

# SEVEN BUTTES RETURN VEGETATION MANAGEMENT PROJECT ENVIRONMENTAL ASSESSMENT

Crescent Ranger District

## Table of Contents

### Chapter I - Purpose and Need For Action

Introduction  
Purpose and Need  
Proposed Action  
Direction from the Forest Plan  
Scoping  
Issues Identified During Scoping  
Decision to Make

### Chapter II - The Proposed Action and Alternatives

Formulation  
Alternatives Considered but Eliminated from Detailed Study  
Alternative 1 (No Action)  
Description of The Action Alternatives

### Chapter III - Environmental Effects

Summary of Effects, Key Issues  
Effects in terms of the Key Issues  
Other Issues  
Other Disclosures

## **Chapter IV - Consultation with Others**

Public Notification  
Public Participation  
Interdisciplinary Team  
Agencies and Tribal Governments Consulted  
References

## **Appendix A - Unit Prescriptions**

## **Appendix B - Mitigation Measures, Objectives, and Monitoring**

## **Appendix C - Odell Watershed Riparian Reserves And Aquatic Conservation Strategy Objectives**

## **Appendix D - Glossary**

## **Appendix E - Response to Comments**

---

### **Deschutes and Ochoco National Forests Website**

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/coverindex.html>

Last Update: 8/10/01

R.A. Jensen



# CHAPTER I - Purpose and Need for Action

## A. Introduction

The Seven Buttes Return planning area spans seven subwatersheds and 160,000 acres. Approximately 143,370 acres are Forest Service Land, managed by the Deschutes National Forest, the balance being privately owned. The project area is located about 50 miles south of Bend, Oregon in Townships 21, 22, 23, 24 South and Ranges 5 1/2, 6, 7, 8, 9 East. [Figure 1 - Vicinity Map](#)

The Crescent Ranger District began a proactive approach to forest health issues in this area in 1996 (Seven Buttes Environmental Assessment). This project continues to work towards the broad goals of resistance to stand replacement insect, disease, and fire events on a landscape scale and to treat where necessary to promote, enhance, and retain large trees on the landscape. Other objectives are development, maintenance, and enhancement of wildlife habitat conditions appropriate for management areas specified in the Northwest Forest Plan, and providing for social opportunities for scenic quality and economic yields of forest products.

This environmental analysis will describe and analyze the effects of the proposed action and alternatives. A glossary is attached as [Appendix D](#) to define terminology used throughout the document.

## B. Purpose and Need

The purpose for the proposed activities is to accomplish the following objectives:

1. Reduce the risk of large-scale loss of forest due to insects, disease, and/or catastrophic fire.
2. Maintain, enhance, and protect late and old-structured stands to benefit species associated with those forest conditions.
3. Encourage development of late and old-structured stand characteristics in younger forests.
4. Reduce fragmentation that has resulted from past harvest practices and road construction.
5. Reduce stand density in riparian zones, while maintaining structural variety, and avoiding soil compaction.
6. Improve public safety and scenic views along State and Forest highways.
7. Reduce high fuel loading in forested areas along major routes and at the urban interface.
8. Return fire to the ecosystem wherever practical as a natural agent of fuels reduction.

The need for the proposed activities is demonstrated by the following conditions and trends:

- The Davis Late Successional Reserve Assessment found that the most immediate need within the LSR was to reduce the risk of catastrophic effects of insect attack, disease, or wildfire in the existing late and old-structured stands. The LSRA concluded that in some Management Strategy Areas (MSAs), there is an immediate need to reduce stand density before habitat loss occurs.
- In the mixed conifer dry plant association group, the true-fir component has increased dramatically in recent times, largely due to timber harvest practices and fire suppression. Because of the dry site conditions and a stand structure that provides ladder fuels from the ground to the crown, these stands are at the highest risk of being lost to a large-scale insect or disease attack, or fire event. Large ponderosa pine and Douglas-fir that are ordinarily fire resistant are placed at risk because of the increased competition with the true fir and because the structure allows ground fires to reach the crowns of the larger trees.
- Across the landscape, stands once dominated by large pines and Douglas-fir (greater than 21" in diameter) are now dominated by smaller, less desirable species of trees. Through overcrowding and competition with younger, smaller trees, the trend in these forests is for the large-tree component to continue to decline. High-density stands retard the growth of large overstory replacement trees, and accelerate the mortality of existing large trees in the overstory. High density understories consist mostly of true fir and lodgepole pine, while residual overstory large trees are ponderosa, sugar pine, white pine, and Douglas-fir. Consequently, not enough overstory replacement trees of the right species exist.

- The decline of large-tree dominated stands affects habitat for the bald eagle and the northern spotted owl, species listed as Threatened under the Endangered Species Act. For bald eagles, large tree habitat near Odell Lake and Davis Lake is at risk, which could in turn reduce the amount of nesting and foraging sites available. Especially on the drier sites near Davis Lake, open stands have seen considerable ingrowth of small trees. For northern spotted owls, stands that provide the large tree and multi-storied canopy structure that owls need for nesting, roosting, and foraging cannot be sustained over the long term on many of the drier growing locations found in the project area.
- Wet areas and riparian zones in the project area are experiencing excessive encroachment by lodgepole pine. On a long-term basis, these coniferous forests are likely to prosper when water tables decline, and then die as water levels rise toward the surface. As the water level rises, and tree mortality ensues, large amounts of dead wood result in the riparian zones, making them more susceptible to damage from high intensity fires. Although wet areas normally have a higher resistance to fire damage, current high fuel loading in many of these areas means that a fire would occur at sufficient intensity to cause much more severe damage to riparian soils and vegetation than normally would be expected. Similarly, the high concentrations of dead trees pose a hazard to adjacent timber stands because they provide a continuous network of conditions that provide connectivity for the spread of fire.
- Most stands within the planning area are still capable of responding favorably to management actions in this proposal. In other words, the stand characteristics that are desired can be achieved and/or maintained through the vegetative treatments. (An example of a stand that would not respond favorably is one that has such an infestation of disease and/or insects that desired stand characteristics are already lost).

### C. Proposed Action

The proposed action was designed to address opportunities for restoring ecosystems identified during the Odell Watershed Analysis, (USDA 1999)\*; Big Marsh Watershed Analysis, (USDA 1997) and to implement the management strategy defined for the Davis Late Successional Reserve (Davis LSR Assessment, USDA 1995). This project incorporates information from those assessments into a proposed action that covers approximately 16,000 acres.

In particular, the Davis Late-Successional Reserve (LSR) Assessment (LSRA) divided the LSR into 28 Management Strategy Areas (MSA), each with its own set of objectives and criteria for developing appropriate treatments. For instance, in MSA B, the LSRA set the threshold so that treatments would only be allowed once a large scale habitat disturbance has occurred. In other MSAs, which are the focus of this project, treatments are allowed under certain conditions in order to reduce the risk of such disturbances from occurring. In some MSAs, such as MSA N and MSA O, bald eagles were given an emphasis. See Davis LSRA, Chapter 4 for more details.

The proposed action consists of the objectives and activities described in Table 1.

Table 1. Proposed Action Objectives and Activities.

Objective	Proposed Activities
Bald eagle habitat enhancement and protection: Maintain health of large trees; ensure retention and replacement of large trees; create fire climax (open park-like) forest conditions. Also treat blocks of winter roosting habitat to retain large trees.	Favor ponderosa, Douglas fir. Remove true fir, lodgepole  Selection cut  Culture large trees  Thin to release overstory replacement trees and reduce stress  Prescribed fire and/or mowing

<p>Restore balance to distribution of stand structures across the landscape: Protect and promote large trees; release ponderosa and/or Douglas fir and white pine.</p>	<p>Favor ponderosa, Douglas fir, western white pine, sugar pine</p> <p>Remove true fir and lodgepole.</p> <p>Selection cut</p> <p>Thin to release favored species and reduce stress</p> <p>Prescribed fire and/or mowing</p>
<p>Protect and enhance spotted owl nesting, roosting, and foraging habitat: Reduce risk of loss; keep multi-structure</p>	<p>Selection thin most sizes with emphasis on thinning from below</p> <p>Selection cut</p> <p>Favor ponderosa, Douglas fir, western white pine, sugar pine</p> <p>Precommercial thin true fir</p> <p>Salvage excess dead and dying</p>
<p>Reduce fragmentation in lodgepole. Manage for black-backed woodpecker and marten habitat: Move toward large, managed blocks of lodgepole.</p>	<p>Thin with fiber and post &amp; pole sales</p> <p>Salvage</p>
<p>Riparian area improvement: Remove conifer encroachment in meadows, reduce density and fuel loads.</p>	<p>Salvage</p> <p>Thin</p> <p>Prescribed fire</p>
<p>Fuel reduction at urban interface.</p>	<p>Thin</p> <p>Salvage excess dead and/or dying</p> <p>Prescribed fire and/or mowing</p>
<p>Develop NRF habitat for spotted owl: Encourage Late and Old structure characteristics; maintain multi-canopy structure.</p>	<p>Thin young stands to accelerate growth</p> <p>Salvage excess dead lodgepole</p> <p>Thin understory to favor overstory replacement trees</p>

Uneven-aged management in lodgepole to encourage development of dispersal habitat for northern spotted owl.	Thin to favor pine species (overstory) and reduce density  Use group selection techniques to develop uneven-aged characteristics
Highway de-icing (reduce shade during winter) and scenic views: Remove tunnel effect, open road to daylight, protect large trees.	Selection cut, removed diseased trees  Culture large trees  Post & pole, precommercial thinning  Shelterwood cut  Prescribed fire and/or mowing
Maintain multi-story canopy and large trees for connectivity between LSRs. Favor/enhance growth of overstory replacement trees.	Thin mostly from below to favor fire-resistant overstory trees.  Prescribed fire
Maintain healthy lodgepole stand.	Commercial and precommercial thin  Shelterwood cut  Favor retention of healthy, mature lodgepole pine trees
Remove excess dead and dying lodgepole	Salvage  Precommercial thin

## ***D. Direction from the Forest Plan***

The 1990 Deschutes National Forest Land and Resource Management Plan (LRMP) provides direction for managing the Deschutes National Forest. Amendments to the LRMP include the Northwest Forest Plan (NWFP, USDA and USDI, 1994), the Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (commonly known as the "Eastside Screens," USDA, 1995), and the Inland Native Fish Strategy (INFISH, USDA, 1995). The Standards and Guidelines for these management areas apply where the amendments provide no particular guidance or where the 1990 LRMP provides more restrictive direction than that found in the amendments.

### **1. Deschutes LRMP Areas**

Direction for management of all lands is found in the 1990 LRMP, unless specifically amended by the Northwest Forest Plan, by the Eastside Screens, or by InFish. The LRMP following management areas are found in the planning area:

- **Dispersed Recreation (18, 404 acres)** -- The goal of the Dispersed Recreation Management Area (MA) is to provide a range of quality recreation opportunities in an undeveloped forest environment.

- **Bald Eagle Management Areas (9,136 acres)** - Nesting and foraging habitat in this Area will be managed to protect and enhance the carrying capacity of bald eagles. Suitable nesting sites will be provided on a continuing basis. Old growth stands with large trees will be emphasized, and human disturbance will be minimal during the nesting season.
- **General Forest (52,027 acres)** - This Management Area emphasizes timber production while providing forage production, visual quality, wildlife habitat, and recreational opportunities for public use and enjoyment.
- **Intensive Recreation (6,969 acres)** - The Intensive Recreation MA provides a wide variety of quality outdoor recreation opportunities within a Forest environment where the localized settings may be modified to accommodate large numbers of visitors. Odell Lake is the primary Intensive Recreation area in the project.
- **Old Growth Management Areas (3,217 acres)** - The goal of this MA is to provide naturally evolved old growth forest ecosystems for the following purposes: habitat for plant and animal species associated with old growth forest ecosystems; representations of landscape ecology; public enjoyment of large, old-tree environments; and the needs of the public from an aesthetic spiritual sense.
- **Davis Lake Special Interest Area (4,230)** - This MA preserves and provides interpretation of unique geological, biological, and cultural areas for education, scientific, and public enjoyment purposes. The primary benefiting uses of these areas will be for developed and dispersed recreation, research, and educational opportunities.
- **Scenic Views (29,273)** - The goal of Scenic Views management areas is to provide high quality scenery that represents the natural character of Central Oregon. Landscapes seen from selected travel routes and use areas will be managed to maintain or enhance their appearance. To the casual observer, results of activities either will not be evident, or will be visually subordinate to the natural landscape.
- **Wilderness (18,127 acres)** - Wilderness areas are meant to feature naturalness, opportunities for solitude, challenge, and inspiration, and within these constraints to provide for recreational, scenic, scientific, educational, conservation, and historical uses. The Diamond Peak Wilderness is part of the project area.
- **Wild and Scenic River Corridor (2,283)** - The primary objectives for managing waterways which are components of the National Wild and Scenic Rivers System will be to protect the outstandingly remarkable values identified for each and for maintaining the free-flowing nature of the river. Within the project area, a portion of Crescent Creek is designated as wild and scenic based on the geological, scenic, and vegetative values.
- **Non-Forest Service Land**-Approximately 16,432 acres of private lands are inside the administrative boundary of the Deschutes National Forest in this project area. Some analysis and planning is done on the subwatershed scale, but activities are only proposed on Forest Service Lands.
- **Roadless** - A portion of an inventoried roadless area (RARE II), identified in the 1990 LRMP, of approximately 20,175 acres is situated in the northwest corner of the project area. No activities are proposed within this roadless area.

The LRMP management areas and roadless area are displayed in [Figure 2](#).

## 2. Northwest Forest Plan Management Areas

More than 80 percent of the project area (approximately 133,000 acres) lies within the area covered by the Northwest Forest Plan, comprising the following land allocations:

- **Administratively Withdrawn (21,825 acres)** - These areas are identified in the Deschutes LRMP and occur in the project area as Davis Lake Special Interest Area, Intensive Recreation, Dispersed Recreation, and Old Growth. Management emphasis precludes scheduled timber harvest.
- **Congressionally Reserved (20,143 acres)** - These areas retain the management direction of the LRMP management areas. They include lands with congressional designations that normally preclude scheduled timber harvest. Within the project area, Congressionally Reserved Areas correspond to Wilderness and Wild & Scenic River Corridors.
- **Late Successional Reserve (49,120 acres)** - Late Successional Reserves (LSRs) have the objective of protecting and enhancing conditions of late successional and old-growth forest ecosystems, which serve as habitat for late successional and old growth forest related species, including the northern spotted owl. The entire Davis LSR is located within the project area. The Davis LSR Assessment was written in 1995 and provides recommendations for management activities.
- **Matrix (42,042)** - Most scheduled timber harvest is to take place in the Matrix. Producing timber and other products are an objective, while standards and guidelines are designed to provide important ecological functions and to maintain

structural components like logs, snags, and large green trees.

- **Riparian Reserves (19,305)** - As part of the Northwest Forest Plan's Aquatic Conservation Strategy, Riparian Reserves are lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use. The objective is to restore and maintain the health of watersheds and the aquatic ecosystems they contain. Riparian Reserves overlay the other land allocations. Specific information about the Riparian Reserves in the project area is provided in [Appendix C](#).
- **Key Watersheds** - Odell subwatershed is identified as a Tier 1 Key Watershed because it is believed to provide high quality habitat for at-risk stocks of resident fish species. It is to serve as refugia for maintaining and recovering habitat for these at-risk species.

These Northwest Forest Plan allocations are displayed in [Figure 3](#).

### 3. Other Documents Influencing the Scope of this Analysis

#### *Watershed Analyses*

The Odell Watershed was first analyzed in 1994, immediately after the adoption of the NW Forest Plan. Three areas of study (domains) were documented: physical, biological, and social. Key issues and trends were identified for the watershed. In 1999, an interdisciplinary team undertook a review of the 1994 analysis to ensure consistency with the Federal Guide. The updated analysis determined that the keys issues were essentially the same. (USDA Forest Service, 1999).

The Big Marsh Watershed Analysis was written in 1997 (USDA Forest Service, 1997). It also included the three basic areas of physical, biological, and social domains. Trends and key issues for the watershed were identified. The portion of the Seven Buttes Return project area covered by this assessment is the Crescent subwatershed.

The purpose for initiating this project is rooted in the trends documented in these analyses.

#### *Davis Late Successional Reserve Assessment*

A site-specific LSR Assessment was written for the Davis LSR, which encompasses 48,890 acres around Davis Lake. This document accounts for each of the eight elements listed in the NW Forest Plan (C-11) for LSR Assessments. (USDA Forest Service, 1995a).

In the LSR Assessment, Management Strategy Areas were delineated, each with its own set of objectives and criteria for developing appropriate treatments. For treatment units proposed within the LSR, only actions that met the treatment criteria for each MSA were carried into the analysis.

#### *BEMA and Nest Site Plans*

These documents were developed to meet the Deschutes National Forest Land Resource Management Plan goal of providing a long-range management plan that addresses recommendations for vegetation, fuels, recreation, and transportation in BEMAS and eagle nest sites. The Crescent and Odell Lakes BEMA and Nest Sites Plan includes a compilation of recommendations and direction from other planning efforts as well as recommendations for management strategies specific to the Crescent and Odell Lake BEMAs and nest sites (USDA Forest Service, 1998). The Bald Eagle Site-Specific Management Plan for the Davis Lake East and West Nest Sites and Wickiup South Nest Sites were completed in 1996 (USDA Forest Service).

### **E. Scoping**

Scoping is the term used to describe the process of gathering information and feedback from the public and internal sources, and identifying issues that may arise from a proposed action.

Public involvement in the planning process began in January 2000 when notice of the project was published in the *Schedule of Projects for the Ochoco and Deschutes National Forests*. Comments from the public were solicited when the project proposal or notice of the proposal was mailed to 315 individuals, agencies, and groups in January 2000. The proposed action was also posted on the Deschutes National Forest's web site.

A number of letters and phone calls were received during the scoping period. Some of the comments expressed support for the purpose of the project and expressed a desire that the alternatives accomplish that purpose. Questions were raised about the need to avoid treatments in some areas because of wildlife habitat concerns (for example, lynx). And questions were raised about the effectiveness of these restrictions at accomplishing the desired effect. A suggestion was also made that road closures should only be proposed when specific needs for resource protection could first be demonstrated.

Finally, a set of comments provided extensive lists of issues that the commenter felt must be considered during any timber harvest analysis, as well as suggestions for improving the effectiveness of Forest Service documents.

## ***F. Issues Identified During Scoping***

Key issues are those that represent a point of debate or concern that cannot be resolved without some consideration of the trade-offs involved. These issues spur the design of alternatives to the proposed action that provide a different path to achieve project objectives. Trade-offs can be more clearly understood by developing alternatives and displaying the relative impacts of these alternatives weighed against the proposed action. This analysis also treats forest health as a key issue because it serves as an underlying driver for achieving most of the habitat protection objectives, and so is also a key driver of the project.

### **1. Key Issues**

#### ***Northern Spotted Owl***

Late-successional forests in the planning area serve as suitable nesting, roosting, and foraging (NRF) habitat for the northern spotted owl. Younger aged forested stands provide dispersal habitat. The project area contains nine known spotted owl activity centers, of which eight are also within U.S. Fish and Wildlife Service designated Critical Habitat (CHU OR-7). Treatments aimed at making these stands more resistant to insects, disease, and fire may also cause a short-term modification or degradation of the habitat. Treatments could also reduce habitat continuity in some large habitat blocks that are located strategically to serve as important connectivity for dispersal of the species. Without silvicultural treatments, long-term degradation or loss of the habitat could result from insects, disease, and/or wildfire. The issue becomes a question of how much short-term loss of habitat is appropriate in order to gain long-term protection.

The effects to the northern spotted owl will be measured using the following five evaluation criteria:

- Acres of NRF habitat treated and percentage of the total NRF existing after harvest activities.
- Acres treated in three large contiguous patches of NRF, which serve as key connectivity corridors for the species.
- Acres of NRF habitat silviculturally treated within northern spotted owl Critical Habitat Unit OR-7 and the Davis LSR.
- Acres of NRF habitat silviculturally treated in Bald Eagle Management Areas.
- Acres of spotted owl dispersal habitat treated in project area.

#### ***Northern Bald Eagle***

Within portions of three Bald Eagle Management Areas (BEMAs), large-tree habitat for the northern bald eagle is at risk of loss caused by fire, insects, and disease. In the Wickiup South, Davis East and Davis West BEMAs, silvicultural treatments propose to create forested stands that are more resistant to insects, disease, and fire over the long term. However, these treatments in dense, multi-storied stands will reduce the amount and distribution of high-quality winter roosting habitat in the long-term (e.g. that would be the objective of treatment). The issue highlights an inherent tradeoff between managing to

protect large trees on dry growing sites, while also managing for winter roosting habitat, which consists of higher density stands that are not stable on those drier sites.

The effects to the northern bald eagle will be measured using the following two evaluation criteria:

- Total number of acres of high quality winter roosting habitat silviculturally treated within Bald Eagle Management Areas (BEMAs) including commercial thinning, salvage of dead and down trees, and individual tree cutting.
- Total number of acres of silvicultural treatments that would occur within Bald Eagle Management Areas (BEMAs).

### ***Forest Health***

Several components of the forest health issue will be addressed in this document to display the effects and effectiveness of proposed silviculture treatments. Primary purposes for initiating the project include

- reducing risk of mortality from insects and disease,
- slowing the loss of large trees,
- ensuring a supply of suitable replacement trees,
- protecting of late and old structured stands (LOS),
- reducing fragmentation, and encouraging LOS characteristics in younger stands are.

See page 2, Need for the Proposed Activities, for more discussion of this issue. The effects on forest health will be measured using the following evaluation criteria:

- Risk to catastrophic loss of the overstory trees due to insects, disease, and/or fire.
- Retention and promotion of large trees.
- Maintenance, enhancement, and protection of late and old-structured stands.
- Availability of replacement trees of suitable condition and species for replacing large overstory trees as they die.

### ***Cumulative Effects to Watersheds***

The stands identified for treatment in the proposed action are considered at risk to catastrophic loss from insect and disease activity or wildfire. However, to reduce that risk and promote more sustainable forest ecosystems requires entry into areas that have seen considerable management activity in the past 20 years. Proposed activities in conjunction with past activities, including past road construction, may affect watershed condition and integrity. Also, project proposals being analyzed on the adjacent Bend-Ft. Rock Ranger District are located within two of the same subwatersheds as this proposal.

