Intermediate is the fourth most abundant PAG at ~7 percent of the area. Four other Moist and Dry PAGs less than 2 percent each account for the rest of the forested areas. Non forest PAGs account for the remainder of the project area. For the actual proposed treatment units the same four dominate PAGs are represented in the project area are reflected in the units with a slight difference in distribution. White fir – Intermediate is 43 percent, White fir – Cool 34 percent and Douglas fir – Dry at 13 percent of the proposed units. In general low elevation species composition is consists of pine/oak dominance. Mid elevation species composition is reflective of mixed conifer forest type with the following specific species present in order of dominance: Douglas fir, ponderosa pine, incense cedar, sugar pine, white fir, Oak Sp., and madrone. High elevation stands have species composition similar to mixed conifer forest types, but with greater proportions of white fir and Western hemlock. Land ownership patterns, past timber harvest, windstorms, wildfires, and fire exclusion have created the highly variable vegetation existing structural conditions in the Round Oak Project Area (Figure 3). The present-day vegetation pattern across the watershed landscape results from the dynamic processes of natural and human influences over time.

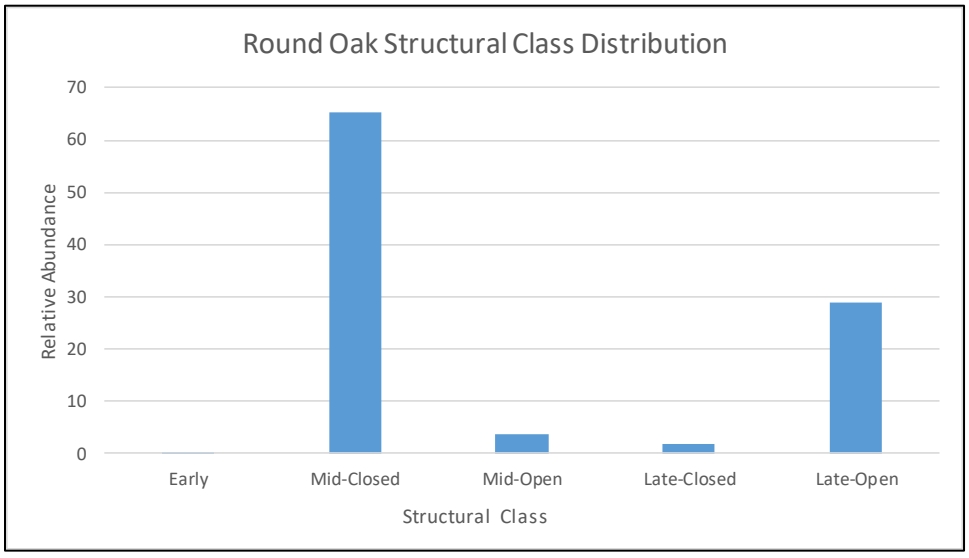

Figure 3: Current Round Oak Structural Class Abundance

2.2 Proposed Action Overview

The Bear Grub and Round Oak projects have been designed under the Southwestern Oregon Resource Management Plan (SWO RMP/ROD) (USDI BLM 2016a) to accomplish management directions such as reduce competition, promote forest resiliency, and harvest timber to contribute to the attainment of the declared ASQ for the Medford District. Timber products produced from these projects would be sold in support of the District's Allowable Sale Quantity (ASQ) declared

in the 2016 SWO RMP/ROD (USDI BLM 2016a). The projects have been designed to conform to the 2016 SWO RMP/ROD (USDI BLM 2016a) by following the management directions for the land use allocations (LUAs) within each project area (Table 2).

Table 2. Medford District BLM 2016 SWO RMP/ROD Land Use Allocation for the Bear Grub and Round Oak Projects

Project	2016 Land Use Allocation[1] Acres						
	HLB – MITA	HLB – LITA	HLB-UTA	DDR[2]	LSR	RR	Total Acres
Bear Grub	0	0	2,743	1,251	446	518	**4,958**
Round Oak	430	1,394	1,073	120	5	162	**3,184**
TOTAL	**430**	**1,394**	**3,816**	**1,371**	**451**	**680**	**8,142**

1 - HLB-MITA=Moderate Intensity Timber Area; HLB-LITA = Harvest Land Base-Low Intensity Timber Area; HLB-UTA= Harvest Land Base – Uneven-Aged Timber Area; DDR= District Designated Reserve; LSR = Late Successional Reserve; RR – Riparian Reserve (see definitions); 2 - The DDR acres in the projects include TPCC lands, roads, and water.

2.3 Detailed Project Objectives and Descriptions

Field-based surveys and inventories were completed by Ashland and Butte Falls Field Office staff during the project planning process to determine current and desired-future stand conditions. Current stand data was used to determine where management could occur within the project areas in order to meet project objectives such as achieving the District's ASQ targets and forest resiliency. To inform project planning, evaluations of spotted owl habitat were also incorporated into the treatment designs and prescriptions. Table 3 below provides a breakdown of the amount of proposed vegetation treatment, road construction and landing construction by spotted owl habitat type. Of the 8,142 acres of proposed action, the highest proportion of the treatments within spotted owl habitat, 33 percent (2,714 acres), is planned within stands characterized as spotted owl foraging habitat, followed by 25 percent (2,011 acres) in dispersal-only habitat, and then 16 percent (1,286 acres) in nesting-roosting habitat. Twenty-six percent (2,131 acres) of the proposed action is planned in lands that do not currently function as spotted owl habitat (i.e., capable or non-habitat).

Table 3. Treatment Acres by Spotted Owl Habitat for the Bear Grub and Round Oak Projects

Project	Field Office	NRF		Dispersal-Only	Capable	Non-Habitat	Total
		Nesting-Roosting	Foraging				
Bear Grub	Ashland	133	1,202	1,542	1,246	835	**4,958**
Round Oak	Butte Falls	1,153	1,512	469	43	7	**3,184**
TOTAL		**1,286**	**2,714**	**2,011**	**1,289**	**842**	**8,142**

2.3.1 Project Objectives and Development Strategies

The primary objectives for the projects planned in the Harvest Land Base (5,640 acres, Table 2), are to meet non-owl-specific objectives (timber production and forest health), while still creating resilient stands. However, some treatments in the HLB would provide secondary benefits for spotted owls by maintaining spotted owl habitat function (post-treatment) and/or developing

nesting habitat over the long term by encouraging tree growth, increasing heterogeneity, enhancing and creating horizontal and vertical structure, and reducing risk of habitat loss due to fire, disease and insects. The objectives for treatments proposed in the late-successional reserves include maintaining and improving spotted owl habitat function.

Bear Grub and Round Oak Project Objectives

There are several management directions incorporated into these projects from the 2016 SWO RMP/ROD (USDI BLM 2016a):

Harvest Land Base

- Conduct timber harvest to contribute to the attainment of the declared Allowable Sale Quantity (ASQ) for the Medford Sustained Yield Unit (SYU) (HLB LUA) (pp. 62, 64, and 68).
- Utilize integrated vegetation management to promote the development and retention of large, open grown trees and multi-cohort stands; increase or maintain vegetative species diversity; promote and enhance the development of structural complexity and heterogeneity; adjust stand composition or dominance; reduce stand susceptibility to disturbances; and create growing space for hardwood and pine persistence and regeneration (at dry sites) (HLB-UTA LUA) (p. 68).
- Conduct regeneration harvest to reset stand development in stands that would not respond well to commercial thinning, and provide complex early-successional ecosystems (HLB-LITA LUA) (p. 64).
- Design timber harvest treatments in a manner sufficient to avoid incidental take of spotted owls (p. 121).
- Treat both management activity fuels and natural hazardous fuels to modify the fuel profile, reduce potential fire behavior and fire severity (p. 91).

Late Successional Reserves (Bear Grub Only)

- Promote the development of nesting-roosting habitat for the spotted owl that do not currently support northern spotted owl nesting and roosting (p. 70).
- Apply silvicultural treatments to speed the development of spotted owl (NSO) nesting-roosting habitat or improve the quality of NSO nesting-roosting habitat in the stand in the long-term (p. 72).
- Enable forests to: respond positively to climate-driven stresses, wildfire and other disturbance with resilience, and ensure positive or neutral ecological impacts from wildfire (p. 74).
- Contribute to the 17,000 acre decadal target (p. 74).
- Apply fuels treatments to reduce the potential for uncharacteristic wildfires (p. 75).
- Design timber harvest treatments in a manner sufficient to avoid incidental take (p. 121).

Riparian Reserves

- Conduct timber harvest and fuels reductions treatments to reduce the risk of stand-replacing crown fires and/or to ensure that stands are able to provide trees that would function as stable wood in the stream (RR-Dry LUA, Class 1 watershed) (pp. 82-84).

Bear Grub and Round Oak Projects Spotted Owl Considerations in Project Planning
Potential effects to spotted owls were considered during project planning because timber harvest under the BLM's SWO RMP/ROD is expected to avoid incidental take of spotted owls until implementation of a barred owl management program is in place (USDI BLM 2016a, p. 30). Therefore the proposed treatments are consistent in avoiding incidental take (per Level 1 discussions with the U.S. Fish and Wildlife Service) while contributing to the District's ASQ and improving forest resilience (USDI BLM 2016a). BLM wildlife biologists and silviculturists for the projects worked together to design treatments in occupied spotted owl habitat/sites in order to avoid an incidental take determination by the Service.

The Medford District is surveying known spotted owl sites, including timber harvest areas associated with the proposed Bear Grub and Round Oak project areas, based on an established spotted owl survey protocol (USDI FWS 2012a). If spotted owls are located, the District intends to drop or modify the treatment prescriptions in order to avoid an incidental take determination by the Service.

The projects were planned, to the extent practicable, to be consistent with the 2012 final Critical Habitat Rule (USDI FWS 2012b). This is primarily being accomplished by following management direction for each specific LUA, which considered treatment intensities in dry and moist forest types within designated critical habitat and following concepts of Ecological Forestry. The SWO RMP/ROD has applied the following concepts of Ecological Forestry:

- Uneven-aged stand management for fire resilience in the dry forest;
- Regeneration harvest with varying levels of retention in the Low Intensity Timber Area (moist forests types);
- Protection of larger and older trees within harvested areas;
- Thinning within the Late-Successional Reserve to speed the development of northern spotted owl habitat; and
- Retention of key forest structural components following natural disturbances in the reserves (USDI BLM 2016a, p. 23).

In addition, the following concepts from the final rule were incorporated into project planning:

1. Proposed actions follow recommendations for active management in the Revised Recovery Plan for the Northern Spotted Owl (2011) and referenced in the 2012 final critical habitat rule. While the management of spotted owls and their critical habitat are not the primary objectives for the treatments proposed in the HLB LUA of the Bear Grub project, the proposed silviculture objectives are to reduce stand densities to within the historic natural range to increase stand resilience, which is consistent with the critical

habitat rule to restore natural ecological processes where they have been disrupted or suppressed (USDI FWS 2012b:71877). In addition, treatments proposed in LSR would aim to speed the development of spotted owl nesting habitat, also consistent with the rule (USDI FWS 2012b, p. 71881)

2. Active forest management that would result in an incidental take determination is not proposed within the home ranges of occupied sites. Surveys are ongoing, so occupancy for many spotted owl sites are undetermined at this time. However, if spotted owls are located, units would be dropped or modified to avoid the likelihood of incidental take of spotted owls. Therefore, the proposed action would not impact the demographic support role of the critical habitat sub-units (USDI FWS 2012b, p. 71881).

2.3.2 Project Descriptions and Prescriptions

The Bear Grub and Round Oak projects utilize silviculture treatments identified in the BLM SWO RMP/ROD for managing conifer forests to accomplish the project level objectives (Table 4). The silvicultural prescriptions applied to each stand were also based on existing stand conditions, field based spotted owl habitat determinations, or in some cases, aerial photo/LiDAR interpretation by experienced BLM wildlife biologists. The project prescription writer and project wildlife biologist will conduct field reviews and adjust marked trees, as necessary, prior to harvest to ensure prescription objectives and spotted owl habitat retention levels are met and consistent with this consultation.

Table 4. Acres of Vegetation Treatments and Road/Landing Construction for the Bear Grub and Round Oak Projects

Treatment Type	Bear Grub	Round Oak	Total Acres
Selection Harvest	1,433	987	**2,420**
Regeneration Harvest	0	1,629	**1,629**
Hazardous Fuels Reduction	3,460	544	**4,004**
Riparian Reserve Thinning	7	0	**7**
Road and Landing Construction, yarding wedges[1]	58	24	**82**
TOTAL	**4,958**	**3,184**	**8,142**

1- These only include acres from road and landing construction and yarding wedges that are outside of units or inside NR or F downgrade or NR, F, and Dispersal-only modification units.

Project Prescriptions – by LUA

Harvest Land Base – Low and Moderate Intensity Timber Areas (LITA and MITA)

Regeneration Harvest (RH) – Round Oak Only

The primary purposes of implementing this treatment are to produce timber to contribute to the attainment of the declared ASQ and to create growing space for early-seral species (such as pine) persistence and regeneration and to provide a variety of forest structural stages distributed both spatially and temporally. Per the SWO RMP/ROD (USDI BLM 2016a) parameters, 15-30 percent of live conifer pre-harvest basal area (BA) would be retained in LITA and 5-15 percent would be retained in MITA. These would be retained in a variety of spatial patterns including aggregated groups and individual trees. Trees

that are both ≥40 inches DBH and that the BLM identifies as having been established prior to 1850 would be retained as well, except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically viable or practically feasible. If such trees need to be cut for safety or operational reasons, retain cut trees in the stand. After regeneration harvest, natural or artificial regeneration would be used to reforest a mixture of species appropriate to the site.

The proposed regeneration harvest prescription would remove nesting-roosting, foraging, and dispersal-only habitat.

***Harvest Land Base - Uneven Aged Timber Area (UTA)* – Bear Grub and Round Oak**

Management activities are proposed within the Harvest Land Base Uneven-aged Timber Area. While each project uses different terms for the prescriptions (commercial thinning, selection harvest), they will follow the direction under the SWO RMP/ROD for UTA LUA as described below.

Projects would be treated with integrated vegetation management. **Integrated vegetation management** includes the use of a combination of silvicultural or other vegetation treatments, fire and fuels management activities, harvest methods, and **restoration** activities. Activities include, but are not limited to, vegetation control, planting, snag creation, prescribed fire, biomass removal, **thinning**, single tree **selection harvest**, and group selection harvest (USDI BLM, p. 68). In forested stands greater than 10 acres commercial treatments may consist of the following:

- Thinning treatments would be prescribed to achieve an average relative density between 20-45 percent after harvest.
- The retention of all dominant Douglas-fir and pine trees that are both greater than or equal to 36 inches diameter at breast height and were established prior to 1850
- The retention of all madrone, big leaf maple, and oak trees greater than or equal to 24 inches diameter at breast height
- At least 10 percent of the treatment unit would be retained in untreated "skips" to provide structural complexity and refugia.
- A total of 30 percent of the stand may consist of openings up to 4 acres, but not exceeding 4 acres each.
- For stands where the primary objective is to maintain dispersal-only habitat, Selection Harvest would be prescribed to achieve 40 percent canopy cover retention, as well as retaining other key habitat features to maintain dispersal function. For stands where the primary objective is to maintain NR or F habitat function, Selection Harvest would be prescribed to maintain 60 percent canopy cover and retain other key habitat features, such as canopy layering, large down woody material, basal area, and standing snags, and legacy structures, to maintain nesting and/or roosting foraging function. Additionally, no more than

20 percent of the pre-harvest basal area would be removed in the stands with prescriptions to maintain nesting-roosting habitat function.

- Prescribed fire may be used following mechanical treatments to stimulate vegetation, reduce fuel loading, and prepare the site for planting.

The proposed Uneven-aged management prescriptions would occur within nesting-roosting, foraging, and dispersal-only habitat and the effects range from removal to maintaining habitat function.

***LSR – Dry* – Bear Grub Only**

Selection Harvest

Proposed treatments include Selection Harvest, which will follow the direction under the SWO RMP/ROD for LSR LUA as described below.

Projects would be treated with integrated vegetation management. **Integrated vegetation management** includes the use of a combination of silvicultural or other vegetation treatments, fire and fuels management activities, harvest methods, and **restoration** activities. Activities include, but are not limited to, vegetation control, planting, snag creation, prescribed fire, thinning, single tree selection harvest, and group selection harvest (USDI BLM 2016a, p. 68). In forested stands greater than 10 acres commercial treatments may consist of the following:

- Thinning treatments would be prescribed to achieve an average relative density between 20-45 percent after harvest.
- The retention of all dominant Douglas-fir and pine trees that are both greater than or equal to 36 inches diameter at breast height and were established prior to 1850.
- The retention of all madrone, big leaf maple, and oak trees greater than or equal to 24 inches diameter at breast height.
- At least 10 percent of the treatment unit would be retained in untreated "skips" to provide structural complexity and refugia.
- A total of 25 percent of the stand may consist of openings up to, but not exceeding 4 acres each.
- For stands where the primary objective is to maintain dispersal-only habitat, Selection Harvest would be prescribed to achieve 40 percent canopy cover retention, as well as retaining other key habitat features to maintain dispersal function. For stands where the primary objective is to maintain nesting-roosting or foraging function, Selection Harvest would be prescribed to maintain 60 percent canopy cover and retain other key habitat features, such as canopy layering, large down woody material, standing snags, and legacy structures, to maintain nesting and/or roosting foraging function.
- Prescribed fire may be used following mechanical treatments to stimulate vegetation, reduce fuel loading, and prepare the site for planting.

- In stands < 10 acres treated with selection harvest or commercial thinning, do not create group selection openings greater than 2.5 acres in size.

  When conducting commercial harvest create snags as identified in the SWO RMP/ROD (p. 73).

LSR prescriptions would vary, but could downgrade and remove foraging habitat and remove dispersal-only habitat. Foraging habitat in LSR would only be removed in low relative habitat suitability. LSR prescriptions could also modify nesting-roosting, foraging, and dispersal-only habitat, but would still maintain function post-treatment.

***Riparian Reserve* – (Commercial Thinning only in Bear Grub)**

Riparian Commercial Thinning would be applied in the Middle (50-120 feet of intermittent, non-fish-bearing streams) and Outer Zones (Site Potential Tree of fish-bearing, perennial, and intermittent streams) of the Riparian Reserve-Dry (RR) land use allocation (Class I sub-watershed). The primary objective is to reduce the risk of stand-replacing, crown fires by reducing stand density and creating space between residual trees to reduce the potential for fire spread (USDI BLM 2016a, p. 83).

Commercial-sized (>8 inches DBH) conifer trees would be removed in addition to hardwoods >8 inches DBH, if necessary, to facilitate removal of conifer trees to meet the prescription. Generally, conifer tree removal would target the lowest size classes (8 inches DBH to 20 inches DBH) within the stand. Appropriate riparian species would be retained to maintain and improve diversity. The following retention preference for conifer species would be applied, where possible: sugar pine, ponderosa pine, incense cedar, Douglas-fir, and white fir. Treatments would maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average across the treated portion of the RR (USDI BLM 2016a, p. 83). Existing snags >6 inches DBH and down woody material >6 inches in diameter at the large end and >20 feet in length would be retained unless removal is necessary for safety, operation, or fuels reduction reasons. Snags >6 inches DBH cut for safety or operational reasons would be retained as down woody material. In the Inner, Middle, or Outer Zones, a minimum of two new snags (1 >10 inches DBH and 1 >20 inches DBH) would be created within one year of completion of yarding the timber in the timber sale. If trees are not available in the size class specified, trees from the largest size class available would be used. Snag creation amounts would be met as an average at the scale of the portion of the harvest unit within the RR, and would not need to be attained on every acre (USDI BLM 2016a, p. 83).

Riparian thinning would remove nesting-roosting, foraging, and dispersal-only habitat.

***Hazardous and Activity Fuels Reduction Treatments (all LUA, including Riparian Reserves)* – Bear Grub and Round Oak**

Fuels Treatment of Forest Management Activity Slash

Activity fuels created from forest management activities described above would be treated post-harvest. To accomplish the fuels treatments, the BLM would conduct a fuels assessment within each unit following harvest activity to determine the fuel hazard and fire risk based on surface

fuel loading, aspect, slope, access, and location of each unit. Post-harvest fuels treatments may include lop and scatter, selective slashing, hand pile burning, biomass removal, pre-commercial thinning, understory, thinning, and under-burning.

Pre-Commercial Thinning (PCT)

Pre-Commercial Thinning would include the cutting of understory vegetation and small trees (conifers less than 8 inches DBH and hardwoods less than 12 inches DBH) using chainsaws. Methods for disposing of the cut material are discussed below.

