

Preliminary Biological Assessment of the Rogers Break Timber Sale: Potential Impacts to the Gales Creek Northern Spotted Owl Site

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INTRODUCTION

Purpose

Forest Grove District is including a sale (Rogers Break) that is partially located within 1.5 miles of the Gales Creek northern spotted owl activity center (owl circle) (see Figure 1). The purpose of this Biological Assessment (B.A.) is to describe habitat conditions within the Gales Creek owl circle and within the sale area. This B.A. includes a discussion on the biological risks of proceeding with this sale on the Gales Creek site, and a discussion on compliance with the "Agreement for the Conservation of Northern Spotted Owls."

Thanks to Laurie O'Nion for her assistance in performing the suitable habitat analyses, for providing historic harvest areas and other essential information, and to Marcia Humes for her careful edits and input.

Policy Direction

Agreement for the Conservation of Northern Spotted Owls. On 5 September 2001, ODF signed an "Agreement for the Conservation of Northern Spotted Owls" with the U.S. Fish & Wildlife Service.

Requirements of this Agreement relevant to this Biological Assessment include:

- Where information is lacking on actual home ranges, the Department agrees to use a circle with a 1.5 mile radius around an active spotted owl site to represent the home range.
- For Pair sites without telemetry information, a 250 acre core use area may be designated...All owl (pair) sites which do not have a core use area determined...shall have core use areas consisting of a 600 meter radius around the center of each owl site.
- The Department agrees not to log or authorize logging on current and future state lands when the logging results in less than 500 acres of suitable owl habitat within a 0.7 mile radius of an owl site; or that results in less than 40 percent coverage of suitable owl habitat within the home ranges of owls in the North Coast.
- Additionally, the Department agrees not to log medium and high quality habitat within a .7 mile radius of an owl site when these habitats constitute less than 500 acres within the .7 mile radius.
- And, the Department agrees not to log medium or high quality habitat within a northern spotted owl home range when these habitats constitute less than 40% of the acreage within the home range. (Note: 40% of a 1.5 mile radius circle is 1809 acres.)
- Suitable northern spotted owl habitat is defined for purposes of this Agreement as low, medium and high quality habitat the Department identified as suitable owl habitat in its 1998 mapping of State Forest lands (Exhibit 3 in the Agreement), provided the area in question has not been logged since the mapping. Areas within an owl home range which do not occur on State Forest lands shall be evaluated for suitability on the same method used to generate the 1998 maps... (Note: Although the Agreement defines suitable habitat slightly differently, Exhibit 3 has been updated using 2001 grow forward OSCUR data and using the following criteria (Mike Wilson, ODF, pers. comm.):
 - Non-habitat <12" DBH
 - Low Quality Habitat 12-17" DBH

- Medium Quality Habitat 18-25" DBH
- High Quality Habitat 26"+ DBH)
- Areas within an owl home range which do not occur on State Forest lands shall be evaluated for suitability on the same method used to generate the 1998 maps

State Forests Program Spotted Owl Strategies for Annual Operation Plan development (General File # 3-2-1-333.1). states "the agreement includes standards for defining suitable habitat for northern spotted owls in Astoria, Forest Grove and Tillamook. The definitions in the agreement have been adjusted to make them more operational. ODF biologists may review an area of "low quality" and determine that it is not suitable and does not require survey. This same consideration of "low quality habitat" will be taken when the areas are considered for inclusion in the acreage required for protection under the ODF/USFWS agreement. This protection measure provision has been applied as of the 04 AOP. General criteria for applying the "low quality" habitat screening process has been developed, and is found in Attachment A of "Northern Spotted Owl Surveying on State Forest Lands (11-02)." This BA includes this suggested review of "low quality" habitat.

BACKGROUND

Survey History and Site Information

This site was originally called Roger's Neighborhood. In 2003, there were two female night responses, along with an unknown-sex response. The first two responses occurred about 2 miles away from each other. This was considered too distant for a resident activity pattern, so the site was designated non-territorial single. In 2004, a nighttime female response was located between the 2003 response locations. The 2003 and 2004 responses were combined, and site status was changed to resident single. The name was changed to Gales Creek, and the AC was placed near the 2004 response. There were no responses in 2005 (Kingfisher 2005).

