

**SUBJECT: Preliminary Biological Assessment The South Rock Railroad timber sale (Tier 2): potential impacts to Under Rock northern spotted owl site.**

**TO:** Jerry Chetock

**FROM:** Rod Krahmer and Matt Gostin

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## **INTRODUCTION**

Purpose. The ODF has proposed The South Rock Railroad timber sale in the Santiam State Forest located in Linn County, Oregon. The South Rock Railroad timber sale is in the FY 2007 operations plan of the North Cascade District. Since The South Rock Railroad timber sale is considered located within the provincial home range of the Under Rock northern spotted owl (NSO) site, a Biological Assessment (BA) is needed to evaluate impacts of the proposed timber sale to the owl site. The NSO is a state and federally listed 'threatened' species by the Oregon Department of Fish and Wildlife (ODFW) and the U.S. Fish and Wildlife Service (USFWS), respectively.

Policy Direction. The Northwest Oregon State Forests Management Plan provides management direction for all Board of Forestry Lands and Common School Forest Lands in northwest Oregon. The resource management goals and strategies are intended to achieve the greatest permanent value through a system of integrated resource management. This plan is guided by legal and policy mandates. The ODF's management activities are conducted in compliance with all state and federal environmental laws, including the state and federal Endangered Species Act (ESA), respectively. 'Take' of threatened or endangered species is prohibited under Section 9 of the federal ESA. The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Such acts may include significant habitat modifications or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. The policies and procedures for lands managed by the ODF in northwest Oregon are to avoid 'take' of NSO. 'Take' avoidance is accomplished on lands managed by the ODF in the North Cascade District through the application of the rescinded U.S. Fish and Wildlife Service (USFWS) take-avoidance guidelines (USFWS 1990).

The USFWS recommends the following stepwise approach to avoid or reduce the risk of incidental take:

1. Conduct NSO surveys during the breeding season and prior to any harvest activity according to protocols endorsed by the USFWS.

2. Avoid any harvest activity which results in less than 70 acres of the best available suitable owl habitat encompassing the NSO nest site and/or activity center of a pair of spotted owls.
3. Avoid any harvest activity which results in less than 500 acres of suitable NSO habitat within 0.7 mile radius (1000 acres) of a nest site and/or activity center. The 500 acres may include the 70 acres in No. 2 above and should be as contiguous as possible.
4. Avoid any harvest activity which results in less than 40% coverage (1182 acres) by suitable owl habitat within a circle with a radius centered on a nest site and/or center of activity and as prescribed by physiographic provinces. The 40% may include the acreage required in No. 2 and No. 3 above.

The ODF biologists also assessed the 'risk' that the proposed operation may pose to the Under Rock NSO site. A number of factors in addition to the USFWS take-avoidance guidelines, including the proximity of the operation to the owl site, the prescription proposed, the size of the operation, the history of activity near the site, and other relevant factors were used to determine the 'risk assessment'.

## **BACKGROUND**

Survey Information. Kingfisher Ecological, Inc., conducted surveys for northern spotted owls in all potential owl habitat in and around planned timber sales and known owls sites in the ODF Cascade District. Potential spotted owl habitat was surveyed in accordance with the protocol for surveying proposed management activities that may impact NSO (USFWS 1992). As a result of these surveys, the Under Rock NSO site was located within 1.2 miles of the proposed timber sale (Figure 1).

Under Rock Northern Spotted Owl Site Information. The Under Rock NSO site was established in 2002, when a pair was found at this site; they fledged two young. The Activity Center (AC) was placed at the location where the first juvenile was found. In 2003, the historic pair was found to be non-nesting. The historic pair nested in 2004, but failed to produce young. The AC was moved to the 2004 nest tree. In 2005, the historic male and an unidentified female attempted to nest in a new tree, but they failed to produce young. The AC remains at the 2004 nest tree (Figure 1). Barred owls were detected in 2002 and 2003 (Kingfisher Ecological, Inc. 2005).

Timber Sale Area Information. The South Rock Railroad timber sale consists of one 92 acre modified clearcut unit. A portion of the unit is located within the 1.2 miles of the Under Rock NSO site (Figure 1). The current stand condition of the timber sale area consists of a 99 year-old stand currently classified as Closed Single Canopy (CSC). This stand type occurs when new trees, shrubs, and herbs no longer appear in the stand, and some existing ones begin to die from shading and competition, in a process called stem exclusion. The overstory is a mix of Douglas-fir, western hemlock and western red cedar trees, with scattered big leaf maple and red alder. Average stand characteristics include: diameter breast height (DBH)=15, basal area (BA)=311, trees per acre (TPA)=237, and stand density index (SDI)=79. Approximately 40% of the stand is infected with dwarf

mistletoe. The understory is sparse and consists of Oregon grape and sword fern. There are currently 20 snags per acre; 1800 cubic feet per acre of sound down wood; and 7900 cubic feet per acre of down wood in all decay classes.