Lop-and-Scatter

When the slash (live and dead material 8 inches or less in diameter) remaining in the treatment units after harvest is less than 11 tons per acre, all stems and branches would be cut from the tree trunk and scattered. Trunks 7 inches in diameter and less would be cut to 3-foot lengths and left on the ground. Slash depth would not exceed 18 inches.

Hand Piling, Mechanical Piling, and Pile Burning

Hand piling and hand pile burning would occur when the slash remaining in the treatment units after harvest is greater than 11 tons per acre. Material between 1 and 7 inches in diameter, and longer than 2 feet, would be handpiled. The piles would be a minimum of 4 feet high and 6 feet in diameter. Piles would be burned in the fall, winter, or spring and would occur within 1 year or less of being piled.

Mechanical piling and pile burning would occur when the slash remaining in the treatment units after harvest is greater than 11 tons per acre and the slope is less than 35 percent. Mechanical equipment would pick up material and walk it to the pile. Material would not be pushed into a pile. Equipment would only travel on previously used skid trails. If machine piled, material between 2 and 12 inches in diameter and 2 feet long would be piled. The piles would be a minimum of 8 feet high and 10 feet in diameter. Most fuels treatments would begin within 90 days after completion of harvest activities. Piles would be burned in the fall to winter and burning of piles would occur within six months to 3 years of being piled.

Underburning

Underburning may be proposed in treatment units to treat residual slash and reduce fire hazard. In proposed treatment units, underburning would be used to remove at least 60 percent of slash less than 3 inches in diameter and a lesser amount of larger fuel size classes. Underburning would be implemented in the spring or fall. Treatment units are analyzed for possible underburning based on the anticipated amount of residual slash, resource objectives, strategic and logistical concerns (aspect, ridgetops, roads, proximity to other fuels treatments, values at risk, etc.). BLM fire and fuels management personnel would conduct post-treatment evaluations to determine the need for underburning.

Follow-up maintenance underburning may take place within five years following initial treatments. Underburning involves the controlled application of fire to understory vegetation and downed woody material when fuel moisture, soil moisture, and weather and atmospheric conditions allow for the fire to be confined to a predetermined area at a prescribed intensity to achieve the planned resource objectives. Prescribed underburning

usually occurs during late winter to spring when soil and duff moisture conditions are sufficient to retain the required amounts of duff, large woody material, and to reduce soil heating. Occasionally, these conditions can be met during the fall season.

Biomass Removal

Whole trees or tree tops would be yarded to log landings, the tree tops and limbs removed and piled at the landings, and the resulting slash piles hauled away from the landings. Whole tree yarding and tree top yarding would not be required but are options for treating activity slash.

2.3.3 Proposed Action Implementation Methods

The proposed treatments would be implemented using a variety of manual and mechanical tools. These methods include ground-based, skyline-cable, and helicopter log extraction.

Polygons representing possible landing locations were included in the proposed units GIS layer used to determine effects from the proposed action. All landings occurring outside of proposed units or within units with prescriptions that would not remove spotted owl habitat were included in the analysis. Approximately 11 acres of NR and F (4 acres of NR and 7 acres of F) habitat would be removed from landing construction within the Bear Grub and Round Oak projects. Landing construction would remove approximately 24 acres of dispersal-only habitat (17 acres in Bear Grub and 7 acres in Round Oak). The habitat effects from the proposed landing construction are analyzed as a separate treatment area and have been incorporated into the total habitat effects for the project as habitat removal (Table 12). Openings created from proposed yarding corridors were assessed and added to the potential treatment effects determination for each unit (either modified and maintained habitat function or downgraded NR or F habitat). Per the timber sale contracts, yarding corridors are limited to 12 feet in width. The prescription writers/silviculturists work with logging systems foresters to determine where more basal area retention is needed to account for potential openings from yarding corridors, while still maintaining habitat function post-treatment. Additionally, the BLM would use one of the timber sale contract stipulations (L-24) to ensure canopy cover is retained, when necessary. The L-24 stipulation requires yarding corridors to be flagged prior to harvesting the unit and if previously reserved trees are needed for yarding corridors, a tree previously marked for harvest could be re-marked as reserve to replace the original reserved tree in the corridor. BLM contract administrators walk the flagged corridors and identify equivalent reserve trees in the unit if needed to replace marked reserve trees located in flagged corridors. The BLM contract administrator makes the final approval before the contractor is allowed to move forward with cutting and yarding operations along the corridors.

For the Bear Grub and Round Oak projects, known spotted owl nest tree locations were compared with the proposed cable units and this evaluation found that no known nest trees are located near potential guy line anchor or tailhold tree estimated paths or locations. Therefore, the BLM has determined that no known spotted owl nests would be removed as a result of tail hold or anchor trees. However, nest trees could get damaged by yarding cables. Spotted owl surveys are being conducted consistent with the spotted owl survey protocol, including surveys at known sites and proposed timber sale areas. If spotted owls are located, the BLM will evaluate the spotted owl locations relative to the logging systems and make changes as

appropriate consistent with BLM authorities which could include modification to the logging systems or reducing the number of anchor trees.

The exact number of guyline or tailhold trees that would be cut in the proposed units is unknown, but the potential exists for several to be cut adjacent to each cable unit. Guyline or tailhold trees could be cut in nesting-roosting, foraging, dispersal-only, or non-habitat. Even though several trees could be cut, these stands adjacent to the harvest units are still anticipated to retain their current habitat function post-treatment because it is estimated that no more than three to six trees per landing would be cut. The total number of trees to be cut would depend on the amount of yarder settings/landings for each unit. The removal is not expected to have substantial reductions to the canopy cover or basal area, change multi-layer stand conditions (if they exist), or remove other key habitat components. The amount of individual trees that could be cut would not collectively change the current function of nesting-roosting, foraging, or dispersal-only stands in which they occur. BLM contract administrators inspect these guyline and tailhold trees while the timber sale is active and report findings to the wildlife biologist and other resource specialist. All landings need approval from the BLM contract administrator prior to them being cut. In some cases, the adjacent areas where the guylines are located do not qualify as habitat, and when single remaining trees are not present, dozers would be used as anchors. According to Oregon OSHA Regulations, felled trees would be removed from the site if they cannot be stabilized and pose an additional threat of sliding or rolling onto the roadways (OAR 437-007-0225 and OAR 437-007-0500). Potential guyline or anchor trees are not expected to occur in spotted owl nest patches.

Access to some units would require road construction to extract timber. The habitat effects from the road construction are analyzed as separate treatment areas if they are located outside of habitat removal units, and have been incorporated into the total habitat effects for the project as habitat removal (Table 12). The roads were buffered to create polygons to represent the effects from the road building. These buffers were included in the proposed units GIS layer used to determine effects from the proposed action. All road construction outside of proposed units or within NR or F downgrade, NR or F modified, or dispersal-only modified units were included in the analysis. Approximately 2 acres of foraging habitat and 4 acres of dispersal-only habitat would be removed by proposed route construction scattered throughout the Round Oak project. The proposed road construction in Bear Grub would not occur in spotted owl habitat.

For all of the activities included above, reinitiation of consultation would occur if the actual effects from these actions exceed the anticipated effects described in this consultation.

2.4 Project Design Criteria

Project Design Criteria (PDC) are conservation measures applied to project activities designed to reduce and minimize potential detrimental effects to listed species. Physical impacts to habitat and disturbances to individuals can be reduced or avoided with PDC. In some cases, use of PDC may result in a determination of *not likely to adversely affect* (NLAA) for a project which may have otherwise been determined to be a *may affect, likely to adversely affect* (LAA). The PDC apply to all proposed activities described in the consultation unless a particular activity is expressly exempted from a particular PDC. As such exemptions (if any) will be described in this Assessment.

The District retains discretion to halt and modify all projects, anywhere in the process of project completion, should new information regarding effects to proposed and listed threatened or endangered species, or their Critical Habitat, arise. Minimization of impacts will then, at the least, include the application of an appropriate seasonal restriction to minimize disruption impacts; and could include clumping of retention trees around nest trees, establishment of buffers, dropping unit(s) or portions of units, or dropping entire projects. Also, should such a situation arise, the Level 1 Team will be convened to determine whether reinitiating consultation will be necessary

If new spotted owl sites are located during surveys, BLM staff biologists and the Level 1 teams will review PDCs and the consultation to confirm the ESA analysis remains valid given the circumstances. Timber sales have a contract clause (E-3) that authorizes the District to initiate a stop work order to the timber sale contractor when threatened and endangered species are found in the timber sale or to comply with court orders. If or when listed species are found in the project area the timber operators would be notified in writing by the contracting officer to stop the work until the issue is evaluated further. If the impacts to the new site are no longer consistent with the analysis, the project will remain stopped until the BLM completes one or more of the following:

- Modifies the proposed action to ensure that impacts remain as described in the consultation documents.
- Imposes seasonal protections (if necessary).
- Reinitiates or completes new consultation.

The following general PDC are expected to be implemented to the fullest extent practicable. If the PDC are not implemented as described or per agreed upon deviations between the Service and BLM, reinitation of consultation may be warranted.

- Activities would be seasonally restricted between March 1 and July 15 within the disruption distances Seasonal Restrictions as described in Table A-1 in Appendix A.

- Spotted owl protocol (USDI FWS 2012a) surveys are still ongoing at the time of this Assessment. Therefore, current occupancy information is not available for many of the sites. If spotted owls are located during remaining protocol surveys before the time of on the ground implementation, units would be dropped or modified to eliminate potential adverse effects that could lead to an incidental take determination. Survey results will be shared with the Level 1 at the end of each survey season to discuss the survey results and appropriate conservation measures.

- Wildlife biologists will review proposed activities through current field office project tracking procedures, which may include field reviews. The purpose of this involvement is to ensure the project minimizes impacts to listed species and the project is carried out as described in this consultation and supporting documents, including implementing seasonal restrictions and other PDC.

- The planning and implementation of Medford District projects will be consistent with the District's Planning and Implementation Quality Control Plan (2015) current at the time of project implementation. Note the Plan is periodically revised; project implementation

will be consistent with the current plan. The citation provided here represents the current plan.

- Prescriptions designed to maintain nesting-roosting or foraging habitat function at the unit scale post-treatment would implement these project design criteria to ensure the function of the habitat and the conditions that would classify the stand as NR or F would remain post-treatment. Best available information from the Klamath Province and as summarized in USDA USDI 2013 informs the treatments and PDCs.
    - Nesting habitat would retain an average of 60 percent canopy cover. Generally no more than 20 percent of the existing basal area would be removed (Wagner and Anthony, 1998) in NR habitat. This includes having at least 180 ft^2/acre total basal area (balanced mix of conifer and hardwoods) retention. The wildlife biologist and prescription writer would review the NR (nesting) units to ensure habitat elements are retained to ensure the stands would still function as nesting habitat post-treatment.
    - Foraging stands would retain an average of 60 percent canopy cover and will have at least 150 ft^2/acre total basal area (balanced mix of conifer and hardwoods) retention. The wildlife biologist and prescription writer would review the foraging units to ensure habitat elements, including basal area and canopy cover, are retained to ensure the stands would still function as nesting habitat post-treatment.
    - Multiple canopy layers would be retained in stands with more than one layer present prior to treatment. These conditions are documented prior to treatment during habitat evaluations and/or silviculture stand exams. The mark inspection process includes the evaluation of how the mark impacts the layering and would be adjusted as needed to ensure pre-treatment layering is retained post-treatment.
    - Decadent components such as large snags, large character trees (live trees with deformities) large down wood, and large hardwoods, would be retained. Snags and danger/hazard trees that must be felled to meet Occupational Safety and Health Administration guidelines would be left on site, used for stream restoration, or sold, depending on the proximity to roads, streams, and the LUA.
    - In prescriptions that include the creation of small openings (gaps) and where the objective is to maintain habitat function, the openings would range from not be greater than one acre in size and would be distributed throughout the unit in a manner to retain sufficient canopy cover, basal area, and key habitat features as described above. The total acres of openings would not exceed 20 percent of the treatment area to maintain NR and F quality and canopy cover. Fewer openings would considered in units with additional thinning in order retain sufficient basal area and canopy cover.
    - Post-harvest fuels treatments, understory reduction, or pre-commercial thinning would only be done if the existing post-harvest layering (especially the lower canopy layers) would not be removed as a result of the activity fuels treatments. The post-harvest layering conditions and need for additional understory

treatments would be assessed by the project wildlife biologist, fuels specialist, and prescription writer.

- Prescriptions designed to maintain dispersal-only habitat function at the unit scale post-treatment would implement these project design criteria to ensure the function of the habitat and the conditions that would classify the stand as dispersal-only habitat would remain post-treatment. Best available information from the Klamath Province and as summarized in USDA USDI 2013 informs the treatments and PDCs.
    - Canopy cover in treated dispersal-only units would be retained at an average of 40 percent, which would provide the minimum canopy to function as dispersal-only habitat.
    - Decadent components important to owls, such as large snags, large down wood, and large hardwoods, would be retained. Snags or danger/hazard trees that must be felled for Occupational Safety and Health Administration guidelines would be left on-site, used for stream restoration, or sold, depending on the proximity to roads, streams, and the LUA.

- No known nest trees would be removed. This includes Bear Grub sites 0096O, 0971O, 2260B, and 3942O where the nest tree locations are unknown. These sites do not have known nest tree locations for the following reasons: the nest trees were located in the 1990's before accurate GPS technology, a pair of non-nesting adult spotted owls were located, or only fledglings were located after they had left the nest. The removal of potential nest trees would be avoided in the nest patches of sites 0971O and 2260B because only fuels treatments would occur and would not remove large trees suitable for nesting. The removal of potential nest trees would be avoided in the nest patches of sites 0096O and 3942O because the locations of proposed commercial thinning are on the edge of the nest patches and are away from general vicinity where the 1990 nest trees were located.

- Large standing snags and down wood will be retained in all project areas to meet the SWO RMP/ROD management direction (USDI BLM 2016a). Generally the marking guidelines favor the retention of large hardwoods and large deformed trees, which provide nesting opportunities for spotted owls. Snags and danger/hazard trees that must be felled to meet Occupational Safety and Health Administration guidelines would be left on site, used for stream restoration, or sold, depending on the proximity to roads, streams, and the LUA.

- The timber sale mark in proposed units that modify nesting-roosting or foraging habitat would be reviewed by the project wildlife biologist prior to implementation to ensure the prescription would retain the function of NR or F habitat post-treatment. The priority for review would be in the home ranges of occupied owl sites to ensure accurate implementation in the relatively more demographically meaningful areas for spotted owls. Foraging units retaining at least 150 ft^2/acre total basal area (conifer and hardwoods), would also be a high priority for review. The desired habitat retention stand conditions described in the definition section above would be checked in the field by the project area biologist and/or the prescription writer. Specifically the mark review would

include checking and documenting how the mark would affect the following stand/habitat elements: tree DBH, basal area, canopy cover, multi-layered structure (if present), skip placement, and gap sizes. Additional trees would be marked for retention if the field review indicated the habitat function (i.e. high canopy cover, layering, basal area, etc.) as intended in the prescription would not be retained post-harvest.

3. STATUS OF THE SPECIES

Status of Northern Spotted Owl – Range Wide

A detailed account of the taxonomy, ecology, and reproductive characteristics of the spotted owl can be found in the *2011 Revised Recovery Plan for the Northern Spotted Owl* (USDI FWS 2011), SEI 2004 Northern Spotted Owl Status Review (Courtney et al., 2004); Interagency Scientific Committee Report (Thomas et al., 1990); Forest Service Ecosystem Management Report (USDA et al., 1993), final rule designating the spotted owl as a threatened species (USDI 1990), and several key monographs (e.g. Dugger et al., 2016a, Anthony et al., 2006 and Forsman et al., 2011). These documents are incorporated by reference.

Eleven demographic study areas have been established to represent owl status across the range of the northern spotted owl (Forsman, et al., 2011). Spotted owl sites and productivity are annually monitored within these areas to

- *assess changes in population trend and demographic performance of spotted owls on federally administered forest lands within the range of the owl, and*
- *assess changes in the amount and distribution of nesting, roosting, and foraging habitat and dispersal habitat for spotted owls on federally administered forest lands.*

Metadata analysis evaluates population parameters of the owls in the demographic study areas. The most recent metadata analysis was published in 2016 and concluded that fecundity, apparent survival, and/or populations were declining on most study areas, and that increasing numbers of barred owls and loss of habitat were partly responsible for these declines (Dugger et. al 2016a). The 2016 metadata analysis found these declines are occurring in more study areas than indicated in the last 2011 analysis (Forsman et. al 2011). In summary, the key findings of Dugger et. al (2016) include the following:

- Spotted owl populations range-wide are declining at an average annual rate of 3.8 percent.
- Competition with barred owls are likely the primary cause of spotted owl population declines across their range because:
    - Barred owls have a strong negative effect on spotted owl survival on some but not all of the individual study areas.
    - Barred owls have a strong positive effect on spotted owl site extinction rates on all areas. Barred owls also have a strong negative effect on spotted owl colonization on some but not all study areas.
- Occupancy is declining on all individual study areas but at differing rates among the areas.
- Effects of climate/weather are variable on spotted owl vital rates. The effects are more evident range-wide in this analysis relative to the results of the previous 2011 meta-analysis.

- Habitat loss is still affecting spotted owl survival, extirpation, and colonization rates on some spotted owl demographic study areas.

Status of Northern Spotted Owl – Province Level
There are two demographic study areas associated with the action area: the Klamath Demography Study Area (KSA) (within the Medford District), which represents the Klamath province and the South Cascade Demography Study Area (CAS) (adjacent to the Medford District), which represents the West Cascades province. Annual reports completed for the KSA and CAS from 2018 and 2019 are summarized below.

Klamath Study Area
While the 2011 meta-analysis (Forsman et al., 2011) indicated that survival on the KSA was stable through 2006, the most recent data regarding occupancy has shown a rapid decline (Lesmeister et al., 2019), which suggests the stability of the survival rate may no longer be valid (Dugger et al., 2016a). According to the 2018 Annual Report, the occupancy rates continued to decline. At least one spotted owl was detected at 25 (15.6 percent) of the sites, which represents a continued downward trend in occupancy on the KSA. Nesting status was confirmed at only one site in 2018, and only one young fledged (Lesmeister et al., 2019). According to the 2019 Annual Report, the occupancy rates continued to decline. At least one spotted owl was detected at 20 (12.4 percent) of the sites, which represents a continued downward trend in occupancy on the KSA. This downward trajectory in occupancy was anticipated under the NWFP and more recently as modeled under the BLM RMP. Nesting status was not confirmed at any sites in 2019 (Lesmeister et al., 2020).

South Cascades Study Area
According to the 2018 Annual Report for the Southern Oregon Cascades Demography Study Area, at least one spotted owl was detected at 45 (28 percent). Nesting was not confirmed in 2018, which was the first year on the study when there were no documented nesting attempts (Dugger et al., 2019). According to the 2019 Annual Report, at least one spotted owl was detected at 37 (22 percent) of the sites. This downward trajectory of occupancy was anticipated under the NWFP and more recently as modeled under the BLM RMP. Twenty-five juveniles were detected in the study area in 2019. The average number of young fledged per confirmed breeding pair in 2019 was 1.77 (Dugger et al., 2020).

4. ENVIRONMENTAL BASELINE

4.1 Description of the Action Area

The action area is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR 402.02). For northern spotted owls, the action area is usually based on the radius of a circle that would capture the provincial home range, which is 1.3 miles for the Klamath Mountains Province and 1.2 in the West Cascades Province (Thomas et al. 1990 and Courtney et al. 2004). The Bear Grub Project is in the Klamath Province and the Round Oak Project is in the West Cascades Province. Therefore, the action area represents all lands within 1.2 and 1.3 miles of proposed treatment units and all lands within any overlapped associated provincial home ranges of known spotted

sites that could be directly, indirectly or cumulatively impacted by the proposed action. The action areas for all projects are displayed in the maps in Appendix D. Tables 5 and 6 below provide habitat baseline data for the action areas.

4.2 Status of Northern Spotted Owl Habitat in the Action Area

The baseline tables below summarize spotted owl habitat by ownership, land use allocation, and critical habitat in for the Bear Grub and Round Oak Action Areas (Tables 5 and 6). The BLM used the Medford District spotted owl habitat baseline layer for BLM managed lands and the updated 2014 Rogue Basin habitat layer based on GNN (Gradient Nearest Neighbor) data to type habitat on non-BLM land (NRF, dispersal-only, capable, and non-habitat).