Moreover, less intensive treatment of stands has a benefit for maintaining certain wildlife habitat, yet means that treatment must occur more often in order to maintain stands in a more stable condition. Less intensive treatments mean a stand would require reentry within 10 to 15 years, while a more intensive treatment would mean that re-entry would not occur again for up to 25 years. Repeated entries at lower intensity will result in the need to maintain an interim road system, as well as have implications to soil productivity recovery and other factors, such as wildlife habitat effectiveness. The issue from the standpoint of cumulative watershed impacts is defined as the amount of hydrologic disturbance and the recovery time:

The effects to watersheds will be measured using the following criteria:

- Amount of hydrologic disturbance expected to occur within subwatersheds, and
- Amount of time expected before returning to the project area again.

## **2. Other Issues**

The following issues and environmental components did not shape the range of alternatives, but analyzing the effects to them is important for assessing how well the alternatives meet the purpose and need for the project, as well as evaluating impacts to specific resources that must be considered, even though they are not driving the project or the alternative formulation. Effects will be disclosed regarding these issues, but in lesser detail than the key issues.

### ***Soils***

This issue is defined in terms of maintaining productive soils where proposed activity areas occur, while restoring soils that have already been impacted by previous management activities (such as machine piling).

### ***Fuel Hazard***

The purpose of the project is to reduce hazardous surface fuels and reduce crown fire potential. Just the same, vegetation management can increase fuel loading (slash) unless follow-up measures are included, and as long as the treatment areas are designed to provide for feasible fuels reduction. Lower intensity vegetation treatment not only means that the stand retains higher crown fire potential, but it also means that fuels cleanup will be more costly. In particular, the low intensity treatments must include design features (such as retention area placement and adequate leave-tree spacing) so that follow-up fuels removal is practical.

### ***Cultural Resources***

Historic and prehistoric resources within the planning area must be protected, or mitigation measures must be incorporated into the project to assure that cultural resource values are preserved using appropriate methods and procedures. In many cases, this will be accomplished by avoidance. However, in campgrounds and other recreation sites, this is not possible, and in some cases, avoidance does not offer the best means of dealing with the resource. For example, a known historic site along Ranger Creek has gone unevaluated because of a lack of funding. Proposed road work will provide the necessary means to evaluate, record, and perhaps interpret this site.

### ***Wild and Scenic River Corridor***

The portion of Crescent Creek running through the planning area is part of the national Wild and Scenic River System. A specific river management plan has not been completed for this stream and so any management proposed must not preclude meeting river management goals. Without a plan, those goals are defined in the LRMP Standards and Guidelines (MA 17). Specific river values that warrant protection are defined in the Crescent Creek Resource Assessment. Portions of nine treatment units lie within the quarter mile corridor currently defined for Crescent Creek.

### ***Water Quality***

Currently, Crescent Creek and Odell Lake have been listed by the Oregon State Dept. of Environmental Quality as having water quality below desired standards. Odell Lake is listed because of suspected chemical imbalance, and Crescent Creek is listed because of high summer temperatures. This listing is required by Section 303d of the Clean Water Act. Odell Creek is not listed but exhibits higher than desired temperatures during certain times of the year. Any activities proposed near these water features must improve these conditions or at least ensure that these conditions are not degraded. Treatment is proposed along Odell Lake (near recreation residences), along Odell Creek (in some cases within the riparian reserve in order to enhance riparian condition), and along Crescent Creek (outside the riparian reserve).

### ***Riparian Protection***

Any treatment within riparian reserves (NWFP) or riparian habitat conservation areas (InFish), must provide a benefit to the aquatic system, or at a minimum be neutral toward achieving Aquatic Conservation Strategy Objectives (ACSOs). A number of units are included for treatment specifically to improve the riparian conditions (eg. Reduce lodgepole encroachment).

### ***Proposed, Endangered, Threatened or Sensitive Plants, Animals and Fish***

The analysis must include consideration of the effects, if any, to species listed or proposed to be listed under the Endangered Species Act (ESA). Sensitive species will also be considered as appropriate.

### ***Management Indicator Species***

In addition to northern spotted owl and bald eagle (discussed as key issues), the following management indicator species (defined in the Deschutes LRMP) need to be considered northern goshawk, three-toed woodpecker, American marten, osprey, woodpeckers, elk and mule deer. These species were selected because their welfare could be used as an indication of the well-being of other species dependent on similar habitat conditions. The proposal must consider impacts to these species during the analysis.

### ***Key Elk Areas***

The Seven Buttes Return planning area contains two key Elk areas. Any vegetation treatments within these areas must consider impacts to the elk habitat located there.

### ***Survey & Manage Species of Plants or Animals***

As part of the Northwest Forest Plan, certain species have been cast in a status that requires specific steps to follow to ensure persistence of these species where they exist.

### ***Big Game Hiding Cover and Forage***

The Deschutes LRMP sets specific parameters for maintaining hiding cover for the benefit of mule deer and elk populations.

### ***Roadless Areas (Inventoried, Uninventoried)***

The Maiden Peak Roadless area lies in the western portion of the planning area. This area is described in the 1990 LRMP Appendix C and was included in the January decision regarding conservation of these areas: No activities (road building or vegetation management) are proposed within this area, although some proposed treatment units are nearby.

All units lie along existing roads. In a few cases, closed roads may be opened temporarily in order to allow access for activities, but none of the treatment areas can be considered unroaded lands, and so none of the activities is expected to have an impact on roadless character of such lands.

In April, 2001, a group of Oregon Citizens announced that it would propose wilderness additions for Oregon.\*\* At the time the analysis for the Seven Buttes Return project was being documented in this assessment, information was not available regarding the location of these potential additions. As information becomes available, it will be given appropriate consideration.

### ***Scenic Views.***

The proposed removal of trees and controlled burning along Road 46, Highway 58 and County Road 61 could affect forest scenery. However, taking no action will allow current trends to occur, which will result in large-scale tree mortality through insects, disease and fire, which also would have a detrimental effect on the Scenic resource.

### ***Recreation***

Several developed recreation sites are included in the Seven Buttes Return planning area. These include Odell Lake recreation residences and campgrounds, the Crescent Creek Campground, and the Davis Lake campgrounds. The vegetation in these sites provides an integral part of the setting that is a valued part of the affected outdoor recreational experience. Proposed vegetation activities will help protect and enhance the vegetation and provide for public safety. Nevertheless, as much as possible the activities should be implemented so that they do not unnecessarily affect recreational use of these sites. In addition, efforts to control dispersed use (such as along Odell Creek) should allow for use to some degree, rather than simply closing off whole areas to access.

### ***Old-Growth Management Areas (LRMP) and treatment in LOS***

Four Old-growth Management Area have been incorporated into the Davis LSR. All proposed treatments in these areas are guided by the LSR Assessment. A fifth old-growth area lies outside the LSR and is designated as AWD under the NWFP. The treatments within the Old Growth Management Areas (OGMAs) are designed to move the stands to late and old structure in either multi-layer or single-layer. Stands within the OGMAs will not be moved to earlier structural stages. These treatments were proposed in order to create or sustain habitat for several LOS dependent species.

### ***Financial Efficiency Analysis***

For all timber harvest components of this project, consideration must be given to the financial efficiency of the proposed action and alternatives.

## **G. Decision to Make**

The deciding officer is the Forest Supervisor of the Deschutes National Forest. The decision maker will determine which alternative, or portion of an alternative best meets the purpose, need, and scope of this project, and best addresses the issues that separate alternative. Specific decision points include the following:

- How much vegetation treatment will occur at this entry and at what intensity level will that treatment occur?
- How much restoration will occur in disperse recreation sites under consideration?
- In general, will road access in the planning area be substantially changed by the use of temporary roads to implement vegetation treatment activities?
- Will the road access along the east side of Davis Lake be changed to accommodate a longer season of recreation use without interfering with the bald eagles that use that area

\*See Section IV.E of this environmental assessment for descriptions of these references.

\*\*As reported in the Register Guard (Eugene, Oregon) and The Bulletin (Bend, Oregon)

GO TO

- Chapter I
- [Chapter II](#)
- [Chapter III](#)

- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)
- [Appendix E](#)

---

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/chapter1.html>

Last Update: 8/8/01

R.A. Jensen

## CHAPTER II - The Proposed Action and Alternatives

This section describes the alternatives that were developed and the process used to formulate them.

### ***A. Formulation***

This project is a continuation of efforts that began in 1996 to take a pro-active approach to forest health issues in the area. A long-term strategy of treating forest stands that are considered at risk of loss due to insect attack, disease, or catastrophic fire would avoid the high levels of mortality that have occurred elsewhere in the interior west. Approximately 25,000 acres of imminently susceptible stands have been identified in the planning area, and the original Seven Buttes Project is treating approximately 7,000 acres of those. (USDA Forest Service, 1996)

Through field examinations and the use of geographic information systems (GIS), stands that are considered imminently susceptible to catastrophic loss were identified. Some stands were deferred from consideration in this project for the following reasons: the LSR Assessment recommended no treatment; the stand contained nesting, roosting, and foraging habitat within a spotted owl territory; the stand consisted primarily of mountain hemlock; or, some areas with riparian vegetation would not benefit from treatment. The stands that went through this evaluation and were not deferred became part of the proposed action.

Alternatives were developed by an interdisciplinary team to display a range of options that meet the purpose and need and respond in various ways to the key issues listed in Section I. Alternative 2 includes all of the units from the proposed action. Objectives for each stand were translated into general prescriptions, such as commercial thinning. Following scoping, a concern arose concerning the amount of acres identified for treatment in the proposed action in addition to the intensity with which treatment would occur. This raised a concern about potential effects to the northern spotted owl because of a concern for modification of spotted owl habitat over such a large area. The proposed action was therefore modified by reducing the intensity of thinning prescriptions, while they continued to meet forest health objectives over a broad area. Alternative 3 was developed to address the issues surrounding northern spotted owl habitat and bald eagle habitat. Alternative 4 defers treatment within three subwatersheds in response to the watershed issue, and also responds to habitat issues as in Alternative 3. Restoration projects in recreation areas that were not part of the proposed action were included in Alternatives 3 and 4.

Table 2 displays the alternatives developed and studied in detail in terms of how they respond to the project's purpose and key issues.

## ***B. Alternatives Considered but Eliminated from Detailed Study***

In addition to the initial proposed action, which was not considered in detail for reasons explained in the previous discussion, other alternative were considered that would have avoided treatments in the Davis Late-Successional Reserve (LSR), avoided treatments of northern spotted owl suitable habitat (NRF), and/or avoided NRF treatment within spotted owl critical habitat (CHU). Given the need for treatment specified in the Davis Late-Successional Reserve Assessment, these alternatives were not considered in detail because eliminating treatments would mean falling short of meeting the need for action.

Consequences of eliminating these treatments can be found in Section III of this document where the impacts of the No Action alternative are discussed.

During the 30-day comment period, a concern was raised that a restoration-only alternative should be analyzed because of resource impacts associated with timber harvest that would not occur if no timber harvest were proposed. This alternative was not considered in detail because the actual objectives and resulting impacts of the activities--timber sale or non-commercial treatment--are very similar. Whether the objectives are met by a purchaser willing to pay the government for the material, or whether it is taken away by a contractor paid at government expense, the material must be removed to accomplish the restoration goals.

Table 2. Alternatives as they respond to the key issues.

<b>Key Issue</b>	<b>Alternatives</b>		
	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>
<b>Northern Spotted Owl Habitat</b>	High-risk stands in the project area will receive light thinning in units with habitat concerns. Protecting and enhancing NRF. Promoting development of NRF for the long term.	Moderate thinning, protecting and enhancing NRF. Promoting development of NRF. Treatment deferred in areas considered important connectivity habitat. Retains habitat in the short term.	Moderate thinning. Protecting and enhancing NRF. Promoting development of NRF. Treatment deferred in areas considered important habitat. No treatment on North side of Davis Mountain during this entry.
<b>Bald Eagle Habitat</b>	Light thinning in units with habitat concerns. Thinning to improve health of large trees.	Fewer stands in the BEMAs will receive harvest treatments. Maintenance of more quality winter roosting habitat.	Fewer stands in the BEMAs will receive harvest treatments. Maintenance of more quality winter roosting habitat.

**Hydrologic Disturbance**

Light thinning prescriptions will require more frequent return interval.

Moderate thinning prescriptions allow longer return interval.

Road closure and restoration work will reduce the potential adverse in-channel impacts from roads and other activities, such as dispersed camping along the shoreline of Davis Lake.

Postpones entry into 3 subwatersheds where previous activities have resulted in higher levels of disturbance. This alt. Defers to a future project that will deal with all restoration at once, and then avoid returning for 20 to 30 years.

Moderate thinning prescriptions allow longer return interval.

Road closure and restoration work similar to Alt. 3.

**Forest Health**

Commercial thinning, salvage, precommercial thinning, and selection harvesting, and fuels treatments on the largest area.

Treatments on a smaller area than Alt. 2, but more than 4, with emphasis on more intense treatments on more acres than Alternative 2 for longer-lasting benefits.

Treatments on the smallest number of acres in the near term, but assuming a follow-up project in the Browns, Wickiup and Lower Little Deschutes, would be similar to Alt. 3 in time.

**C. Alternative 1 (No Action)**

As required by the National Environmental Policy Act (NEPA), the No Action Alternative is included in the analysis and forms a basis for comparison of the action alternatives. No timber harvest or other activities pertaining to the purpose and need for this project would take place. No road closures or restoration activities would take place as described in this document. Current management activities and actions resulting from other decisions would proceed. Current conditions are described in the Odell Watershed Analysis, the Davis Late Successional Reserve Assessment, and the Big Marsh Watershed Analysis.

## ***D. Description of The Action Alternatives***

### **Description of Alternative 2 (Proposed Action)**

This alternative treats at-risk stands across the landscape. More acres would be treated in this alternative than in the other action alternatives in order to reduce short-term risk on these stands. Table 3 displays the harvest methods, approximate number of acres to be treated, and estimated harvest volume.

The main objective for all treatments is to reduce stand density to a level that substantially changes the risk of mortality caused by over-crowding and competition for resources. The Upper Management Zone (UMZ) is a measure that represents the point at which tree mortality can be expected to occur at a substantial level in a given stand. In other words, a stand below UMZ exhibits fairly low mortality. A stand above UMZ exhibits a higher rate of mortality. For example, in pine plant associations, bark beetles become a serious threat when a stand reaches 100 percent of its UMZ. To reduce a stand to 67% of the UMZ requires removal of approximately 40% of the basal area. To get to 90% UMZ requires removal of about 30% of the basal area.

The UMZ concept is not as helpful in determining which stands over UMZ might be more likely to be affected. Similarly, once a stand is below 100 percent UMZ, little difference has been found between light (90% UMZ) and moderate (67% UMZ) treatments in reducing susceptibility, and so they both provide similar forest health benefits. However, the different densities make a considerable difference to the timing of a follow-up entry. In order to maintain a stand in a stable condition, a stand treated to 90 percent UMZ would take about 10 to 15 years to grow beyond the 100 percent UMZ level, while a stand treated to 67 percent UMZ would take up to 25 years to return to unstable levels.

About 90% of the thinning treatments in Alternative 2 propose light thinning (to reduce the UMZ to 90%). About 10% of the treatments would be a moderate intensity (reduce to 67% of UMZ). So although more acres will be entered under Alternative 2, the prescription in most areas is less intense.

Individual units would have a combination of thinning and salvage logging, depending on specific conditions. Salvage-only logging will occur on 1,350 acres, and could include follow-up small tree thinning to assure regeneration. A prescription that calls for only small tree (Precommercial) thinning will occur on 230 acres. In other words, on 230 acres, no commercial harvest will take place, just precommercial thinning. Precommercial thinning will also occur in most of the units that are first harvested for trees of commercial value.

Fuel treatments will include underburning in the stands that are resistant to fire effects, as well as a number of other potential methods, including hand piling (and pile burning), grapple piling (and pile burning), mowing, and/or chipping of material.

Table 3 shows the amount of each treatment prescription and an estimate of timber volume. [Figure 4](#) displays the location of units across the project area. Recreation and road-related activities are listed

above under the subsection called "Activities common to all alternatives." These actions are displayed in [Figure 7](#).

Retention areas will be expanded to 25% in the following units. 75, 80, 95, 135, 265, and 735. The purpose of the larger retention area is for spotted owl dispersal habitat, which will also provide better deer and elk hiding cover.

The approximate number of acres treated varies by alternative, as does the specific prescription within certain areas. Refer to Table 2 in Appendix A for specific unit descriptions. Acres are approximate, based on Geographic Information System (GIS) data. Totals displayed in Table 3 do not account for retention areas that will be left untreated (15 to 25 percent of each harvest unit), or Riparian Reserve and Riparian Habitat Conservation Areas that will be avoided. On the other hand, timber sale volume estimates displayed in Table 3 have been adjusted down to account for these reductions.

Table 4 compares alternatives by their respective logging systems and Table 5 displays a comparison of estimated fuel treatment acres based on preliminary estimates of the type of treatment that may be feasible. Because of the amount fuels to be created during the commercial treatments, much more mechanical fuel treatments than underburning are expected for this entry.

### **Description of Alternative 3**

Two key issues related to the proposed action involve the effectiveness of wildlife habitat; specifically, habitat for bald eagles and northern spotted owls, both of which are listed as threatened under the Endangered Species Act. Alternative 3 addresses these concerns by deferring treatments in some key habitat areas. For example, this alternative avoids treatments in spotted owl connectivity area on Maklaks Mountain and the Bald Eagle Management Areas south of Wickiup Reservoir.

Retention areas will be expanded to 25% in the following units. 15 and 20. The purpose of the larger retention area is for spotted owl dispersal habitat, which will also provide better deer and elk hiding cover. This alternative proposes fewer acres of treatment overall than Alternative 2, but more than Alternative 4. On about half of the proposed treatment acres, thinning treatments are more intense than in Alternative 2. These moderate treatments will remove more basal area than the light thinning proposed in Alternative 2, leaving these stands at about 67 percent of UMZ. As noted above, light thinning aims at achieving 90 percent of UMZ.

As with Alternative 2, some units may have a combination of thinning and salvage logging prescribed. Salvage-only logging will occur on 1,350 acres. Precommercial thinning only will occur on 230 acres. That is, on 230 acres, no commercial harvest will take place, just precommercial thinning. Precommercial thinning will also occur in many units that are first harvested for trees of commercial value. See Table 3 for the acres proposed for harvest treatments and [Figure 5](#). Individual unit prescriptions are included in [Appendix A](#).

## ***Recreation and Road Related Activities***

In addition to the actions described in the subsection called "Activities Common to All Alternatives," this alternative will move or eliminate some campsites that are below high water on the Davis Arm of Wickiup Reservoir (between Hwy 46 and the lava flow at Davis Lake). This will move impacts away from the water and begin to restore vegetation. Fire rings may be moved further from the water to discourage use below the high water. Barriers may be installed and vegetation restored. Access to dispersed sites from Forest Road 4654 will be discouraged and other user-created roads will be eliminated. A user-created spur road off of Hwy 46 that traverses a steep bank will be closed ([Figure 7](#)).

This alternative will close motorized access to a dispersed campsite situated at the end of Forest Road 4660-400 (Ranger Creek Road). This road also serves as a portion of the Metolius-Windigo Horse Trail, which continues from the end of the road north along the west side of Davis Lake. The road is often wet with water channeling in the tire ruts. Under this alternative, the road would be closed to motor vehicles. It would continue to function as a foot and horse trail. (This portion of the Metolius-Windigo Trail may be relocated in the future). The dispersed camp at the end of the road, known as "honeymoon camp" would not be accessible by motor vehicles. Barriers would also be placed at the campsite to eliminate the possibility of motorized vehicles driving out onto the meadow around Ranger Creek and Davis Lake ([Figure 7](#)).

Table 4 compares alternatives by their respective logging systems and Table 5 displays a comparison of estimated fuel treatment acres based on preliminary estimates of the type of treatment that may be feasible. Because of the amount of fuels to be created during the commercial treatments, much more mechanical fuel treatments than underburning are expected for this entry.

## **Description of Alternative 4**

This alternative is identical to Alternative 3 in Odell, Odell Lake, Moore, and Crescent subwatersheds where a combination of thinning treatments will be applied. The main difference between this alternative and Alternative 3 is that most treatments in three subwatersheds (Browns, Wickiup, and Lower Little Deschutes) would be deferred during this round of planning so that the area can be analyzed more completely in the near future. Deferring treatment within these three subwatersheds allows for planning a more comprehensive approach to restoring this area. This approach focuses on a longer return time. Rather than needing to re-enter the area in 10 to 25 years a comprehensive plan would allow for a longer period of rest, estimated at from 30 to 40 years.

This alternative assumes that a follow-up proposal would occur in the next 3 to 5 years. When that future project is planned, the return interval could be lengthened by addressing vegetation, watershed, road maintenance, and other restoration opportunities, all at once. Although a less comprehensive follow-up project would be feasible under Alternative 2 or Alternative 3, the benefit of keeping the vegetation portion in a comprehensive plan is that it would offer a more likely source of funding in order to accomplish area resource improvement projects.

As with Alternatives 2 and 3, some units will include a combination of salvage and thinning treatments. Salvage-only logging will occur on 1,065 acres and precommercial thinning only will occur on 230 acres. Refer to [Figure 6](#) for location of harvest units.

Table 4 compares alternatives by their respective logging systems and Table 5 displays a comparison of estimated fuel treatment acres based on preliminary estimates of the type of treatment that may be feasible. Because of the amount fuels to be created during the commercial treatments, much more mechanical fuel treatments than underburning are expected for this entry.

Alternative 4 includes the recreation-related activities as described above in Alternative 3.

## Activities Common to All Action Alternatives

- Access to East Davis Lake and Lava Flow Campgrounds at Davis Lake will be altered. An intersection between 4600-855 road and Hwy 46 will be reconstructed allowing more direct access from Hwy 46 to the East Davis Lake Campground. The portion of the 855 road north of the new intersection will be closed (for about one mile). A portion of Road 850 that has been closed because of bald eagle protection requirements will be opened year round by moving the gate from its current location to the north about a third of a mile. This will all allow access to the dispersed campsites along the east shore of Davis Lake without impacting bald eagle. This access change is displayed in [Figure 7](#).
- Numerous user-created roads and dispersed camping sites occur along a portion of Odell Creek. These are reached via Road 4660-600. Actions to reduce impacts on Odell Creek from these roads and camp sites will be implemented as part of the vegetation management actions that are proposed along Road 4660-600. These include public education efforts such as signs; harvest unit design to minimize off-road vehicle use; strategic barrier placement to prevent damage along stream banks. Dispersed camping sites along Odell Creek would be moved back about 100 feet from stream bank where necessary.
- Riparian Reserves for the Odell Watershed (Odell, Odell Lake, and Moore subwatersheds) are to be designated as described in Appendix C. These reserve boundaries are recommended in the Odell Watershed Analysis (USDA Forest Service, 1999).
- During harvest layout, retention areas will be identified for each unit. Within the range of the northern spotted owl, generally 15% retention areas will be included in commercial timber harvest units as directed in the matrix standards (NWFP C-41). This will apply in all allocations under the NWFP (Matrix, Late Successional Reserve, Administratively Withdrawn, and Congressionally Withdrawn) because the rationale for the 15% reserves in Matrix applies to these other areas as well. Each alternative has specific areas identified to increase the area of retention up to 25% (see alternative descriptions). East of the owl range, 15% of units will also be retained to maintain habitat connectivity. Under current direction, retention areas designated east of the owl range would not have the same long-term restrictions as those associated with retention areas designated under the Northwest Forest Plan.