The desired future condition for this stand is General. Removal of western hemlock infected with mistletoe is important to limit its' spread. The anticipated pathway for this stand is: 1) unit will receive a modified clearcut; 2) unit will be evaluated for a pre-commercial thinning in 10-15 years; 3) unit will be evaluated initial commercial thinning in 40 years. The opportunity to develop snags and down wood will also evaluated and implemented if needed; 4) unit will be evaluated for a second commercial thinning in 80 years; and 5) regeneration harvest planned to occur in 100 years.

The proposed management prescription for the timber sale area is:

- Unit will receive a modified clearcut. After timber harvest, the unit is expected to have the following average stand characteristics: DBH=24, BA=22, TPA=6, and SDI=4.
- Leave 5-7 green trees per acre in scattered clumps. Leave trees in the unit will be Douglas-fir and western red cedar only.
- Remove all infected western hemlock.
- Unit will be broadcast burned to prepare the site for planting.
- Unit will be planted with a mix of species except western hemlock.
- Snags and down wood will be added at this entry.

## **ASSUMPTIONS**

Defining Under Rock NSO Home Range. According to the procedures leading to ESA compliance for the NSO (USFWS 1990), the median home range size for spotted owls in the Oregon Cascades is 2500 acres, or the approximate equivalent of the area encompassed by a circle with a radius of 1.2 miles. Although NSO's generally do not have circular home home ranges, in the absence of more specific information about the home range of the Under Rock NSO, it is assumed that a 1.2 mile radius circle around the nest or AC approximates the home range of the Under Rock NSO site.

Defining Suitable Northern Spotted Owl Habitat. For the purposes of ESA compliance, the USFWS (1990) describes suitable NSO habitat as stands that exhibit the following characteristics:

- moderate to high canopy closure;
- a multi-layered, multi-species canopy dominated by large overstory trees
- a high incidence of large trees with large cavities, broken tops, and other indications of decadence;
- numerous large snags;
- heavy accumulations of logs and other woody debris on the forest floor; and
- considerable open space within and beneath the canopy.

These attributes are usually found in mature and old conifer forests, but are sometimes found in younger forests, especially those that contain remnant large trees or patches of large trees from earlier stands. It is important to note that the age of forests is not as important a factor in determining habitat suitability as are vegetational and structural components (USFWS 1990).

In ODF's experience, NSO occur in some forest stands that are less than 80 years old. Several studies have investigated NSO home range and habitat use in young forests on ODF lands in western Oregon (Islam et al. 1997, Anthony et al. 2000, Tappeiner et al. 2000, Glenn et al. 2004). Islam et al. (1997) investigated the relationship between demography of NSO and habitat characteristics at the landscape level on ODF lands, and reported that the minimum diameter of the dominant conifer trees in stands of NSO habitat should be at least 18 inches and stands should also contain about three size classes and have variation in stem density within the stand. Anthony et al. examined habitat in owl home ranges on ODF lands in the Northern Coast Range (NCR) of Oregon and Elliott State Forest (ESF) in south-central Oregon Coast Range. Individual owls in the NCR study area selected mature forest and hardwood forest, and avoided young and pole stands. At ESF, owls selected mixed-age conifer, mature conifer, old conifer, and hardwood forest, and avoided young and pole. Owls were also found close to conifer-hardwood ecotones more often than expected in both study areas. At NCR, Tappeiner et al. 2000 reported that nest and forage sites had larger trees, lower tree densities, and more hardwood stems than low use sites, and that higher owl success (combination of site occupancy and reproduction indices) was positively correlated with average tree size and negatively correlated with tree density. Glenn et al. 2004 reported that individual owls on their study areas in the NCR and ESF varied greatly in habitat use patterns and appeared to be using different strategies for surviving in younger forests. In younger, or less structurally diverse landscapes, the use of hardwoods was more frequent than in landscapes dominated by older conifer forest. Hardwoods may contribute structural diversity and prey base than are otherwise in short supply in relatively young, homogenous landscapes lacking remnant old-forest structures.