Habitat Updates

The Medford District BLM spotted owl habitat baseline is continually updated by the District, and the Bear Grub and Round Oak Action Area habitat baselines are current as of February, 2020.

The majority of the habitat updates within the proposed Bear Grub and Round Oak treatment units were based on field evaluations. These field evaluations included taking measurements of overstory canopy cover (ocular estimates), measuring overstory tree diameters, recording the number of canopy layers, recording the amount of coarse woody debris and snags, and recording other habitat characteristics such as nesting platforms, cavities, and mistletoe brooms. In addition to the field evaluations, the project wildlife biologists conducted a review of potential spotted owl habitat using a combination of aerial photographs, LiDAR, GIS software, wildlife survey data, and stand exam records for the remaining project units. Areas outside of proposed treatment units were updated using aerial photos or LiDAR. As a result, the habitat baseline for the Bear Grub and Round Oak projects represents the most current and up-to-date habitat information to the extent practicable, and overall, this habitat information represents best available information.

Bear Grub Action Area

The Bear Grub Action Area is contained in one large polygon, at 78,028 acres, and does not overlap with the Round Oak Action Area. Approximately 20 percent of the federal lands within the action area are NRF habitat (Table 5). The habitat in the action area is influenced by geology, with meadows or oak woodlands on many of the south facing slopes. Historic fire has also influenced the habitat, with the most recent large fire occurring in 2002 (Squires Peak). There are 25 spotted owl home ranges within the action area (Table 8).

Table 5. Spotted Owl Habitat Environmental Baseline for the Bear Grub Action Area

	Total Acres	NRF Habitat Acres (% Total)	Capable Habitat Acres (% Total)	Reserved Acres[1] (% Of Total)	Non-Reserved Acres (% Of Total)	Dispersal[2,] Acres (% Of Total)
OWNERSHIP						
-All Ownerships	78,028	17,669 (23%)	28,358 (36%)	27,211 (35%)	50,817 (65%)	37,783 (48%)
- Non-Federal (Private, State)	34,460	6,774 (20%)	12,094 (35%)	0	34,460 (100%)	17,097 (50%)

Table 5. Spotted Owl Habitat Environmental Baseline for the Bear Grub Action Area							
		Total Acres	NRF Habitat Acres (% Total)	Capable Habitat Acres (% Total)	Reserved Acres[1] (% Of Total)	Non-Reserved Acres (% Of Total)	Dispersal[2,] Acres (% Of Total)
-Federal (BLM, USFS)		43,568	10,897 (25%)	16,266 (37%)	27,211 (62%)	16,357 (38%)	20,686 (47%)
LAND ALLOCATION—FEDERAL (*hierarchal, no acres double-counted*)							
Reserves		27,211	6,544 (24%)	9,973 (37%)	27,211 (100%)	0	10,942 (40%)
Harvest Land Base (and Matrix on FS)		16,357	4,353 (27%)	6,293 (38%)	0	16,357 (100%)	9,738 (60%)
SPOTTED OWL CRITICAL HABITAT							
Critical Habitat Unit	**Sub-unit**	**Acres**	**NRF Habitat Acres**	**Capable Habitat Acres**	**Reserved**	**Non-Reserved**	**Dispersal**
10	**KLE-3**	616	97 (16%)	250 (41%)	299 (49%)	317 (51%)	243 (39%)
10	**KLE-6**	18,007	6,867 (38%)	4,675 (26%)	9,979 (55%)	8,028 (45%)	11,980 (67%)
Notes: 1. Based on 2016 RMP LUAs BLM and 1994 NWFP LUA FS Reserved= land allocation with no programmed timber harvest, but some removal of commercial trees, including LSR, Riparian Reserve, and District Designated Reserves in this AA 2. Dispersal includes NRF habitat.							

Round Oak Action Area

The Round Oak Action Area is contained in one large polygon, at 57,737 acres and does not overlap with the Bear Grub Action Area. Approximately 39 percent of the federal lands within the action area are NRF habitat (Table 6). There are 18 spotted owl home ranges within the action area (Table 8).

Table 6. Spotted Owl Habitat Environmental Baseline for the Round Oak Action Area							
		Total Acres	NRF Habitat Acres (% Total)	Capable Habitat Acres (% Total)	Reserved Acres[1] (% Of Total)	Non-Reserved Acres (% Of Total)	Dispersal[2,] Acres (% Of Total)
OWNERSHIP							
-All Ownerships		57,737	13,807 (24%)	16,487 (29%)	6,748 (12%)	50,989 (88%)	37,928 (66%)
- Non-Federal (Private, State)		28,234	2,266 (8%)	10,262 (36%)	0	28,234 (100%)	15,297 (54%)
-Federal (BLM, USFS)		29,503	11,541 (39%)	6,225 (21%)	6,748 (23%)	22,755 (77%)	22,001 (75%)
LAND ALLOCATION—FEDERAL (*hierarchal, no acres double-counted*)							
Reserves (BLM, USFS)		6,748	3,448 (51%)	1,060 (16%)	6,748 (100%)	0	5,321 (79%)
Harvest Land Base (matrix FS)		22,755	8,093 (36%)	5,165 (23%)	0	22,755 (100%)	16,680 (73%)
SPOTTED OWL CRITICAL HABITAT							
Critical Habitat Unit	**Sub-unit**	**Acres**	**NRF Habitat Acres**	**Capable Habitat Acres**	**Reserved**	**Non-Reserved**	**Dispersal**
10	**KLE-4**	8,203	3,171 (39%)	1,376 (17%)	1,257 (15%)	6,946 (85%)	6,822 (83%)

Table 6. Spotted Owl Habitat Environmental Baseline for the Round Oak Action Area							
		Total Acres	NRF Habitat Acres (% Total)	Capable Habitat Acres (% Total)	Reserved Acres[1] (% Of Total)	Non-Reserved Acres (% Of Total)	Dispersal[2,] Acres (% Of Total)
10	KLE-5	6,354	2,884 (45%)	856 (13%)	1,656 (26%)	4,698 (74%)	5,228 (83%)
Notes: 1 Based on 2016 RMP LUAs BLM and 1994 NWFP LUA FS Reserved= land allocation with no programmed timber harvest, but some removal of commercial trees, including LSR, Riparian Reserve, and District Designated Reserves in this AA 2. Dispersal includes NRF habitat.							

4.3 Status of Northern Spotted Owl Dispersal Conditions

Fifth field watersheds can provide a landscape-level qualitative evaluation for dispersal function using the concepts of Thomas, et al (1990), as described below, along with more recent analyses of dispersal function per Lint, et al. (2005), Davis, et al. (2011). Thomas, et al. (1990), originally recommended assessing dispersal habitat conditions on the quarter-township scale and managing forested landscape so 50 percent of each quarter-township contain dispersal habitat. These levels were used to describe suitable habitat to support the transient phase of spotted owl dispersal. Since then, the Service has generally recommended using a fifth field or larger landscapes for assessing dispersal habitat conditions because watersheds or provinces offer a more biologically meaningful way to evaluate dispersal function. Davis, et al. (2016) suggested that landscapes having at least 40 percent of dispersal habitat conditions (including both older and younger forests) would be sufficient to support spotted owl dispersal across the landscape. For the fifth field watershed scale analysis conducted in this consultation, the BLM used the updated habitat information as described above to characterize NRF, dispersal-only, capable, and non-habitat across the region and across all ownerships (Table 7). This information represents the best available habitat data and analysis approach to evaluate dispersal-habitat function for spotted owls. The effects to spotted owl dispersal from the Bear Grub and Round Oak projects are analyzed in the Effects section below.

Table 7. Dispersal Habitat Conditions in the Fifth Field Watersheds Associated with the Bear Grub and Round Oak Projects						
5th Field Watershed	Associated Project (s)	Total Watershed Acres	Total NRF Habitat Acres	Total Dispersal-Only Habitat Acres	Total Dispersal Acres (NRF+ Dispersal Only)	% Watershed Dispersal Habitat (NRF +Dispersal-only)
Bear Creek	Bear Grub	**231,067**	37,126	56,786	93,912	**41 %**
Big Butte Creek	Round Oak	**158,137**	41,136	65,061	106,197	**67 %**
Little Applegate River	Bear Grub	**72,245**	22,245	20,322	42,567	**59 %**
Middle Applegate River	Bear Grub	**82,537**	20,986	22,739	43,725	**53 %**
South Fork Rogue River	Round Oak	**160,657**	64,727	57,314	122,041	**76 %**

4.4 Status of Northern Spotted Owl Sites in the Action Area

Northern spotted owl site occupancy is defined as locations with evidence of continued use by spotted owls (including breeding), repeated location of a pair or single birds, presence of young before dispersal, or some other strong indication of continued occupation. Spotted owl sites used in this consultation are based on historic information, protocol surveys, or incidental observations. Spotted owls are generally monogamous and primarily mate for life (Courtney 2004). They are also known to exhibit high site fidelity. However, owls often switch nest trees and use multiple core areas over time, possibly in response to fluctuations of prey availability, loss of a particular nest tree, or presence of barred owls (see the barred owl section below). These multiple nest locations (original and alternates) are typically combined to represent one spotted owl pair territory for analysis purposes. For this assessment, survey history was used to determine which location had the preponderance of activity (original or alternate locations, or both) to represent the final territory used for analysis.

As mentioned above, the action area represents all lands within 1.2 and 1.3 miles of proposed treatment units and all lands within any associated provincial home ranges of known spotted sites that could be directly, indirectly or cumulatively impacted by the proposed action. There are 43 known spotted owl site home ranges (including 3 territories with original and alternate site locations) that could be impacted by proposed projects in this Assessment (Table 8 and Appendix B). These home ranges are completely contained within the Bear Grub and Round Oak Action Areas because they overlap project unit footprints. There are 16 spotted owl site centers outside of the action areas with a portion of their home range overlapping the action areas. However, no treatments are proposed within these home ranges, so the District believes that no effects are anticipated to spotted owls associated with these 16 home ranges. Therefore these home ranges are not included in the action areas and the sites are not carried forward in the effects analysis.

Table 8. Spotted Owl Sites Associated with the Bear Grub and Round Oak Action Areas

	Bear Grub	Round Oak	Total
Number of Owl Home Ranges Completely Contained in the Action Area *(proposed units in known home ranges)*	**25**	**18**[1]	**43**
Number of Owl Home Ranges Overlapping the Action Area *(site center outside of AA and no units inside known home ranges)*	**12**	**4**	**16**
TOTAL	**37**	**22**	**59**

1 – Includes 3 territories with 1 alternate location/home ranges

Summary of Current Spotted Owl Site Habitat Conditions

The pre-treatment NRF habitat acres for spotted owl sites in the Bear Grub and Round Oak project Action Areas are displayed in Table C-1 (Appendix C) and inform the effects determinations from the proposed actions. NRF habitat is a focus of the analysis because research has indicated that the quantity and configuration of "older forest" (analogous to NRF habitat) provides a valid inference into the likelihood of occupancy (Hunter, et al. 1995), survival, and reproduction (Franklin, et al. 2000; Zabel, et al. 2003; Olson, et al. 2004; Dugger, et al. 2005; Dugger, et al. 2011).

Spotted Owl Habitat Outside of Known Spotted Owl Home Ranges

There are approximately 3,527 acres of NRF habitat on federal lands within the Bear Grub and Round Oak Action Areas that are outside of known spotted owl home ranges (Table 9).

Table 9. Spotted Owl NRF Habitat on Federal Lands Outside of Known Spotted Owl Home Ranges, but within the Bear Grub and Round Oak Action Areas

Project Action Areas	NRF Acres
Bear Grub	1,984
Round Oak	1,543
TOTAL	**3,527**

These NRF acres include aggregations of habitat that have potential for spotted owl occupancy. Contiguous NRF habitat greater than 70 acres (Miller et al., 1989) is one factor to determine if owls are present and based on threshold models developed by Swindle, et al. (1997) and Perkins (2000) that indicate the 200- to 300-meter radius (and sometimes greater), encompassing up to 70 acres around a nest is important to spotted owls. Additionally, contiguous NRF habitat located in high relative habitat suitability (RHS) (see USDI FWS 2011) have a higher potential of supporting owls. Abiotic factors represented in the high RHS, such as slope, aspect, and core habitat, increase the likelihood of supporting nesting owls compared to other locations across the landscape. These habitat areas will be further evaluated in the Effects section below.

Spotted Owl Surveys

All nesting-roosting and foraging habitat associated with the Bear Grub and Round Oak projects will be surveyed to protocol (USDI FWS 2012a, Lint et al 1999), on BLM lands within 1.2 (Round Oak) and 1.3 (Bear Grub) miles of the proposed units and within spotted owl sites affected by the proposed action. These surveys include nesting-roosting and foraging habitat outside spotted owl known home ranges in the areas that have the highest potential for spotted owl occupancy, as determined by the District and informed by the information provided above. Spot check surveys will continue as needed according to the protocol. If spotted owls are located, the BLM will modify or drop the units as appropriate to avoid incidental take of spotted owls. See Appendix B for a summary of the survey efforts and survey results for the known spotted owl sites associated with Bear Grub and Round Oak projects.

4.5 Northern Spotted Owl Prey Species

The composition of the spotted owl's diet varies geographically and by forest type. Generally, flying squirrels are the most prominent prey for spotted owls in Douglas-fir and western hemlock forests in Washington and Oregon (USDI FWS 2011). In southwest Oregon, dusky-footed woodrats (*Neotoma fuscipes*) and northern flying squirrels (*Glaucomys sabrinus*) are a primary prey species for spotted owls (Forsman et al. 2004). Dusky-footed woodrats are typically found in high densities in early-seral or edge habitat (Sakai and Noon 1993; Bingham and Noon 1997), but are also abundant in old growth and complex forests (Carey, et al. 1997). Northern flying squirrels are another major source of owl prey in southwest Oregon, and are found in older, more structurally complex forest along with younger stands (Wilson 2010). Other important prey items include red tree voles, deer mice, red-backed voles, gophers, snowshoe hare, bushy-tailed

wood rats, birds, and insects, although these species comprise a small portion of the spotted owl diet (USDI FWS 2011).

4.6 Barred Owls

The 2011 Revised Recovery Plan for the Northern Spotted Owl identifies competition from the barred owl as a threat to the spotted owl (USDI FWS 2011). Barred owls (*Strix varia*) are native to eastern North America, but have moved west into spotted owl habitat. Existing evidence suggests that barred owls compete with northern spotted owls for habitat and prey with near total niche overlap and that interference competition (Dugger, et al. 2011; Van Lanen, et al. 2011; Wiens et al. 2014) is resulting in increased northern spotted owl site abandonment, reduced colonization rates, and likely reduction in reproduction (Olson, et al. 2005; Dugger, et al. 2011; Forsman, et al. 2011; Wiens et al. 2014).

Barred owls are detected opportunistically because the BLM does not conduct barred owl surveys across the District (Table 10). However, the District assumes the trend of barred owl observations across the District, is consistent with the trends in the adjacent Klamath Study Area (Lesmeister et al., 2019, p. 7). Data from the Klamath Demographic Study Area (KSA) has shown the percentage of spotted owl sites with barred owl detections is steadily increasing, from less than 10 percent in all years previous to 2003, to greater than 10 percent in all years after 2003 (Hollen et. al. 2015). Additionally, the number of sites where barred owls were detected exceeded the number of sites where spotted owls were detected for the first time in 2014 (Hollen et. al. 2015). Observational data suggests direct competition with and aggressive displacement of spotted owls from prime nesting habitat.

While the BLM did not specifically survey for barred owls, a study in the Oregon Coast range suggests that over the course of a season, spotted owl surveys to protocol (> 3 visits) allow ~85 percent of the barred owls present in the area to be detected (Wiens et al. 2011). Additionally, the spotted owl survey protocol (USDI FWS 2012a) allows for a reasonable assurance that spotted owls in an area will be detected, even where barred owls are present. The Service and cooperators conducted analyses of historical spotted owl survey data, leading to estimates of detection rates for spotted owls that account for the effects of barred owl presence. These detection rates, along with data on spotted owl site colonization and extinction probabilities, and empirical analysis of spotted owl site occupancy, were utilized in developing the survey protocol used by the BLM in the Project Area. Use of the 2012 Protocol serves two primary purposes: (1) provide a methodology that results in adequate coverage and assessment of an area for the presence of spotted owls, and (2) ensure a high probability of locating resident spotted owls and identifying owl territories that may be affected by a proposed management activity, thereby minimizing the potential for unauthorized incidental take (USDI FWS 2012a).

Table 10. Barred Owl Detections within the Bear Grub and Round Oak Action Areas

Project	Spotted Owl Sites with Barred Owl Detections *(within the last 2 years)*	Percent of Total Spotted Owl Sites in the Action Area with Barred Owls	Additional Barred Owl Observations in the Action Area/ Comments
Bear Grub	**14 sites** 0096O, 0097O, 0114O, 0592O,0944O, 0973A, 0992O, 2361O, 2395O, 2397O, 3648O, 3942O, 4066O, 4611O	56 %	0

Table 10. Barred Owl Detections within the Bear Grub and Round Oak Action Areas			
Project	**Spotted Owl Sites with Barred Owl Detections** *(within the last 2 years)*	**Percent of Total Spotted Owl Sites in the Action Area with Barred Owls**	**Additional Barred Owl Observations in the Action Area/ Comments**
Round Oak	**10 Sites** 1826B, 1831A/1831O, 1957B/1957F, 1958A, 2059A/2059O, 2359O, 2360A, 3260O, 4079O, 4616O, 4620O, FS-DD, FS-OM	56%	30

Experimental removal of barred owls is currently occurring in four study areas across the range of the spotted owl (USDI FWS 2013). The Union Myrtle Study Area (UMSA) is one of the four proposed long-term northern spotted owl study areas designed to assess the effects of barred owl removal on the status and trends in northern spotted owl as directed under Recovery Action 29 in the Revised Recovery Plan (USDI FWS 2011). The KSA is being used as a control area (non-removal) for the UMSA, including areas within the Medford District.

4.7 Status of Northern Spotted Owl Critical Habitat

Critical habitat for the northern spotted owl was first designated in 1992 in *Federal Register* 57 (USDI FWS 1992), and includes the primary constituent elements that support nesting, roosting, foraging, and dispersal. Designated critical habitat also includes forest land that is currently unsuitable, but has the capability of becoming NRF habitat in the future (USDI FWS 2012b, pp. 1796-1837). Critical habitat was revised for the northern spotted owl and the final designation was published by the Service in the *Federal Register* (signed on August 12, 2008) and became effective on September 12, 2008 (USDI FWS 2008). The 2008 Service's Critical Habitat delineations were challenged in court and the 2008 designation of northern spotted owl CHU was remanded. The Service was ordered to revise the CHU designation. The final Critical Habitat Rule was published in the *Federal Register* on December 4, 2012 **(**USDI FWS 2012, pp. 71876-72068) and became effective January 3, 2013. The rule continues to be litigated with a case pending in the District Court of Columbia.

Section 4(a)(3) of the ESA specifies that the Service shall designate critical habitat for endangered or threatened species and may, from time-to-time thereafter as appropriate, revise such designation. Critical habitat is defined as (1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the listed species and which may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by the species at the time it is listed that are essential for the conservation of a listed species.

Considerations in designating spotted owl Critical Habitat (USDI FWS 2012b) included the following:

- Ensuring sufficient habitat to support stable, healthy populations across the range, and also within each of the 11 recovery units;
- Ensuring distribution of spotted owl populations across the range of habitat conditions used by the species;

- Incorporating uncertainty, including potential effects of barred owls, climate change, and wildfire disturbance risk; and
- Recognizing that these protections are meant to work in concert with other recovery actions, such as barred owl management.

Four Critical Habitat sub-units (KLE-3, KLE-4, KLE-5, and KLE-6) are partially located within the action areas encompassing 33,180 acres of designated spotted owl Critical Habitat across all ownerships (Tables 5 and 6), which is 0.3 percent of designated spotted owl Critical Habitat range-wide (9,577,342 acres). Of the lands within spotted owl Critical Habitat in the action areas, 73 percent (24, 273 acres) are dispersal quality habitat (NRF plus dispersal-only habitat) and 39 percent (13,019 acres) are NRF habitat (Tables 5 and 6). There are an additional 631 acres of spotted owl Critical Habitat on lands managed by the State of Oregon within the Bear Grub Action Area.