The true identity of this female spotted owl is unknown. It has not yet been possible to determine if the bird is banded. There is a possibility that the observations represent the female that formerly occupied the Little Beaver site. This female was last observed at the Little Beaver site (determined Historic in 2003) in 1999, then was confirmed at the Iler Creek site (upgraded to Pair in 2005) in 2003 and 2005 (not surveyed in 2004). It is possible that the Gales Creek site represents part of this female's home range, especially during non-nesting years, or potentially an alternate territory. Locations of the Little Beaver and Iler Creek sites in relation to the Gales Creek site are shown in Figure 2.

Another possible hypothesis is that this site is occupied by a different owl (or pair of owls) and that this (these) owl(s) normally reside in an area that is not well covered by road-based surveys. There is a large stand on the hillside directly above the activity center with many large, scattered residual trees. It is possible that a bird within the center or upper portions of this stand would not be readily detected by road-based surveys.

Sale Area Information

The following discussion is from Forest Grove District's Preliminary Pre-Operations Report. Note that Area 3 of the proposed sale is not located within the owl circle, so I have omitted portions of this discussion referring only to Area 3.

"The sale has been inventoried using the Stand Level Inventory (SLI) procedure. The stands in Area 1...are classified as UDS. Area 2 is 67% CSC and 33% UDS.

The overstory of... all the stands are almost entirely Douglas-fir, with minor amounts of hemlock, redcedar, and hardwoods. In areas highly infected with *Phellinus*, there is more

species diversity, and a higher abundance of snags and down woody debris. The understory across all areas is comprised mostly of dwarf Oregon grape, salal, vine maple, bracken fern, and sword fern. Average ground cover is estimated to be 75%.

Stand Level Inventory (SLI) cruise data indicate...that there...(are) approximately 10 snags per acre, averaged across the sale area. An average of 2 snags ≥ 24 inches per acre, and 1 hard snag, exist...across the sale area. SLI also indicates that approximately 5000 cubic feet per acre of down woody material exists. Approximately 90 percent is of decay class 3-5.

The entire sale area has been surveyed for *Phellinus weirii*. The results indicate severe infection throughout the sale area..."

Sale Prescription

The following discussion is from Forest Grove District's Preliminary Pre-Operations Report. Note that Area 3 of the proposed sale is not located within the owl circle, so I have omitted portions of this discussion referring only to Area 3.

"Areas 1 and 2 will be a Moderate Partial Cut to a SDI of 34. Area 1 will have a target residual stand of 140 ft^2 of basal area and average diameter of 19 inches.

...(Discussion specific to Area 3 was not included)...

Average estimated additions of down wood through normal logging slash accumulations will be approximately 100 ft^3 per acre."

ASSUMPTIONS AND METHODS

Defining the home range

The home ranges and habitat use of the bird using the Gales Creek site are not known. Known owl locations are plotted in Figure 1, but this represents incomplete information. The Activity Center is based on survey locations, rather than on an actual nest location. If spotted owls are found nesting in this landscape in the future, the activity center location could shift significantly, so the habitat analyses presented in this report should be considered tentative based upon existing owl information.

Anthony et al. (1999) found that spotted owls in 2nd growth forests in the northern Oregon Coast Range frequently have very large home ranges, extending well beyond 1.5 miles. In the absence of better information on the home ranges of any birds using the site, the following discussion on the habitat situation will describe stand conditions within a 1.5 mile radius around the established activity centers, as required by the Agreement for the Conservation of Northern Spotted Owls

Defining Suitable Habitat

It is difficult to define suitable habitat for spotted owls in younger forests. Documentation provided with the "Procedures Leading to Endangered Species Compliance for the Northern Spotted Owl" (U.S. Fish & Wildlife Service, 1990) describes spotted owl suitable habitat as stands that exhibit:

"...moderate to high canopy closure; a multilayered, multispecies 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 old growth, but they 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..."

The majority of stands used by spotted owls on ODF ownership do not meet the above definition of suitable habitat.