- Slash created as a result of activities associated with the project will be treated, especially in areas where there is a high risk of fire starts. Refer to Appendix A, Unit Prescriptions for an estimate of specific unit-by-unit methods. However, depending on conditions following the commercial treatment, a different method for a particular unit may need to be used. For example, a grapple pile unit may be underburned if conditions allow. Similarly, an underburning unit may require mechanical treatment before it can be burned because of post-harvest fuel levels.
- The removal of trees greater than 21 inches in diameter (breast height) may occur for the reasons described in Appendix B (page 11) and the LSR Assessment (page 3-28). In NRF habitat within the LSR, any large trees (>21" dbh) will only be removed from the site after site-specific approval of the District Ranger (LSRA page 3-28). As a general rule, large tree removal should be rare, which means that large trees will comprise fewer than 5 percent (on average) of the trees to be removed during project activities.
- Generally, for each activity area proposed, the mitigation measures and management objectives will be the same in all alternatives. Mitigation measures include actions taken to avoid, minimize, reduce, eliminate, or rectify adverse impacts of management activities proposed in the alternatives. A list of mitigation measures and objectives can be found in Appendix B.

## Temporary Roads and Road Maintenance

No new system roads are proposed as part of this project. Road maintenance will occur as needed to access harvest units. Road maintenance would consist primarily of blading of road surfaces and cutting of roadside vegetation to provide for efficient use of haul routes. A number of roads will reopen for the time necessary to complete the sale and post-sale activities, but would be closed once that work is completed. Table 6 includes a summary of the amount of road openings needed.

Temporary road construction would be necessary in all three action alternatives to complete the proposed silvicultural treatments. Implementation of Alternative 2 would result in the construction of approximately 12 miles of temporary roads; Alternative 3 would yield approximately 10 miles of temporary roads; and Alternative 4 would be construct approximately 9 miles of temporary road.

Temporary roads would primarily be constructed on locations with relatively gentle side slopes, which would generally result in narrow road widths and very little excavation or displacement of soil within that roadway. Temporary roads are typically built by the equipment that is being employed in tractor skidder operations, therefore the temporary roads in the selected alternative would be constructed immediately prior to commencement of harvest activities (or during those harvest activities) in the individual units that they are intended to serve. Upon completion of hauling activities, these roads would be closed with impassable earthen barriers and their running surfaces would be roughened to eliminate use by motor vehicles. Any subsequent near-term post-sale activities that may require vehicular access—such as slash treatment—would result in short-term road opening, after which the road would again be closed.

Temporary roads would be subsoiled after use as a part of compaction remediation activities, after which

they would not be available for use. Since these roads would only be open for brief periods of time during activities and then, at the completion of those activities, permanently closed and decompacted to foster revegetation, they would not represent a change in access provided by the transportation system.

## **K-V Projects**

Money will be collected under the authority of the Knudsen/Vandenberg (KV) Act, to complete certain projects such as required reforestation, proposed mitigation, enhancement and restoration projects in the vicinity of the harvest units. Required KV (R) and mitigation measures (M) have the highest priority for funding, but may not be funded solely through KV funds. For example, appropriated timber sale support funding may be used as well to insure that these requirements are accomplished. Enhancement projects (E) may be funded through KV or through other means.

This list is intended to serve as an overall guide for the project area. As specific timber sales are delineated within the project area, specific priorities may be adjusted to meet the specific needs for each sale area. This priority setting should be documented briefly in the implementation file for each timber sale. In addition, where funding of enhancement project relies on appropriated funding, not KV dollars, the district may place priority on funding other projects in other project areas, which could mean that a number of the enhancement projects listed here may or may not be completed depending on district-wide priorities.

1. Reforestation site preparation (R)
2. Reforestation (R)
3. Soil Restoration (primarily subsoiling) (M and E)
4. Noxious weed control (M)
5. Temporary Road restoration (M)
6. Recreation site mitigation (stump hazard removal, cleanup, etc) (M)
7. Scenic View cleanup (M)
8. Snag Creation to maintain existing levels (M)
9. Small tree thinning (PCT) (E)
10. Small tree thinning slash cleanup (M)
11. Timber stand improvement (release/weeding) (E)
12. Noxious weed removal (pre-existing) (E)
13. Road closures (E)
14. Snag creation to improve conditions where existing snags are lacking (E)

Other enhancement projects may be implemented if additional funding exists after accomplishing the priority projects. These projects have equal priority in general. Depending on the particular site-specific circumstances of the project area, a particular project may have more emphasis than another. Details of these proposed activities are found in the KV portion of the project file

- Road closures/improvement

- Great Grey Owl platforms
- Soil restoration
- Bat boxes
- Recreation facility/site improvement
- Bird boxes
- Meadow Enhancement
- Scenic view improvements
- Waterfowl structures

Table 3. Alternative Comparison of Vegetation Treatments.

<b>Acres by Harvest Method</b>	<b>Alt. 1 (No Action)</b>	<b>Alternative 2 (Proposed Action)</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
HSL6M	0	0	385	385
HSL9M	0	2720	1830	1590
HTH6C	0	0	630	635
HTH6M	0	170	1420	1360
HTH6S	0	1210	3105	2570
HTH6M/S	0	0	105	105
HTH9C	0	1995	0	0
HTH9M	0	3205	595	595
HTH9S	0	3050	715	415
HTH9M/S	0	105	0	0
HTH9Q	0	1400	2045	415
HSV/HTH6S	0	0	45	45
HSV/HTH6M	0	0	10	0
HSV/HTH9S	0	580	335	335
HSV/HTH9M	0	170	160	160

Total for green		14435	11220	8450
HSV	0	1350	1350	1065
PCT	0	230	230	230
Estimated Total Acres	0	15955	12730	9675
Estimated Net Acres		12,360	9,820	7,730
Estimated Volume CCF and MMBF		80,260 ccf or 41.7 MMBF	61,400 ccf or 31.9 MMBF	44,600 ccf or 23.2 MMBF

### Harvest Method Definitions:

**HTH:** Commercial Thinning - the objective is to leave stocked stand that is below the upper management zone (UMZ) and with a species and structure that will meet resource objectives. Generally, this means retaining species such as ponderosa pine and removing white fir. The size of these trees is such that they may be utilized on the commercial market (greater than 6 inches diameter).

**9** = Thin to 90% of UMZ (light thinning)

**6** = Thin to 67% of UMZ (moderate thinning)

**M** = Thin to maintain multi-story stand.

**S** = Thin to promote or maintain single-story stand.

**C** = Combination of multi and single-story objectives.

**Q** = Increase retention area to 25% of unit area.

**HSV:** Salvage- removal of dead trees to utilize material and reduce fire hazard. Some small-green tree during cleanup.

**PCT:** Precommercial thinning- thinning of smaller diameter trees too small to be utilized commercially.

**HSL:** Selection cutting- prescribed in areas where LOS conditions are lacking, with an objective of thinning around selected trees to promote growth.

CCF = 100 cubic feet and MBF = 1,000 board fee., MMBF = one million board feet

Table 4 Logging Systems Estimate

<b>System</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>
Ground	12,050	9625	8595
Cable or Helicopter	450	320	320

Table 5 Fuels Treatment estimate

<b>Treatment</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>
Grapple/Handpile	10,590	8,340	7,940
Handpile	110	110	110
Underburn	1,840	1,560	900
	12,540	10,010	8,950

Table 6 Alternative Comparison of Recreation and Non-harvest Activities

<b>Alt. 1 (No Action)</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>
No change at 600 road.	Unit design and regulation of dispersed use.	Unit design and regulation of dispersed use.	Unit design and regulation of dispersed use.
4600-855 to remain open	4600-855 to be closed	4600-855 to be closed	4600-855 to be closed
No re-opening of intersection 4600 and 4600-855	Re-opening of intersection 4600 and 4600-855	Re-opening of intersection 4600 and 4600-855	Re-opening of intersection 4600 and 4600-855

No change at dispersed camp sites on Davis Arm	No change at dispersed camp sites on Davis Arm	Modification or elimination of campsites on Davis Arm. Closure of user-created roads.	Modification or elimination of campsites on Davis Arm. Closure of user-created roads.
No change at dispersed campsite at end of 4660-400 road.	No change at dispersed campsite at end of 4660-400 road.	Dispersed campsite at end of 4660-400 road would be walk or pack in.	Dispersed campsite at end of 4660-400 road would be walk or pack in.
4660-400 to remain open to motor vehicles.	4660-400 to remain open to motor vehicles.	4660-400 to be closed to motor vehicles.	4660-400 to be closed to motor vehicles.
No roads would be re-opened.	Approximately 92 miles of currently closed roads would be opened to facilitate commercial haul.	Approximately 75 miles of currently closed roads would be opened to facilitate commercial haul.	Approximately 46 miles of currently closed roads would be opened to facilitate commercial haul.

## Monitoring

Opportunities for monitoring have been identified and are described in Appendix B.

[Figure 4](#) - Alternative 2Units Map

[Figure 5](#) - Alternative 3 Units Map

[Figure 6](#) - Alternative 4 Units Map

[Figure 7](#) - Recreation and Road Activities

GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)
- [Appendix E](#)

---

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/chapter2.html>

Last Update: 8/27/01

R.A. Jensen

## CHAPTER III - Environmental Effects

This section of the environmental assessment considers the environmental consequences of implementation of the various alternatives. The effects may be direct, indirect, or cumulative.

### A. Summary of Effects, Key Issues

A detailed description of the effects of each alternative is provided in sections B and C. Table 7 displays a summary of information found in Section B.

Table 7 Summary of Effects, Key Issues

Issue		Alt. 1	Alt 2	Alt 3	Alt. 4
<b>Northern Spotted Owl</b>	Owl Impacts Summary	May Affect, likely to adversely affect spotted owl or critical habitat			
<b>NRF</b>	NRF Altered to dispersal	0	1843	1143	141
	NRF Altered to forage	0	3189	2506	2090
	<b>Total NRF</b>	<b>0</b>	<b>5032</b>	<b>3649</b>	<b>2231</b>
<b>Blocks</b>	Habitat Blocks Maklaks	0	312	241	241
	Habitat Blocks Hamner	0	0	0	0
	Habitat Blocks N. Black Rock	0	632	419	419
<b>LSR</b>	NRF Altered to dispersal	0	297	94	69
	NRF Altered to forage	0	819	691	674
	<b>Total LSR</b>	<b>0</b>	<b>1116</b>	<b>785</b>	<b>743</b>
<b>CHU</b>	NRF Altered to dispersal	0	79	41	40
	NRF Altered to forage	0	428	317	317
	<b>Total CHU</b>	<b>0</b>	<b>507</b>	<b>358</b>	<b>357</b>
<b>BEMA</b>	NRF Altered to dispersal	0	1137	476	47
	NRF Altered to forage	0	277	106	47
	<b>Total</b>	<b>0</b>	<b>1414</b>	<b>582</b>	<b>94</b>
<b>Dispersal</b>	Acres of dispersal treated	0	12977	9679	6319

<b>Bald Eagle</b>	Eagle Impact Summary	May adversely affect	May Affect, not likely to adversely affect eagle		
	Winter Forage moderate altered	0	1137	476	47
	Winter Forage light altered	0	277	106	47
	Total Winter Forage altered	0	1414	582	94
	Other BEMA habitat treated	0	1285	926	663
	Total BEMA habitat treated	0	2699	1508	757
<b>Forest Health</b>	Risk reduction in general (acres)	None	16000	12000	9000
	Large tree loss risk reduction	None	High	Med.	Low
	Replacements for large trees	None	High	Med.	Low
	Fragmentation reduction	None	High	Med.	Low
	Young stands promoted	None	High	Med.	Low
<b>Watershed Effects</b>	Watersheds at or above 25%	1	2	2	1
	Watersheds 20-25%	0	2	1	1
	Watersheds less than 20	6	3	4	6
	Return interval (decades)	NA	1-2	2-3	3-4

## ***B. Effects in terms of the Key Issues***

### **1. Spotted Owl Habitat**

Late-successional forests that are suitable nesting, roosting, and foraging (NRF) habitat and younger aged forested stands that are suitable for dispersal habitat for the northern spotted owl is present in the 7 Buttes Return project area. The project area contains nine known spotted owl activity centers. Eight of these centers are also within U.S. Fish and Wildlife Service designated Critical Habitat (CHU OR-7). The majority of the suitable spotted owl habitat in the planning area was surveyed three times in 1999 and 2000. An additional three visits are planned in 2001 on the north side of Davis Mountain to comply with a two-year six visit spotted owl survey protocol.

The Davis Late-Successional Reserve Assessment (USDA Forest Service 1995a) describes the need for action as follows:

**It must be recognized that NRF habitat is generally not considered sustainable long-term in the mixed conifer dry PAG without management intervention. Currently, the structure within the mixed conifer dry PAG that the owls are using has developed as a result of fire suppression and the consequent encroachment of white fir in the understory. This habitat type is unstable. Within the LSR the majority of**

**the existing NRF habitat is located in this PAG. (page 2-5 )**

**There is an immediate need to reduce the risk of losing the desired LOS components within the Davis LSR. The focus of the protection strategy is to aggressively adjust the existing balance of vegetative conditions in the mixed conifer and lodgepole PAGs within and around the LSR to a more sustainable balance over the next five years. (page 3-18)**

**The majority of unharvested mixed conifer stands have progressed to the climatic-climax condition due to fire suppression. The majority of the stands in the climatic-climax condition have been determined to be at high risk of losing their late and old-structured components such as large diameter ponderosa pine and Douglas-fir to insect attack and/or wildfire. These components if lost, are not easily replaced within the Davis LSR due to a shortage of replacement trees of adequate size and/or species composition. (page 3-20)**

Without silvicultural treatments, wildfire, insects, and/or disease could result in the long-term degradation or loss of spotted owl habitat. However, silvicultural treatments may also result in some short-term modification of habitat in order to achieve forested lands that are more resistant to insects, disease, and fire over the long-term. Surveys have been completed to protocol so that no habitat modification would negatively impact northern spotted owls that have not been previously identified.

### ***Summary of Effects to the Northern Spotted Owl***

Given the current trends in the loss of large trees caused by overcrowded conditions, the no action alternative would adversely affect spotted owls and critical habitat. Implementation of any action alternative proposes to alter northern spotted owl habitat as a result of commercial thinning and salvage timber harvests. Nesting, roosting, and foraging habitat would be altered to owl forage habitat on approximately 2,000 to 3,000 acres depending on the alternative selected. Generally this modification means that stands currently providing NRF habitat will continue to provide roosting, foraging and dispersal capability for the northern spotted owl. There would also be between 150 to 1,850 acres of NRF habitat altered to a point where it is no longer suitable nesting, roosting or foraging. This change would leave the habitat available for dispersal habitat.

Alternative 2 proposes to alter the greatest number of acres of NRF to foraging habitat. This alternative is expected to have more adverse effects than alternatives 3 or 4. Alternative 4 proposes the least of amount of NRF habitat treatments and would be expected to have the least impact on spotted owl habitat. All action alternatives are expected to have beneficial effects on spotted owl habitat in the long-term by reducing stand density, allowing more resistant trees to be maintained on site, and retaining the large trees currently present.

In the short-term, there will be a reduction in the amount, quality and distribution of suitable spotted owl habitat within the planning area. Over the long-term, multi-story stand treatments are expected to develop more sustainable NRF habitat that is capable of supporting northern spotted owls at a level consistent with the habitat capability within eastside Cascades ecosystems.

In summary in the short-term, all action alternatives are likely to adversely affect the northern spotted owl and designated critical habitat. Long-term, implementation of these treatments will provide a benefit by retarding the loss of key habitat components while assuring future habitat comes on line as untreated stands lose their habitat quality.

### ***Existing Condition***

The Seven Buttes Return planning area (PA) supports a variety of tree species and vegetative conditions some of

which provide suitable habitat for the northern spotted owl, a federally threatened species. Depending on the age, average stand diameter, and structural characteristics forested areas may function as spotted owl nesting, roosting, and foraging habitat (NRF) or provide habitat capable of only allowing owl dispersal. Generally, NRF stands represent the highest quality habitat present providing potential nest sites, high quality prey habitat and also allow for owl dispersal.

There are approximately 25,482 acres of suitable NRF habitat in the planning area with most of that acreage associated on or near the major buttes in the planning area but also adjacent to Odell Lake and within the Oregon Cascades Recreation Area (OCRA). Habitat fragmentation as a result of past timber harvest is relatively common on the buttes although large consolidated blocks of NRF habitat is present along Odell Lake, Maklaks Mountain, within the OCRA, north of Black Rock and along the west side of Hamner Butte.

There are approximately 91,738 acres of forested stands that provide suitable dispersal habitat for the spotted owl. The following criteria were used to define dispersal habitat: within lodgepole pine and mountain hemlock forests, average stand diameter had to meet or exceed 7 inches dbh and greater than 30 percent canopy cover. Within mixed conifer and ponderosa pine forests, average stand diameter had to meet or exceed 11 inches diameter and greater than 40 percent canopy cover. Dispersal habitat is generally well distributed across the planning area although fragmentation has occurred west of Davis Lake in the mixed conifer dry plant associated group (USDA 1994). A mountain pine beetle outbreak killed the lodgepole pine stands immediately south of Davis Lake and removed the owl dispersal capability in this area as well.

The following evaluation criteria will be used to measure the effects of the planned activities:

1. Acres of NRF habitat treated and percentage of the total NRF existing after harvest and road construction activities.
2. Acres treated in three large contiguous patches of NRF habitat (Maklaks, West Hamner, and North Black Rock), which serve as key connectivity corridors for the species.
3. Acres of NRF habitat silviculturally treated within Northern Spotted Owl Critical Habitat Unit OR-7 and the Davis Late-Successional Reserve.
4. Acres of NRF habitat silviculturally treated in Bald Eagle Management Areas (BEMAs).
5. Acres of spotted owl dispersal habitat treated in project area.

***a. Acres of NRF habitat treated.***

Table 8. Nesting, Roosting, and Foraging Habitat (NRF) Treated.

Alt.	Acres of NRF Treated	Acres to dispersal"	Acres to Forage	Acres NRF Untreated	Percent of Total Treated
1	0	0	0	24,430	0%
2	5,035	1,843	3,189	19,390,447	21%
3	3,430	1,143	2,290	21,198	14%
4	2,580	141	2,090	23,251	11%

Table 8 displays the acres of Nesting, Roosting, and Foraging Habitat (NRF) Treated Within The 7 Buttes Return Planning Area. . Figure 8 shows Alternative 2 treatments in relation to existing NRF. Figure 9 shows all the alternative treatments by comparison.

### *Alternative 1*

Implementation of this alternative would result in no timber harvest that would negatively impact any NRF habitat in the project area. Concurrently, there would be no opportunity to treat forested stands that are identified as imminently susceptible to reduce their risk to disease, insect infestation, and/or wildfire. Natural ecological processes would continue to evolve that may result in some stands dying from insect damage and disease. In the absence of commercial and pre-commercial thinning, younger-aged stands would mature at a slower rate into conditions suitable for spotted owl dispersal. Large trees that fade because of high stand density and unbalanced species composition will remain on the site to provide snags and down wood, but living large trees will take several decades, if not centuries, to replace as key constituent of the NRF. Therefore, no action will have the effect of degrading spotted owl habitat.

### *Alternative 2*

Implementation of this alternative would result in the commercial timber harvest within about 20 percent of the total NRF habitat present in the planning area. No harvest of NRF habitat would occur within any known spotted owl home range. The majority of the commercial thinning planned would occur on the north side of Davis Mountain, south side of Hamner Butte, and south of Cryder and Ringo Buttes. The commercial thinning proposed includes a combination of upper and lower management zone to single or multi-story.

Generally, single story thinning of NRF would occur in the BEMA's to provide bald eagle nesting habitat. The reduction in vertical and horizontal structure would likely preclude these stands from functioning as NRF habitat for spotted owls into the foreseeable future. These stands would provide for owl dispersal capability.

Thinning proposed would involve primarily the removal of lodgepole pine and white fir with the vast majority of the trees removed being less than 21 inches in diameter. This level of treatment would provide resistance to insects and disease. The multi-story thinning treatments of NRF would occur on Davis Mountain, Maklaks Mountain, Cryder Butte, Hamner Butte, and Odell Butte. Upper and lower management zone thinning would occur that would temporarily alter NRF habitat to foraging habitat for 1-3 decades. Roosting and dispersal capability would be maintained however and NRF conditions return when canopy cover increases to approximately 50 percent. A total of 3,189 acres of NRF would be temporarily altered to roosting and foraging habitat. It is estimated within one to three decades increased tree growth of residual trees and coniferous understory would recover to function as NRF habitat again. However, reducing the risk to the large trees and giving them the best chance possible to survive, these treatments provide a faster means of creating future NRF by preserving the component that is most difficult to replace (larger trees).

Timber harvest within these stands may result in the removal of a percentage of the snags present within harvest units. This would reduce the habitat present for small mammals that serve as prey base for northern spotted owls. To mitigate for this loss, snags would be retained wherever possible and additional snags created (see mitigation measures). Coarse woody debris would also be left within each harvest unit to meet existing direction.

Indirect effects could include the possibility of additional tree loss to windthrow. Typically, prevailing storms approach from the south or southwest and reducing stand density on these aspects increase the risk to losing some additional green trees to windthrow though there is no way to predict if or when this might occur or the severity. The south side of Davis Mountain, Maklaks Mountain, and the east side of Davis Lake are several areas that may be more

susceptible to windthrow.