Essential Physical or Biological Features of Critical Habitat

The Physical or Biological Features (PBFs) are the specific elements considered essential to the conservation of the spotted owl and are those elements that make areas suitable as nesting, roosting, foraging, and dispersal habitat. The PBFs should be arranged spatially such that it is favorable to the persistence of populations, survival, and reproductive success of resident pairs, and survival of dispersing individuals until they are able to recruit into a breeding population (USDI FWS 2012b, p. 71904). Within areas essential for the conservation and recovery of the spotted owl, the Service has determined that the PBFs are:

1) **Forest types** that may be in early, mid-, or late-seral states and support the northern spotted owl across its geographical range

2) Habitat that provides for **nesting and roosting**. This habitat must provide:
   a) Sufficient foraging habitat to meet the home range needs of territorial pairs of northern spotted owls throughout the year.
   b) Stands for nesting and roosting that are generally characterized by:
      (i) Moderate to high canopy cover (60 to over 80 percent),
      (ii) Multilayered, multispecies canopies with large (20–30 in. [51-76 cm] or greater dbh) overstory trees,
      (iii) High basal area (greater than 240 ft^2/acre [55 m^2/ha]),
      (iv) High diversity of different diameters of trees,
      (v) High incidence of large live trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence)
      (vi) Large snags and large accumulations of fallen trees and other woody debris on the ground, and
      (vii) Sufficient open space below the canopy for northern spotted owls to fly.

3) Habitat that provides for **foraging**, which varies widely across the northern spotted owl's range, in accordance with ecological conditions and disturbance regimes that influence vegetation structure and prey species distributions.

4) Habitat to support the **transience and colonization phases of dispersal**, which in all cases would optimally be composed of nesting, roosting, or foraging habitat (PBFs (2) or (3)), but which may also be composed of other forest types that occur between larger blocks of nesting, roosting, and foraging habitat. In cases where nesting, roosting, or foraging habitats are insufficient to provide for dispersing or nonbreeding owls, the specific dispersal habitat PBFs for the northern spotted owl may be provided by the following:
    a) Habitat supporting the transience phase of dispersal, which includes:
        (i) Stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities; in general this may include, but is not limited to, trees with at least 11 in. (28 cm) dbh and a minimum 40 percent canopy cover; and
        (ii) Younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.
    b) Habitat supporting the colonization phase of dispersal, which is generally equivalent to nesting, roosting, and foraging habitat as described in PBFs (2) and (3), but may be smaller in area than that needed to support nesting pairs.

For the Bear Grub and Round Oak projects combined, approximately 2,178 acres of the proposed treatments in this Assessment occur in northern spotted owl habitat (nesting-roosting, foraging, and dispersal-only) within the 2012 Revised Designated Northern Spotted Owl Critical Habitat (USDI FWS 2012b, pp.71876-72068) (Table 18). A portion of the Bear Grub project units (1,387 acres) are within Critical Habitat Unit 10 (sub-units KLE-3 and KLE-6). A portion of Round Oak project units (1,122 acres) are within Critical Habitat Unit10 (sub-unit KLE-5). Even though the action area includes land in sub-unit KLE-4, no proposed treatment units occur in this sub-unit.

The following descriptions for CHU 10 and the associated sub-units where proposed treatments occur (KLE-3, KLE-5, and KLE-6) are directly out of the final rule in the *Federal Register* (USDI FWS 2012b, pp.71931-71935). The number of historical spotted owl sites for each sub-unit are from local BLM and Forest Service database and GIS queries.

Unit 10: Klamath East (KLE)
Unit 10 contains seven subunits and consists of the eastern portion of the Klamath Mountains Ecological Section M261A, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994, Section M261A), and portions of the Southern Cascades Ecological Section M261D in Oregon. This region is characterized by a Mediterranean climate, greatly reduced influence of marine air, and steep, dissected terrain. Franklin and Dyrness (1988, pp. 137-149) differentiate the mixed-conifer forest occurring on the "Cascade side of the Klamath from the more mesic mixed evergreen forests on the western portion (Siskiyou Mountains)," and Kuchler (1977) separates out the eastern Klamath based on increased occurrence of ponderosa pine. The mixed-conifer/evergreen hardwood forest types typical of the Klamath region extend into the southern Cascades in the vicinity of Roseburg and the North Umpqua River, where they grade into the western hemlock forest typical of the Cascades. High summer temperatures and a mosaic of open forest conditions and Oregon white

oak (*Quercus garryana*) woodlands act to influence northern spotted owl distribution in this region. Northern spotted owls occur at elevations up to 1,768 m. Dwarf mistletoe provides an important component of nesting habitat, providing additional structure and enabling northern spotted owls to occasionally nest within stands of relatively younger, small trees

KLE-3

The KLE-3 subunit occurs in Jackson, Josephine, and Douglas Counties, Oregon, and comprises Federal lands managed by the BLM. Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, but also for demographic support. This subunit facilitates northern spotted owl movements between the western Cascades and coastal Oregon and the Klamath Mountains.

There are approximately 100 total historic spotted owl site centers located on BLM lands in this entire critical habitat sub-unit. This critical habitat sub-unit is not within lands managed by the Forest Service as indicated in the Final Critical Habitat rule language.

KLE-5

The KLE-5 subunit occurs in Jackson County, Oregon, and comprises lands managed by the BLM. Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for north-south connectivity between subunits, but also for demographic support.

There are approximately 40 total historic spotted owl site centers located on BLM lands in this entire critical habitat sub-unit. This critical habitat sub-unit is not within lands managed by the Forest Service as indicated in the Final Critical Habitat rule language.

KLE-6

The KLE-6 subunit consists of Federal lands managed by the BLM and USFS in Jackson County, Oregon, and Siskiyou County, California. Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for north-south connectivity between subunits, but also for demographic support.

There are approximately 80 total historic spotted owl sites on BLM and FS lands in Oregon in this entire critical habitat subunit. The number of NSO sites in KLE-6 in California is unavailable for this analysis.

Northern Spotted Owl Critical Habitat Baseline Data

Table 11 summarizes the spotted owl habitat baseline for the entire critical habitat subunits KLE-3, KLE-4, and KLE-6. The Service created the habitat baseline acres by clipping the NWFP

Interagency Regional Monitoring Program Spotted Owl habitat layer to the December 2012 critical habitat layer. The Service then created a spreadsheet on December 19, 2012 with the baseline habitat acres by CHUs and subunits. For this Assessment, the BLM used the February 10, 2020 USFWS updated critical habitat acres for the current CH habitat baseline for subunits. These acres were derived by subtracting spotted owl habitat removed by habitat-altering projects and fires entered into the USFWS database from the December 19, 2012 layer. Project specific habitat calls are based on field verification, GIS habitat layers, and photo interpretation.

Table 11. Critical Habitat Baseline (acres)

CHU/ Subunit	NRF	Dispersal-Only	Dispersal (NRF + Dispersal-Only)	Capable or Non-Habitat	Total (Dispersal + Capable + Non-Habitat)
10-KLE-3	37,627	43,696	81,323	31,476	112,799
10-KLE-5	18,233	13,045	31,278	6,974	38,252
10-KLE-6	44,807	88,136	132,943	34,906	167,849

4.8 Role of the Action Areas in the Survival and Recovery of the Spotted Owl

There are 31,476 acres of spotted owl NRF habitat and 44,235 acres of dispersal-only habitat within the combined action areas**,** representing approximately 0.3 percent of the range wide nesting-roosting habitat (12,103,700 acres total (Davis et al. 2016, p 22)) and 0.2 percent of the range wide dispersal habitat (25,729,299 acres total (Davis et al. 2016, p. 32)). There are 43 spotted owl sites within the action areas and based on ongoing (yet-to-be completed) surveys to date, only two (both in the Round Oak Action Area) of these 43 sites have been occupied by spotted owls (single or pair) in the last year (or two years for resident single status).

Spotted owl populations within the area encompassed by the District play an important role in the range wide population dynamics of this species (Dugger et al. 2016 and Schumaker et al. 2014). Spotted owl populations within the Klamath-East, Klamath-West, and West Cascades South Critical Habitat units have been shown to serve as source populations, while spotted owl populations in the Oregon Coast Ranges and North Coast Olympic units have been identified as sink populations (Dugger et al. 2016, *entire;* and Schumaker et al 2014, p. 588). Schumaker et al. (2014, p. 589) developed a spatially-explicit, individual-based model of spotted owl population dynamics and found that protecting and enhancing performance in both sources and sinks may be essential for range-wide population persistence.

As stated earlier, these projects have been designed under the 2016 SWO RMP/ROD (USDI BLM 2016a). Under the management direction of the 2016 SWO RMP/ROD, the BLM has provided for conservation and recovery of the spotted owl through the Late-Successional Reserve system, creating large blocks of nesting, roosting, and foraging habitat to provide spotted owl movement across the landscape, the protection of structurally complex forests, considering dry and moist forest types and implementing concepts of Ecological Forestry, and addressing the effects of barred owls by avoiding incidental take of spotted owls until a barred owl management plan has been implemented (USDI BLM 2016a, pp. 22, 23).

5. EFFECTS OF THE PROPOSED ACTION

According to the Endangered Species Act Consultation Handbook (USDI FWS 1998), a "may affect" determination is required when a proposed action may pose any effects to listed species or designated critical habitat. When any adverse effects to listed species or critical habitat may occur as a result of the proposed action, a "likely to adversely affect" (LAA) determination is appropriate. However, when effects to listed species or critical habitat are expected to be discountable, insignificant, or entirely beneficial, "is not likely to adversely affect" (NLAA) is the appropriate conclusion. Insignificant effects relate to the size of the impact and should never reach the level where take would occur. Discountable effects are those unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect or evaluate insignificant effects; or (2) expect discountable effects to occur.

Effects of the action are all consequences to listed species or critical habitat that are reasonably likely to occur and are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

5.1 Effects to Northern Spotted Owls Analyzed by Habitat

The effects to nesting-roosting, foraging, and dispersal-only habitats described below represent the District's current proposal for the Bear Grub and Round Oak projects (Table 12). It is likely the effects to habitat would be reduced at the time of the NEPA Decision Record because the District anticipates that acres would be deferred for various reasons including economics or logging feasibility issues, resulting in fewer acres offered for sale. Additionally, locations for landing and road construction might be adjusted by the time of implementation, but the contract administrator, project planner, and wildlife biologist will ensure any changes are consistent with the effects analyzed in this consultation. Consultation monitoring reports will reflect the actual implemented acres for this project.

It is likely that the proposed actions analyzed in this assessment would be implemented over several years and not all at the same time, which will essentially meter-out the impacts to the habitat baseline and spotted owls. The forest management projects may result in a combination of timber sale, stewardship, and service contracts. The Round Oak project will result in at least three timber sales in FY2020 and FY2021. The Bear Grub project will result in at least one timber sale in FY2020.

The results of treatment on spotted owl habitat depends on the current stand condition (and how close it approximates old, complex-forest characteristics considered important to owls), how many trees are removed, the residual overstory, the aerial extent of the treatment, the residual decadence of standing and down wood, the canopy complexity, the time of year the treatment occurs, and the type of tree removal. The habitat effects categories listed in Table 12 are described in more detail in the Definitions Section above. In general, NR, F, or dispersal-only habitat removal would remove key habitat features and generally drops canopy cover below 40 percent and changes the unit so it no longer provides NR, F, or dispersal-only habitat for owls

post-treatment. NR or F downgrade would alter the condition of spotted owl NR or F habitat by removing key habitat elements so the unit no longer function as nesting, roosting, and foraging, but it would function as dispersal-only habitat post-treatment. NR, F, or dispersal-only modification occurs when the action would remove some trees or reduces the availability of other habitat components, but does not change the current function of the habitat because the conditions that would classify the stand as NR, F, or dispersal-only habitat would remain post-treatment.

Table 12. Summary of Effects to Spotted Owl Habitat from the Bear Grub and Round Oak Projects

	NRF Remove (acres)		NRF Downgrade (acres)		NRF Modify (acres)		Dispersal-only Remove[3] (acres)	Dispersal-only Modify (acres)	Dispersal Quality Remove *(NRF+Dispersal-only)*[4]	Total Habitat Acres Treated[5]
	NR[1]	F[2]	NR[1]	F[2]	NR[1]	F[2]				
***Bear Grub Action Area Baseline Habitat** (From Table 5)*	***(17,669)***						***(20,114)*** *(Dispersal-only)*		***(37,783)*** *(NRF + Dispersal-only)*	***78,028[1]*** *(total AA)*
Bear Grub	**96**	**599**	**2**	**57**	**37**	**550**	**599**	**976**	**1,294**	**2,916**
% Change to the Bear Grub Action Area Baseline Habitat	**-3.4%**		**-0.3**		**No Change**		**-3%**	**No Change**	**-3.4%**	**3.7 % of AA treated**
***Round Oak Action Area Baseline Habitat** (From Table 6)*	***(13,807)***						***(24,121)*** *(Dispersal-only)*		***(37,928)*** *(NRF + Dispersal-only)*	***57,737[1]*** *(total AA)*
Round Oak	**1,068**	**1,278**	**0**	**0**	**85**	**234**	**279**	**190**	**2,625**	**3,134**
% Change to the Round Oak Action Area Baseline Habitat	**- 17 %**		**No Change**		**No Change**		**-1.2%**	**No Change**	**-6.9%**	**5.4 % of AA treated**
TOTAL HABIAT EFFECTS FOR the FY20 BATCH BA	**1,164**	**1,877**	**2**	**57**	**122**	**784**	**878**	**1,166**	**3,919**	**6,050**

1- NR = Nesting/Roosting; 2 - F = Foraging; 3 - Baseline is Dispersal-Only habitat; 4- Baseline is Total Dispersal Quality Habitat (NR and F + Dispersal-Only Habitat);5 - Total Action Area acres across all ownership, including non-habitat and capable habitat acres

5.2 Effects to Northern Spotted Owl Dispersal Function

Dispersal-only Habitat Removal Effects within the Action Areas

Removal of dispersal quality habitat (NR, F, and dispersal-only) is proposed in seven of the eight fifth field watersheds associated with the Bear Grub and Round Oak projects (Table 13). The removal would not reduce the amount of dispersal-quality habitat below 40 percent post-harvest in these watersheds (Table 13). Best available information suggests 40 percent is sufficient to maintain dispersal-habitat function at the landscape scale (see discussion above in the Environmental Baseline Section and Davis et al. 2016, 12). Forest landscapes traversed by dispersing owls typically include a fragmented mosaic of roads, clear-cuts, and non-forested areas, and a variety of forest age classes ranging from fragmented forests on cutover areas to old-growth forests (Forsman, et al. 2002).

The removal of dispersal-only and NR and F habitat outside of critical habitat would not preclude owls from dispersing throughout the action areas post-treatment. The units would be dispersed throughout the action areas and large blocks of non-habitat would not be created that would create barriers and preclude owls from dispersing through the watershed.

Table 13. Changed Dispersal Conditions in the Fifth Field Watersheds from the Bear Grub and Round Oak Proposed Actions

5th Field Watershed *(Project)*	Total Watershed Acres	Total Dispersal Acres (NRF+ Dispersal Only) Pre-treatment	% Watershed Dispersal Habitat (NRF +Dispersal-only) Pre-treatment	Total NRF Removed	Total Dispersal -only Removed	% Watershed Dispersal (NRF+DO) Habitat Post-Treatment	Total % Reduction from Proposed Action
Bear Creek (Bear Grub)	231,067	93,912	40.6 %	229	76	40.5 %	-0.1 %
Big Butte Creek (Round Oak)	158,137	106,197	67 %	1,096	57	66 %	- 1 %
Little Applegate River (Bear Grub)	72,245	42,567	59 %	133	261	58 %	- 1 %
Middle Applegate River (Bear Grub)	82,537	43,725	53 %	330	259	52 %	- 1 %
South Fork Rogue River (Round Oak)	160,657	122,041	76 %	1,251	222	75 %	- 1 %

5.3 Effects to Northern Spotted Owls

Analysis Approach

Using best available habitat and spatial use information on northern spotted owls, the BLM developed a general approach, informed by local conditions, to evaluate effects determinations for individual sites affected by the proposed action. Habitat reduction from the proposed actions will be analyzed at the home range, core, and nest patch scales (see definitions above for a description of these scales and why they are used for analysis). Table 14 provides the general approach, while recognizing site-specific conditions may provide exceptions to the factors.

Table 14. Medford BLM General Factors for Spotted Owl Effect Determinations

LAA Determination Factors	NLAA Determination Factors
• NR or F removal or downgrade within the 0.5 mile core use area or home range, depending on context with current amounts of NR or F habitat • NR or F and dispersal-only treatment in the nest patch. • Treatments that modify NR or F or dispersal habitat while maintaining habitat function and are located in the 0.5 mile core use areas with low amounts of NR or F habitat pretreatment.	• Generally, NR or F would not be removed or downgraded within the home range, 0.5-mile core area, or nest patch (with some site specific exceptions, and dependence on current habitat quantity and quality) • No treatment in a nest patch.

Effects to Individual Owls

As indicated above in the Spotted Owl Site Baseline Section, there are 43 owl sites/territories affected by the proposed projects because some treatments are proposed in these home ranges. Effect determinations to spotted owls are based on changes to habitat conditions during the

critical breeding season at the site level (Table C-1, Appendix C). Maps displaying owl sites, home ranges, 0.5 mile core-use areas, nest patches, and proposed units are included in Appendix D.

NRF habitat for each site/territory associated with the projects in this Assessment are presented in Table C-1 (Appendix C). When less than 40 to 60 percent of the home range is NRF habitat, the likelihood of spotted owl presence is lower and survival and reproduction may be reduced (Thomas, et al. 1990; Bart and Forsman 1992; Bart 1995; Dugger, et al. 2005). These central tendency values and 40 (home range) and 50 (core-use area) percent values are not meant to be exact values but rather generalized values based on best available information for habitat-fitness. Site specific circumstances and professional opinion also inform effect and harm determinations. Adjacent private lands have removed or could remove potential NRF on their lands within spotted owl home ranges. Therefore, the BLM cannot assume private lands are contributing to the older forest conditions in these home range and core areas in the spotted owl site in this Assessment.

While the above values inform the discussion on take, for the purposes of this consultation, the District has analyzed the extent of effects that may result from the proposed action. General parameters informing whether a given project would adversely affects spotted owls are provided in Table 14. This analysis involves knowing the type of habitat that would be impacted by the treatment and to what extent the treatment would affect habitat elements of basal area, layering, downwood, snags, shrubs and canopy. Other analysis includes the abiotic features of where the treatment is located in relation to the home range, core use area, and nest patch, and how much habitat is in the home range and to what extent is the current habitat being impacted. Collectively, these factors inform the effects determinations provided below. Table 15 summarizes the site specific effects described above for each site detailed in Table C-1 (Appendix C).

Table 15. Bear Grub and Round Oak Spotted Owl Site Effects Table Summary (from Appendix C, Table C-1)

	LAA Sites	NLAA Sites
Bear Grub	**23**	**2**
	0096O, 0097O, 0114O, 0592O,0944O, 0971O, 0972O, 0973A, 0992O, 2234O, 2260B, 2267O, 2361O, 2394O, 2397O, 3648O, 3934O, 3941O, 3942O, 4066O 4068O, 4513O, 4611O	2395O, 3559O
Round Oak	**14**	**4**
	1163O, 1826B, 1831A/1831O, 1957B/1957F, 1958A, 2059A/ 2059O, 2359O, 2360A, 3260O, 4079O, 4616O, 4620O, FS-DD, FS-OM	2007B, 2220O, 2222A/2222O,3561B
TOTAL	**37**	**6**

Spotted Owls Likely to be Adversely Affected from the Proposed Action:
Based on the general factors listed in Table 14, along with the effects descriptions provided in the Definitions section above and the acres of effects provided in the Effects to Habitat section above, spotted owls at 37 sites would be adversely affected by the proposed action (Table 15). In total, 2,448 acres of NRF would be removed or downgraded within spotted owl home ranges

associated with the Bear Grub and Round Oak Projects (579 acres in Bear Grub and 1,869 acres in Round Oak). The amount of NRF removal within the spotted owl home range scale ranges from 0.2 acres up to 360 acres. Adverse effects to spotted owls are anticipated because the quantity and quality of habitat would be diminished, likely result in reductions to reproduction, survival, feeding and sheltering

Adverse effects are also anticipated at spotted owl sites 0971O and 4079O where the current amount of NRF habitat is low within the 0.5 mile core-use area and where substantial amounts of dispersal-only habitat removal or NRF habitat modification are proposed within the 0.5 mile core use area. These treatments in the 0.5 mile core use area would exacerbate the overall poor habitat conditions at the site.