ODF has some data on the use of younger forest types from North Coast spotted owl sites on ODF lands. An attempt to create a habitat suitability index (HSI) for spotted owls was conducted by Islam et al. (1997). Although this investigation was limited by various factors, the major finding was a positive correlation between owl site occupancy and the acreage of stands averaging 18 inches or greater in DBH (according to ODF's OSCUR timber inventory database) within ¼ and ½ mile of the owl site activity center.

A telemetry study of several owls on the Clatsop State Forest (Anthony et al. 1999) found many spotted owl foraging locations in smaller diameter stands averaging 12-13 inches and greater. The investigators in the HSI study noted that many owl responses had occurred in stands ranging from 12-17 inches in average DBH, but that there was no correlation between this size class and owl occupancy. They thought that some stands less than 18 inches DBH probably were suitable to some degree, but the attributes that determine that suitability were not apparent. The telemetry study and a concurrent study of habitat in areas where owls were located (Tappeiner et al. 1999) have found that hardwoods, especially hardwood/conifer edges, are an important component of spotted owl foraging habitat in both the Clatsop and Elliott State Forests. The habitat study also found that spotted owl nesting and foraging sites had larger average DBH and fewer trees per acre than non-use areas. So, other factors in addition to DBH that contribute to spotted owl habitat quality likely include hardwoods (especially hardwood/conifer edges), stand age, snags, down wood, and horizontal diversity.

My observation is that within many of the younger stands used by spotted owls on ODF ownership, suitable habitat occurs at the patch rather than at the stand level. This may help explain why spotted owls living in landscapes on ODF ownership, with amounts of 'habitat' that greatly exceed the minimum recommendations of the Incidental Take Guidelines, have such poor demographic performance (Anthony et al. 2000). It may take many more acres of younger stands to provide the number of suitable habitat patches that would be contained in a much lesser acreage of old-growth forest. The energetics of a bird moving between the more sparsely distributed habitat patches also may reduce viability. Therefore, retaining 2nd growth 'habitat' at or near the minimum standards could result in negative impacts to individual spotted owl sites.

Because of the correlation between acreage of 18"+ DBH stands to spotted owl occupancy (Islam et al. 1997), it may be reasonable to assume that these stands provide suitable habitat for spotted owls. However, the majority of the 18"+ DBH stands on ODF ownership do not contain all the structural components described in the earlier paragraph. From a biological perspective, not all stands averaging 12"+ DBH provide suitable habitat for spotted owls. Indeed, I routinely make determinations that 12-17" DBH stands within and adjacent to proposed sale areas do not provide suitable spotted owl habitat based upon stand density, structural diversity, and tree diversity (State Forests Program Spotted Owl Strategies for Annual Operation Plan development, General File # 3-2-1-333.1).

Habitat on Private Ownership

Habitat acreages on private industrial and non-industrial ownership within this owl circle were estimated using aerial photo analysis combined with ground-truthing. Because I do not have access to timber inventory data for the private ownership, the habitat information is not directly comparable to the ODF OSCUR data. For the private ownership, I evaluated habitat using the criterion: "If ODF were proposing a timber sale in a comparable stand, would I recommend spotted owl surveys?" I ground-truthed habitat quality within portions of the owl circle. I used the knowledge gained from on-site visits to calibrate my

interpretation of the aerial photos. Harvest units on private ownership were obtained from the local ODF Forest Practices Forester. Laurie O'Nion mapped more recent private harvest activities after analyzing recent Forest Practices notifications.

All stands were digitized and acreages were calculated using ArcView.

Assessment of Habitat on ODF Ownership

As directed by current policy (State Forests Program Spotted Owl Strategies for Annual Operation Plan development General File # 3-2-1-333.1), I have conducted a site-specific assessment of habitat suitability on the 11-17" DBH stands on ODF ownership. I conducted the majority of this assessment using recent stereo aerial photograph. I ground-truthed a limited number of stands that, from aerial photo interpretation, appeared to be denser and simpler than most of the 12-17" DBH stands within the owl circle. The standard for habitat suitability was the same as that used for the private ownership analysis: "If ODF were proposing a timber sale in a comparable stand, would I recommend spotted owl surveys?"