After the completion of commercial thinning, post-sale silvicultural treatments may include post and pole sales and/or pre-commercial thinning to further reduce the number of stems per acre of undesirable species such as lodgepole pine and white fir while retaining the more resistant trees such as ponderosa pine, Douglas-fir, sugar pine, and western white pine. Silvicultural prescriptions would be written and take into account the existing condition and desired future condition and prescribe treatments with appropriate mitigation measures to develop or enhance spotted owl habitat for the long-term. Spring underburning of slash may also occur to reduce fuel loadings within the mixed conifer and ponderosa pine PAG's. This activity is not expected to have a long-term negative impact on owl habitat because mitigation measures are in place to retain the large diameter logs and snags that provide small mammal habitat and serve as prey species for the northern spotted owl. Timing restrictions on burning may also be in effect depending on the location (see mitigation measures).

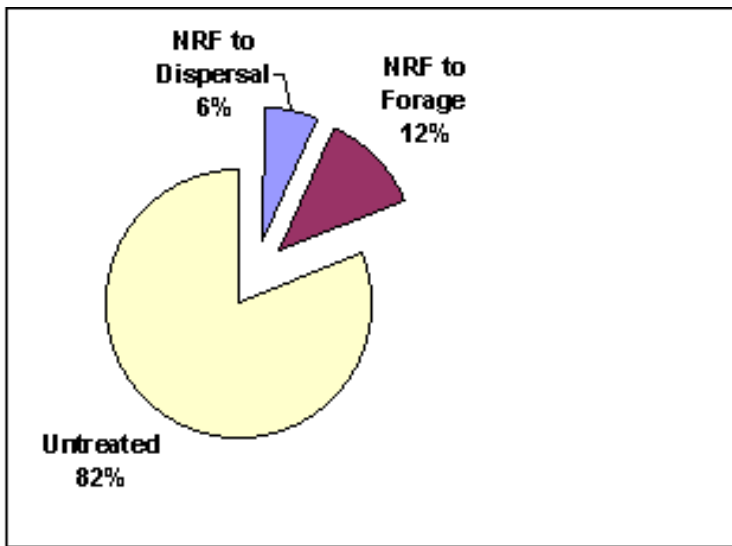


Figure 8 Alternative 2 NRF Treatments

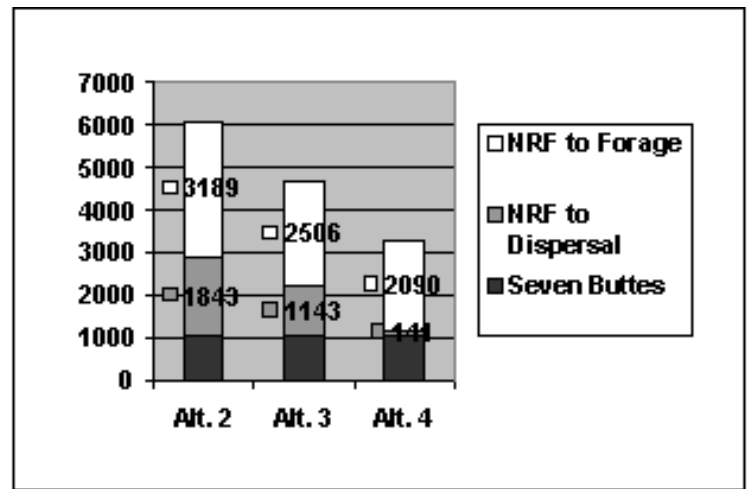


Figure 9 NRF Treatment by Alternative

### Alternative 3

Implementation of this alternative would result in the commercial thinning harvest of about 14 percent of the total NRF habitat in the planning area. The reduction in NRF habitat harvested, compared to Alternative 2 is because fewer acres will be treated in several key areas including the north side of Davis Mountain, Maklaks Butte, and the south side of Hamner Butte. Commercial thinning to upper and lower management zone with a combination of single and multi-story treatments would occur similar to alternative 2. Multi-story treatments total 2,506 acres and would occur in Cryder Butte, Hamner Butte, Royce Mountain, Odell Butte, and Maklaks Mountain. Also similar to alternative 2, these treatments would temporarily alter NRF habitat for 1-3 decades. Roosting and foraging habitat however would be maintained.

Single story treatments would occur on 1,140 acres of NRF habitat primarily located on Davis Mountain with scattered units on Cryder Butte, Royce Mountain, Odell Butte, and west of Wickiup Reservoir. Similar to alternative 2 these treatments would alter NRF habitat and only provide dispersal capability into the foreseeable future.

Similar to Alternative 2 the primary emphasis is to reduce the stand density and basal area by removing lodgepole pine and white fir with lesser amounts of ponderosa pine or other more desirable species. Trees to be removed would be less than 21 inches diameter with few exceptions. The different thinning strategies would allow some areas to be lightly thinned while reducing the risk to insects and disease and also returning to NRF capability within one to two decades. Alternatively, some areas would be more heavily thinned reducing the length of time before the next needed harvest entry but also increasing the length of time needed to return to NRF capability, estimated at two to three decades.

The direct effects would be the same as described for alternative 2, although reduced in the number of acres actually treated. An additional 1,400 acres of NRF habitat would remain untreated as potential nesting habitat for the spotted owl as compared to Alternative 2. These stands would remain of higher risk of habitat loss, and if lost, would take longer to recover than the recovery time estimated for treated stands.

Similar to Alternative 2 there would be no treatment of NRF habitat within each known spotted owl home range. There is the potential for greater indirect effects with this alternative since some acreage is proposed for thinning to the lower management zone. Those harvest units on southwest facing aspects and thinned to the lower management zone planned for Royce Mountain and east Davis Lake would have a higher risk of additional green tree loss to windthrow although this would be dependent on the timing and severity of storms. If windthrow occurred and depending on the severity, the quality of dispersal habitat may be lowered and require additional time for tree canopy cover to return.

After the completion of commercial thinning, post-sale silvicultural treatments may include post and pole sales and/or pre-commercial thinning to further reduce the number of stems per acre of the more undesirable species including white fir and lodgepole pine. The more resistant trees including ponderosa pine, Douglas-fir, sugar pine, and western white pine would be favored where they are available. Silvicultural prescriptions would be written and take into account the existing condition and desired future condition and prescribe treatments with appropriate mitigation measures to develop or enhance spotted owl habitat for the long-term. Similar to alternative 2, underburning within mixed conifer and ponderosa pine PAG's may be scheduled to reduce fuel loadings with the same effects as previously described.

#### *Alternative 4*

Implementation of alternative 4 would result in the commercial thinning of 2,231 acres of NRF habitat or about 9 percent of the total NRF habitat in the planning area. The major difference between this and alternative 2 and 3 is that no harvest would occur in the Browns, Wickiup, and Lower Little Deschutes subwatersheds in the northern portion of the planning area. Similar to alternative 3, there is a combination of upper and lower management zone and single and multi-story commercial thinning proposed for this alternative.

A total of 2,090 acres of NRF habitat would be thinned with a multi-story objective and be altered to roosting and foraging habitat. A total of 141 acres of NRF habitat would be thinned to a single story condition and change these acres to dispersal habitat capability only.

The direct and indirect effects would be the same as described for Alternative 2 except on a reduced number of acres. An additional 2,800 acres of NRF habitat would be maintained with this alternative as compared to alternative 2 although that also means fewer acres silviculturally treated to create more resistant stands. Similar to alternative 2 and 3 no treatment of NRF habitat is proposed within known spotted owl home ranges.

After the completion of commercial thinning, post-sale silvicultural treatments may include post and pole sales and/or

pre-commercial thinning to further reduce the number of stems per acre of more resistant trees including ponderosa pine, Douglas-fir, sugar pine, and western white pine. Silvicultural prescriptions would be written and take into account the existing condition and desired future condition and prescribe treatments with appropriate mitigation measures to develop or enhance spotted owl habitat for the long-term. Similar to alternative 2, underburning within mixed conifer and ponderosa pine PAG's may be scheduled to reduce fuel loadings with the same effects as previously described.

***b. Acres treated in three large contiguous blocks of NRF***

Table 9 Acres of NRF Treated within Large, Contiguous Blocks

<b>Alternative</b>	<b>Maklaks Block 2,208 ac.</b>	<b>Hamner Block 3,293 ac.</b>	<b>North Black Rock Block 814 ac.</b>	<b>Percent of Total Treated</b>
1	0	0	0	0%
2	312 ac. / 14%	0	632 ac. / 78%	15%
3	241 ac. / 11%	0	419 ac. / 52%	10%
4	241 ac. / 11%	0	419 ac. / 52%	10%

Table 9 displays acres treated in three large contiguous blocks of NRF habitat (Maklaks, West Hamner, and North Black Rock), which serve as key connectivity corridors for the species.

***Alternative 1***

Implementation of this alternative would result in no timber harvest that would negatively impact any of the large blocks in the short-term. Concurrently, there would be no opportunity to treat forested stands that are identified as imminently susceptible to reduce their risk to disease, insect infestation, and/or wildfire. Natural ecological processes would continue to evolve that may result in some stands dying from insect damage and disease. In the absence of commercial and pre-commercial thinning, younger-aged stands would mature at a slower rate into conditions suitable for spotted owl dispersal. With No Action, the stands in these blocks remain at risk of losing their value as suitable owl habitat. Loss of large trees represents the most long-term effect of habitat loss, since it is the component that would take the longest to replace.

***Action alternatives***

None of the action alternatives implement NRF treatments in the Hamner Block. In all action alternatives, commercial thinning is proposed in Maklaks and North Black Rock contiguous habitat blocks, but Alternative 2 proposes more in each than Alternative 3 or 4. In Alternative 2, the greatest impact would occur in the North Black Rock block where the majority of the acreage would be commercially thinned. This habitat would be altered to roosting and foraging habitat for one to two decades. In Alternative 2, the stands proposed for thinning in this block range the entire height of the mountain from north to south, which poses a somewhat higher greatest risk of interrupting owl dispersal if heavy windthrow were to occur. However, this silvicultural treatment would be more likely to provide long-term benefit if the stands are converted to a more disease resistant forest. The same circumstances apply to the Maklaks

block where similar conditions exist in an area suspected to be important to dispersing spotted owls and other late-successional dependent species.

Implementation of Alternative 3 and 4 would result in 284 fewer acres proposed compared to Alternative 2. An unthinned block of NRF habitat would be left in Maklaks and North Black Rock to act a buffer in maintaining a NRF corridor through each block while still allowing some level of risk reduction to occur within each contiguous habitat patch.

*c. Acres of NRF habitat treated within Critical Habitat and LSR.*

Table 10 NRF in LSR

<b>Alternative</b>	<b>Acres NRF Treated</b>	<b>NRF to Dispersal</b>	<b>NRF to Forage</b>	<b>Acres NRF Remaining</b>	<b>Percent of Total Treated</b>
1	0	0	0	12,420	0%
2	1,116	297	819	11,304	9%
3	785	94	691	11,635	6%
4	743	69	674	11,677	6%

Table 11 NRF in CHU

<b>Alternative</b>	<b>Acres NRF Treated</b>	<b>NRF to Dispersal</b>	<b>NRF to Forage</b>	<b>Acres NRF Remaining</b>	<b>Percent of Total Treated</b>
1		0	0	9,087	0%
2	507	428	79	8,580	6%
3	358	317	41	8,729	4%
4	357	317	40	8,730	4%

Table 10 displays the current number of acres of NRF habitat within the Davis LSR, as well as the expected change in NRF acreage by alternative. Table 11 displays acres of NRF Treated within Critical Habitat Unit CHU OR-07.

Approximately 97 percent of the CHU overlaps with the Davis LSR so every acre of CHU impacted is also contained within the Davis LSR. However, there are acres of LSR impacted that are outside the CHU boundary.

*Alternative 1*

Implementation of this alternative would result in no timber harvest that would negatively impact any of the NRF in the critical habitat and/or LSR. Concurrently, there would be no opportunity to treat stands that are identified as imminently susceptible to reduce their risk to disease, insect infestation, and/or wildfire. Natural ecological processes would continue to evolve that may result in some stands dying from insect damage and disease. Risk of habitat loss caused by a large-scale fire would also increase with time, and if a fire were to occur, the length of time that the habitat would be absent from the landscape would extend from decades to centuries, depending on the survival of the large trees in the stands. In the absence of commercial and pre-commercial thinning, younger-aged stands would mature at a slower rate into conditions suitable for spotted owl dispersal.

### *Action Alternatives*

Implementation of any of the action alternatives would result in the commercial thinning of various percentages of the NRF in Davis LSR and the CHU (see tables). In Alternative 2, more commercial thinning is proposed adjacent to Odell Lake, south side of Maklaks Mountain, south side of Royce Mountain, southeast side of Hamner Butte, south side of Ringo Butte and within the Davis East BEMA. All commercial thinning proposed would be done to reduce stand density and basal area. In Alternative 2, a combination of upper and lower management zone and single and multi-story treatments are proposed. Within the LSR, a total of 297 acres of NRF habitat would be thinned to a single story condition. Of the 297 acres, 79 acres are also within the CHU. The majority of the 297 acres are within the Davis Lake BEMA with a desired objective of maintaining bald eagle nesting habitat. Spotted owl NRF habitat would be altered to dispersal habitat only in order to meet the bald eagle habitat objective. There are also 819 acres of NRF habitat proposed for thinning to maintain a multi-story condition. This treatment would alter NRF habitat for 1-3 decades until canopy cover returns to near pre-harvest conditions. Upper management zone thinning would allow NRF habitat conditions to return in an estimated 1-2 decades while an additional decade may be required where lower management zone thinning would occur. No harvest of NRF habitat would occur within a known spotted owl home range territory.

Implementation of Alternative 3 or Alternative 4 would result in fewer acres of timber harvest on Hamner Butte and Maklaks Butte as compared to Alternative 2. Similar to alternative 2 a combination of upper and lower management zone and single and multi-story thinning is proposed. Within the LSR a total of 94 acres of NRF habitat would be treated to a single story condition. Of the 94 acres, 41 acres are also within the CHU. Thinning to single story would alter NRF habitat to dispersal habitat for the foreseeable future. There are also 691 acres of NRF habitat proposed for thinning to maintain a multi-story condition. This treatment would alter NRF habitat to roosting and foraging habitat for 1-3 decades as described in alternative 2. Indirect effects may include a temporary reduction in prey species particularly if snag densities are reduced during harvest operations. However, mitigation measures are in place for snag retention and coarse woody debris to maintain spotted owl prey base habitat. Similar to alternative 2, there would be no harvest of NRF habitat within known spotted owl home range territories.

#### *d. Acres of NRF habitat treated in Bald Eagle Management Areas (BEMAs).*

Table 12. Acres of NRF Treated Within BEMAs

<b>Alt.</b>	<b>Acres NRF Treated</b>	<b>Eagle Nest Tree Protection</b>	<b>Maintaining Bald Eagle Winter Roost</b>	<b>Acres NRF Remaining (in the BEMA)</b>	<b>Percent of Total Treated</b>
1	0	0	0	3,731	0%

2	1,414	1137	277	2,317	38%
3	582	476	106	3,149	16%
4	94	47	47	3,637	3%

This criterion addresses the effects of trying to manage habitat for northern spotted owls within a Deschutes National Forest bald eagle land management allocation (BEMA). Habitat requirements for each species are not exactly the same and in the case of the bald eagle, open stands are more beneficial than for spotted owls. The Davis LSR Assessment addressed this by emphasizing bald eagle habitat management objectives near Davis Lake. Additional information on effects to bald eagles is also provided under Issue #2. Table 12 displays acres of Nesting, Roosting, and Foraging Habitat (NRF) Treated Within Bald Eagle Management Area (BEMAs).

### *Alternative 1*

Implementation of this alternative would result in no timber harvest that would negatively impact any of the spotted owl NRF. Concurrently, there would be no opportunity to treat forested stands that are identified as imminently susceptible to reduce their risk to disease, insect infestation, and/or wildfire. Natural ecological processes would continue to evolve that may result in some stands dying from insect damage and disease. In the absence of commercial and pre-commercial thinning, younger-aged stands would mature at a slower rate into conditions suitable for spotted owl dispersal. Bald eagle habitat would remain at a higher risk as well. Since bald eagle habitat tends to be the more dry growing sites, the risk of losing large trees on these sites is higher when stand densities remain high.

### *Action Alternatives*

Implementation of the action alternatives would result in the harvest of from 3 percent of the NRF within BEMA allocated lands (Alternative 4), up to 38 percent (Alternative 2). The majority of the timber harvest in Alternative 2 would occur within the Wickiup BEMA with smaller acreages treated in the east Davis Lake and Odell Northwest BEMA's. Treatments that alter NRF to dispersal habitat are proposed to create a single story condition to maintain and enhance bald eagle nesting habitat. Treatments that maintain bald eagle winter roosting habitat would alter NRF to roosting and foraging habitat for 1-2 decades until NRF conditions re-develop. Post-sale treatments may also be scheduled which could include post and pole and/or pre-commercial thinning to further reduce stand density to a desirable condition for the long-term term.

#### *e. Acres of spotted owl dispersal habitat treated*

Table 13 Acres of Northern Spotted Owl Dispersal Habitat Treated by Alternative.

<b>Sub watershed</b>	<b>Existing Dispersal</b>	<b>Subwatershed % = Dispersal Habitat</b>	<b>Alt. 2 Treated Dispersal Acres</b>	<b>Alt. 3 Treated Dispersal Acres</b>	<b>Alt. 4 Treated Dispersal Acres</b>
Browns	6,756	95%	2,223 (33%)	2,032 (30%)	0
Crescent	27,228	86%	5,171 (19%)	4,645 (17%)	4,645 (17%)

L.L. Deschutes	8,083	81%	56 (<1%)	8 (<1%)	8 (<1%)
Moore	29,267	80%	1,761 ( 6%)	934 ( 3%)	834 ( 3%)
Odell	13,291	80%	1,062 ( 8%)	694 ( 5%)	694 (5%)
Odell Lake	16,938	78%	220 (1%)	138 (1%)	138 (1%)
Wickiup	8,318	96%	2,484 (30%)	1,228 (15%)	0
Total	109,881		12,977 (12%)	9,679 (9%)	6,319 (6%)

Table 13 displays the acres of northern spotted owl dispersal habitat currently present within each subwatershed and the number of acres silviculturally treated by alternative. The table discloses the number of acres that currently provide dispersal capability, which includes the acres of nesting, roosting and foraging habitat that are also present within each subwatershed. NRF serves as dispersal habitat and so has been included in these figures.

### *Alternative 1*

Taking no action will have little or no measurable effect on the conditions for dispersal habitat, assuming that no large-scale disturbance occurs from insects/disease or fire. Over time, dispersal habitat would grow into suitable owl nesting, roosting and foraging habitat. In the absence of commercial and pre-commercial thinning, younger-aged stands would mature at a slower rate into conditions suitable for spotted owl dispersal. If a fire or other disturbance takes place, these stands would likely lose their value as dispersal habitat, depending on fire severity and the resulting distribution of openings caused by the disturbance. No timber harvest that would negatively impact dispersal habitat.

### *Action Alternatives*

Implementation of Alternative 2 would allow timber harvest (commercial thinning and post/pole thinning) within about 12 percent of the planning area acreage that currently provides dispersal capability for the northern spotted owl. This would include treatment in stands currently functioning as NRF habitat as well as stands currently providing roosting, foraging and dispersal habitat. Upper and lower management zone thinning to single and multi story is prescribed with post-harvest canopy cover estimated to remain above the minimum 30 percent level within lodgepole pine and mountain hemlock PAG's, 35 percent within ponderosa pine and mixed conifer dry PAG's, and greater than 40 percent in the mixed conifer wet PAG's that define dispersal habitat. All treatments are designed to reduce stand density, facilitate the increased growth of residual trees, and lessen the risk of loss to wildfire, insects, and disease. Habitat connectivity would be maintained and allow for northern spotted owls to disperse through planning area. Mitigation measures would require the retention of a minimum of 15 percent of each harvest unit.

Implementation of Alternative 3 would allow timber harvest within about 9 percent of the total dispersal habitat within the planning area. Silvicultural treatments would include single or multi story prescriptions to upper or lower management zone levels. Compared to alternative 2, reduced timber harvest would occur in several areas including Davis Mountain and Maklaks Mountain. Post-harvest canopy cover would meet the minimums required that define dispersal habitat within each PAG and allow owls to disperse through treated stands. Mitigation measures would require the retention of a minimum of 15 percent of each harvest unit and within units 15 and 20, 25 percent retention would occur. These retention blocks would provide high canopy cover areas for spotted owls or and other species that

are dispersing north and south through this area.

Implementation of Alternative 4 would allow timber harvest within about 6 percent of the total dispersal habitat within the planning area. The acreage is reduced from Alternatives 2 and 3 because no harvest would occur within the Browns and Wickiup subwatersheds. The effects would be similar to that described in Alternative 3 in those subwatersheds where thinning is proposed because the same units are proposed with the same treatment prescriptions. Within unit 15, 25 percent retention would occur. These retention blocks would provide high canopy cover areas for spotted owls or and other species that are dispersing north and south through this area. All treated stands are expected to remain dispersal habitat post-harvest.

### *Cumulative Effects to Spotted Owls*

At the present time there are approximately 24,632 acres of NRF habitat within the planning area with silvicultural treatments proposed on 2,231 to 5,035 acres in this assessment. This analysis takes into account implementation of the Seven Buttes EA (USDA 1996). The treatment objectives in the Seven Buttes EA were the same as described in this assessment, to reduce the risk of catastrophic loss to insects, disease, and wildfire. In the long-term, upper and lower management zone thinning to maintain multi-story forests are expected to reduce the susceptibility of stands to large-scale loss to wildfire and/or insect and disease outbreaks. Within mixed conifer wet and mixed conifer dry (north slopes) stands, sustainable blocks of habitat are expected to be maintained as owl habitat in the long-term, although short-term degradation would occur from the thinning proposed. Within other PAGs and mixed conifer dry on east, south and west slopes, the ability to maintain NRF habitat in the long-term may not be achievable although quality dispersal habitat will be maintained. The treatment of NRF habitat would only occur outside spotted owl home ranges and are intended to create blocks of quality dispersal habitat and sustainable NRF habitat where physically capable to replace stands that may be lost from future wildfires or disease epidemics. Habitat connectivity would be maintained throughout the project area because no regeneration timber harvest is proposed and so all treated stands would maintain dispersal habitat capability for the spotted owl.

Several planning areas border the Seven Buttes Return project area, including Charlie Brown (USDA 2000) to the north and Baja 58 (USDA 1998) to the south. Both Charlie Brown and Baja 58 involve commercial and precommercial thinning of NRF and non-suitable owl habitat. The Charlie Brown project was permitted 990 acres of NRF habitat modification by the US Fish and Wildlife Service. These acres were further adjusted by the re-mapping of NRF habitat during the spring of 2001 and the actual adverse impact acres are closer to 640. The Seven Buttes Return project as proposed would cause no cumulative impacts to owls dispersing north or south out of the project area because habitat connectivity would be maintained. All silvicultural prescriptions would be written to maintain dispersal habitat at a minimum.