The question of whether the adverse effects lead to significant impairment (i.e., harm) of spotted owl life history functions (i.e., reduction in reproduction and survival) is a determination made by the Service. For significant impairment to occur there must be reasonable certainty that resident spotted owls occupy the site. In occupied sites, the proposed treatment location on the landscape, as well as pre-treatment NRF conditions at the home range and 0.5 mile core-use areas also factored into the analysis of significant impairment. This site specific information is included in the comments in Table C-1 (Appendix C) for occupied sites in the Bear Grub and Round Oak projects. Under the BLM's SWO RMP/ROD (USDI BLM 2016a), the BLM will not propose actions that incur incidental take of spotted owls due to timber harvest activities.

Spotted Owls Not Likely to be Adversely Affected from the Proposed Action:
Based on the general factors listed in Table 14, spotted owls at 6 sites would not be adversely affected by the proposed action. This is because the proposed action is not expected to measurably impact essential habitat for nesting or foraging activities, which could affect reproduction and survival of spotted owls associated with the sites. The majority of these sites were determined to be NLAA because the proposed treatments would modify the stand conditions, but the habitat function would be retained post-harvest. Similar to the LAA sites listed above, if spotted owls are located during surveys that represent a change in site location or some other change in circumstances that warrants a reevaluation of the effects determination, the District will consider modifying or dropping units to avoid incidental take, as appropriate. This process would be conducted through the Rogue Basin Level 1 Team, as appropriate.

Occupancy Status of Spotted Owls in the Action Area
Because spotted owl protocol surveys are ongoing at the time of this Assessment, current spotted owl occupancy information is not available for all of the sites. However, for *planning purposes* for the projects in this Assessment, the BLM is determining occupancy status based on current survey information (at least one year of protocol surveys) and current habitat amounts within the home range and 0.5 mile core-use areas. The current occupancy status summary provided in Table 16 is subject to change once surveys have been completed. If resident spotted owls are found occupying where adverse effects are determined due to habitat modification, the BLM will defer and/or modify their harvest plans to reduce the likelihood of incidental take of spotted owls. This process would be conducted through the Rogue Basin Level 1 Team, as appropriate.

The current occupancy status of sites 3941O and 4611O in the Bear Grub Action Area are unknown at this time. Protocol surveys have been conducted on the BLM in the last two years and no spotted owls have been observed. However, the BLM was only able to conduct surveys outside of the 0.5 mile core-use area because the site centers and core-use areas are primarily on private (3941O) or state lands (4611O). It is unlikely these sites are occupied due to the low amounts of nesting habitats at the core-use and home range scales (Table C-1, Appendix C). There are 24 acres of NRF (5 percent) in site 3941O and 81 acres of NRF (16 percent) on Federal Lands at the 0.5 mile core use scale. Eighty percent of the core-use area of site 3941O and 76 percent of the core-use area of site 4611O are private or state ownership and currently these lands do not provide significant nesting habitat to these spotted owl sites. The BLM plans to survey these core-use areas because access was recently granted to site 4611O and a public access point was located for site 3941O. As noted above, if owls are located, the BLM will defer and/or modify their harvest plans to reduce the likelihood of incidental take of spotted owls.

Table 16. Occupancy Status Summary of Spotted Owl Sites Affected by the Bear Grub and Round Oak Proposed Actions

	Surveys are Current (at least 2 years of protocol surveys)		**Occupancy Status Currently Unknown (Protocol Surveys Not Completed, or Not Enough Information)**
	Occupied (Pair or Resident Single)	**Unoccupied (No Pairs or Resident Singles)**	
Bear Grub	**0**	**23**	**2**
		0096O, 0097O, 0114O, 0592O, 0944O, 0971O, 0972O, 0973A, 0992O, 2234O, 2260B, 2267O, 2361O, 2394O, 2395O, 2397O, 3559O, 3648O, 3934O, 3942O, 4066O, 4068O, 4513O	*3941O, 4611O*
Round Oak	**2**	**16**	**0**
	2220O, 3561B	*1163O, 1826B, 1831A/1831O, 1957B/1957F, 1958A, 2007B, 2059A/2059O, 2222A/2222O, 2359O, 2360A, 3260O, 4079O, 4616O, 4620O, FS-DD, FS-OM*	
TOTAL	**2**	**39**	**2**

Proposed Treatments Outside of Known Home Ranges

The Bear Grub and Round Oak projects are proposing to treat 1,691 acres (28 percent of total project habitat acres treated) of spotted owl habitat outside of home ranges of known spotted owl sites. These acres are a subset of the total project acres listed in Table 12 above and further summarized by project in Table 17.

Spotted owl protocol surveys to all NRF outside of known home ranges are ongoing and if new resident spotted owls (pairs or singles) are found, the District plans to drop units or modify proposed prescriptions to avoid and minimize or avoid adverse effects to the extent possible and not incur incidental take as determined by the Service. To date, no spotted owls have been observed outside of known home ranges in the Bear Grub or Round Oak Projects in the last 2 years.

Table 17. Effects to Spotted owl Habitat Outside of Known Home Ranges for the Bear Grub and Round Oak Action Areas

	NRF Removed (acres)		NRF Downgraded (acres)		NRF Modify (acres)		Dispersal-Only Removed (acres)	Dispersal-Only Modify (acres)	Total Habitat Acres Treated
	NR[1]	F[2]	NR[1]	F[2]	NR[1]	F[2]			
Bear Grub	6	168	0	0	2	235	70	512	**993**
Round Oak	161	316	0	0	22	108	73	17	**698**
TOTAL	**167**	**484**	**0**	**0**	**24**	**343**	**143**	**529**	**1,691**

1- NR = Nesting/Roosting
2- F = Foraging

5.4 Effects to Barred Owls/Spotted Owl Interaction

Available evidence suggests that the presence and distribution of barred owls may affect habitat quality for spotted owls (Wiens 2012 and Yackulic et al. 2013). Additionally, many studies suggest that the two species compete for resources and maintaining older, high quality forest habitat may help spotted owls persist, at least in the short-term. As mentioned above, the Ashland and Butte Falls staff surveyed for RA 32 (structurally complex forest) within the associated projects and identified 281 acres in the HLB LUA that can be characterized has Recovery Action 32 quality habitat (USDI FWS 2011). Approximately 25 acres (9 percent) would be deferred from harvest at this time. However, these 256 acres may be harvested in the future under another project because the management direction in the SWO RMP/ROD is not to forego timber harvest of stands in the Harvest Land Base for purposes of following Recovery Action 32 recommendations (USDI BLM 2016a, p. 127).

The intent of the Recovery Action 32 recommendation is to maintain the older and more structurally complex multi-layered conifer forests on federal lands in order to not further exacerbate the competitive interactions between spotted owls and barred owls. Management Direction in the SWO RMP/ROD (USDI BLM 2016a, p. 71) directs "protection" of structurally complex forests specifically identified in the stand Level mapped LSR (RA32) LUA. There are 7,020 acres of SWO RMP/ROD mapped LSR (large block and stand level/RA32) combined in both action areas that would not be treated (93 percent of the action areas), which would help minimize the likelihood that inter-species competition would be exacerbated as a result of this project. However, the proliferation of barred owls on the landscape and the resulting tendency for spotted owls to move around due to barred owl presence, are likely compounding the challenges facing spotted owls. Therefore, some competitive interactions are still anticipated to occur since barred owls have been observed in the action areas. Barred owls have been recorded when detected during spotted owl surveys and have been detected at 24 sites (see Table 10). Of these 24 spotted owl territories with barred owl activity, treatments resulting in adverse effects to spotted owls are proposed at 23 sites (Appendix C, Table C-1). However, it is also not known if forest habitat removal directly results in a range expansion of barred owls (USDI FWS 2013).

5.5 Effects from Disturbance

Project Design Criteria restricting activities during the breeding season and within recommended disturbance distance thresholds will be incorporated into the Bear Grub and Round Oak Projects

(Appendix A). Applying the Mandatory PDC should avoid noise or activity which would adversely affect nesting owls and their young. On-the ground implementation will not occur during the critical breeding season (March 1 to July 15). Nesting owls are confined to an area close to the nest, but once the young fledge, they can move away from noise and activities that might cause adverse effects.

5.6 Effects to Northern Spotted Owl Critical Habitat

At least a portion of the Bear Grub and Round Oak Projects are within the 2012 designated spotted owl critical habitat (Table 18). The consultation process evaluates how a proposed action is likely to affect the capability of the critical habitat to support northern spotted owl nesting, roosting, foraging, or dispersal (PBFs) by considering the scales at which the life-history requirements of the northern spotted owl are based regardless of the species' presence or absence (USDI FWS 2012b).

Overall, the Bear Grub and Round Oak Projects combined will treat up to 2,178 acres of spotted owl NR, F, and dispersal-only habitat in designated critical habitat (Table 18). The primary impacts to critical habitat will be the approximately 1,207 acres in total of NR and F habitat that is proposed for removal or downgrade. As discussed above, if spotted owls are located during ongoing surveys, the District will consider modifying or dropping units to avoid incidental take, as appropriate. These potential changes could also reduce the amount of NR and F habitat proposed for removal or downgrade within critical habitat.

As shown in Table 18, of the total combined 1,212 acres of NR and F habitat acres proposed for removal or downgrading in designated critical habitat, 47 percent (572 acres) are in nesting-roosting habitat (PBF#2) and 53 percent (640 acres) are in foraging habitat (PBF#3). As provided in the definition section, foraging habitat is a subset of NRF (as such is calculated as NRF for baseline tracking). Even though these foraging stands may have large trees and high canopy cover, they are often dense, uniform and single-storied, lacking important spotted owl habitat components such as layering, snags, and coarse woody debris.

The primary objectives for these projects are to meet non-owl-specific objectives, such as timber production and forest health (in HLB LUA). Therefore, treatments are proposed in currently functioning NR habitat, which include removal of NR habitat, in the HLB LUA and also in designated critical habitat, so as to meet other management goals and objectives of the District. Treatments proposed in foraging stands would occur in the Bear Grub Project in the LSR LUA and are designed to promote the development of NR habitat as directed in the SWO RMP/ROD for LSR (USDI BLM 2016a, p. 70). While active management is planned within critical habitat, as provided for in the SWO RMP/ROD and per the critical habitat final rule (USDI FWS 2012b, pp. 71881-82), the treatments are intended to avoid any incidental take of spotted owls as also provided for in SWO RMP/ROD direction.

Table 18. Effects to Spotted Owl Critical Habitat from the Bear Grub and Round Oak Proposed Actions

	NRF Removed (acres)		NRF Downgrade (acres)		NRF Modify (acres)		Dispersal-Only Removed (acres)	Dispersal-Only Modify (acres)	Dispersal Quality Remove *(NRF+Dispersal-only)*[3]	Total Habitat Acres Treated
	NR[1]	F[2]	NR[1]	F[1]	NR[1]	F[2]				
KLE-3 (baseline acres from Table 11)	**37,627**						***43,696*** *(Dispersal-only)*		**81,323** *(NRF + Dispersal-only)*	
Bear Grub	**0**	**0**	**0**	**5**	**0**	**0**	**103**	**21**	**103**	**129**
% Change to KLE-3 Baseline Habitat	**No Change**		**- 0.01 %**		**No Change**		**- 0.2 %**	**No Change**	**-0.1%**	
KLE-5 (baseline acres from Table 11)	**18,233**						***13,045*** *(Dispersal-only)*		**38,252** *(NRF + Dispersal-only)*	
Round Oak	**525**	**403**	**0**	**0**	**21**	**65**	**34**	**55**	**962**	**1,103**
% Change to KLE-5 Baseline Habitat	**- 5 %**		**No Change**		**No Change**		**- 0.03 %**	**No Change**	**-2.5%**	
KLE-6 (baseline acres from Table 11)	**44,807**						**88,136** *(Dispersal-only)*		***132,943*** *(NRF + Dispersal-only)*	
Bear Grub	**45**	**183**	**2**	**49**	**5**	**243**	**244**	**175**	**472**	**946**
% Change to KLE-6 Baseline Habitat	**-0.5%**		**-0.1%**		**No Change**		**- 0.3%**	**No Change**	**-0.4%**	

1- NRF = Nesting/Roosting/Foraging - PBF #2;
2- RF = Roosting /Foraging - PBF #3;
3- All Dispersal Baseline (Dispersal-only + NRF)

Critical Habitat Effects Summary by Primary Biological Features

Nesting, Roosting, and Foraging Habitat (PBFs #2 and #3)

NRF Removal

The primary objective for the 1,156 acres of NR and F proposed for removal within critical habitat is to meet SWO RMP/ROD directed timber ASQ volume targets on the Harvest Land Base LUA. These acres habitat proposed for removal in the Bear Grub and Round Oak projects would not be expected to obtain NRF conditions in designated critical habitat for decades. The Biological Opinion for the BLM Western Oregon Resource Management Plan predicted that uneven-aged management would result in the loss of PBFs #2 and #3. However, even with the proposed loss, the prescriptions would promote more rapid development of stands containing the elements associated with nesting-roosting habitat and would promote restoration of natural disturbance regimes, compared to regeneration type treatments. The Service also concluded that these losses would be mitigated because during this same time span that these the critical habitat in reserved LUAs are expected to develop spotted owl habitat through ingrowth and through management actions such as thinnings designed to speed the development of critical habitat PBFs (USDI FWS 2016, pp. 690 and 691).

Up to six of the 1,156 acres of NR and F proposed for removal in the Bear Grub and Round Oak projects are due to road and landing construction. The road and landing construction in NR and F would remove all vegetation and key habitat components (layering, large trees, snags, coarse

woody debris, and high canopy cover) and are not expected to return to or obtain NR and F functioning habitat as long as these areas are utilized as roads or landings in the future.

According to the 2012 Final CHU Rule (USDI FWS 2012b, pp.14062-14165), Section 7 consultations need to consider the temporal and spatial scale of impacts a proposed action may have on the PBFs. As part of the Rule, the Service recommends using a scale that is relevant to the needs and biology of the spotted owl and believes the 500-acre core area scale is a reasonable metric for land managers to use as a screen when assessing effects on critical habitat. The Rogue Basin Level 1 team has consistently used the 500-acre scale analysis in previous ESA Section 7 consultations. However, in this case, it was evident without doing a site specific 500-acre analysis that the amount of NR and F removal and downgrade relative to the existing NRF at the 500-acre scale would be measurable. As a result, the **BLM has determined the removal of 1,156 acres of NR and F habitat may affect, and would likely adversely affect (LAA)** spotted owl critical habitat because it would result in a measurable removal of an essential physical or biological feature.

NRF Downgrade

The proposed vegetation treatments in the Bear Grub Project would downgrade 2 acres of NR habitat (PBF #2) and 54 acres of foraging habitat (PBF #3) in designated critical habitat. There will be no NR or F downgrade in the Round Oak project. Treatments proposed to downgrade foraging habitat in the Bear Grub project are located in the LSR LUA. In these areas the treatments are silviculturally designed and intended to speed the trajectory of the development of spotted owl nesting habitat, improve resiliency, and restore ecological functions (USDI BLM 2016a, pp. 70, 72, and 74). These treatments would also help meet the District's non ASQ timber ASQ targets, which is a bi-product of the primary objective. By conducting these types of treatments in PBF #3, over the long term, it is anticipated that stand resiliency would improve which would reduce fire risk and enhance the overall ecological condition of the stand and immediate landscape. These types of treatments were proposed in the Western Oregon Proposed Resource Management Plan/Final Environmental Statement (USDI BLM 2016b, p. 252) because the increased spatial heterogeneity at multiple scales, and disruption of fuel continuity, can alter potential fire behavior and may create conditions in which wildfire can occur without detrimental consequences, reducing impacts to highly valued resources, including timber and wildlife habitat (Finney 2001 and Jain et al. 2012). In stands that are not currently structurally-complex, the creation of small openings and heterogeneous (patchy) stand composition would move vegetation patterns and fuel loadings and arrangements toward conditions comparable to low- and mixed-severity fire regimes (Agee 2002). Additionally, in general, studies have shown that stands with higher fire resistance have reduced surface fuel loading, lower tree density, large diameter trees of fire-resistant species, increased height to live crown, and discontinuous horizontal and vertical fuels (USDI BLM 2016b, p. 243).

The current condition of the foraging stands are generally either single-storied homogenous stands and lacking structure, or layered stands lacking the large diameter trees characteristic of supporting nesting habitat. Therefore, some long-term habitat benefits may also be achieved from the proposed action as tree diameter growth increases, multi-layered structure and species diversity develops. More immediate short-term impacts to spotted owls and critical habitat are anticipated due to the removal of key habitat features coincident with the likely use of the area

by breeding spotted owl. According to the critical habitat rule, these tradeoffs of short-term impacts and longer-term habitat development are tradeoffs that are taken into consideration when designing dry forest restoration projects (USDI FWS 2012b, pp. 71881, 71942).

The BLM has determined the downgrade of 56 acres of NRF habitat may affect, and would likely adversely affect (LAA) spotted owl critical habitat because it would result in a measurable removal of an essential physical or biological feature.

NRF and Dispersal-Only Habitat Modification (Maintaining Function) (PBFs #1, 2, 3, and 4)

The proposed vegetation treatments in the Bear Grub and Round Oak Projects would modify, but maintain the function of 334 acres of NR and F habitat (PBFs # 2 and 3) and 251 acres of Dispersal-only habitat (PBFs # 1 and 4) in designated critical habitat. The BLM would follow the PDCs described above to ensure habitat would function post-treatment. As a result, no adverse effects are anticipated to designated critical habitat as a result of these treatments because the amount and condition of these PBFs would not change. Therefore, t**he BLM has determined the modification of 334 of NR and F habitat and 251 acres of dispersal-only habitat may affect, but is not likely to adversely affect (NLAA)** spotted owl critical habitat.

Dispersal function (PBF #4)

Habitat Removal

The Bear Grub and Round Oak Projects would remove 381 acres of dispersal-only habitat in designated critical habitat from vegetation treatments and road/ landing construction. The removal of 1,156 acres of NR and F habitat that also serves as dispersal quality habitat, when combined with the removal of dispersal-only habitat, would contribute to a reduction of dispersal habitat (PBF #4) in these critical habitat sub-units. **The BLM has determined the removal of 381 acres of dispersal-only and 1,156 acres of NRF habitat may affect, and would likely adversely affect (LAA)** spotted owl critical habitat because it would result in a measurable removal of an essential physical or biological feature.

The removal of dispersal habitat (NRF + dispersal-only) would not affect the intended connectivity function of these sub-units (east/west and north/south connectivity). Habitat supporting the transience phase of dispersal contains stands with adequate tree size and canopy cover to provide minimal foraging opportunities and protection from avian predators. This may include younger and less diverse forest stands, such as even-aged, pole-sized stands, than foraging habitat but such stands should contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the movement phase (USDI FWS 2011). Forest landscapes traversed by dispersing owls typically include fragmented mosaics of roads, clear-cuts, and non-forested areas, and a variety of forest age classes ranging from fragmented forests on cutover areas to old-growth forests. Spotted owls are able to move successfully through highly fragmented landscapes typical of the mountain ranges in western Washington and Oregon (Forsman, et al. 2002).

The proposed removal and downgrade of NRF and removal of dispersal-only habitat within these critical habitat subunits would not alter the intended subunit function of providing demographic support for spotted owls (see footnote in Table C-1, in Appendix C for sites located in critical

habitat). While many of these sites would be adversely affected, these sites are either unoccupied or have not had a resident single or territorial pair. Surveys are ongoing and units would be dropped or modified if resident singles or territorial pairs are located. Therefore, even though adverse effects are proposed at these sites, mitigations are in place that would avoid affecting owls and the demographic support of these sub-units.

Table 19. Summary of Effects to Sub-Unit Intended Functions from the Bear Grub and Round Oak Projects

Sub-Unit	Number and Percent of Total Historical Sites Adversely Affected	Percent Habitat Loss from Dispersal Removal (NRF+Dispersal-only Habitat)
KLE-3	1 (1%)	- 0.1 %
KLE-5	6 (15%)	- 2.5 %
KLE-6	16 (7.5 %)	-0.4 %

Capable Habitat (Subset of PBF #1)

Approximately 313 acres of capable habitat in designated critical habitat is proposed for treatment in the Bear Grub Project and 16 acres in the Round Oak Project. Of these 329 acres, only 17 acres (5 percent) are proposed for road and landing construction (all in Bear Grub and in KLE-6). Due to the potentially permanent nature of road and landing construction, these 17 acres would be precluded from developing future spotted owl habitat. These 17 acres are distributed throughout the action areas. The proposed road and landing construction that is preventing the development of future spotted owl habitat would not be a substantial change within the KLE6 sub-unit because no more than 0.05 percent of the current capable habitat would be affected.