My intent in this exercise was to categorize stands by OSCUR type, not to re-draw types. So, stands where 'suitable habitat' predominated within the OSCUR type were classified as 'suitable', and stands where unsuitable habitat predominated was classified as 'unsuitable'. The majority of the 12-17" stands within this landscape are characterized by relatively high amounts of horizontal diversity, largely due to *Phellinus* infection. There are many patches of small, simple Douglas-fir that on their own might be classified as unsuitable. However, within most of the types, there also are scattered *Phellinus* patches, hardwood patches and stringers, and patches of wider spaced trees. A few types also contained some patches of large, residual trees. These stands were classified as 'suitable', although various sized patches of 'unsuitable' habitat were scattered throughout many of the types.

There has been a fairly large amount of recent harvest activity within the Gales Creek owl circle over the past 10 years. Units harvested since 1998 were not classified as 'suitable' habitat as per the Agreement. There also are two areas that were harvested in 1997 (Figure 1), which under the Agreement can be considered suitable for spotted owls. One harvest area in the extreme southeastern portion of the owl circle has an average DBH of >17" according to OSCUR. However, much of this area has <70% canopy closure due to the *Phellinus* treatment prescription, so I have classified areas with <70% canopy closure (ID'd on aerial photos with some ground truthing) as 'non-suitable' as specified in the Agreement. In the southwestern portion of the owl circle, is another area harvested in 1997 that ranges between 12-17" DBH according to OSCUR. This all would be classified as 'suitable' under the Agreement; however, I have typed out areas having low canopy cover due to the *Phellinus* treatment, and summarized these areas as 'non-habitat' in Tables 1-2 and 4-5.

IMPACTS ASSESSMENT AND DISCUSSION

Landscape Analysis

Figure 1 shows the spotted owl activity center, spotted owl observations, timber sale location, and average stand ages and diameters (based on ODF's OSCUR timber inventory database – Stand02) on ODF ownership within the Gales Creek owl circle

Average stand DBH on ODF ownership and suitable habitat on private ownerships within 0.7 miles of the Gales Creek A.C. are summarized in Tables 1 and 2; stand age on ODF is summarized in Table 3. Acreages reported in these tables are approximate.

Average stand DBH on ODF ownership and suitable habitat on private ownerships within 1.5 miles of the Gales Creek A.C. are summarized in Tables 4 and 5; stand age on ODF is summarized in Table 6. Acreages reported in these tables are approximate.

Currently there are 835 acres of ODF stands averaging at least 12" DBH within 0.7 miles of the Gales Creek A.C. that I would consider suitable spotted owl habitat (Tables 1&2). Within the 0.7-mile radius circle, 0 acres are aged >60 years, 807 acres are aged 50-59, and 46 acres are aged 40-49 years, and 1 acre is <40 years old (Table 3). 41 acres of suitable habitat stands 12" and greater DBH are within recently harvested sales, reducing acreage of potential habitat on ODF within the 0.7 mile circle to 794 acres (Tables 1&2). I have identified 4 acres of suitable habitat on private ownerships within the 0.7 mile circle, increasing habitat acres to 798 acres. Rogers Break will not modify habitat within the 0.7-mile circle.

Currently there are 3080 acres of ODF stands averaging at least 12" DBH within 1.5 miles of the Gales Creek A.C. that I would consider suitable spotted owl habitat (Tables 4-5). Within the 1.5-mile radius circle, 17 acres are aged >60 years, 2873 50-59, and 704 acres are aged 40-49 years (Table 6). 432 acres of suitable habitat stands 12" and greater DBH are within recently harvested sales, reducing acreage of ODF potential habitat within the owl circle to 2648 acres (Tables 1-2). I have identified 217 acres of suitable habitat on private ownerships within the owl circle, increasing habitat to 2865 acres. Rogers Break will modify 226 acres of suitable habitat stands averaging 12-17" DBH and aged 50 to 69 years, reducing habitat acres to 2639 acres. So, amount of suitable spotted owl habitat within the Gales Creek owl circle is well in excess of the standards outlined in the Agreement.