There are also approximately 17,000 acres of privately owned lands in the project area, mostly east of Odell Butte and Black Rock. Crown Pacific Corporation is the largest land owner with the project area and they have conducted intensive timber harvest in this area over the last several years. At best most of the acreage would provide poor quality dispersal habitat and NRF habitat is likely non-existent. There is also a strip of privately owned land at Crescent Lake junction and about 1,200 acres along Highway 58 between Crescent Lake and Royce Mountain. These lands, where still timbered, would allow for owl dispersal, but future development as homesites may eventually eliminate their ability to provide spotted owl dispersal habitat in the long term.

## **2. Bald Eagle Habitat**

The northern bald eagle is a federally listed threatened species. On July 6, 1999, the proposal was made to remove the species from this status, but to date, no further action has been taken.

Large tree habitat for the northern bald eagle is at risk to fire, insects, and disease particularly within portions of the Wickiup and Davis Bald Eagle Management Area's (BEMA's). Large tree habitat is important because it provides potential nest trees during the late winter and early spring and night communal roosting habitat needed during the winter months especially during periods of inclement weather. Silviculture treatments have the capability to enhance nesting or roosting habitat by reducing stand density and reduce the risk of large tree loss to insects and disease. Conversely, commercial thinning may increase the risk of windthrow and/or convert quality roosting habitat to nesting habitat by promoting single story type habitats.

### **Summary**

There are 11 bald eagle territories and 28 known bald eagle nest trees within the Seven Buttes planning area although the wintering population of bald eagles is much higher. No silvicultural treatments would be scheduled to advance the successional development of younger aged stands toward quality nesting and roosting habitat or to reduce overstocked stands and reduce the risk of large tree loss to disease, insects and/or wildfire. If the current trend of large tree loss continues due to competition, insect, and disease plus risk to catastrophic wildfire, the no action alternative may adversely affect bald eagle habitat.

Implementation of any of the action alternatives would result in a determination that the actions may affect but are not likely to adversely affect the northern bald eagle. Figure 10 shows Alternative 2 treatments in relation to the total area within the BEMAs. Winter "M" represents winter roosting habitat that receives moderate intensity treatments. Winter "L" represents lighter treatments. "Other" represents treatments outside of the winter roosting habitat classification. Quality roosting habitat would still be provided in no harvest retention areas and thinning of younger aged stands would occur to develop future roosting habitat within the BEMA's. Over the long-term, there may be beneficial effects on bald eagles and their habitat as treated stands become more resistant to disease and insects.

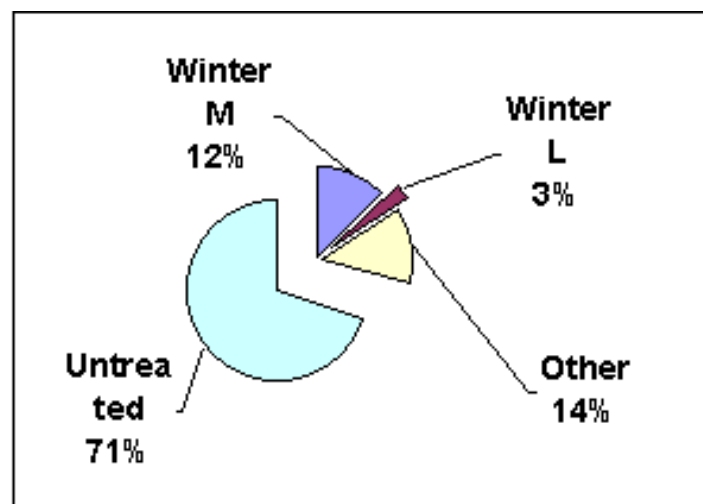


Figure 10 Alt. 2 Bald Eagle Treatments

### **Existing condition**

There is a total of 9,125 acres of bald eagle management areas contained in 12 parcels within the planning area. These acres are located adjacent to portions of Wickiup Reservoir, Davis Lake, Odell Lake, and Crescent Lake, and the

BEMAs range in size from 5 to 3,010 acres.

Currently, 3,731 acres of the 9,125 acre total would be described as high quality roosting habitat meaning the stands typically have 2 or 3 canopy layers with an overstory component of late-successional ponderosa pine, Douglas-fir, sugar pine or some combination. The understory component in these stands would be comprised of the same species but also include white fir and lodgepole pine as well. The highest quality roosting habitat is present along Wickiup Reservoir, east Davis Lake, and Odell Lake. The lack of multi-canopied late-successional forested habitat along Crescent Lake and west Davis Lake reduces the quality of roosting habitat within these BEMA's. For this analysis, the BEMA's were consolidated into 4 areas even though multiple BEMA's exist adjacent to the lakes or reservoirs.

The remaining acres (5,394) in the BEMA's are younger stands without an old growth component, plantations, and recently thinned mid- and late-successional stands that at this time do not provide sufficient canopy closure and stand density to moderate the effects of winter storms.

The highest quality roosting habitat is present along Wickiup Reservoir, east Davis Lake, and Odell Lake. There are no known communal roost sites in the planning area although they are assumed to be present and occupied. Typically, roosting habitat tends to be in late-successional multi-storied stands near nest sites and although they may shift during the winter months depending on where forage resources are located.

The following evaluation criteria will be used to evaluate the effects of the planned activities:

- Total number of acres of high quality winter roosting habitat silviculturally treated within Bald Eagle Management Areas (BEMAs) including commercial thinning, salvage of dead and down trees, and individual tree culturing.
- Total number of acres of silvicultural treatments that would occur within Bald Eagle Management Areas (BEMAs).

***a. Acres of high quality winter roosting habitat treated in BEMAs***

Table 14 Acres of High Quality Roosting Habitat Treated Within Each BEMA

<b>BEMA</b>	<b>Alternative 1 Single/Multi</b>	<b>Alternative 2 Single/Multi</b>	<b>Alternative 3 Single/Multi</b>	<b>Alternative 4 Single /Multi</b>
Wickiup	0 / 0	884 / 172	395 / 1	0 / 0
Davis	0 / 0	253 / 58	81 / 58	47 / 0
Odell	0 / 0	0 / 42	0 / 42	0 / 42
Crescent	0 / 0	0 / 5	0 / 5	0 / 5
Totals	0 / 0	1,137/ 277 = 1,414 (38%)	476/ 106 = 582 (16%)	47/ 47 = 94 ( 3%)

Table 14 displays the total number of acres of high quality winter roosting habitat silviculturally treated within Bald Eagle Management Areas (BEMAs). Treatments include commercial thinning, salvage of dead and down trees, and individual tree culturing. High quality winter roosting totals about 3,730 acres. Single story treatment is proposed for

protecting eagle nesting sites; Multi story treatments provide for eagle winter roosting habitat.

### *Alternative 1*

Implementation of this alternative would result in no immediate change in the condition of the BEMAs within the planning area. There are 9,125 acres of BEMA in the planning area within which natural processes would continue to evolve, and may include the loss of large tree habitat through insects and disease, as well as an increasing risk of fire. However, there are 10 bald eagle territories and 28 known bald eagle nest trees within the Seven Buttes Return planning area, although the wintering population of bald eagles is much higher. No silviculture treatments would be scheduled to advance the successional development of younger aged stands toward quality nesting and roosting habitat or to reduce overstocked stands and reduce the risk of large tree loss to disease, insects and/or wildfire. If the current trend of large tree loss continues due to competition, insect, and disease plus risk of catastrophic wildfire, the no action alternative may adversely affect bald eagle habitat.

### *Action Alternatives*

Implementation of any of the action alternatives would result in a determination that the project may affect but is not likely to adversely affect the northern bald eagle. Quality roosting habitat would still be provided in no harvest retention areas and thinning of younger aged stands would occur to develop future roosting habitat within the BEMAs. Over the long-term, there would be beneficial effects on bald eagles and their habitat as treated stands become more resistant to disease and insects.

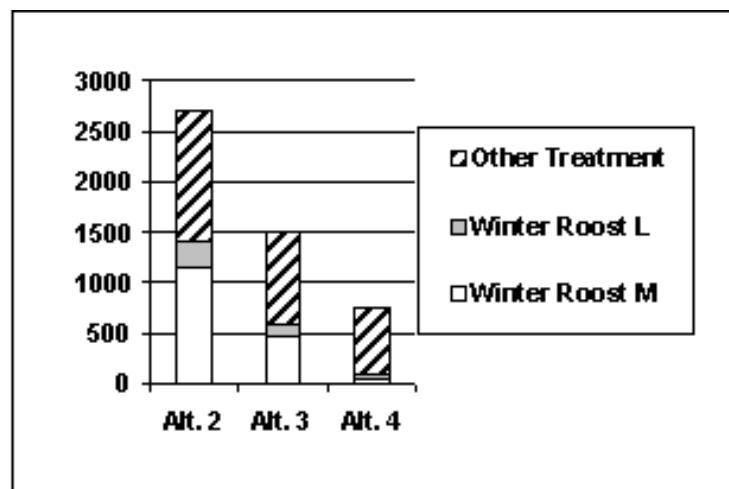


Figure 11 Eagle Treatment by Alternative

Figure 11 displays the alternatives by the intensity of treatment in winter roosting. Alternative 2 treats a greater amount of the winter roost, and treats a higher percent to a higher intensity than either Alternative 3 or Alternative 4.

Alternative 2 would result in the most commercial thinning, salvage, and individual tree culturing within the BEMA's high quality roosting habitat, with the majority of treatment planned within the Wickiup BEMA. Most of the high-quality roosting habitat would be treated with single story prescriptions that would provide more resistant stands but would eliminate their use as quality roosting habitat because canopy layering and canopy cover would be reduced. This effect would last into the foreseeable future or as long as these stands are treated to provide nesting habitat only. The greatest effect would occur within the Wickiup BEMA where over 1,000 acres would be treated to single story. Quality roosting habitat would be left in the 15-25 percent retention areas only.

A total of 277 acres, primarily within the Wickiup BEMA would be treated to maintain a multi-story forest condition. The quality of roosting habitat would be reduced for 1-2 decades as some of the understory lodgepole pine and white fir are removed to reduce competition and risk to insects and disease. It is expected increased growth would occur in the residual trees that would over time provide quality roosting habitat and allow bald eagles greater protection from winter storms.

To eliminate the disturbance risk to nesting and/or roosting bald eagles from harvest activities and burning operations, seasonal operating restrictions would be in effect for selected harvest units. (see mitigation measures).

Implementation of Alternative 3 would result in commercial thinning, salvage, and individual tree culturing of fewer acres of high-quality roosting habitat. Most (about 80%) would be treated for single story nesting habitat and eliminate their use as quality roosting habitat for bald eagles. The remaining 106 acres are treated to maintain resistant multi-story forest. The major difference in Alternative 3 when compared to alternative 2 is the reduction in the amount of high quality roosting habitat impacted particularly in the Wickiup BEMA. Stand exam data was used to look at basal area in each of the planned units in the Wickiup BEMA and those stands with the greatest need to reduce stand density were proposed for treatment. A second design aspect was to consolidate treatments next to timber sale units that were planned with the original Seven Buttes Environmental Assessment (USDA 1996). This in effect would create large blocks of treated stands up to 500-600 acres in size that are more resistant to fire and insects while deferring treatment in other areas to maintain high quality roosting habitat while treated stands recover. Within the Davis East BEMA, treatment of quality roosting habitat is deferred because adjacent stands are already scheduled for thinning or tree culturing planned with the Seven Buttes EA.

Implementation of Alternative 4 would result in the least amount of commercial thinning, salvage, and individual tree culturing. Only 47 acres in the Davis BEMA would be treated to single story to create nesting habitat and 47 acres would be treated to maintain multi-story roosting habitat in the Odell and Crescent BEMAs. Because there is no harvest proposed in the Wickiup and Browns subwatersheds in Alternative 4, no treatment would occur in the Wickiup BEMA. All stands presently functioning as roosting habitat would be maintained although no treatments would occur to reduce the risk of large tree loss to insects, disease, and increasing risk of loss to wildfires. This alternative also provides opportunity to field review treated BEMA harvest units that were planned and implemented under the original Seven Buttes EA approved in 1996.

***b. Total Acres of treatments in BEMAs.***

Table 15 Acres of Silviculture Treatment Within BEMAs

<b>Total BEMA Treated Acres</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
	0	2,699 (30%)	1,508 (17%)	757 (8%)

Table 15 displays the total number of acres of treatment planned within the BEMAs, which have a total area of about 9,125 acres within the project area.

***Alternative 1***

Implementation of this alternative would result in no immediate change in the condition of the BEMAs within the planning area. Consequences have been described under the first evaluation criteria, including a finding that taking no action may have an adverse impact on the bald eagle and its habitat.

### *Action Alternatives*

In addition to the treatments described under the first criteria, implementation of the three action alternatives will also treat additional acres of commercial thinning, salvage, and/or individual tree culturing of younger aged stands of ponderosa pine, mix conifer, and lodgepole (Alt 2 = 1,285 acres, Alt. 3 = 926 acres; and Alt. 4 = 663 acres). The objective of these treatments is to accelerate tree development, salvage dead and down material and maintain the health of old growth trees by removing competition.

In addition to the thinning, tree culturing and salvage, underburing may occur in selected units of mixed conifer and/or ponderosa pine to reduce fuel loadings and remove undesirable tree species. All burning would be timed to minimize or eliminate disturbance to nesting and wintering bald eagles. All silviculture and fire treatments would be consistent with the project design criteria as stated in the FY2000 Programmatic Biological Assessment prepared by the forest for proposed, threatened, and endangered species and critical habitat. In addition, all treatments are consistent with the objectives of the Site-Specific Bald Eagle Management Plans for the Odell Lake, Crescent Lake, Davis Lake East and West, and Wickiup South Nest Sites.

Indirect effects would relate to the possibility of windthrow. Those stands subject to southwest winds have the greatest potential for windthrow loss. To some extent this potential effect can be mitigated by feathering edges and leaving greater tree retention in more exposed areas. Silvicultural prescriptions would take this into consideration.

To eliminate the disturbance risk to nesting and/or roosting bald eagles from harvest activities and burning operations, seasonal operating restrictions would be in effect for selected harvest units. (see mitigation measures).

Alternative 4 is different from the others primarily because no harvest is proposed in the Wickiup and Browns subwatersheds. Therefore no treatment would occur in the Wickiup BEMA. All stands presently functioning as roosting habitat would be maintained although no treatments would occur to reduce the risk of large tree loss to insects, disease, and increasing risk of loss to wildfires. This alternative also provides opportunity to field review treated BEMA harvest units that were planned and implemented under the original Seven Buttes EA approved in 1996.

### *Beneficial Effects of East Davis Lake Road Access Changes*

Alternatives 3 and 4 include modifications to the access along the east side of Davis Lake. A short section of road (estimated at less than 200 feet) will be constructed from Road 46 to Road 855, and then a mile of Road 855 will be closed (see Figure 7). Also, about a third of a mile of Road 850 will be opened year round to allow access to two dispersed camp sites. Both of these actions will benefit bald eagles over current conditions by changing traffic and use patterns that will result in less disturbance to the southern-most nest stand while continuing protection for the northern-most nest.

The dispersed sites lie outside the bald eagle protection areas currently in place, but because of the current location of the gate, vehicles park at the gate and people often reach the lake from a location that is near the southern nest site. Moving the gate away from this position should reduce the likelihood of vehicles parking there by providing a more attractive lake access point farther away from the nest.

### *Cumulative Effects*

The selected alternative of the Seven Buttes Project (1996) included 929 acres of silvicultural treatments within the

same BEMAs described in this assessment. When combined with the acreage proposed in this document, treatment would have or will occur on from 18 to 40 percent of the total BEMA acreage, depending on the selected alternative. This would result in treated stands more capable of maintaining their large tree component for nesting purposes while still maintaining untreated stands capable of providing quality winter roosting habitat with canopy capable of moderating extremes in weather conditions. Additional silvicultural entries are expected in the immediate future within this planning area to further reduce stand susceptibility to insects and disease. All planning efforts would take into consideration previous silvicultural treatments, existing conditions, and current management direction for northern bald eagles.

The Bend/Fort-Rock Ranger District is currently preparing an environmental assessment (Charlie Brown), which proposes similar vegetative and fuels treatments as described for Seven Buttes Return. The Charlie Brown biological evaluation identified 1,835 acres of silviculture and fuels treatments in the preferred alternative within 11 BEMAs of the project area. A percentage of these treatment areas would occur within the Wickiup and Browns subwatershed that overlap with the Seven Buttes Return planning area. Commercial and pre-commercial thinning, large tree culturing, mistletoe control and fuels reduction by fire are projected to occur within the Bend/Ft.Rock BEMAs. The biological evaluation stated there would be few minor, short-term negative effects on bald eagles from only a few harvest units and overall, a Beneficial Effect determination was made for both action alternatives. The U.S. Fish and Wildlife Service concurred with this determination in a biological opinion.

This action when considered in combination with the Seven Buttes and Seven Buttes Return projects will cause only minor short-term effects to the bald eagles. Therefore, implementation of any alternative may affect, but is not likely to adversely affect the bald eagle. Long term, there may be beneficial effects to bald eagles and their habitats as treated stands become more resistant to disease and insect attacks, and as the longevity of a greater number of the large trees increases.

### **3. Forest Health**

The forest health issue has six components that are relevant to the project area. These components are: risk, large tree loss, late and old structured stands, replacement trees, fragmentation, and encouraging LOS in young stands. These issues are discussed in more detail on page 2, under Need for the Proposed Activities.

#### ***a. Risk***

Many stands on the landscape are at risk to catastrophic loss of the overstory due to insects, disease, and/or fire.

Alternative 1 would not reduce the risk. As a result of no treatment, the kind and extent of pest agents causing the risk would be highest with this alternative. The number of large contiguous blocks at risk would be highest with Alternative 1.

Under Alternative 2, risk would be reduced the most of all of the alternatives. The kind and extent of pest agents causing the risk would be the lowest of the action alternatives. The number of large contiguous blocks at risk would be lowest with this alternative.

Alternative 3 would reduce risk less than Alternative 2. The kind and extent of pest agents causing the risk would also be higher than that of Alternative 2. The number of large contiguous blocks at risk would be higher than Alternative 2.

Risk on Alternative 4 would be reduced less than that of Alternatives 3. The kind and extent of pest agents causing

risk would also be higher than that of Alternative 3. The number of large contiguous blocks at risk would be higher than Alternative 3.

### ***b. Large Trees***

Across the landscape, stands once dominated by large trees (greater than 21" in diameter) have become dominated by smaller trees.

With Alternative 1, loss of large trees would continue, and possibly accelerate. Since large trees tend to be unable to compete with dense understories, this alternative would leave the highest numbers of large trees at risk to pest agents.

Large tree loss would be the lowest with Alternative 2, as treatments would be designed to promote and enhance the large tree component of the treated stands. Large tree loss would be higher with Alternative 3, as fewer acres of treatments would be designed to promote and enhance the large tree component of the treated stands. Large tree loss would be the highest of the action alternatives under Alternative 4, because fewer acres would be treated to slow it.

### ***c. Late and Old Structured Stands (LOS)***

A primary purpose of the project is to maintain, enhance, and protect late and old-structured (LOS) stands to benefit species associated with those forest conditions.

LOS stands would be at the greatest risk of loss with Alternative 1. The main element at risk is the large trees, as discussed above. Loss of significant numbers of large trees would move these stands from LOS to mid or early structured stands.

LOS stands would be at the lowest risk of loss with Alternative 2. As noted above, the large tree component of these stands would be retained, along with other natural characteristics to the extent practical given current stand conditions. Treatment of some stands, presently considered as mid-structured because of the very high density of understory trees, would result in them being late structured since they have sufficient large trees to make them suitable as multi-storied late-structured stands.

Under Alternative 3, LOS stands would be at a higher risk of loss than with Alternative 2. The large tree component of these stands would be retained, along with other structural characteristics to the extent practical, given current stand conditions. As with Alternative 2, treatment of some stands, presently considered mid-structured because of the very high density of understory trees, would still result in them being late structured. Therefore, depending on the number of such stands treated, Alternative 3 could be similar in effect to Alternative 2.

Alternative 4 would leave the LOS stands at a higher risk of loss than Alternative 3, but not as high as the No Action. As noted above, the large tree component of these stands would be retained, along with other structural characteristics to the extent practical, given current stand conditions. As with Alternative 2 and 3, treatment of stands may move them from mid-structured to late structured, because they have enough large trees to be considered multi-storied late-structured stands when the dense understory trees are removed.

### ***d. Replacement Trees***

There is a need to ensure replacement trees of suitable condition and species to adequately replace the large overstory trees as they die.

With Alternative 1, no action, replacement trees available to replace large trees that die would remain the lowest in number. Because the large trees tend to be shade-intolerant species, the smaller trees of those species don't compete effectively in dense regeneration stands. Hence, the shade-tolerant true firs compete more effectively, but move the stands towards dense, pole-sized trees with very few becoming large over time.

Replacement trees would be the highest in number under Alternative 2. Treatments aimed at favoring shade-intolerant species would help ensure suitable numbers of large, persistent trees over time. Alternative 3 would ensure fewer replacement trees than Alternative 2, and with Alternative 4, the number of replacement trees available to replace large trees that die would not be as high as the other action alternatives, but would be higher than Alternative 1.

#### *e. Fragmentation*

Fragmentation has resulted from past harvest practices and road construction.

Effects on the landscape from fragmentation would remain unchanged under Alternative 1 until a large-scale event (i. e., beetle-killed trees, fire, etc.) kills the LOS stands to the degree that they would be similar in vegetative height and ecological function as regenerated harvest units. Hence, fragmentation would be expected to reduce over time as the older stands give way to young, dense stands.

The effects to the landscape from fragmentation would be reduced with Alternative 2, both in the short term and the long term. In the short term, single-storied stands would be more open and have similar conditions as the early structured stands, except for tree size. In the long term, thinning of existing regenerated stands to promote tree growth would combine with thinning of the LOS stands bringing them to similar structure conditions sooner. Since this would be done on the most acres, fragmentation would be expected to reduce the most over time with this alternative. With Alternative 3, effects on the landscape from fragmentation would be similar to Alternative 2 but on fewer acres, both in the short term and long term. Alternative 4 would reduce fragmentation less than Alternatives 2 and 3, but more than Alternative 1.