The remaining 296 acres of capable habitat in Bear Grub and 16 acres in Round Oak would occur in vegetation treatment units with prescriptions that would not preclude the development of future spotted owl habitat. In some cases, the prescriptions would speed the trajectory of developing dispersal-only or nesting habitat in the next 20-30 years.

Beneficial Effects to Critical Habitat

The following beneficial effects may be realized in some stands as a result of implementation of the proposed action:

- Thinning in simple stands of foraging and dispersal-only habitat would accelerate tree growth and promote the development of structurally complex forest conditions, which are important to spotted owls.
- Very dense stands would be opened by thinning, thereby improving the ability for spotted owls to disperse within these stands by providing more “flying space.”
- Treated stands are likely to be more ecologically sustainable because residual stands would be less susceptible to suppression mortality, as well as mortality from insects and disease.
- Treated stands may provide additional protection to adjacent untreated NRF stands from wildfire by making more fire resilient stands through stand density and ladder fuel reduction.

- Single tree selection would reduce stand density to increase tree growth, quality, and vigor of the remaining trees; create diversified stand structure (height, age, and diameter classes), develop spatial heterogeneity within stands; increase resilience of forest stands to wildfire, drought, insects, by reducing stand density and ladder fuels; and increase growing space and decrease competition for large and/or legacy pine, oak, and cedar.

Critical Habitat Effects Conclusion

The BLM has determined the proposed actions, when considered at the project scale, may affect, and would likely adversely affect (LAA) spotted owl critical habitat because the proposed actions result in a measurable removal of essential physical or biological features.

5.7 Effects to Northern Spotted Owl Prey

The northern flying squirrel, dusky-footed woodrat, bushy-tailed woodrat, and red tree voles are important prey of the northern spotted owl in this action areas (Forsman, et al. 2004). Woodrat densities in the Douglas-fir/hardwood forests in the Klamath Province were nearly equal or greater than flying squirrels (Zabel et al., 1995). Spotted owl prey relationships are complex and prey-switching may be important (Courtney, et al. 2004). Vegetation treatment projects may impact spotted owl foraging by changing habitat conditions for different prey species.

Sakai and Noon (1993) stated that dusky-footed woodrats, the primary prey of owls in the Bear Grub and Round Oak Action Areas, might benefit from some thinning or harvest that would increase shrub and pole stands. Bushy-tailed woodrat presence is more dependent on cover and food availability than on seral stage. They often use areas previously disturbed by fire (Carey 1991). Bushy-tailed woodrats are most abundant along streams, and riparian areas may serve as the principal avenue for woodrat recolonization (Carey, et al. 1992). Lehmkuhl, et al. (2006) found that fuels projects in eastern Washington could have impacts on bushy-tailed woodrats, but confirmed the importance of maintaining snags, down wood, and mistletoe. These components would be retained as part of the proposed action.

Some disturbance of habitat may improve forage conditions, provided the understory structure and canopy cover are retained. Removal of some tree canopy (under NRF modification treatments that would still maintain habitat function), would bring more light and resources into the stand, stimulating forbs, shrubs and other prey food. Once the initial impact of disturbance recovers (six months to two years), the understory habitat conditions for prey food would increase over the next few years, until shrubs and residual trees respond and once again close in the stand. A dispersal stand that resulted from the downgrade of NRF habitat would begin to develop the pretreatment habitat within 20 to 40 years, depending on treatment type, plant association, and location. Residual trees, snags, and down wood that are retained in the thinned stands would provide some cover for prey species over time, and would help minimize harvest impacts to some prey species. The retained trees may respond favorably to more light and resources and gain height and canopy over time.

Flying squirrel densities are correlated with high cavity density, large amounts of hypogeous fungi, and crown class differentiation (Carey, et al. 1997; Carey, et al. 2000). Gomez, et al. (2005) noted that commercial thinning in young stands of Coastal Oregon Douglas-fir (35 to 45 years old) did not have a measurable short-term effect on density, survival, or body mass of

northern flying squirrels. Similarly, Waters and Zabel (1995) compared squirrel densities and body mass in shelterwoods, and in old and young stands in the northern Sierras (old = 3.29/Ha, shelterwood = 0.31/ha, young = 2.28/Ha) and found no difference in body mass or recapture rates between young and old stands in northern more mesic forest habitats, although they concluded that heavy logging and site preparation (burning) in the shelterwoods negatively affected flying squirrels. More recent studies have indicated negative impacts of thinning on flying squirrels (Wilson 2010; Holloway and Smith 2011). Additionally, Ritchie, et al. (2009) found negative landscape effects on flying squirrels when harvested areas opened the stand to create open conditions. Flying squirrels predation pressure increases and their survival and reproduction decrease in stands with too many gaps, large gaps, lacking a mid-story canopy layer, and low overall stem densities (Wilson and Forsman 2013).

The proposed actions, especially in NRF habitat, would likely remove flying squirrel habitat, which could decrease flying squirrel abundance (Wilson 2010; Manning, et al. 2011) and reduce spotted owl foraging opportunities in these areas. Residual trees, snags, and down wood that are retained in the units would provide some cover for prey species over time and would help minimize long-term harvest impacts to some prey species.

Edges created from harvest can be areas of good prey availability and potentially increased vulnerability (i.e., better hunting for owls) (Zabel, et al. 1995). Prey animals may be more exposed in the disturbed area or may move away from the disturbed area for the short-term. Some minor changes in prey availability may occur as cover is disturbed and animals move around in the understory. They may become more vulnerable and exposed. The disturbance might attract other predators such as hawks, other owls, and mammalian predators. This may increase competition for owls in the treatment area, but the exposure of prey may also improve prey availability for northern spotted owls.

Bingham and Noon (1997) reported that a spotted owl core area is the area that provides the important habitat elements of nest sites, roost sites, and access to prey, benefiting spotted owl survival and reproduction. Rosenberg and McKelvey (1999) reported that spotted owls are "central place" animals with the core area (the area closest to the nest) being the focal area. Several studies (Wagner and Anthony 1998; Dugger, et al. 2005; Zabel, et al. 2003; Bingham and Noon 1997) indicate the core area size for the Klamath and Western Cascades provinces is 0.5-mile (or 500 acres) around the nest site. Therefore, effects to prey species are most critical at the nest patch and core areas. Effects to spotted owl sites at the nest patch and core areas are analyzed in Section 5.3 above and the effects to prey species can also be derived from this data.

Treatment implementation would be spread out temporally and spatially within the Bear Grub and Round Oak Action Areas, which would provide areas for spotted owl foraging during project implementation and reduce the impact of these short-term effects at the project level. Untreated patches will be retained within the project areas for special status species, riparian vegetation, and other constraints. Residual trees, snags, and down wood that are retained in the thinned stands would provide some cover for prey species over time, and would help minimize harvest impacts to some prey species. Flying squirrel habitat may be reduced in quality in some places, but those same places are likely to maintain or improve habitat for woodrats and other small mammals (Courtney, et al. 2004).

5.8 Consistency with Spotted Owl Recovery Plan Recommendations

On June 30, 2011, the Service released the *Revised Recovery Plan for the Northern Spotted Owl* (USDI FWS 2011). The Notice of Final Revised Recovery Plan Availability was published in the Federal Register on July 1, 2011 (USDI FWS, 76 FR pp. 38575-38576) for the Northern Spotted Owl. Recovery plans are not regulatory documents; rather, they provide guidance to bring about recovery and establish criteria to be used in evaluating when recovery has been achieved. The BLM continues to work with the Service to incorporate Recovery Goals and Actions consistent with BLM laws and regulations. The BLM is a participant in the inter-organizational spotted owl working group (Recovery Action 1) and will continue demographic monitoring to address Recovery Actions 2 and 3. The vegetation projects in this Assessment follow other recovery actions, such as Recovery Actions 6, 10, and 32 recommendations. Additionally, the land use allocations, management direction, and guidance in the 2016 Southwestern Oregon RMP/ROD constitute BLM's contribution towards Recovery Actions 10 and 32 (USDI BLM 2016a, p. 127). The Bear Grub and Round Oak projects incorporated applicable SWO RMP/ROD direction and guidance. Regionally, the BLM is also helping to conserve spotted owls by assisting with the implementation of Recovery Action 29, which is the experimental removal of barred owls. This experiment would help inform a barred owl management program. The BLM will not authorize timber harvest activities that would result in incidental take of spotted owls until the implementation of a barred owl management program, which could be in the next two to five years (USDI BLM 2016a, p. 128).

Recovery Action 6
Approximately 338 acres of thinning treatments (262 acres in Bear Grub and 76 acres in Round Oak) are prescribed units proposed in dispersal-only habitat and capable habitat that have the potential to develop into nesting habitat based on their plant association series and site potential (high relative habitat suitability). These treatments would accelerate the development of structural complexity and biological diversity and would meet Recovery Action 6.

Recovery Action 10
The BLM worked to meet the intent of Recovery Action 10 in the projects in the Bear Grub and Round Oak projects by planning the projects to minimize adverse effects to occupied spotted owl sites. This included staff wildlife biologists and silviculturists working together to design treatments that would not result in an incidental take determination by the Service and be consistent with the SWO RMP/ROD (USDI BLM 2016a, pp. 30, 127). Spotted owl sites are being surveyed to protocol and if spotted owls are located, the District intends to drop or modify treatment units to reduce potential adverse effects to spotted owls.

Recovery Action 32
The BLM is also a collaborator in Recovery Actions that address barred owl issues, such as the implementation of Recovery Action 32 recommendation. The intent of Recovery Action 32 is to maintain the older and more structurally complex multi-layered conifer forests on federal lands in order to not further exacerbate the competitive interactions between spotted owls and barred owls.

Management Direction in the SWO RMP/ROD (USDI BLM 2016a, p. 71) directs "protection" of structurally complex forests specifically identified in the stand level mapped LSR (RA32)

LUA. There are 7,571 acres of mapped LSR (including stand level mapped LSR) in the Bear Grub and Round Oak Action Areas. Approximately, 447 acres of these mapped LSR (RA32) seven percent) are proposed for treatment (443 acres in the Bear Grub Project and 4 acres in the Round Oak Project). However, these acres do not have the characteristics of a structurally complex forest, so there would be no effect to Recovery Action 32 type habitat from this treatment. These were field verified by the wildlife staff. Field level identification of structurally complex forest at the District level was informed by the interagency SW Oregon process for determining structurally complex forest (USDA USDI 2010).

Because the SWO RMP/ROD directed complex forest identification for LSRs, the Ashland and Butte Falls Field staff surveyed for Recovery Action 32 type habitat (structurally complex forest) within the Bear Grub and Round Oak projects and identified 281 acres of RA32 habitat in the HLB LUA (Table 20). Approximately 256 acres of field verified RA32 habitat are proposed for treatment in the Bear Grub (68 acres) and Round Oak (188 acres) projects because they are within the Harvest Land Base. This is consistent with direction in the SWO RMP/ROD not to forego timber harvest of stands in the Harvest Land Base to contribute to Recovery Action 32 (USDI BLM 2016a, p. 127).

Table 20. Recovery Action 32 Summary for the Bear Grub and Round Oak Projects

Project	District Identified structurally complex habitat (Recovery Action 32) Acres		Treated Structurally Complex Habitat Acres	
	District Staff Field Identified in Project Area in HLB	2016 SWO RMP/ROD Mapped LSR/RA 32 Habitat in the Action Area	HLB	2016 SWO RMP/ROD Mapped LSR/RA 32
Bear Grub	91 11 patches (0.5 to 32 acres)	5,112	68	443
			68 acres removed	29 acres F removal (in low RHS and 2 in roads/landings) 56 acres F downgrade 86 F maintain 29 acres dispersal only removed (3 roads/landings) 83 acres dispersal-only maintain 161 acres non-habitat/capable
Round Oak	190 34 patches (0.1 to 30 acres)	2,459	188	4
			183 acres removed 5 maintained	2 acres NR removal (roads/landings) 1 acre dispersal-only removal 1 acre capable
Total	**281**	**7,571**	**256**	**447**

6. CUMULATIVE EFFECTS

Cumulative effects under ESA are "those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation" (50 CFR 402.02). The effects of future federal actions will be evaluated during future section 7 consultations and are not included in cumulative effects.

Updates to habitat from post-harvest monitoring of recent BLM timber sales within these action areas have been included in this Biological Assessment.

The action areas have a checkerboard pattern of ownership of private land interspersed with BLM. Management practices occurring on private lands range from residential home site development to intensive industrial timber management. The majority of state and private forests in Washington, Oregon, and Northern California are managed for timber production. Non-federal lands are not expected to provide demographic support for spotted owls across and between physiographic provinces (Thomas, et al. 1990; USDA and USDI 1994a). Historically, non-federal landowners practiced even-aged management (clear-cutting) of timber over extensive acreages. Private industrial forestlands are managed for timber production and will typically be harvested between 40 and 60 years of age, in accordance with State Forest Practices Act Standards.

The Medford BLM assumes past management practices on private lands would continue. The BLM anticipates some loss of owl habitat on private lands, but cannot predict the rate of loss, types of spotted owl habitat affected, or the specific location of harvest. BLM does not track private land harvest activity. Harvest activities on state and private lands can be expected to impact spotted owls located within adjacent federal lands by removing and fragmenting habitat and through disturbance activities adjacent to occupied sites during sensitive periods. The Oregon Forest Practices Act Rules (OAR 629-665-0210) protects spotted owl nest sites (70-acre core areas) for at least three years after the last year of occupation.

Reciprocal ROW permit holders may fell hazard trees and adjacent trees on BLM lands. Landowners or their agents are required to obtain Road Use Permits to build roads across BLM managed land for commercial purposes or to haul commercial products on BLM maintained road systems. Reciprocal ROWs with private parties already cover many existing road activities in the action area. According to BLM Information Bulletin (IB) # OR-2000-174, this is a non-discretionary action, including the disposal of the logs. If these areas occur in LSR or Riparian Reserves, the BLM cannot ask the permittees to leave these trees as coarse woody debris.

7. BIOLOGICAL ASSESSMENT CONCLUSIONS

It is the conclusion of this biological assessment that proposed actions may affect northern spotted owls and their critical habitat as documented above. Formal consultation is requested for the projects in this Assessment. Table 21 summarizes the effects determinations for each project.

Table 21. Effects Determination Summary for the Bear Grub and Round Oak Projects

Field Office	Project	Effects to Spotted Owls	Effects to Spotted Owl Critical Habitat
Ashland	**Bear Grub**	LAA	LAA
Butte Falls	**Round Oak**	LAA	LAA

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APPENDICES

Appendix A: Project Design Criteria (PDC)

Project design criteria (PDC) are measures applied to project activities designed to minimize potential detrimental effects to proposed or listed species. The PDCs in this Appendix include the detailed seasonal restrictions for spotted owls. PDC for disturbance are intended to reduce disturbance to nesting spotted owls occupied spotted owl nest sites. Sites are assumed occupied unless surveys or habitat conditions indicate otherwise.

The seasonal or daily restrictions listed below may be waived at the discretion of the decision maker if necessary to protect public safety (as in the case of emergency road repairs or hazard tree removal). Emergency consultation with the Service will then be initiated in such cases, where appropriate.

Any of the following PDC may be waived in a particular year if nesting or reproductive success surveys conducted according to the U.S. Fish and Wildlife Service endorsed survey guidelines reveal that spotted owls are non-nesting or that no young are present that year. Waivers are only valid until March 1 of the following year. Previously known sites/ activity centers are assumed occupied until protocol surveys indicate otherwise.

Disruption and Disturbance Distances

A **disruption distance** is the distance within which the effects to listed species from noise, or mechanical movement associated with an action is expected to exceed the level of discountable or insignificant. Thus, within the disruption distance, actions occurring within the nesting season are expected to *adversely affect* listed species. Unit wildlife biologists may increase, but may not decrease, these disruption distances and still comply with the standards of this consultation. Within the disruption distance, activities occurring during the critical breeding period could significantly disrupt the normal behavior pattern of individual animals or breeding pairs (USDI FWS 2004).

A **disturbance distance** is the distance within which the effects to listed species from noise, human intrusion, and mechanical movement associated with an action is expected to be discountable or insignificant and adverse effects will not be expected. Effects are expected to be "insignificant" or "discountable" beyond the disruption distance and up to the disturbance distance. Thus, between the disruption distance and disturbance distance recommendations, effects are not expected to adversely affect listed species. To correctly apply the standards of this assessment to individual animals or breeding pairs, the unit wildlife biologist may increase or decrease these disturbance distances in accordance with the best available scientific information and site-specific conditions. Beyond the disturbance distance recommendations, no effects to listed species are expected.

During the critical breeding period, activities occurring within the disruption distances, shown in **Table A-1** from occupied spotted owl sites, and unsurveyed NRF habitat, could cause injury by significantly disrupting the normal behavior pattern of individual animals or breeding pairs. Use

of these recommended distances with the project design criteria listed below will minimize effects to listed species from disruption.

Spotted Owl Seasonal Restrictions

Distances described in Table A-1 to a known occupied spotted owl nest tree or fledging locations, but if no current survey information is available then distances are from the edge of the most recent nest patch.

Table A-1 – Spotted Owl Seasonal Restrictions (content adopted from USDI FWS 2016 USDI FWS 2016b; Table 227, pp. 597-600).

Project Activity	Disruption Distance – Mandatory Seasonal Restrictions	Disturbance Distance – Potential Extension
		March 1 – Sept. 30
Light maintenance (*e.g.*, road brushing and grading) at campgrounds, administrative facilities, and heavily-used roads	*No Seasonal Restriction*	≤ 0.25 mile
Log hauling on heavily-used roads	*No Seasonal Restriction*	≤ 0.25 mile
Chainsaws (includes felling hazard/danger trees)	Not allowed ≤ 65 yards between March 1 – July 15	≤ 0.25 mile
Heavy equipment for logging, road construction, road repairs, bridge construction, culvert replacements, etc.	Not allowed ≤ 65 yards between March 1 – July 15	≤ 0.25 mile
Pile-driving (steel H piles, pipe piles); Rock Crushing and Screening Equipment	Not allowed ≤ 120 yards between March 1 – July 15	≤ 0.25 mile
Burning (prescribed fires, pile burning)	Not allowed ≤ 0.25 miles between March 1 – July 15	≤ 1 mile
Blasting	Not allowed ≤ 0.25 miles between March 1 – July 15 and not allowed ≤ 100 yards between July 16 - Sept. 30	≤ 1 mile
Helicopter: Chinook 47d	Not allowed ≤ 265 yards between March 1 – July 15 and not allowed ≤ 100 yards (hovering only) between July 16 - Sept. 30	≤ 0.5 mile
Helicopter: Boeing Vertol 107, Sikorsky S-64 (SkyCrane)	Not allowed ≤ 150 yards between March 1 – July 15 and not allowed ≤ 50 yards (hovering only) between July 16 - Sept. 30	≤ 0.25 mile
Helicopters: K-MAX, Bell 206 L4, Hughes 500	Not allowed ≤ 110 yards between March 1 – July 15 and not allowed ≤ 50 yards (hovering only) between July 16 - Sept. 30	≤ 0.25 mile
Small fixed-wing aircraft (Cessna 185, etc.)	Not allowed ≤ 110 yards between March 1 – July 15	≤ 0.25 mile

Table A-2. Disturbance, disruption and/or physical injury distance thresholds for northern spotted owls (USDI FWS 2016b; Table 227, pp. 597-600).