Habitat determinations within 1.2 miles of the Under Rock NSO nest site were made by ODF wildlife biologists and foresters using results of NSO research on ODF lands, aerial photo interpretation, information about forest stand age and average stand diameter on ODF lands from the department's computerized forest inventory system databases (Figure 2), and ground-truthing. Based upon these findings, NSO habitat -for this assessment was defined as:

- Forest stands greater than 18 inches average DBH provided suitable habitat for NSO.
- Forest stands between 12-17 inches average DBH provided suitable or non-suitable habitat for NSO depending on the presence/absence of structural characteristics needed to accommodate owls. ODF biologists, using professional judgment, determined the suitability of habitat for these stands by considering stand density, structural diversity, and tree diversity. Extremely dense stands may preclude spotted owl use because of the difficulty for owls to maneuver through

the stand. Stands lacking in vertical and horizontal diversity and tree species diversity may provide poor habitat for prey species and/or few perching/hunting opportunities for spotted owls.

- Forest stands less than 12 inches average DBH provided non-suitable habitat for NSO.

## **IMPACT ASSESSMENT AND DISCUSSION**

Landscape Analysis. Approximately, 481 acres of suitable owl habitat occurs within 0.7 miles, and 1356 acres of suitable owl habitat occurs within 1.2 miles of the Under Rock NSO (Table 1)(Figure 3).

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Table 1. Acres of suitable and non-suitable northern spotted owl (NSO) habitat within 0.7 miles and 1.2 miles of Under Rock NSO.

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<u>Landowner</u>	<u>0.7 mile radius</u>		<u>1.2 mile radius</u>	
	<u>Suitable</u>	<u>Non-suitable</u>	<u>Suitable</u>	<u>Non-suitable</u>
ODF	481	499	1303	545
BLM	0	0	53	0
Other	0	0	0	0
<b>TOTAL</b>	<b>481</b>	<b>499</b>	<b>1356</b>	<b>545</b>

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Forest habitat in the proposed timber sale area is dominated by a mature, densely stocked stand of Douglas fir, mixed with varying amounts of western hemlock, western red cedar, and hardwoods. Tree size/density, tree diversity, and structural diversity are adequate to provide nesting, roosting, and foraging opportunities for northern spotted owls. Therefore, forest habitat in The South Rock Railroad timber sale area is considered suitable NSO habitat.

The South Rock Railroad timber sale will impact and modify 0 acres of suitable owl habitat within 0.7 miles and 43 acres within 1.2 miles of the Under Rock NSO AC. Thus, 481 acres of suitable owl habitat will remain within 0.7 miles and 1313 acres of suitable owl habitat will remain within 1.2 miles of the Under Rock NSO AC following administration and implementation of The South Rock Railroad timber sale (Figure 3).

## **CONCLUSIONS AND RISK ASSESSMENT**

Biological Risk. The South Rock Railroad timber sale poses a ‘low’ risk to the continued viability of the Under Rock NSO site. Total acres of suitable spotted owl habitat within 0.7 miles of the Under Rock NSO site is 4% lower than USFWS recommendations to reduce potential risk of incidental ‘take’, however, the proposed timber sale action will avoid any additional loss of suitable owl habitat within 0.7 mile circle. Total acres of

suitable spotted owl habitat within 1.2 miles of the Under Rock NSO is 11% higher than USFWS recommendations to reduce potential risk of incidental 'take'.

Compliance. The proposed The South Rock Railroad timber sale action is consistent with ODF's legal and policy mandates to maintain existing NSO sites on ODF lands. The South Rock Railroad timber sale is planned in accordance with USFWS recommendations to avoid incidental 'take' under the federal ESA (USFWS 1990). Specifically, The South Rock Railroad timber sale will avoid timber harvest which:

- results in less than 70 acres of the best available suitable owl habitat encompassing the AC.
- results in any additional loss of suitable NSO habitat within a 0.7 mile radius of the AC; and
- results in less than 1182 acres of suitable NSO habitat within a 1.2 mile radius of the AC.

## **CONSULTATION**

Oregon Department of Fish and Wildlife. Comments to be provided by Charlie Bruce

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C: Gregg Cline, Mehama  
Howard Strobel, Mehama  
Scott West, Mehama  
Mike Caffereta, Forest Grove  
Mike Bordelon, Forest Grove  
Rob Nall, Salem  
Jodi Kroon, Salem  
Jane Hope, Salem  
Marcia Humes, Salem  
Matt Gostin, Salem  
Charlie Bruce, ODFW, Salem