#### *f. Young Stands*

Thinning in younger stands is aimed at encouraging LOS habitat. Except for programmed timber stand improvement projects for precommercial thinning, no treatments to encourage LOS would be done under Alternative 1. Therefore, this alternative accomplishes the least amount of this objective. The amount of treatments in young stands to encourage LOS would be the highest with Alternative 2, and would therefore accomplish the most of this objective. Alternative 3 would implement these treatments on fewer acres than Alternative 2, but more than Alternative 4. Alternative 4 would have the least of these treatments as compared with the action alternatives.

## **4. Cumulative Watershed Effects**

Over time, stable stream channels function in a balance so that they transport sediment supplied from the contributing watershed, so that they maintain their beds and banks, and do not experience net erosion or deposition.\* Management activities have the potential to alter stream channel stability and sediment transport capability by increasing peak flow volumes and duration, and changing evapo-transpiration rates so that historic runoff patterns are changed. Impacts of management actions can be predicted by measuring the amount of past harvest activity, road construction, and large wildfires that have occurred, and then adding the amount of time that has passed since the activity occurred in order to take into account hydrologic recovery provided by growing trees. Using this technique, predictions can estimate which watersheds are more likely to experience higher peak flow volumes, and longer duration peak flows, with resulting

increased potential for altering stream channel stability, and sediment transport capability.

This predictor of watershed response based on past actions is called 'hydrologic disturbance' and can be thought of as cumulative impacts to hydrologic functioning. For this analysis it is displayed as a percentage of the subwatershed.

Table 16 Hydrologic Disturbance of Subwatersheds by Alternative.

Subwatershed	Hydrologic Disturbance			
	Alt. 1 - No Action	Alt. 2	Alt. 3	Alt. 4
Browns	17%	25%	25%	17%
Lower Little Deschutes	30%	31%	30%	30%
Wickiup	14%	21%	19%	14%
Crescent	16%	23%	22%	22%
Moore	15%	17%	17%	17%
Odell	13%	16%	15%	15%
Odell Lake	1%	1%	1%	1%

When a watershed reaches a hydrologic disturbance around 25-30%, negative effects such as down cutting, scour, and development of nick points are more likely to occur than in watersheds with lower percentages. The following table displays the resulting hydrologic disturbance if each alternative were implemented.

### *Alternative 1*

No direct effects to the watersheds would result from Alternative 1 (No Action), assuming that no catastrophic loss of vegetation were to result from insect, disease or fire outbreaks. Current conditions would remain unchanged, although recovery would occur at a rate that would provide 100 percent return after about 60 years, if no future loss were to occur.

In the meanwhile, surveys indicate that no immediate connection can be drawn between those watersheds with levels over 20 percent and damage to stream channels. For example, the Lower Little Deschutes subwatershed (at 30%) shows no negative effects in stream channels (all are ephemeral streams). This may indicate that highly permeable soils, relatively gentle slopes and other characteristics of these watersheds make them more resistant to the effects from vegetation and ground manipulations. Recovery would continue to occur over time as plantations matured.

A likely indirect impact would result if either an insect/disease outbreak occurs, or a large-scale fire burns a large portion of any of these watersheds. Large amounts of insect caused mortality would reduce the vegetation cover and lead to more frequent and higher intensity fires. Higher intensity fires would have more severe impacts by damaging soils and leaving large areas in an open condition, effectively setting back the hydrologic recovery and increasing the risk of similar impacts as those discussed above in regard to past management activities. Fire risk would continue to be a concern along urban interface/summer home areas, high-use recreation areas, and along roads.

## ***Action Alternatives***

Under all action Alternatives, the hydrologic disturbance for Wickiup, Browns, Crescent, Moore, Odell, and Odell Lake subwatersheds would remain under 25-30%. After treatments no in-channel effects from past and proposed vegetation treatments would be expected. The Lower Little Deschutes subwatershed will be at or above the threshold with Alternatives 2 & 3, but is not expected to exhibit any in-channel effects from past or proposed vegetation treatments based on the watershed's highly permeable soils, relatively gentle slopes and other characteristics. In Alternative 4, two subwatersheds would only be entered where units overlap from other watersheds (Units 15, 155, and 785). It is expected that they would react as described under Alternative 1.

The risk of high-severity and high-intensity fires is reduced more through Alternatives 2 & 3 than Alternative 4 because more stands will be treated. Under Alternative 4, in the short term, the risks would remain the same as Alternative 1 within the Browns, Wickiup, and Lower Little Deschutes subwatersheds.

Meeting the overall habitat protection objectives in each subwatershed will require future entries. With alternative 2, the return interval is likely to be shorter, because many of the stands will receive a lighter treatment. Repeated entries, over short periods of time, have a higher likelihood of producing adverse cumulative effects to the subwatersheds. Closely spaced entries will extend hydrologic recovery time and extend the use of roads that might otherwise be decommissioned for several decades between activities. In other words, the repeated disturbances would not allow as much time to rest and recover from manipulations or allow the opportunity to minimize and rehabilitate the transportation system.

Alternative 4 postpones entry into most of the Browns, Lower Little Deschutes, and Wickiup subwatersheds, thus allowing more time to study detailed vegetation, transportation, and other restoration needs in those areas. A future entry would attempt to address all vegetation needs so that barring any catastrophic events, the return interval would be much longer and the subwatersheds would be allowed to rest for 30 to 40 years before the need for further entries. The road network in those three subwatersheds would also be studied and opportunities to return more lands to the productive land base would be explored.

In all alternatives, previously managed stands would continue to naturally recover at an rate that would provide full recovery in 60 years, or approximately 1.67% annually. This assumes that vegetation management activities would take the stand to the equivalent of a clearcut, and so represents a conservative estimate.

Also, in Alternatives 3 and 4, small-scale benefits to the hydrologic condition would accrue as a result of the restoration work proposed around Davis Lake, which will reduce the impact of dispersed recreation use to streams and their aquatic systems. In addition, adopting the wider riparian reserve boundaries recommended in the Odell Watershed Analysis will provide a more accurate basis on which to protect and measure impacts to those aquatic systems.

## ***C. Other Issues***

### **1. Soils**

Soils in the 7 Buttes Return project area are strongly influenced by materials deposited as a result of volcanic eruptions, including volcanic ash, pumice, and cinders. The eruption of Mt. Mazama 6,000 years ago was the main event that influenced the soils in this area. Previously developed soils underlie the pumice and ash at depths from 40 inches to more than 60 inches. The dominant landtypes within the project area are well drained. Surface soils are

pumy sands. Existing soil attributes are discussed in the Soil Specialist's Report, which is in the project file. Effects to soils are discussed in terms of soil quality, which is evaluated by looking at a mapping unit's productivity, susceptibility and resiliency from perturbations, and the percent of an area affected by detrimental impacts from previous activities.

### *Alternative 1*

No direct effects would occur to soils as the result of Alternative 1, assuming that a high intensity fire does not occur within the project area. The soil quality would remain at its current reduced level on about 13,000 acres because of the cumulative effects of past management activities (harvest, piling of slash) and roads. Road closures (from an earlier project decision) would eventually return about 1,100 acres to some level of productivity over the long term. Impacts to soil quality in high-use dispersed recreation sites (along Ranger and Odell Creeks, northwest side of Davis Lake, and southeast side of Odell Lake in particular) would continue to be a concern. Dispersed sites, user-created roads and off road vehicle use may expand and increase causing erosion and loss of vegetation in these areas. Because these areas are, for the most part, directly adjacent to water, the sediment movement to the lakes and streams would also be expected to increase. The likelihood of higher severity and intensity fires is expected to increase with Alternative 1. Fire occurrence would negatively influence soil quality attributes such as erosion rates, site productivity, and nutrient loss. This effect would be most likely to occur along summer home tracts, around high-use recreation sites, and along roadways because of the increased likelihood of fire occurrence in these areas.

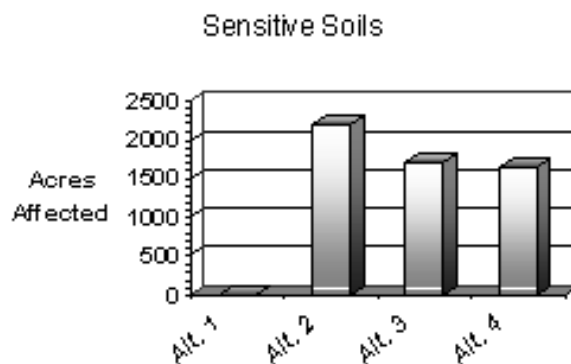


Figure 12. Treatment Amount on Sensitive Soils

### *Action Alternatives*

The three action alternatives provide appropriate soil protection by following Best Management Practices, Regional and Forest soil quality standards, and Forest Plan direction, as well as specific mitigation measures (Appendix B).

As necessary, skid trails, landings, and temporary roads will be designated and rehabilitated/stabilized after activities are completed. Large woody debris will be left on-site to meet, at a minimum, long-term site recovery needs for treated sites. Minimizing the disturbance of the fine organic matter (duff layer) will assure that short-term site productivity needs are sustained on treated sites. The cumulative effects of past activities and expected increase in recreation use, as discussed under Alternative 1, would be the same in all three action alternatives.

Vegetation management and fuels treatments along urban interface/summer home areas, high-use recreation areas, and along roads will help to reduce the risk to soil quality from fires of higher intensity and severity than what would have historically occurred in the project area. Treatments will also help in recycling nutrients into the soils (return the higher levels of nutrients held in above-ground biomass to below-ground reserves). The risk to soil quality from fires

would be reduced the most in Alternative 2, because more acres will be treated.

Some units have been previously harvested (both clear-cut and partial removal treatments) causing a lowered inherent soil productivity on those sites (i.e., detrimental impacts to soil quality). These units may be able to be rehabilitated during this entry through the use of KV funds. In Alternative 2, rehabilitation of past soil damage would occur on up to 363 acres that had been reduced from high to moderate inherent productivity, and on 6 acres that had been reduced from moderate to low inherent productivity. Alternative 3 would be similar to Alternative 2, rehabilitating up to 339 acres of past soil damage. Under Alternative 4, the least amount of soil rehabilitation would take place, with up to 258 acres proposed.

Sensitive soils have properties that make them highly susceptible to erosion, compaction, and/or displacement. Alternative 1 would not directly affect any sensitive soils. Alternative 2, 3 and 4 all propose activities on sensitive soils (Figure 1), but actual impacts to these soils will be minimal by following Best Management Practices, Regional and Forest soil quality standards, and Forest Plan direction, as well as specific mitigation measures (Appendix B).

On this entry, all action alternatives focus on stands that are high-to-moderately susceptible to fire or insect and disease outbreaks. Therefore, future entries will occur in order to meet habitat protection and other project objectives. Repeated entries, over short duration of time, have a greater potential for producing adverse cumulative effects to the soil resource, such as additional compaction, displacement, and other disturbance. Alternative 2 will require more repeat entries than Alternative 3 because it proposed a higher ratio of light to moderate treatment (Alt. 2 = 90:10, Alt. 3 = 50:50). Stands that have more basal area removed increase the time until a next entry, and allow more time for sites to recover between entries (e.g., within the Moore, Crescent, and Browns subwatersheds; see unit prescriptions in Appendix B).

Under Alternative 4, most harvest activities are postponed within the Browns, Lower Little Deschutes, and Wickiup subwatersheds. A future entry into these three subwatersheds would entail a more comprehensive attempt to address all vegetation, road maintenance, and other restoration needs during one entry, which would allow the area to "rest" for 30 to 40 years before the need for further entry. A future project of this type would also address the road network and any restoration needs.

Alternatives 3 and 4 both address impacts to soils resulting from recreation use. Dispersed sites and access routes to these sites would be designed to reduce resource damage to acceptable limits (Figure 7 for specific areas). Previously damaged areas that are not in use would be rehabilitated to the extent practical and allowed by other resource constraints, and stabilized to reduce further impacts to resources. This will aid in reducing sediment into adjacent lakes and streams.

All action alternatives implement the riparian reserve recommendations of the Odell Lake Watershed Analysis, which will create a more focused means of providing for protection and enhancement of wet soils found in these reserves.

## 2. Fuel Hazard

Decades of fire suppression and changes in stand structure due to management practices have caused an increase in mid and lower story stand densities that are considered far above historic levels. This does not support ecosystem health and sustainability. Surface (horizontal) fuel loading is characterized through fuel models. Vertical fuel loading (ladder fuels) is characterized by the potential risk of a crown fire. The alternatives will be discussed in terms of how each alternative affects the level of surface fuels and potential for crown fire to occur.

### ***a. Hazardous Surface Fuels***

Fuel models characterize what ground fuels are present, and how a fire is likely to behave under those circumstances. Fuels models 6, 10, 11, and 12 would generate the highest flame lengths and more intense fire behavior.

No fuels reduction would occur under Alternative 1. Therefore, succession would continue and more acres would move towards a fuel model 10, with increased heavier dead and down fuel loadings. Associated with fuel model 10 are greater fire intensities and severity accompanied by increased rates of spread and a reduced ability to control. These situations combined could result in fire behavior beyond control efforts so that fire starts are more likely to grow to catastrophic proportions. Greater habitat loss could occur, especially in the ponderosa pine and mixed conifer dry forests. Smoke emissions from a wildfire such as this would be of a higher quantity than would take place in a prescribed fire.

Table 17 Treatment by fuel model

Fuel Model	Existing Condition	Approximate Number of Acres to be Treated			
		Alt. 1	Alt. 2	Alt. 3	Alt. 4
FM 8 - Low (little undergrowth)	40,168	0	2,495	1,324	980
FM 9 -- Moderate (related to needle cast)	35,154	0	8,680	7,082	4,939
FM 11 - Moderate (related to slash material)	13,453	0	1,628	1,362	1,274
FM 6 - High (related to brush)	165	0	0	0	0
FM 10 - High (related to large amounts of dead and down wood)	11,701	0	2,851	2,677	1,696
FM 12 - High (related to large amounts of slash)	2,055	0	90	90	10

Alternative 2 allows for the greatest possible extent of fuels reduction, based on the number of acres to be treated. Fuel models 10, 11, and 12 will most likely move towards a fuels model 8 or 9. Fuels models 8 and 9 would start to move towards their natural levels, reducing the potential for large-scale fires. Alternative 2 allows for fuels treatment over more acres than Alternatives 3 or 4. Alternative 4 will leave more stands at risk to a catastrophic wildfire event.

In all three action alternatives, units that are harvested or salvaged will also include fuels treatments. Underburning will be one of the many fuels treatments used where applicable. The results of treatment will most likely be fuel models 10, 11, and 12 moving towards fuel model 8 or 9. Fuel models 8 and 9 should start to move towards their normal, expected levels, reducing the potential for large-scale fires. The various thinning intensities (90 and 67% of UMZ) will not make a significant difference in the resulting surface fuel loadings because of follow-up fuels reduction activities.

### ***b. Crown Fire Potential***

The potential for a crown fire to occur, based on stand structure, crown closure, surface fuel models, wind,

temperature, and slope, has been established by the Deschutes Fuels Group using satellite imagery. The following categories describe the risk of a crown fire occurring: Null - no chance of crown fire; Low - ground/surface fire occasional torching; Moderate - passive, torching occurs; High - active, fire readily consumes the crown sustained by the heavier surface fuel loading; Extreme - independent, fire moves through the crowns of the tree canopy apart from surface fire. The following table displays the distribution of crown fire potential across the project area and the amount of each category treated by alternative. The acres of existing conditions reflect only Forest Service Land within the project areas.

The existing condition of 'Null' includes the non-forested areas of the project, such as water and lava. Alternative 1, the no action alternative would not reduce the hazardous stand structure which is capable of initiating and sustaining a crown fire. Forest succession would continue its role and the risk of a catastrophic wildfire would increase.

Table 18 Acres treated within crown fire potential rating.

Crown Fire Potential	Existing Condition	Acres Treated by Alternative			
		Alt. 1	Alt. 2	Alt. 3	Alt. 4
Null	48,299	0	165	132	107
Low	34,304	0	6,101	4,965	3,404
Moderate	33,067	0	3,601	2,771	2,114
High	13,049	0	4,953	4,080	2,943
Extreme	14,589	0	984	635	484

Alternative 2 treats close to 6,000 acres of stands in the high and extreme categories. Under this alternative, more acres would be treated than any of the other action alternatives. However, thinning intensities vary: 13,004 acres will be brought down to 90% UMZ and 1,379 acres to 67% UMZ. At 90% UMZ, fewer trees are removed and the hazardous stand structure that is capable of initiating and sustaining a crown fire would not be reduced as much as in the treatments that aim for 67% UMZ. However, specific efforts are to be taken to allow post harvest treatment of fuels in order to reduce the crown fire potential to levels that meet the project's protection objectives. Means of accomplishing this include involving fuels input during prescription writing.

Even with that goal in mind, based on general estimates of standing trees to be removed, plus existing down woody material that would be left on site after harvest, fire managers' options for fuel treatments will be limited and the cost of treatments would increase because of closer spacing of residual trees, which would impede or hamper the effects of the prescribed fuels treatment. Units with slopes greater than 30% that are treated to the 90% UMZ will be even more expensive because of the inability to use mechanical equipment. However, by allowing for treating in a clumpy pattern that provides for fuels clean-up, there should not be an appreciable difference (other than the cost to implement) between the stands treated to 90% UMZ and the stands treated to 67% UMZ.

Under Alternatives 3 and 4, more units will be thinned down to the 67% UMZ. The 67% level allows for greater flexibility and lower costs for fuel treatments.

Under Alternative 3, 4,715 acres within the high and extreme categories will be treated. Alternative 4 treats the fewest acres of this category at 3,427 acres. Lower and mid-story removal in the effort to move stands to a late, single-story

structure will have the most effect on stands that are categorized as high and extreme crown fire potential. The treatments planned in Alternatives 3 and 4 would move high and extreme stands to low through these thinning treatments. Underburning and other fuel treatments have the ability to decrease the fuel load, which will further decrease crown fire potential by reducing fire intensity.

Under Alternative 4, by not doing any harvest or fuels treatments in the Browns and Wickiup subwatersheds, forest succession will continue increasing fuel loadings, crown fire potential, and prolonging the time until re-introduction of fire back into fire-adapted ecosystems, as with Alternative 1.

### 3. Wild and Scenic River Corridor

Crescent Creek is part of the National Wild and Scenic Rivers System, from the dam at Crescent Lake to the point where the creek crosses County Road 61. The large ponderosa pines along the stream combined with the narrow canyon adjacent to Odell Butte create a unique experience for the area and led to a determination that vegetation/scenery was found to be the outstandingly remarkable value (ORV) for this stretch of Crescent Creek. The Wild and Scenic Rivers Act requires that these values and other river-related values be protected and enhanced. Interim guidelines in the Deschutes National Forest Land and Resource Management Plan require that harvest of trees will be oriented towards enhancement of scenic, hydrologic, fisheries, recreational, and/or wildlife values.

Portions of the following units fall within the wild and scenic river interim corridor (1/4 mile each side of the creek): 240, 255, 285, 460, 500, 665, 690, 695, and 715. For the most part, these are treatment units that overlap a fairly small percentage in the river corridor so that placing a unit boundary on an arbitrary line a quarter mile from the river would not be as implement able as using the more clearly defined stand type boundary. Approximately 220 acres within the corridor would be commercially thinned (no salvage is planned). The vegetation/scenery ORV will be protected and enhanced through the silviculture treatments by reducing the risk of mortality from insects/disease as well as reducing the potential impact of a large-scale fire encroaching on the corridor.

### 4. Water Quality

The project area includes three subwatersheds containing water bodies that have been listed by the Oregon Department of Environmental Quality as outside desired parameters.\*\* These parameters are related to Section 303 (d), of the federal Clean Water Act. Table x lists the water bodies and the parameters that they do not meet. Crescent Creek from the dam at Crescent Lake to its confluence with the Little Deschutes River exceeds State standards for summer salmonid rearing water temperatures of 17.8oC. Crescent Creek water temperatures start near 24oC at the lake outlet and cools by 3-4 degrees before leaving Forest Service land and entering the Little Deschutes River. Although tributaries reduce the water temperature by the time it enters the Little Deschutes River It still exceeds 17.8oC.

The Little Deschutes River water temperature exceeds 17.8oC required by ODEQ for summer salmonid rearing (ODEQ 1998b). Current monitoring by USFS personnel found the 7-day average maximum water temperature was 23.4oC at the FS rd 62 bridge.

The pH level in Odell Lake can rise above the standards established by Oregon Department of Environmental Quality (ODEQ). Johnson et al. (1985) published a pH of 9.3. Current measurements indicate pH levels closer to 7, well within the State standards of 6.5 to 8.5 (USFS unpublished data).

Although not currently listed, Odell Creek continually has higher water temperatures than the standards established by

the ODEQ. Water temperature monitoring on Odell Creek found Odell Lake discharges warm water into the creek (22.9oC). Odell Creek registered a 7-d average maximum water temperature of 18.3oC during the summer months near the mouth. Cold springs and tributaries help to reduce the water temperature of Odell Creek by 4oC before entering Davis Lake.

Table 19 Watershed and Listed Water Quality Parameter

<b>Watershed Name</b>	<b>Water Body Name</b>	<b>Parameter Listed for:</b>
Odell Lake	Odell Lake	Summer pH levels outside the range of 6.5 to 8.5
Crescent	Crescent Creek	Exceed Summer salmonid rearing temperature of 17.8 degrees C
Lower Little Deschutes	Little Deschutes River	Exceed Summer salmonid rearing temperature of 17.8 degrees C

By following Best Management Practices (BMPs), and mitigation measures outlined in Appendix B, the action alternatives would have no measurable effects on the parameters for which Crescent Creek, the Little Deschutes River, and Odell Lake are listed under the DEQ's 303(d) list of water-quality limited water bodies.

In addition, Alternatives 3 and 4 both address impacts to soils and water quality resulting from recreation use. Dispersed sites and access routes to these sites would be designed to reduce resource damage (see Figure 7 for specific areas). Previously damaged areas would be rehabilitated to the extent practical and allowed by other resource constraints. These areas would be stabilized to reduce further impacts to resources, while allowing some level of recreational use to continue. This will aid in reducing sediment into adjacent lakes and streams, as well as providing better shade by improving bank side vegetation.

All action alternatives implement the riparian reserve recommendations of the Odell Lake Watershed Analysis, which will create a more focused means of providing for protection and enhancement of wet soils found in these reserves.