Cumulative Impacts

There have been several recent sales within the Gales Creek spotted owl circle:

<u>Sale Name</u>	<u>Acres within Owl Circle</u>	<u>% of Circle</u>	<u>Year Harvested</u>
Storey Burn Road Thin #2	517	11.5	1997
Fire Break One Thin	81	1.8	1997
BLT Deluxe	2	0	1999
Wil Rogers Thin	79	1.8	1999
Storey Burn Combo	124	2.8	2001
Parkview	220	4.9	2001
Upper Drift	30	0.7	2002
Acres harvested since 1997	1053	23.5	
Rogers Break	232	5.2	
	1285	28.7	

As directed by the Agreement, sales harvested in 1998 or later are not considered to provide suitable spotted owl habitat. Under the Agreement, areas harvested before 1998 are considered suitable. However, the 1997 sales included *Phellinus* treatment which resulted in many patch clearcuts within the units. So when I conducted my suitability review of the 12-17" DBH types, I typed out the areas with high-density of patch cuts as 'non-suitable,' and included the more traditional thinning areas as 'suitable' habitat. In stands >17" DBH, I also typed out areas with <70% canopy closure as 'non-suitable.'

Most of the sales harvested after 1998 also included *Phellinus* treatments. Therefore, I anticipate that large portions of these sale areas will not recover to the point of providing suitable spotted owl habitat for many years.

Discussion

Habitat Suitability. The Gales Creek spotted owl circle is predominately forested by young stands aged 47-52 years old and averaging 13-16" DBH (in 2002). Normally, it would be unusual to find a resident spotted owl site within a landscape supporting such young stands. However, there are two exceptional circumstances that may pre-dispose this area to spotted owl occupancy:

- There is a 154 acre type that contains numerous (3 per acre according to OSCUR) scattered residual old-growth Douglas-fir trees. There have been no spotted owl responses within this type; however, it is a large type with poor road survey access. It is possible that a spotted owl deep

within this type would not be detected by road-based surveys. The OSCUR comments field within this type also reads "*Phellinus* pockets numerous throughout."

- Most of the stands within this owl circle are heavily infected with *Phellinus* root rot. This root disease results in increased fine-scale patch diversity within a stand and causes steady recruitment of snags and down wood within the stands. In my opinion, the prevalent *Phellinus* infection within this landscape has resulted in stands that have higher habitat capacity for spotted owls than is indicated by age and DBH alone.

Due to small tree size and dense stocking, many of the stands of 'suitable' habitat within this owl circle (especially within the western and northwestern portions of the circle) would be best described as 'barely suitable' or 'marginally suitable.' What this means is that without the *Phellinus* infection, I likely would have classified more stands as '12-17" non-habitat' based on dense stocking and low structural diversity. Still, rather than 'stands of suitable habitat,' most of these stands should be considered to be 'stands where patches of suitable habitat are present.' In my opinion, the density of suitable habitat patches within these stands is correlated with the severity of the *Phellinus* infection.

Because of the prevalence of low quality habitat in this landscape, it is likely that a spotted owl living within this landscape would range beyond 1.5 miles. This is supported by the relatively large home range sizes observed during the recently completed radio-telemetry study conducted on ODF lands in Clatsop County (Anthony et al. 1999).

Anticipated Impacts of the Harvest Prescription.

Short Term. The short-term impacts of the proposed harvest prescription are difficult to assess. My experience has been that logging activity results in the loss of decadence within the managed stands, especially within the more decayed down logs and snags. The harvest activity also likely will result in a short-term simplification of understory structure due to mechanical damage.

The moderate thinning prescription should not render suitable habitat unusable for spotted owls; however, recent thinning in this landscape tend to have a 'disturbed' look for several years after thinning. In the late '90s ODF sponsored a case study looking at spotted owl habitat use before and immediately after a commercial thinning that was designed to be non-detrimental in the short term (Meiman, et al. 2003). In this case study, spotted owls shifted their habitat use away from the recent commercial thinning immediately after harvest. We do not have information on if or when the owls would again use the area as they did prior to harvest.

Long Term. The thinning prescription will allow more light to reach the forest floor, so in addition to increasing stand diameter growth, over the long term the thinning should also increase understory growth and potentially lead toward stand layering. Over time, progression of the *Phellinus* infection should result in continued recruitment of decadence, as well as enhancement of fine-scale patch diversity. So, over the long term, careful implementation of the proposed management prescription likely will lead to higher quality spotted owl habitat.