Project Activity	No Effect	NLAA "may affect" disturbance distance	LAA early nesting season disruption distance (Mar 1–Jul 15)	LAA late nesting season disruption distance (Jul 16–Sep 30)	LAA direct injury and/or mortality (Mar 1 – Sep 30)
Light maintenance (*e.g.*, road brushing and grading) at campgrounds, administrative facilities, and heavily-used roads	>0.25 mile	≤ 0.25 mile	NA[1]	NA	NA
Log hauling on heavily-used roads	>0.25 mile	≤ 0.25 mile	NA[1]	NA	NA
Chainsaws (includes felling hazard/danger trees)	>0.25 mile -	66 yards to 0.25 mile -	≤ 65 yards[2]	NA	NA
Heavy equipment for road construction, road repairs, bridge construction, culvert replacements, etc.	>0.25 mile	66 yards to 0.25 mile	≤ 65 yards[2]	NA	NA
Pile-driving (steel H piles, pipe piles) Rock Crushing and Screening Equipment	>0.25 mile	120 yards to 0.25 mile	≤ 120 yards[3]	NA	≤ 5 yards (injury)[3]
Blasting	>1 mile	0.25 mile to1 mile	≤ 0.25 mile[4]	NA	≤ 100 yards (injury)[4]
Helicopter: Chinook 47d	>0.5 mile	266 yards to 0.5 mile	≤ 265 yards[5]	≤ 100 yards[6] (hovering only)	NA
Helicopter: Boeing Vertol 107, Sikorsky S-64 (SkyCrane)	>0.25 mile	151 yards to 0.25 mile	≤ 150 yards[7]	≤ 50 yards[6] (hovering only)	NA
Helicopters: K-MAX, Bell 206 L4, Hughes 500	>0.25 mile	111 yards to 0.25 mile	≤ 110 yards[8]	≤ 50 yards[6] (hovering only)	NA
Small fixed-wing aircraft (Cessna 185, etc.)	>0.25 mile	111 yards to 0.25 mile	≤ 110 yards	NA	NA
Tree Climbing	>66 yards	26 yards to 65 yards	≤ 25 yards[9]	NA	NA
Burning (prescribed fires, pile burning)	>1 mile	0.25 mile to 1 mile	≤ 0.25 mile[10]	NA	NA

NLAA = "not likely to adversely affect." **LAA** = "likely to adversely affect" **≥ is greater than or equal to, ≤ is less than or equal to.**

Table A-2 (Northern Spotted Owl) Footnotes:

1. NA = not applicable. Based on information presented in Temple and Guttiérez (2003, pg. 700), Delaney *et al*. (1999, pg. 69), and Kerns and Allwardt (1992, pg. 9), we anticipate that spotted owls that select nest sites in close proximity to open roads either are undisturbed by or habituate to the normal range of sounds and activities associated with these roads.
2. Based on Delaney *et al*. (1999, pg. 67) which indicates that spotted owl flush responses to above-ambient equipment sound levels and associated activities are most likely to occur at a distance of 65 yards (60 meters) or less.
3. Impulsive sound associated with pile-driving is highly variable and potentially injurious at close distances. A review compiled by Dooling and Popper (2007, pg. 25) indicates that birds exposed to multiple impulses (*e.g.*, pile driving) of sound at 125 decibels (dBA) or greater are likely to suffer hearing damage. We have conservatively chosen a distance threshold of 120 yards for impact pile-driving to avoid potential effects to hearing and to account for significant behavioral responses (*e.g.*, flushing) from exposure to loud, impulsive sounds. Based on an average maximum sound level of 110 dBA at 50 feet for pile-driving, exposure to injurious sound levels would only occur at extremely close distances (*e.g.*, ≤ 5 yards).
4. Impulsive sound associated with blasts is highly variable and potentially injurious at close distances. We selected a 0.25-mile radius around blast sites as a disruption distance based on observed prairie falcon flush responses to blasting noise at distances of 0.3 – 0.6 miles from blast sites (Holthuijzen *et al*. 1990, pg. 273). Exposure to peak sound levels that are >140 dBA are likely to cause injury in the form of hearing loss in birds (Dooling and Popper 2007, pgs. 23-24). We have conservatively selected 100 yards as an injury threshold distance based on sound levels from experimental blasts reported by Holthuijzen *et al*. (1990, pg. 272), which documented peak sound levels from small blasts at 138 – 146 dBA at a distance of 100 meters (110 yards).
5. Based on an estimated 92 dBA sound-contour (approximately 265 yards) from sound data for the Chinook 47d presented in Newman *et al*. (1984, Table D.1).
6. Rotor-wash from large helicopters is expected to be disruptive at any time during the nesting season due the potential for flying debris and shaking of trees located directly under a hovering helicopter. The hovering rotor-wash distance for the Chinook 47d is based on a 300-foot radius rotor-wash zone for large helicopters hovering at < 500 above ground level (from WCB 2005, pg. 2 – logging safety guidelines). We reduced the hovering helicopter rotor-wash zone to a 50-yard radius for all other helicopters based on the smaller rotor-span for all other ships.
7. Based on an estimated 92 dBA sound contour from sound data for the Boeing Vertol 107 the presented in the San Dimas Helicopter Logging Noise Report (USFS 2008, chapters 5, 6).
8. The estimated 92 dBA sound contours for these helicopters is less than 110 yards (*e.g.*, K-MAX (100 feet) (USFS 2008, chapters 5, 6), and Bell 206 (85-89 dBA at 100 meters) (Grubb *et al*. 2010, pg. 1277).
9. Based on Swarthout and Steidl (2001, pg. 312) who found that 95 percent of flush responses by spotted owls due to the presence of hikers on trails occurred within a distance of 24 meters.
10. Based on recommendations presented in *Smoke Effects to Northern Spotted Owls* (USDI FWS 2008, pg. 4).

Appendix B: Spotted Owl Site History

Table B-1: Northern Spotted Owl Sites within Bear Grub Action Area

Site #	Survey Results					Notes
	2019	2018	2017	2016	2015	
0096O Grub Gulch	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	Barred owls detected in 2019.
0097O Rush Creek	No Response 6 Visits	No Response 6 Visits	No Survey	No Response 6 Visits	No Response 4 Visits	Barred owl detected in 2019.
0114O Griffin Creek	No Response 6 Visits	No Response 8 Visits	No Survey	No Survey	No Survey	Unknown *Strix* owl detected once in 2018. Barred owl detected in 2019.
0592O Bear Wallow	No Response 3 Visits	No Response 3 Visits	No Response 3 Visits	No Response 3 Visits	No Response 3 Visits	Forest Service site, demography protocol. Surveyed annually (minimum 3 visits) since 2011. Barred owls detected in 2015, 2019.
0944O Bunny Meadows	No Response 3 Visits	No Response 6 Visits	No Response 6 Visits	No Response 3 Visits	No Response 3 Visits	Barred owls detected in 2016, 2017, 2019
0971O Armstrong Gulch	No Response 6 Visits	No Response 7 Visits	No Survey	No Survey	No Survey	Unknown *Strix* owl detected once in 2018
0972O Deming Gulch	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	
0973A Anderson Creek	No Response 6 Visits	No Response 6 Visits	No Survey	No Response 6 Visits	No Response 3 Visits	Barred owls detected in 2018, 2019.
0992O Phantom Gulch	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	Forest Service site. Barred owls detected in 2016, 2018, 2019.
2234O Point Mountain	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Response 2 Visits	Barred owls detected in 2018, 2019.
2260B East Fk Forest Creek	No Response 3 Visits	No Response 6 Visits	Male detected once. 6 Visits	No Response 5 Visits	No Response 2 Visits	
2267O Bishop Creek	No Response 3 Visits	No Response 6 Visits	No Response 6 Visits	No Response 3 Visits	No Response 3 Visits	
2361O Anderson Lookout	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	Barred owls detected in 2018, 2019.
2394O Oregon Belle	No Response 3 Visits	Male detected once 6 Visits	No Response 6 Visits	No Response 2 Visits	No Response 3 Visits	Unknown *Strix* detection once in 2018. Barred owls detected in 2016, 2017
2395O Wagner Creek	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	Rehabilitated male spotted owl released at Wagner Creek in 2017. Barred owls detected in 2019.

Table B-1: Northern Spotted Owl Sites within Bear Grub Action Area

Site #	Survey Results					Notes
	2019	2018	2017	2016	2015	
2397O Wellington	No Response 3 Visits	No Response 6 Visits	No Response 6 Visits	No Response 3 Visits	No Response 3 Visits	Barred owls detected in 2018, 2019.
3559O Squires Rock	No Response 3 Visits	No Response 6 Visits	No Response 6 Visits	No Response 5 Visits	No Response 3 Visits	
3648O Bobs Birds	No Response 6 Visits	No Response 6 Visits	No Survey	No Response 6 Visits	Male detected once. 5 Visits	Barred owls detected in 2016, 2018, 2019.
3934O Cope and Mitre	Male detected once. 6 Visits	No Response 6 Visits	No Response 6 Visits	No Response 3 Visits	No Response 3 Visits	
3941O Anderson Avenue	Unknown	No Response 6 Visits	Unknown	Unknown	Unknown	Private property, not surveyed by BLM. Hancock provided survey data for 2018.
3942O Griffins Lair	No Response 6 Visits	No Response 8 Visits	No Survey	No Survey	No Survey	Unknown *Strix* owl detected once in 2018. Barred owl detected in 2019.
4066O Arrastra Creek	No Response 6 Visits	No Response 6 Visits	No Survey	No Response 6 Visits	No Response 3 Visits	Barred owls detected in 2019.
4068O Deming Gulch North	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	
4513O Wolf Gap	No Response 6 Visits	No Response 6 Visits	No Survey	No Survey	No Survey	
4611O Coleman Creek	Unknown	Unknown	Unknown	Unknown	Unknown	State land. Not surveyed by BLM. Barred owls detected in home range in 2018, 2019.

Table B-2: Northern Spotted Owl Sites within Round Oak Action Area

Site #	Survey Results					Notes
	2019	2018	2017	2016	2015	
1163O Rancheria	No Response 6 Visits	No Response 6 Visits	No Response 1 Visit	No Survey	No Survey	
1826B Cur Creek	No Response 6 Visits	No Response 6 Visits	No Response 3 Visits	No Survey	No Survey	Barred owl detections in 2018 and 2019. No NSO obs at Original in last 15 years. All nesting occurred at Alt B. Alt A is only 0.3 mi from Alt B.
1831O/A Blue Goose	No Response 6 Visits	No Response 6 Visits	No Response 6 Visits	Pair Detected once. 6 visits	No Response 2 Visits	Most nesting occurred at Alt A, but NSO have used a wide area between O and Alt A. STRIX-unknown fledglings observed in 2016 in Alt A. Barred Owl detections 2015 - 2019
1957B & FS Mud Springs	1 Single male auditory response near Alt B. 6 Visits	No Response 6 Visits	No Response 5 Visits	No Response 3 Visits	No Response 4 Visits	Most NSO obs have been at the Alt B site on BLM and the FS site in 34-4E-19. There are two other FS sites between that site and the Alt B site. Surveyed in demog study-OSU, from 2015-2019. Barred owl detections near the Alt B site 2017 – 2019.
1958A Sheep Camp FS	No Response 6 Visits	No Response 6 Visits	No Response 3 Visits	No Response 4 Visits	No Response 4 Visits	Barred owl detections in 2018.
2007B Maple Jack	No Response 6 Visits	No Response 6 Visits	No Response 1 visit	1 STRIX Unk obs 4 visits	No Response 6 Visits	Alt B is on BLM land, O and A are on private and are very close to Alt B. Most NSO obs have been near B. Barred owl detections in 2015.
2059O/A Titanic West	No Response 6 visits	No Response 6 visits	No Response 2 visits	No Survey	No Survey	The original and Alt A sites are 0.7 mi apart, but nesting and NSO have been observed at both locations. Barred Owls nested in 2019.
2220O Smith Creek	Active Pair	Active Pair 6 visits	Active Pair + Fledglings	Active Pair	Active Pair + Fledglings	
2222O/A Fredenburg East	No Response 6 visits	1 STRIX Unk obs 6 visits	No Response 6 visits	No Response 6 visits	No Response 6 visits	Weyerhaeuser. Original and Alt A sites only 0.35 mi apart, but NSO have used both sites. Barred owl detected in 2015 and 2017. In 2018 there was a resident single male spotted owl at the outer edge of the Fredenburg East 2222A home range. The owl observations were from 1.6 miles to 1.9 miles west of the fuels units that are located in 34S-03E-31. The site where this male was in 2018, was a temporary site called "Fredenburg South." It has been a temp site for a long time and has never had pair or nesting status.
2359O Round Mountain	No Response 6 visits	1 STRIX Unk obs 6 visits	1 STRIX Unk obs 6 visits	1 Single male auditory response 6 visits	No Response 6 visits	Site never had pair or nesting status. Barred owls detected 2015 – 2018.
2360A SF Vine Maple	No Response 6 visits	1 Single female auditory response near Alt A. 6 visits	No Response 1 visit	No Response 3 visits	No Response 6 visits	The original and Alt A sites are 0.7 mi apart, but all nesting activity and the majority of NSO obs have been closer to the Alt A site. Barred owl detections in 2015, 2018, and 2019.
3260O Clementcheria	No Response 6 visits	No Response 6 visits	No Response 1 visit	No Survey	No Survey	Barred owl detections in 2017 and 2019.

Table B-2: Northern Spotted Owl Sites within Round Oak Action Area

Site #	Survey Results					Notes
	2019	2018	2017	2016	2015	
3561B Olson Mountain	Active Pair	Active Pair	Active Pair	Active Pair	Active Pair & Fledglings	Round Oak project units are outside of the Original and Alt A home ranges.
4079O Jackass Creek	No Response 6 visits	No Response 6 visits	No Response 1 visit	No Response 3 visits	No Response 6 visits	Barred owl detections in 2015 and 2019.
4616O Camp Cur	Single Owl detected once. 6 visits	No Response 6 visits	No Response 2 visits	No Survey	No Survey	Barred owls detected in 2018.
4620O Friese Creek	No Response 6 visits	No Response 6 visits	No Response 1 visit	No Survey	No Response 6 visits	Goshawks nested near site center in 2019. Barred owls detected in 2015 and 2018.
FS Oak Mountain	No Response 5 visits	No Response 3 visits	No Response 3 visits	No Response 4 visits	No Response 4 visits	2015-2019 surveyed in demog study-OSU. This site is what the BLM would call a temporary site. It never had resident single or pair status, and it does not have an MSNO associated with it. A single male was located once in 1990 and once in 1994.
2686O Dead Dog FS	1 single Male NSO Auditory response; 3 visits	No Response 3 visits	No Response 4 visits	No Response 3 visits	No Response 3 visits	2015-2019 surveyed in demog study-OSU. There was 1 single male NSO auditory response near the center of 34S-03E-12, in 2019, at the outer edge of the home range.

Appendix C: Detailed Spotted Owl Site Effects for the Bear Grub and Round Oak Projects

Table C-1: Detailed Spotted Owl Site Effects for the Bear Grub and Round Oak Project

Project	NSO SITE	EFFECTS	NRF HR acres Pre-Treat	NRF HR % Pre-Treat	NRF Core acres Pre-Treat	NRF Core % Pre-Treat	NRF Acres Removed			NRF Acres Downgraded			NRF Acres Modified (Function Maintained)			Dispersal Acres Removed			Dispersal Acres Modified (Function Maintained)			HR NRF Reduced (acres)	HR NRF acres Post-Treat	HR NRF % Post-Treat	NRF Core Reduced (acres)	NRF Core acres Post-Treat	NRF Core % Post-Treat	Occupancy Status (codes on the last page)		Comments
							HR	Core	NP	HR	Core	NP	HR	Core	NP	HR	Core	NP	HR	Core	NP							2018	2019	
Bear Grub[1]	0096O	LAA	944	28%	261	52%	29	17	0	30	14	1	16	3	0	109	27	0	56	20	3	59	885	26%	31	230	46%	NO	NO +	
Bear Grub[1]	0097O	LAA	731	22%	130	26%	36	0	0	16	0	0	0	0	0	24	0	0	0	0	0	52	679	20%	0	130	26%	NO	NO +	
Bear Grub[1]	0114O	LAA	679	20%	35	7%	17	0	0	14	0	0	40	0	0	31	0	0	39	0	0	31	648	19%	0	35	7%	UNK-obs	NO +	
Bear Grub[1]	0592O	LAA	1078	32%	57	11%	22	0	0	0	0	0	0	0	0	19	0	0	0	0	0	22	1056	31%	0	57	11%	NO	NO +	
Bear Grub	0944O	LAA	576	17%	78	16%	141	30	0	0	0	0	3	0	0	46	5	0	4	4	0	141	435	13%	30	48	10%	NO	NO +	
Bear Grub	0971O	LAA	252	7%	128	26%	0	0	0	0	0	0	80	80	43	56	0	0	52	0	0	0.0	252	7%	0	128	26%	UNK-obs	NO	
Bear Grub[1]	0972O	LAA	841	25%	182	36%	42	0	0	23	0	0	6	0	0	78	0	0	31	0	0	65	776	23%	0	182	36%	NO	NO	
Bear Grub[1]	0973A	LAA	647	19%	134	27%	77	12	0	20	5	0	11	0	0	36	1	0	22	7	0	97	550	16%	17	117	23%	NO +	NO +	
Bear Grub[1]	0992O	LAA	846	25%	193	39%	9	0	0	0	0	0	0	0	0	12	0	0	0	0	0	9	837	25%	0	193	39%	NO +	NO +	
Bear Grub[1]	2234O	LAA	681	20%	284	57%	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	677	20%	0	284	57%	NO	NO	
Bear Grub[1]	2260B	LAA	277	8%	75	15%	0	0	0	8	8	3	0	0	0	120	70	11	44	44	15	8	269	8%	8	67	13%	NO	NO	
Bear Grub[1]	2267O	LAA	516	15%	162	32%	10	2	0	0	0	0	227	34	0	76	3	0	3	0	0	10	506	15%	2	160	32%	NO	NO	
Bear Grub[1]	2361O	LAA	605	18%	171	34%	37	12	0	5	5	0	11	0	0	19	3	0	33	5	0	42	563	17%	17	154	31%	NO +	NO +	
Bear Grub	2394O	LAA	345	10%	59	12%	47	0	0	0	0	0	0	0	0	9	0	0	15	0	0	47	298	9%	0	59	12%	NO	NO	
Bear Grub[1]	2395O	NLAA	695	20%	307	61%	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	694.8	20%	0	307	61%	NO	NO +	
Bear Grub	2397O	LAA	971	29%	230	46%	133	0	0	0	0	0	0	0	0	11	0	0	0	0	0	133	838	25%	0	230	46%	NO +	NO +	
Bear Grub[1]	3559O	NLAA	466	14%	83	17%	0	0	0	0	0	0	227	12	0	64	13	0	52	13	0	0	466	14%	0	83	17%	NO	NO	
Bear Grub[1]	3648O	LAA	992	29%	202	40%	29	0	0	0	0	0	0	0	0	28	0	0	0	0	0	29	963	28%	0	202	40%	NO +	NO +	
Bear Grub	3934O	LAA	458	13%	76	15%	33	0		0	0	0	142	0	0	52	0	0	18	0	0	33	425	13%	0	76	15%	NO	M-obs	
Bear Grub	3941O	LAA	724	21%	24	5%	34	0	0	16	6	0	0	0	0	17	0	0	0	0	0	50	674	20%	6	18	4%	NO	NS	
Bear Grub	3942O	LAA	292	9%	87	17%	75	24	2	0	0	0	42	40	22	19	8	0	9	8	0	75	217	6%	24	63	13%	UNK-obs	NO +	
Bear Grub	4066O	LAA	721	21%	73	15%	52	0	0	0	0	0	0	0	0	24	0	0	0	0	0	52	669	20%	0	73	15%	NO	NO +	
Bear Grub[1]	4068O	LAA	1065	31%	205	41%	64	0	0	39	15	0	16	2	0	111	23	0	43	6	0	103	962	28%	15	190	38%	NO	NO	
Bear Grub[1]	4513O	LAA	514	15%	136	27%	28	20	0	0	0	0	0	0	0	38	7	0	42	0	0	28	486	14%	20	116	23%	NO	NO	
Bear Grub[1]	4611O	LAA	493	15%	81	16%	37	0	0	7	0	0	13	0	0	22	14	0	23	0	0	44	449	13%	0	81	16%	NS +	NS +	
Round Oak[1]	1163O	LAA	487	17%	160	32%	222	40	0	0	0	0	0	0	0	4	0	0	0	0	0	222	265	9%	40	120	24%	NO	NO	
Round Oak[1]	1826B	LAA	870	30%	156	31%	312	83	25	0	0	0	0	0	0	27	6	2	0	0	0	312	558	19%	83	73	15%	NO +	NO +	
Round Oak	1831A	LAA	642	22%	136	27%	283	24	0	0	0	0	0	0	0	7	0	0	0	0	0	283	359	12%	24	112	22%	NO +	NO +	
Round Oak	1831O	LAA	724	25%	295	59%	311	92	14	0	0	0	0	0	0	73	1	0	0	0	0	311	413	14%	92	203	41%			
Round Oak[1]	1957B	LAA	701	24%	147	29%	109	44	0	0	0	0	0	0	0	0	0	0	0	0	0	109	592	20%	44	103	21%	NO +	M-obs +	
Round Oak[1]	1957F	LAA	973	34%	144	29%	237	6	0	0	0	0	0	0	0	1	0	0	0	0	0	237	736	25%	6	138	28%			
Round Oak[1]	1958A	LAA	778	27%	118	24%	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	735	25%	0	118	24%	NO +	NO	
Round Oak	2007B	NLAA	237	8%	86	17%	0	0	0	0	0	0	98	0	0	0	0	0	119	26	0	0	237	8%	0	86	17%	NO	NO	