## **5. Aquatic Conservation Strategy Objectives and Water Quality**

The No Action Alternative does not meet the intent of eight of the nine Aquatic Conservation Strategy Objectives for Riparian Reserves contained within page B-9 of the Northwest Forest Plan Standards and Guidelines. All of the action alternatives meet the nine objectives and are discussed in Appendix C.

The Riparian Reserve widths for streams, reservoirs, and wetlands greater than one acre were evaluated with the proposed activities. Reserves would follow guidelines found within page C-30 of the Northwest Forest Plan ROD, and as recommended in the 1999 Odell Watershed Analysis (refer to Appendix C).

In all alternatives up to about 360 acres of riparian reserve treatment has been proposed to remove dead and improve riparian conditions. Units 330, 360, and 390 lie near Odell Lake and are proposed as fuel hazard reduction near recreation residences. Unit 840 includes East Davis Campground and the interface area. The campground lies in the riparian reserve and will receive treatment to reduce risk of future mortality. Units 275 and 785 lie along the eastern shore of Davis Lake, where treatment is proposed to improve conditions for bald eagle nest sites that lie within 300 feet of the water. Unit 815 includes West Davis Campground and the surrounding interface area, which will be treated to reduce risk as well. Unit 310 includes a small portion of Ranger Creek that may receive some risk reduction salvage. Units 325, 405, and a small part of 370 lie near Odell Creek and the intent of treatment is to reduce lodgepole

encroachment and reduce fuel hazard levels. Unit 665 may include similar treatments in the large lodgepole flat between Crescent Lake and Highway 58.

All riparian treatments except those in 275 and 785 are proposed to improve aquatic conditions. The bald eagle treatments in units 275 and 785 will have a neutral impact to the ACS objectives.

## 6. Cultural Resources

Following guidelines in a 1995 Regional Programmatic Agreement among USDA-Forest Service, the Advisory Council on Historic Preservation Office, a finding of No Effect has been determined for Alternatives 1 and 2. Activities proposed under Alternatives 3 and 4 would require a finding of "No Adverse Effect," because of the impacts to eligible sites in the recreation areas proposed for either vegetation management, or some other form of restoration work (such as the road closure along Ranger Creek). Formal mitigation plans are being developed to keep these impacts within the process called for in Federal law, regulation, and Forest Service agreements with the Advisory Council on Historic Preservation. In order to mitigate the Adverse Effects, a treatment plan would need to be developed in coordination with consulting parties and executed prior to implementing the improvements in the campground area. This would allow us to propose a finding of No Adverse Effect based on mitigation measures (such as a site treatment and monitoring plan for each affected site).

## 7. Management Indicator Species (MIS)

The Deschutes LRMP identifies the following as management indicator species (MIS) within the project area: northern bald eagle, northern spotted owl, northern goshawk, three-toed woodpecker (updated to black-backed woodpecker and other woodpeckers), American marten, osprey, elk, and mule deer. These species were selected because their welfare could be used as an indicator of other species dependent upon similar habitat conditions.

The effects on the northern spotted owl and the northern bald eagle have been discussed earlier in this Section. Impacts to mule deer and elk are discussed in later sections titled Key Elk Areas and Big Game Hiding Cover and Forage.

### *Black-Backed Woodpecker and/or Three-Toed Woodpecker*

This species is typically associated with lodgepole pine and mixed conifer forests and forages in areas with concentrations of dead and decaying trees and logs. Suitable habitat would include wet and dry lodgepole, and dry mixed conifer plant associations that are in mid to late structural stages.

Table 20 Black-back Woodpecker Habitat Treated

Subwatershed	Existing Acres of Habitat	Alternative 2 Acres Treated	Alternative 3 Acres Treated	Alternative 4 Acres Treated
Browns	1,792	1,043	880	0
Crescent	18,955	5,488	4,968	4,968
L.L. Deschutes	5,530	129	4	0

Moore	10,523	1,362	1,094	1,033
Odell	8,460	1,394	1,080	1,080
Odell Lake	1,590	107	28	28
Wickiup	6,433	2,062	1,041	0
Totals	53,283	11,585 (22%)	9,095 (17%)	7,109 (13%)

### *Effects of Alternative 1*

Implementation of this alternative would result in no immediate direct change in vegetative condition within the planning area. Natural succession would continue to occur with the greatest tree growth occurring in those forested stands that have been pre-commercially or commercially thinned. However, untreated overstocked stands especially on south-facing slopes would continue to be at risk of losing their largest trees to insects and disease. This may result in an increase in foraging habitat for the woodpeckers and so a short-term increase in woodpecker populations would be expected after a large-scale disturbance.

### *Effects common to all action alternatives*

The majority of the silvicultural treatments planned in the action alternatives are designed to reduce the risk of attack by insects and disease through a reduction in stand density. This would be accomplished by salvage of down dead material, commercial thinning, tree culturing, pre-commercial thinning and/or post and pole thinning or any combination of the above. With the exception of pre-commercial thinning, all other treatments have the potential to alter currently suitable habitat by removing nesting and/or foraging habitat for this woodpecker species. The table above displays the current condition of black-back woodpecker habitat within the planning area and the amount silviculturally treated by alternative.

Potential nesting and foraging habitat may be removed during commercial thinning harvest because OSHA safety regulations require the felling of hazardous trees (snags) that have the potential to injure forest workers. The salvage of dead trees and down logs would also alter stands that function as nesting and foraging habitat. Habitat degradation would be a direct effect reducing the amount and distribution of suitable nesting and foraging habitat within those units selected for timber harvest. Logging operations may also result in some displacement of birds into adjoining stands providing suitable habitat during the nesting season.

Over the long-term the intent of these silvicultural treatments are to reduce the potential for catastrophic loss to insects and disease or to wildfire. Ideally, the post-harvest condition over the long-term is to have forested stands with tree species able to withstand endemic levels of insects and disease and minimizing the risk for large-scale loss to wildfires as well. Natural processes would continue to occur weakening some trees that would become future snag habitat for this species.

To help mitigate the expected decrease in snag densities during harvest operations, snags will be left or created to maintain cavity excavator species including the black-back woodpecker at the 100 percent potential population level. This would require the retention or creation of 2.6 lodgepole snags per acre in lodgepole plant associations and 4.0 snags per acre in mix conifer or ponderosa pine plant associations (USDA 1994). Snag habitat and down log retention

is also addressed in the mitigation measures section of this environmental assessment. In addition, a minimum of 15 percent of each harvest unit would be left untreated providing high snag level densities where they naturally occur.

### *American Marten*

Suitable habitat for this species can be found in the mountain hemlock, mixed conifer and lodgepole wet and dry plant associations where the canopy cover is greater than 30 percent and size-structure is equal to or greater than pole sized diameter trees. Riparian zones are also favored habitats. Marten tend to utilize areas with complex physical structure near the ground including woody debris, lower branches of trees, rocks or talus areas, and shrubs. Marten habitat is generally well distributed across the entire planning area with most contiguous blocks present west of Hamner Butte, Davis Mountain and in the mountain hemlock zone along the Cascade crest. Habitat fragmentation has occurred in all project area plant associations, particularly near the southeast corner of the project area and west of Davis Mountain north to the district boundary.

Table 21. American Marten Habitat Treated

<b>Subwatershed</b>	<b>Existing Acres of Habitat</b>	<b>Alternative 2 Acres Treated</b>	<b>Alternative 3 Acres Treated</b>	<b>Alternative 4 Acres Treated</b>
Browns	2,379	965	844	0
Crescent	23,575	5,282	4,951	4,848
L.L. Deschutes	5,482	107	4	0
Moore	24,862	1,308	1,061	1,003
Odell	12,651	1,489	1,094	1,094
Odell Lake	17,023	218	138	138
Wickiup	6,346	2,010	1,001	0
Totals	92,318	11,379 (12%)	9,093 (10%)	7,083 (8%)

### *Effects of Alternative 1*

Implementation of this alternative would result in no immediate direct change in vegetative condition within the planning area. Natural succession would continue to occur with the greatest tree growth occurring in those forested stands that have been pre-commercially or commercially thinned. However, untreated overstocked stands especially on south-facing slopes would continue to be at risk of losing their largest trees to insects and disease. This may result in a reduction in the amount and distribution of large tree stands that provide suitable nesting, foraging, and denning habitat for the management indicator species listed above. With Alternative 1, the risk to stand loss from insects, disease, and wildfires is not reduced, and so there is the potential for catastrophic loss of marten habitat in this planning area.

### *Effects common to all action alternatives*

Acres of marten habitat treated are described in the above table. There is no regeneration timber harvest proposed that would completely remove suitable marten habitat. Commercial thinning is planned in many mid- and late-successional stands to reduce stand density and basal area, particularly of the white fir and lodgepole pine, species more susceptible to insects and disease. Many of the treatments would maintain late multi-story conditions or cause the stand to progress toward that condition. Some salvage of down material is also planned although mitigation measures would require the retention of a minimum of 300 linear feet of down logs per acre and at least one slash pile per acre. The following table displays the acres of proposed treatment within each alternative by subwatershed.

Within all treated stands, marten habitat would be retained because no regeneration harvest is scheduled and greater than 30 percent canopy cover would remain. However, marten habitat quality would be temporarily altered particularly where dead and down coarse woody material would be salvaged. Because many marten prey species depend on down logs and snags for shelter and denning habitat, prey densities may temporarily decline as a result of logging activities. As stated previously, mitigation measures would require the retention of a minimum of 300 linear feet of down logs per acre to provide ground cover for small mammals and marten.

### ***Goshawk***

There are approximately 60,000 acres of suitable goshawk habitat within the planning area. This acreage figure includes stands that currently function as potential nesting habitat and stands with less canopy cover that would preclude nesting capability but still provide suitable goshawk foraging area. Suitable goshawk habitat would be found in mixed conifer, ponderosa pine and lodgepole wet and dry PAGs. Foraging habitat can be found in the same PAGs although these stands typically have a lower canopy cover and average stand diameter is smaller. The most contiguous suitable habitat is located west of Hamner Butte although suitable habitat is generally well distributed across the entire planning area. Habitat fragmentation has occurred in all subwatersheds although much reduced in the Odell Lake subwatershed. The fragmentation is a result of previous regeneration timber harvests and large tree loss to insect outbreaks.

District wildlife sighting databases show numerous goshawk sightings in the planning area particularly on the buttes although there is only one confirmed nest site near Ringo Butte. Goshawk surveys using tape-recorded alarm and wail calls were conducted in the planning area during the 1999 and 2000 field season. Several accipiters were observed including two confirmed goshawk sightings on Davis Mountain during the 2000 field season although no nests were located.

Table 22 Northern Goshawk Habitat Treated

<b>Subwatershed</b>	<b>Existing Acres of Habitat</b>	<b>Alternative 2 Acres Treated</b>	<b>Alternative 3 Acres Treated</b>	<b>Alternative 4 Acres Treated</b>
Browns	3,139	1,726	1,601	0
Crescent	20,500	5,494	5,000	5,000
L.L. Deschutes	6,142	107	4	0
Moore	11,333	1,648	1,305	1,190
Odell	9,292	1,346	1,035	1,035

Odell Lake	2,010	107	28	28
Wickiup	7,718	2,203	1,027	0
Totals	60,134	12,631 (21%)	10,000 (17%)	7,253 (12%)

### *Effects of Alternative 1*

Implementation of this alternative would result in no immediate direct change in vegetative condition within the planning area. Natural succession would continue to occur with the greatest tree growth occurring in those forested stands that have been pre-commercially or commercially thinned. However, untreated overstocked stands especially on south-facing slopes would continue to be at risk of losing their largest trees to insects and disease. This may result in a reduction in the amount and distribution of large tree stands that provide suitable nesting, foraging, and denning habitat for the management indicator species listed above. With Alternative 1, the risk to stand loss from insects, disease, and wildfires is not reduced, and so there is the potential for catastrophic loss of goshawk habitat in this planning area.

### *Alternative Action Alternatives*

Implementation of the action alternatives would affect habitat as described in the table above. Because no regeneration timber harvest is proposed, there would be no reduction in the amount of suitable habitat present in the planning area although habitat degradation is expected. This would occur as late-successional stands are commercially thinned below the 60 percent canopy cover level, usually defined as the nesting habitat minimum. The same treated stands however, would continue to provide suitable foraging habitat. Suitable nesting habitat conditions within thinned stands could return in one to two decades when increased growth of the residual trees create a dense canopy cover again. In addition, nesting habitat would be maintained in the 15 percent retention blocks within each harvest unit.

In all action alternatives, salvage harvests of concentrated down lodgepole pine is proposed on the southwest and northwest side of Davis Lake. The reduction of down material would reduce habitat for the woodpecker guild and small rodents, common prey species of the northern goshawk. However, mitigation measures are in place to require the retention of coarse woody debris for woodpeckers, chipmunks, and squirrels that also provide a prey base for goshawks. Goshawk foraging capability would be maintained in these units.

In Alternative 3 and Alternative 4, habitat degradation would occur principally from the commercial thinning within late-successional stands capable of providing nesting habitat. Alternative 3 proposes a combination of lower and upper management zone commercial thinning that would have slightly different impacts compared to Alternative 2. Upper management zone thinning would reduce basal area to approximately 90 percent of the desired level. This would allow nesting habitat conditions return in one to two decades because a higher level of residual trees would be left with a corresponding quick return to a relatively high canopy cover. Lower management zone commercial thinning would reduce basal area to approximately 67 percent of the desired level for that PAG. Because more trees would be removed lowering canopy cover, it is estimated nesting habitat conditions may not return for two to three decades. Nesting habitat would continue to be maintained in the 15 percent retention blocks of each harvest unit. Treated stands would still continue to provide foraging habitat. Lower management zone thinning is proposed on Odell Butte, east of Crescent Lake, and Royce Mountain. Mitigation measures would also be in effect for the retention of snags and coarse woody debris to provide habitat for prey base species (see mitigation measures).

The major difference between Alternative 4 and other action alternatives is that this alternative proposes no vegetation treatment in the Browns, Lower Little Deschutes, and Wickiup subwatersheds. Suitable nesting and foraging habitat would be maintained in these subwatersheds although still subject to large-scale habitat loss from insects, disease, and wildfire as stands experience increasing tree mortality. Lower management zone commercial thinning would occur on Odell Butte, east of Crescent Lake, Royce Mountain, and south of Cryder and Ringo Buttes. The effects would be similar to that described in alternative 3 although the acreage of lower management thinning would be increased as compared to alternative 3. Quality nesting habitat would still be well distributed across the entire planning area and a minimum of 15 percent of each planned harvest unit would remain untreated.

In all alternatives, in the event new northern goshawk nest(s) are discovered in the planning area nest site protection would be given consistent with current direction found in the Deschutes National Forest Land and Resource Management Plan. Seasonal operating restrictions may be required if potentially disturbing activities are proposed during the northern goshawk nesting season (see mitigation measures).

### ***Osprey***

Ospreys are very common on the ranger district and 29 nests are documented within the planning area although not all are active every year. Osprey nests are primarily concentrated around the shore of Odell Lake and northwest of Davis Lake.

### ***Effects of Alternative 1***

Implementation of this alternative would result in no immediate direct change in vegetative condition within the planning area. Natural succession would continue to occur with the greatest tree growth occurring in those forested stands that have been pre-commercially or commercially thinned. However, untreated overstocked stands especially on south-facing slopes would continue to be at risk of losing their largest trees to insects and disease. This may result in a reduction in the amount and distribution of large tree stands that provide suitable nesting, foraging, and denning habitat for osprey.

### ***Effects common to all action alternatives***

Deschutes Forest Plan measures would be incorporated into each planned timber sale and should result in no impact to the osprey population within the planning area. See mitigation measures for a list of proposed harvest units with limited operating periods.

Deschutes National Forest direction is to protect active nest sites by maintaining the vegetative character of an area at least 300 feet in radius around the nest. While timber management may occur, maintain at least four dominant overstory trees per acre for nest and perch trees with ponderosa pine favored, where available. Active nest sites should be protected from disturbing activities within 0.25 mile of the nest by restricting site disturbing operations during the period of April 1 - August 31 (DLRMP p.4-52). These measures would be incorporated into each planned timber sale and should result in no impact to the osprey population within the planning area. See mitigation measures for a list of proposed harvest units with limited operating periods.

### ***Cumulative Effects To Management Indicator Species***

The Seven Buttes environmental assessment completed in 1996 stated four entries over a period of 20 years maybe necessary to treat the 30,000 plus acres identified as imminently susceptible to insects and disease in the planning

area. Seven Buttes Return is the second assessment being prepared to implement the risk reduction and habitat enhancement in this planning area. In addition, the Bend-Ft. Rock Ranger District is also currently developing an environmental assessment that partially overlaps Seven Buttes Return in the Moore and Wickiup subwatersheds. The Charlie Brown projects have similar habitat objectives as described for Seven Buttes Return. That assessment stated there would be no negative impacts to black-backed woodpeckers, white-headed woodpeckers, and the great gray owl. However, there would be short-term negative effects on marten habitat from harvest activities that reduce canopy cover although habitat would not be eliminated by regeneration timber harvest. The assessment also stated northern goshawks maybe negatively affected as a result of burning operations to reduce the presence of white fir in many of the harvest units. This effect would reduce the overhead canopy cover below that needed by nesting birds although untreated areas would continue to provide quality nesting habitat. While some short-term displacement of species may occur as a result of timber harvest, silvicultural prescriptions have been designed to enhance and create long-term sustainable forested habitats for management indicator wildlife species.

It is reasonable to assume future planning efforts would occur within the Seven Buttes planning area that would involve habitat manipulations. Current habitat conditions would be assessed at that time and planning would consider all standards and guidelines that are in place at that time.

### ***Resident and Migratory Landbirds.***

Proposed treatments in all action alternatives have the potential to negatively and positively impact habitat for resident and migratory birds. These activities include commercial and pre-commercial thinning in early, mid- and late-successional stands of ponderosa pine, mixed conifer and lodgepole pine, in addition to underburning.

In January 2001, President Clinton issued an executive order on migratory birds directing federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. Within two years, federal agencies are required to develop a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service to conserve migratory birds including taking steps to restore and enhance habitat, prevent or abate pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible.

The Forest Service has prepared a Landbird Strategic Plan (January 2000) to maintain, restore, and protect habitats necessary to sustain healthy migratory and resident bird populations to achieve biological objectives. The primary purpose of the strategic plan is to provide guidance for the Landbird Conservation Program and to focus efforts in a common direction. On a more local level, individuals from multiple agencies and organizations within the Oregon-Washington Chapter of Partners in Flight participated in developing a publication for conserving landbirds in this region. A Conservation Strategy For Landbirds of the East-Slope of the Cascade Mountains In Oregon and Washington was published in June 2000 (Altman 2000). This document describes focal species, and biological and population objectives within subprovinces of the East-Slope Cascades of Oregon and Washington.

The Seven Buttes Return project area is within the Central Oregon subprovince of the landbirds conservation planning region and contains two of the three habitat types found in this region (ponderosa pine, mixed conifer); however oak-pine woodlands are not present in the planning area. Mixed conifer forest is present on all the buttes and on Maklaks Mountain and Davis Mountain in the project area and are mostly mid- and late-seral stands with small blocks of regenerating mixed conifer. The habitat is as follows:

- Ponderosa pine habitat is present along the north side of Davis Mountain, south side of Hamner Butte, immediately east of Davis Lake, and in the northern part of the planning area west of Wickiup Reservoir. Within the ponderosa pine habitat, focal species include the white-headed woodpecker, pygmy nuthatch,

chipping sparrow, and Lewis woodpecker. The key habitat features include large patches of old forest with large snags, large diameter trees, open understory with regenerating pine, and patches of burned old forest.

- Within the mixed conifer habitat, focal species include the brown creeper, Williamsons' sapsucker, flammulated owl, hermit thrush and olive-sided flycatcher. The key habitat features include large diameter trees, large diameter snags, interspersed of grassy openings and dense thickets, multi-layered/dense canopy and edges and openings created by wildfire.
- Lodgepole pine is considered a unique habitat in the conservation plan with the focal species of black-back woodpecker and old growth lodgepole pine the conservation focus. Lodgepole pine dominates the flatter terrain and frost pockets within the planning area and is also a common understory species in the mixed conifer and ponderosa pine habitats.

### *Alternative 1*

Implementation of this alternative would result in no silvicultural treatments and/or underburning to reduce stand competition, advance stand succession or maintain the health and vigor of the existing plant communities in the planning area. Overstocked stands would continue to be at risk to catastrophic wildfires, disease and insect infestations that have the capability to negatively impact thousands of acres across the planning area. Quality white-headed woodpecker habitat is relatively uncommon in the planning area because dense understories have been allowed to develop that do not provide the open habitat needed by this species. The large diameter snags and live trees needed for foraging and nesting are also at risk because of tree densities and basal exceeding site capacity. This alternative foregoes the opportunity to improve and enhance large diameter open grown ponderosa pine habitat for white-headed woodpeckers, pygmy nuthatches, and the chipping sparrow.

Within the mixed conifer stands, no change would likely occur to avian species composition and distribution within the planning area although this is also dependent on conditions on wintering grounds for migratory birds. Natural succession would continue to evolve increasing canopy cover, average stand diameters, and allowing coniferous understories to further develop. However, the increasing basal area and stand density is creating stress on the dominant large diameter trees in the stands and resulting in an increased rate of mortality. This is also the habitat component that takes several hundred years to attain. In the absence of forest management to reduce tree competition forested stands will continue to be at risk to large scale stand replacing events such as wildfires, insect outbreaks and disease. If these events were to occur, there would be long-term negative impacts to species such as the brown creeper, flammulated owl, hermit thrush, and the olive-sided flycatcher.

### *Action Alternatives*

Implementation of all action would result in the commercial and pre-commercial thinning of ponderosa pine habitat, mixed conifer habitat, and lodgepole pine habitat as displayed in table 23 and table.

The following table lists the number of acres of early, mid- and late-seral silvicultural treatments proposed by alternative and habitat type (ES = early seral, MS = mid-seral, and LS = late-seral).

Table 23. Acres of Treatments Proposed by Seral stage and PAG

<b>Habitat Type</b>	<b>Current Acres</b>	<b>Alternative 1 Acres Treated</b>	<b>Alternative 2 Acres Treated</b>	<b>Alternative 3 Acres Treated</b>	<b>Alternative 4 Acres Treated</b>
Ponderosa ES	2,144	0	270	220	74

Ponderosa MS	7,426	0	2,027	1,743	293
Ponderosa LS	9	0	2	2	2
Mixed Conifer ES	13,023	0	870	678	510
Mixed Conifer MS	40,126	0	6,533	4,689	3,668
Mixed Conifer LS	4,828	0	619	311	175
Lodgepole ES	6,349	0	549	463	382
Lodgepole MS	21,309	0	4,496	4,252	3,313
Lodgepole LS	1,705	0	180	180	161
Total	96,919	0	15,546	12,538	8,578

Table 24 Summary treated acres by PAG

Alternative	Acres PP	Acres MC	Acres LP
2	2299	8022	5225
3	1965	5678	4895
4	369	4353	3856

Treatment objectives in the mid- and late-seral stands are to maintain the health of the overstory by reducing stand density and competition for water resources. Generally, thinning would be from below removing white fir and lodgepole pine in mixed conifer and ponderosa pine stands.