CONCLUSIONS AND RISK ASSESSMENT

Biological Risk

Over the past 10 years, spotted owls have been pioneering developing habitats within the Forest Grove District. Some sites have been ephemeral, and other sites have been more stable. There is not sufficient information at this time to determine whether or not the Gales Creek site will be one of the more stable, long-term sites. However, current habitat conditions are such that I believe that this site could support a stable resident spotted owl site over the near term:

- There is a large stand near the A.C. with many scattered residual trees that makes a likely core area,
- *Phellinus* is prevalent throughout the owl circle, increasing decadence and horizontal diversity within the stands
- There is a fairly large amount of suitable (albeit low quality) owl habitat within the circle that should continue to improve over time with careful management.

A large number of acres of suitable habitat on ODF ownership within this owl circle (almost 25% of the circle) has been managed since 1997. Most of these management prescriptions have included aggressive *Phellinus* treatment, which I believe has reduced the short- and long-term ability of the treated stands to function as suitable spotted owl habitat.

To date, there have been very few spotted owl observations within this owl circle. One of the four observations to date was within the Rogers Break sale area (Figure 1). Another observation was located near the sale boundary.

Harvest of this sale will impact some of the last remaining un-managed stands within and outside the southeastern portion of the owl circle (Figure 1). If the Gales Creek owl circle is being used by the Iler Creek female (see Survey History and Site Information), this area likely provides important connectivity with the Iler Creek circle to the southeast. Note that the amount of suitable habitat within the Iler Creek site is below the requirements of the Agreement ("Updated Final Biological Assessment of the Schmidlin Timber Sale: Potential Impacts to the Iler Creek Northern Spotted Owl Site, Prepared by Clint Smith, 16 November 2005).

If this owl circle is being used by a separate resident bird (or pair), it seems reasonable, based on past observations, to conclude that the Rogers Break sale area will impact an important part of this bird's home range (Figure 1).

Because of distance from the activity center and surplus of habitat acres above that required by the Agreement, harvest of Rogers Break does not currently pose a 'High' risk to the Gales Creek site.

When I originally drafted this BA, the harvest prescription called for *Phellinus* treatment, similar to the previous sales within this owl circle. With the proposed *Phellinus* treatment, I anticipated harvest of the Rogers Break sale would pose a 'Moderate' risk to viability of the Gales Creek spotted owl site. This determination was largely based on the cumulative impacts of almost 30% of the owl circle being operated upon in less than 10 years (plus additional operations on non-ODF ownership), combined with the detrimental habitat impacts of the *Phellinus* prescription.

Since the original draft of this BA, the District has changed the management prescription to moderate thinning without *Phellinus* treatment. I believe this prescription change significantly reduces the short- and long-term impacts on spotted owl habitat quality, and so reduces the risk to the owl site. However, I still think this is not a 'no-risk' activity because of:

- large amount of recent activity, especially in northeastern, eastern, southeastern, and southwestern portions of the owl circle, and
- One of four total spotted owl observations is located within the Rogers Break sale area and another is located very near the boundary.

If a similar activity were proposed within this owl circle in the next several years, I anticipate it would have a higher biological risk. Factors to consider for future operations that may have lower risk include:

- Target lower quality habitat (smaller and denser stands) for operation.
- Target smaller harvest units, maximizing edge between thinned and un-thinned units.
- Target light-moderate thinnings without *Phellinus* treatment to minimize short-term impacts.
- Focus on areas away from recent harvest units and away from spotted owl observations.

In conclusion, I anticipate that harvest of the Rogers Break sale, as currently proposed, would pose a 'low' risk to viability of the Gales Creek spotted owl site

Compliance with the Agreement for the Conservation of Northern Spotted Owls

Habitat acreages within the Gales Creek owl circle are well above the standard required by the Agreement. Therefore, proceeding with this sale is consistent with the requirements of the Agreement.

CONSULTATION

Herman Biederbeck, District Wildlife Biologist with Oregon Department of Fish & Wildlife has reviewed the final draft of this BA. His comments are included as Attachment 1.

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