Appendix C: Detailed Spotted Owl Site Effects for the Bear Grub and Round Oak Projects

Table C-1: Detailed Spotted Owl Site Effects for the Bear Grub and Round Oak Project

Project	NSO SITE	EFFECTS	NRF HR acres Pre-Treat	NRF HR % Pre-Treat	NRF Core acres Pre-Treat	NRF Core % Pre-Treat	NRF Acres Removed			NRF Acres Downgraded			NRF Acres Modified (Function Maintained)			Dispersal Acres Removed			Dispersal Acres Modified (Function Maintained)			HR NRF Reduced (acres)	HR NRF acres Post-Treat	HR NRF % Post-Treat	NRF Core Reduced (acres)	NRF Core acres Post-Treat	NRF Core % Post-Treat	Occupancy Status (codes on the last page)		Comments
							HR	Core	NP	HR	Core	NP	HR	Core	NP	HR	Core	NP	HR	Core	NP							2018	2019	
Round Oak[1]	2059A	LAA	441	15%	109	22%	231	66	10	0	0	0	0	0	0	8	1	0	0	0	0	231	210	7%	66	43	9%	NO	NO+	
Round Oak[1]	2059O	LAA	494	17%	151	30%	190	125	47	0	0	0	0	0	0	5	0	0	0	0	0	190	304	11%	125	26	5%	NO	NO+	Barred owls nested
Round Oak	2220O	NLAA	926	32%	238	48%	0	0	0	0	0	0	0	0	0	78	0	0	0	0	0	0	926	32%	0	238	48%	PAIR	PAIR	
Round Oak	2222A	NLAA	778	27%	64	13%	0	0	0	0	0	0	32	0	0	0	0	0	14	0	0	0	778	27%	0	64	13%	UNK-obs	NO	
Round Oak	2222O	NLAA	560	19%	5	1%	0	0	0	0	0	0	43	0	0	0	0	0	45	0	0	0	560	19%	0	5	1%			
Round Oak	2359O	LAA	751	26%	164	33%	254	118	54	0	0	0	0	0	0	7	2	0	0	0	0	254	497	17%	118	46	9%	UNK-obs +	NO	
Round Oak	2360A	LAA	403	14%	130	26%	152	34	0	0	0	0	0	0	0	26	1	0	0	0	0	152	251	9%	34	96	19%	F-obs +	NO +	
Round Oak[1]	3260O	LAA	929	32%	192	38%	305	150	64	0	0	0	0	0	0	10	7	2	0	0	0	305	624	22%	150	42	8%	NO	NO +	
Round Oak	3561B	NLAA	548	19%	260	52%	0.3	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	547.7	19%	0	260	52%	PAIR	PAIR	
Round Oak	4079O	LAA	336	12%	177	35%	0	0	0	0	0	0	108	68	13	0	0	0	66	7	0	0	336	12%	0	177	35%	NO	NO +	
Round Oak	4616O	LAA	679	23%	158	32%	360	62	44	0	0	0	0	0	0	40	9	3	3	0	0	360	319	11%	62	96	19%	NO +	UNK-obs	
Round Oak	4620O	LAA	228	8%	96	19%	50	8	0	0	0	0	0	0	0	5	0	0	0	0	0	50	178	6%	8	88	18%	NO	NO	
Round Oak[1]	FS-DD	LAA	1163	40%	233	47%	25	0	0	0	0	0	0	0	0	6	0	0	0	0	0	25	1138	39%	0	233	47%	NO	NO	
Round Oak[1]	FS-OM	LAA	1094	38%	146	29%	151	0	0	0	0	0	0	0	0	5	0	0	0	0	0	151	943	33%	0	146	29%	NO	M-obs	

1 = Site Center is in Designated Critical Habitat

OCCUPANCY CODES	
NO	Not Occupied (protocol surveys)
RSM	Resident Male
RSF	Resident Female
PAIR	Pair
M-obs	Male, not enough for RS
F-obs	Male, not enough for RS
MF-obs	M/F - not enough for RS or Pair
UNK-obs	Unknown STOC - not enough for RS
NS	Not Surveyed
NR	No Response
(+) BO	Barred Owl

Map 1. Bear Grub Action Area

Legend

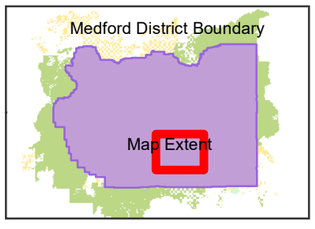
- Northern Spotted Owl Sites
- Final Action Area
- Northern Spotted Owl Critical Habitat November 2012

Pre-Harvest Habitat

- NRF
- Dispersal
- Capable
- Non-Habitat

Ownership

- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- State
- Private Individual or Company



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0 0.5 1 2 Miles

0 0.75 1.5 3 Kilometers

United States Department of the Interior
Bureau of Land Management
Medford District
3040 Biddle Rd
Medford, OR 97504

Date: 5/17/2020

Map 2. Round Oak Action Area

Legend

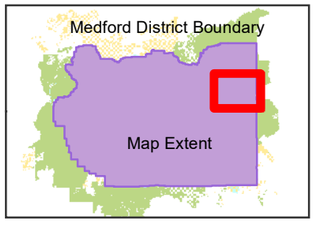
- Northern Spotted Owl Sites
- Final Action Area
- Northern Spotted Owl Critical Habitat November 2012

Pre-Harvest Habitat

- NRF
- Dispersal
- Capable
- Non-Habitat

Ownership

- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- State
- Private Individual or Company



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0 0.75 1.5 3 Kilometers

United States Department of the Interior
Bureau of Land Management
Medford District
3040 Biddle Rd
Medford, OR 97504

Date: 5/17/2020

Map 3. Bear Grub Project Units - Habitat Effects

Legend

- Northern Spotted Owl Sites
- Final Action Area
- Northern Spotted Owl Critical Habitat November 2012

Northern Spotted Owl

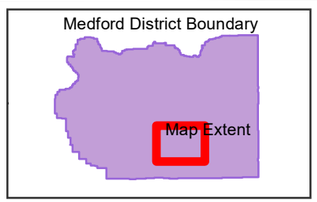
- Nest Patch
- Owl CORE
- Home Range

Treatment Effects

- NRF REMOVED
- NRF DOWNGRADE
- NRF MODIFY
- DISPERSAL REMOVED
- DISPERSAL MODIFY
- NO EFFECT

Ownership

- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- Corps of Engineers
- Local Government
- State
- Private Individual or Company



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0 1.25 2.5 Miles

0 0.5 1 2 Kilometers

United States Department of the Interior
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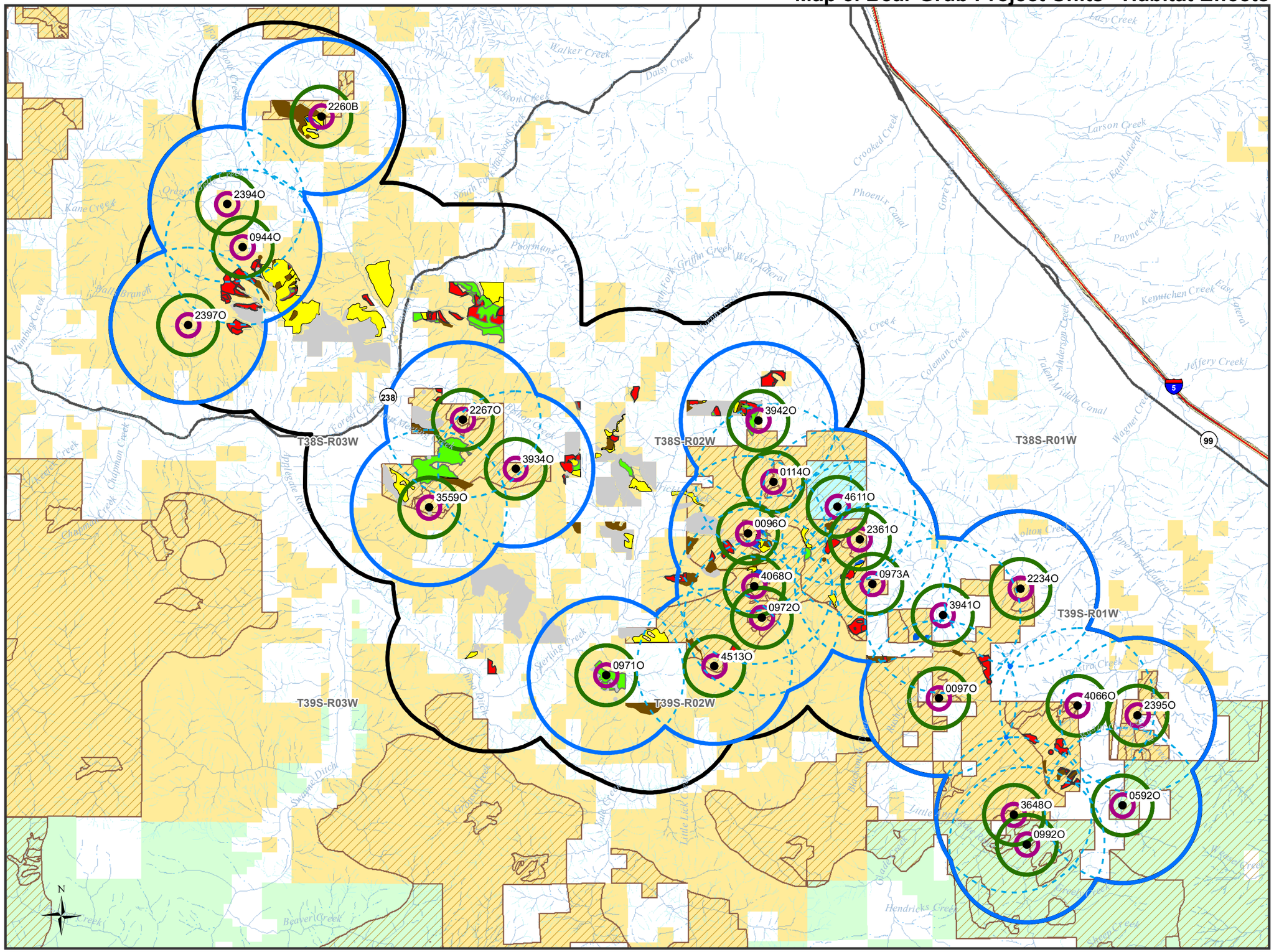
Medford District
3040 Biddle Rd
Medford, OR 97504

Date: 5/17/2020



Map 4. Round Oak Project Units - Habitat Effects

Legend

- Northern Spotted Owl Sites
- Final Action Area
- Northern Spotted Owl Critical Habitat November 2012

Northern Spotted Owl

- Nest Patch
- Owl CORE
- Home Range

Treatment Effects

- NRF REMOVED
- NRF DOWNGRADE
- NRF MODIFY
- DISPERSAL REMOVED
- DISPERSAL MODIFY
- NO EFFECT

Ownership

- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- Corps of Engineers
- Local Government
- State
- Private Individual or Company

Medford District Boundary

Map Extent

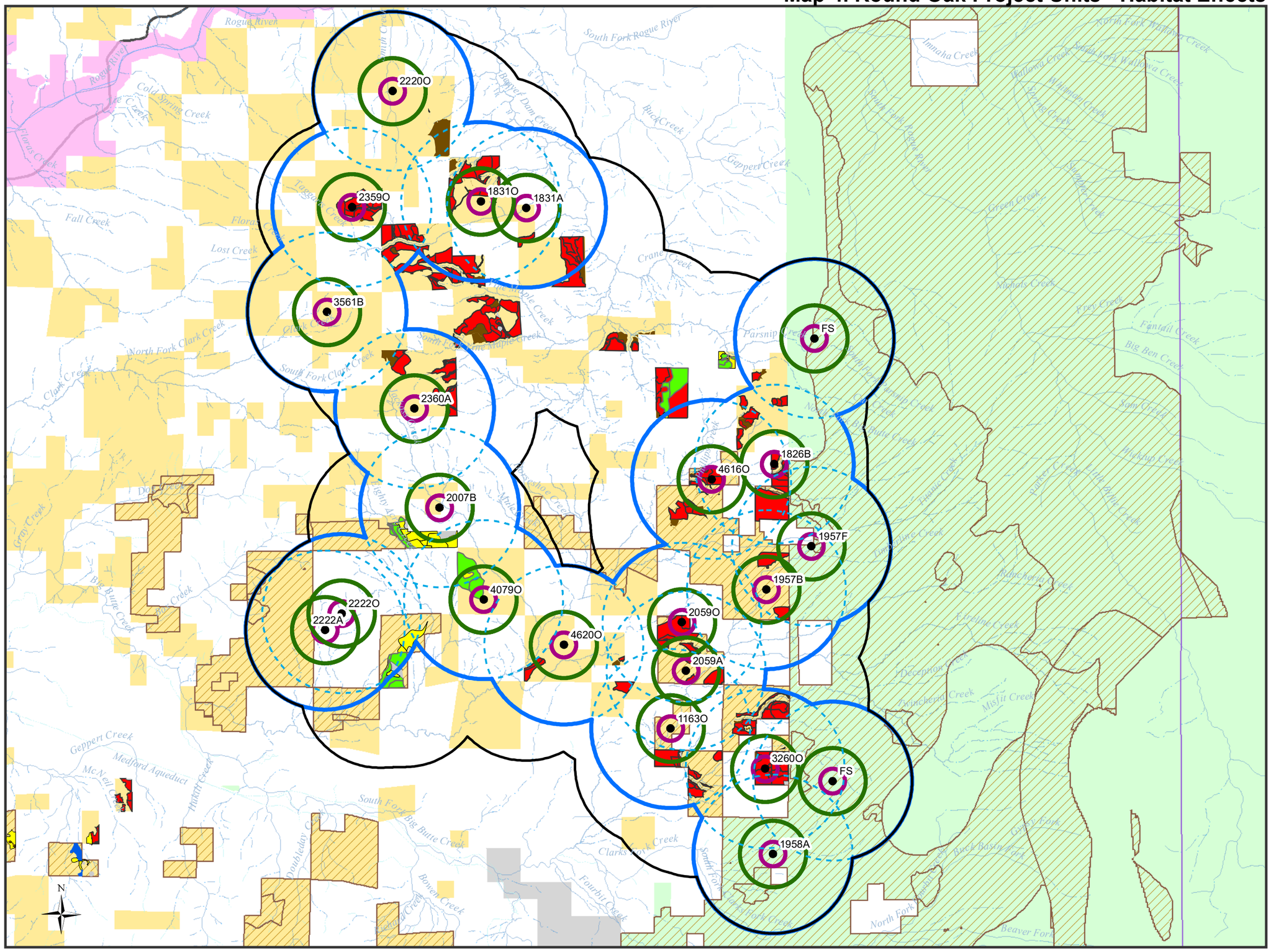
1:90,000

0 1 2 Miles

0 0.5 1 2 Kilometers

United States Department of the Interior
Bureau of Land Management
Medford District
3040 Biddle Rd
Medford, OR 97504

Date: 5/17/2020



Map 5. Bear Grub Project Units - Treatment Type

Legend

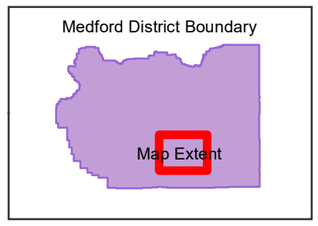
- Northern Spotted Owl Sites
- Final Action Area
- Northern Spotted Owl Critical Habitat November 2012

Treatment Type

- Fuels Reduction
- Landing Construction
- Road Construction
- Timber Harvest

Ownership

- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- Corps of Engineers
- Local Government
- State
- Private Individual or Company



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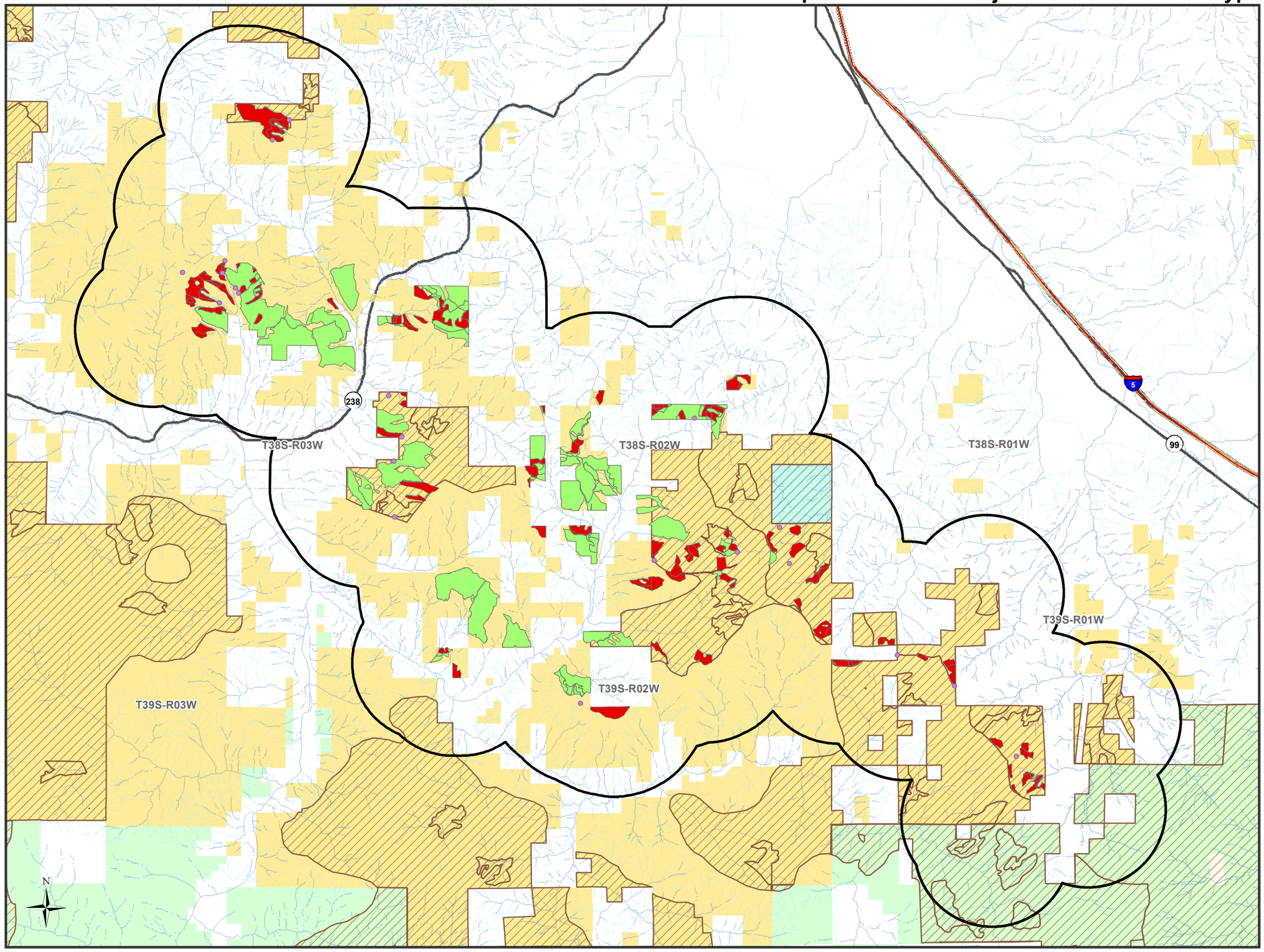
0 0.5 1 2 Miles

0 2 4 Kilometers

United States Department of the Interior
Bureau of Land Management
Medford District
3040 Biddle Rd
Medford, OR 97504

Date: 5/17/2020



Map 6. Round Oak Project Units - Treatment Type

Legend

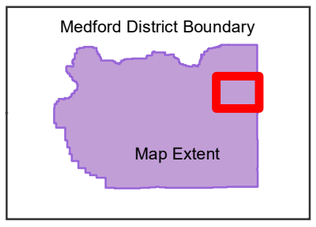
- Northern Spotted Owl Sites
- Final Action Area
- Northern Spotted Owl Critical Habitat November 2012

Treatment Type

- Fuels Reduction
- Landing Construction
- Road Construction
- Selection Harvest (SH)
- Regeneration Harvest (RH)

Ownership

- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- Corps of Engineers
- Local Government
- State
- Private Individual or Company



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