Within mid- and late-seral stands of ponderosa pine, thinning would maintain and enhance stands favorable for the white-headed woodpecker, pygmy nuthatch, chipping sparrow and the Lewis' woodpecker by reducing stand density, protecting the large tree component and retaining snags and patches of dense cover. This would have a beneficial effect on the previously mentioned species but would reduce the amount of habitat available for species such as Townsend's warblers, red-breasted nuthatch, mountain chickadees, and warbling vireos. This group of species prefer denser forested habitats and were not historically present in dryland habitats until white fir and lodgepole pine became established in the understories. However, the chickadees and warblers are also present on the west-side of the Cascades where environmental conditions are more favorable to maintain multi-storied habitats.

This would vary somewhat by alternative with Alternative 2 treating more ponderosa pine on the north side of Davis Mountain, south side of Hamner Butte, east side of Davis Lake and west of Wickiup Reservoir. In Alternative 3, reduced timber harvest would occur in several areas affecting the amount of mid- and late-seral mixed conifer and ponderosa pine stands that would be treated. Reduced harvest would occur on Davis Mountain, Hamner Butte, and Maklaks Mountain as compared to Alternative 2. With Alternative 4, no timber harvest or underburning would occur in the Browns, Wickiup and Lower Little Deschutes subwatersheds. This foregoes the opportunity to treat 3,000 to 6,500 acres of lodgepole pine, mixed conifer, and ponderosa pine stands in these subwatersheds to reduce fuel loading, the increasing risk of uncontrolled wildfire, and to reduce stand susceptibility to insect and disease outbreaks.

These reductions would result in fewer acres treated for the benefit of dry forest habitat dependent species such as the white-headed woodpecker, pygmy nuthatch, chipping sparrow, brown creepers, flammulated owls, hermit thrushes and olive-sided flycatchers. Areas not treated would continue to provide dense canopy mid- and late-seral stands of ponderosa pine and mixed conifer that are suitable habitat for brown creepers, flammulated owls and the hermit thrush. However, untreated stands are still susceptible to stand replacing fire events and insect outbreaks capable of severely modifying thousands of acres in the planning area and creating a long-term loss of habitat for these species.

In Alternative 4, there would no opportunity to create and maintain large diameter open grown ponderosa pine habitat for white headed woodpeckers, pygmy nuthatches, and chipping sparrows particularly north of Davis Lake and west of Wickiup Reservoir in the Moore and Wickiup subwatersheds until the next entry.

In all alternatives, mixed conifer treatments are prescribed on the Cryder Butte, Ringo Butte, Hamner Butte, Odell Butte, Maklaks Mountain, Davis Mountain, and Royce Mountain. Within the mixed conifer mid- and late-seral stands, single and multi storied treatments would be prescribed to maintain the health and vigor of the overstory tree species. These prescriptions are intended to benefit brown creepers, Williamsons' sapsuckers, flammulated owls, hermit thrushes and olive-sided flycatchers by promoting large diameter trees and snags and maintaining areas with dense thickets of understory trees and shrubs.

In all alternatives, post-sale fuel treatments would be scheduled to reduce the risk of ground and crown fires in harvested areas. Underburning operations particularly in the spring have the potential to displace resident and migratory birds into adjacent suitable habitat stands and/or eliminate habitat for those species dependent on dense canopied forests or brushy areas of manzanita and bitterbrush. These activities would also create suitable habitat for those species closely associated with more open areas consistent with historical conditions.

For all action alternatives, mitigation measures would be in effect to maintain at least 15 percent of each harvest unit kept in an untreated condition to provide nesting and foraging habitat for resident and migratory birds. During burning operations, snags and large diameter down wood would be protected wherever possible to maintain these habitat components.

Indirect effects include the temporary displacement of some species during logging operations and the possibility of additional tree loss to windthrow particularly on southwest aspects. However this can be minimized by marking fewer trees (feathering) near openings.

Post-sale treatments may include underburning, handpiling, and/or grapple piling to reduce fuel loadings in harvest units. Underburning is more likely to occur in ponderosa pine and mixed conifer units that have been treated to maintain or enhance single story forested stands. Spring burns typically remove fuels less than three inches in diameter but also consume shrubs such as bitterbrush which may be used as nesting cover. This would result in habitat loss and species displacement for landbirds currently using those areas. However, we also expect long-term habitat and species population benefits to several species including the white-headed woodpecker, pygmy nuthatches, flammulated owls, chipping sparrows, and Townsend's solitaires which have been greatly reduced in dry forest habitats.

To partially mitigate the habitat losses, a minimum 15 percent of each harvest unit would not be impacted by burning or timber harvest to maintain dense canopied areas with a shrub component if available, to provide nesting and foraging habitat for resident and migratory species. Mitigation measures are also in place to protect snags and large diameter down wood during underburning operations.

Table 23 also displays the number of early-seral acres that will be pre-commercially thinned to maximize tree growth

for the long-term and eventually provide nesting and foraging habitat.

In all action alternatives, the forest management activities proposed are consistent with the biological objectives for these species. These include no net loss of ponderosa pine or mixed conifer forest, retention of large diameter snags and trees, enhancing the size and connectivity of high quality habitat, and improving the quality of degraded habitats.

Impacts to the black-back woodpecker, the focal species for lodgepole pine, were described in the management indicator species issue in this document.

### *Cumulative Effects*

Large-scale forest management in the Seven Buttes area of the Crescent Ranger District began in 1996 by identifying those stands that were most susceptible to wildfire and insect and disease outbreaks. An environmental assessment was completed in 1996 that identified more than 25,000 of forested stands defined as imminently susceptible and that also stated several entire stands may be required to improve long-term forest health in this planning area. The selected alternative of the Seven Buttes proposed more than 10,000 acres of selected treatments including pre- and commercial thinning of early-seral, mid-seral, and late-seral stands of lodgepole pine, ponderosa pine, and mixed conifer in the planning area. The treatments proposed in the original Seven Buttes project are similar to that currently being proposed with this entry.

If implementation of Seven Buttes Return occurs, forest health restoration will occur on an estimated 9,500 to 16,000 acres depending on the alternative selected. In combination with the 10,000 acres to be treated in the original analysis, over 20,000 acres of forest thinning will be accomplished that will benefit ponderosa pine and mixed conifer dependent bird species that have occurred here historically including the white-headed woodpecker, pygmy nuthatch, brown creepers, Williamson's sapsuckers, flammulated owls, hermit thrushes, olive-sided flycatchers, and chipping sparrows. Concurrently, there has been a reduction in the amount of habitat available for the Townsend's solitaire, red-breasted nuthatch, mountain chickadee, and warbling vireos that were not here historically but moved in as white fir and lodgepole pine began to dominate the understory of ponderosa pine and mixed conifer forests on the east-side Oregon Cascades. While reductions in habitat have occurred for this group they are also present on the west-side Cascades and there is less concern for them as a whole as compared to dry forest bird species.

Within 5-10 years another planning effort may again focus on the Seven Buttes planning area to review current conditions and assess forest health needs. Analysis conducted at that time would determine the scope and intensity of the project and landbird habitat would be analyzed based on current direction and habitat conditions present.

## **8. Proposed, Endangered, Threatened or Sensitive Plants**

No threatened, endangered, or sensitive plant species have been found in the Seven Buttes Return Project area units, therefore, activities associated with those units for all alternatives will not adversely impact any TES plant species viability or cause a trend toward federal listing

## **9. Proposed, Endangered, Threatened or Sensitive Animal & Fish Species**

A biological evaluation has been conducted for species and their essential habitat known to exist on the Deschutes National Forest. Effects to the northern spotted owl and bald eagle were discussed under the key issues subsection above. The following is a summary table of the findings for the other species:

Table 25 Effects Summary on PETS Wildlife

<b>Species</b>	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>
Northern Spotted Owl (T)	LAA	LAA	LAA	LAA
Northern Spotted Owl Critical Habitat	LAA	LAA	LAA	LAA
Northern Bald Eagle (T)	LAA	NLAA	NLAA	NLAA
Canada Lynx (T)	NE	NLAA	NLAA	NLAA
Bull Trout (T)	NLAA	NLAA	NLAA	NLAA
Oregon Spotted Frog (FC)	NI	MIIH	MIIH	MIIH
Peregrine Falcon (S)	NI	NI	NI	NI
Horned Grebe (S)	NI	NI	NI	NI
Red-necked Grebe (S)	NI	NI	NI	NI
Bufflehead Duck (S)	NI	MIIH	MIIH	MIIH
Harlequin Duck (S)	NI	NI	NI	NI
Western Sage Grouse (S)	NI	NI	NI	NI
Yellow Rail (S)	NI	NI	NI	NI
Tricolored Blackbird (S)	NI	NI	NI	NI
California Wolverine (S)	NI	MIIH	MIIH	MIIH
Pacific Fisher (S)	NI	MIIH	MIIH	MIIH
Pygmy Rabbit (S)	NI	NI	NI	NI
Red Band Trout (S)	MIIH	MIIH	MIIH	MIIH

**(T)** Federal Threatened

**(S)** Regional Forester Sensitive

**(FC)** Federal Candidate

**NE** No Effect (Applies to listed species)

**NLAA** May Affect, Not Likely To Adversely Affect

**LAA** May Affect, Likely To Adversely Affect

**NI** No Impact (applies to candidate species and sensitive species)

**MIH** May Impact Individuals or Habitat, But Will Not Likely Contribute To a Trend Toward Federal Listing or Cause a Loss of Viability To The Population or Species

**WIFV** Will Impact Individuals or Habitat With A Consequence That The Action May Contribute To A Trend Toward Federal Listing Or Cause A Loss of Viability To The Population or Species

Following is a discussion of those listed or candidate species that this project may affect. The Biological Evaluation/Assessment includes a discussion of species that will not be affected.

- Northern bald eagle, northern spotted owl: these have been discussed at length in the key issue section above.
- Canada Lynx (T): Based on the latest information regarding habitat types for lynx on the Deschutes National Forest (using the second edition of the Lynx Conservation Assessment and Strategy, vegetation treatments proposed in the Seven Buttes Return Project do not occur within a designated Lynx Analysis Unit (LAU) and are not expected to adversely impact undetected or transient lynx that may move through the project area. Therefore the actions included in the project "May affect but are not likely to adversely affect" the Canada lynx.
- Bull Trout (T): Bull trout primary habitat include Trapper creek, Odell Lake, Odell Creek, Crystal Creek, and Davis Lake. Juvenile rearing occurs only in Trapper Creek and potentially Odell Lake. Bull trout spawning has only been documented in Trapper Creek. As a result of Seven Buttes Return Project activities, increased runoff and overland flow may increase surface erosion in some areas, and in some cases will mean less groundwater recharge, so that less spring fed water flows into Odell Creek. The cool waters entering from Maklaks Creek contribute to the cooler temperatures during the summer when much of Odell Creek flows come from warmer surface water off Odell Lake. In addition, past actions when combined with this project and future projects have increased soil compaction and created openings that may contribute to higher than normal overland flows. Mitigation measures will be implemented as part of the Seven Buttes Return Project to reduce those impacts. Moreover, these actions are proposed in response to negative trends documented in the Odell Watershed Analysis. These actions and mitigation measures are consistent with the project design criteria in the FY2000 Programmatic BA. Implementation of any action alternative would result in a determination of "May Affect, but is not likely to adversely Affect bull trout."
- Oregon Spotted frog (FC): The Oregon spotted frog (*Rana pretiosa*) is currently listed as a candidate species by USFWS. There are currently 4 known populations of Oregon spotted frogs on the District: Davis Lake at the mouth of Ranger Creek, Davis Lake near the mouth of Odell Creek, Odell Creek ford at Road 4660 and Big Marsh based on surveys conducted in 1994 (Hayes 1995). Two spotted frogs were found in Ranger Creek, 10 in Odell Creek, and about 300 spotted frogs in Big Marsh. Hayes (1995) stated spotted frog habitat was limited in both streams because brook trout were present, stream temperatures were cold, and limited side channels were present that offer warm, shallow water habitat needed by the frogs. No recent surveys have been conducted in the Odell Creek or Trapper Creek areas. The salvage of dead and down lodgepole is proposed adjacent to portions of Ranger Creek and Odell Creek. To maintain instream security cover for spotted frogs no lodgepole would be removed from the either stream and an appropriate no harvest buffer would be maintained within the riparian reserve to provide connectivity. With these measures in place there would be no impact to Oregon spotted frogs in the Odell Creek and Ranger Creek areas where timber harvest may occur. These measures are also consistent with the project design criteria in the FY2000 Programmatic BA. Implementation of any action alternative would result in a determination of "No Impact" to the Oregon spotted frog.
- Sockeye salmon and chinook salmon: The assessment of the effects on Essential Fish Habitat (EFH) concluded that this project area has no essential habitat.

### ***Region 6 Sensitive Species***

The September 2000 Forest Service Region 6 Sensitive wildlife species list was reviewed for species that may be present on the Deschutes National Forest. After a review of records, habitat requirements and existing habitat components, it was determined that the following sensitive animal species have habitat or are known to occur in the project area: peregrine falcon, horned grebe, red-necked grebe, bufflehead duck, harlequin duck, California wolverine, and Pacific fisher. After a review of records, habitat requirements and existing habitat components, it was determined that the remaining sensitive species have no habitat and do not occur in the project area: western sage grouse, yellow rail and tricolored blackbird. Implementation of any of the project alternatives would have **no impact** on these species.

- **Bufflehead Duck (S):** Buffleheads are one of the smallest ducks and smallest of the North American diving ducks. They only nest in North America in tree cavities or artificial nest structures within about 220 yards of lakes, ponds, and river systems. On the Crescent Ranger District, buffleheads are commonly seen on the large lakes and reservoirs year-round or until freeze-up occurs when they fly off to find open water and food resources. Because buffleheads are dependent upon tree cavities for nesting purposes, the removal of snag habitat near bodies of water have the potential to negatively impact this species. Project implementation is expected to reduce the density of snags currently present within those harvest units surrounding Davis Lake and those portions of Odell Lake, Crescent Lake and Wickiup Reservoir that are within the project area. However, post-harvest surveys of snag habitat on recently harvested timber sales in this area in most cases, exceed those required to maintain species populations. To mitigate the expected loss in snag habitat, the retention of snags particularly near bodies of water is required. Because snag densities are assumed to decline with project implementation at least temporarily, the determination of effect for any action alternative is "May Impact Individuals or Habitat, But Will Not Likely Contribute To a Trend Toward Federal Listing Or Cause a Loss of Viability To The Population or Species."
- **California Wolverine (S):** Wolverines cover a wide variety of habitats from the arctic tundra to coniferous forest. The most common habitats are those that contain a high diversity of microhabitats and high prey populations. Wolverines also tend to avoid areas with high temperatures and an abundance of human activity (Ruggiero et al 1994). Wolverines are opportunistic and will forage on whatever is readily available. Small mammals, hares and berries make up a large part of the diet in summer months, and large ungulates or carrion in winter (Ruggiero et al 1994). The most critical and limiting habitat for wolverines seems to be acceptable denning habitat. Disturbance during the denning season seems to cause females to abandon the area. Denning habitat in the southern Oregon Cascades has been modeled using a program developed by Hart using data from Copeland's Idaho study (Hart 1997). Factors in the model include high elevation rocky slopes or cirque basins on north and east slopes that have persistent snow into the spring and summer. It is unknown if the denning model developed in Idaho can accurately be used in the southern Oregon Cascades, but it is the best information that we have at this time. District records include three unconfirmed sightings of wolverine near the summit of Willamette Pass, two sightings near Maklaks Mountain, and two sightings north of Crescent Lake along Crescent Creek. Forest carnivore surveys were conducted on the district in 1995, 1996, and 1998 utilizing baited camera sets although no photographs or footprints of wolverines were detected. The most suitable denning habitat would be located within the Mt. Thielsen and Diamond Peak Wilderness areas and the adjacent OCRA. The number of unconfirmed wolverine sightings would tend to indicate the animals are present on the Deschutes National Forest although no natal dens have been confirmed at this time. None of the wolverine sighting areas reported to district personnel would be classified as denning habitat although the animals may have been foraging or dispersing when observed. No timber harvest or road construction/re-construction to provide access to harvest units would occur within or adjacent to high elevation rocky slopes or cirque basins where denning habitat may be present in the planning area. However, disturbance associated with logging activity including timber felling, yarding, hauling, and/or road construction may cause an animal to avoid areas where these activities are occurring. Project implementation would not result in any loss or disturbance of potential denning habitat although individual animal(s) may be temporarily displaced from foraging and dispersal habitats during the periods when logging activities may be occurring. If a wolverine

natal den is located, project activities within one mile of the den would be prohibited with a seasonal restriction (see mitigation measures). Based on these expected impacts, the determination for the California wolverine is "May Impact Individuals or Habitat, But Will Not Likely Contribute To a Trend Toward Federal Listing Or Cause a Loss of Viability To The Population or Species".

- **Pacific Fisher (S):** Fishers are similar in body form to weasels and are the largest elongated terrestrial mustelid with males averaging 3-6 kg, twice as large as females. Females have 1 litter per year with litter sizes of 1-4 with 2-3 being the norm. Fishers probably select prey on the basis of availability and diets are typically diverse. Diets in the Pacific coastal states include porcupine, squirrels, woodrats, rabbits, mice, voles, marmots, beaver, quail and grouse. Scavenging is an important foraging behavior of mustelids and ungulate carrion has been found to be an important food item in the northern Rocky Mountain areas. Fishers are can be active during the day and/or at night. Studies conducted in Washington state indicate fishers inhabit a variety of densely forested habitats at higher elevations on the east side of the Cascades, with 70 percent of the detections above 1000 meters and the majority were found in the subalpine fir zone (Heinemeyer and Jones 1994). Fishers commonly use forested riparian areas along streams for resting foraging. Limited carnivore snow tracking, baited camera sets, and track plates have been used to try and detect marten, fisher, and wolverine presence on the district with surveys occurring in 1994, 1995, 1996, and 1998. There were no detections of fishers documented from these surveys. However, a juvenile male fisher was captured on the Rogue River National Forest and radio collared in 1998 that dispersed 45 miles to the Big Marsh area on the Crescent Ranger District. This animal was radio tracked until the battery died in December 1999. District wildlife sighting records also list unconfirmed fisher sightings on the southwest side of Odell Lake and in the Crescent Creek drainage within the planning area. The silvicultural treatments planned in all action alternatives would reduce stand density through commercial and pre-commercial thinning activities. The commercial thinning proposed would reduce overstory stand canopy cover to approximately 30-50 percent or more depending on the prescription. The pre-commercial entries would reduce the understory to about 190-275 stems per acre of seedling/saplings and pole sized trees. Either treatment would still maintain sufficient overhead canopy cover to maintain fisher habitat. Snag densities may decrease in the short-term to meet OSHA safety regulations but snags would be maintained at a minimum of 3-4 per acre to meet cavity excavator species requirements. These snags may also be used as potential fisher resting sites and natal dens. The salvage of dead and down lodgepole pine is also proposed particularly in the Odell Creek and Trapper Creek drainages south of Davis Lake. The removal of this material may indirectly effect the fisher by reducing habitat for prey species such as rabbits, mice, and voles although mitigation measures would include the retention of slash piles and a minimum of 300 linear feet of down logs per acre to provide prey base habitat. Fishers that maybe in the project area may also be displaced into adjacent habitats as a result of timber harvest activities and the associated disturbance during the period operations may occur. Based on these expected effects, the determination for the Pacific fisher is "May Impact Individuals or Habitat, But Will Not Likely Contribute To a Trend Toward Federal Listing Or Cause a Loss of Viability To The Population or Species".
- **Red Band Trout (S):** Redband trout are native to both the Odell system and the Crescent Creek and Little Deschutes River system. A fish survey performed below Highway 58 by ODFW in 1992 found that although rainbow trout were the most abundant trout species in this section of Crescent Creek, the density was lower than expected. A recent survey only observed redband, mountain whitefish and kokanee in Crescent Creek. Indirect effects of the proposed activities include a potential for increased peak flows or increased duration of flows, which could increase overland flow and reduce ground water recharge, with consequent less cool spring discharge into Crescent Creek and Odell Creek. Mitigation measures are included in the project including riparian reserves as well as soil enhancement. Based on these expected effects and mitigation measures, the determination for the redband trout is "May Impact Habitat, But Will Not Likely Contribute To a Trend Toward Federal Listing Or Cause a Loss of Viability To The Population or Species".

## 10. Survey & Manage Species

The 2001 ROD for Survey and Manage Species provides a the latest context for evaluating project actions. Appropriate protocols were followed to evaluate the effects of this project to species included in the 2001 ROD for Survey and Manage Species.

### ***a. Plants***

Effects are described for the following species, known to occur in the project area: *Bryoria tortuosa*, *Buxbaumia viridis*, *Tritomaria exsectiformis*, and *Schistostega pennata*. Appendix B lists mitigation measures for units affected.

*Bryoria tortuosa* (uncommon forage lichen): Thinning and low-intensity fires are not likely to threaten established populations. Proposed treatment for EA Unit 215 is thinning and removal of excess dead trees in all action alternatives. It is possible that trees with *B. tortuosa* could be removed during treatment causing potentially detrimental direct effects to the population. The direct effects would be the same in all action alternatives. The No Action alternative would have no direct effects. Habitat for *B. tortuosa* could be enhanced in the action alternatives by the proposed treatment in Unit 215 by opening up the canopy and letting in more light.

*Buxbaumia viridis* (bug-on-a-stick): Found in the following units: 315, 320, 330, 345, 360, 390, 645. Treatments in these units vary by alternative. Logs with *B. viridis* would probably not be desirable for harvest due to the advanced state of decay (Classes 3, 4, and 5), however, they could be destroyed by logging equipment and other harvest and post-harvest activities. Natural or prescribed fire could burn down logs colonized by the species. Harvest that opens the canopy allowing increased insolation and air movement resulting in drying of the substrate on which *B. viridis* grows causes a negative indirect effect on the occurrences and habitat. Past, present, and future actions that remove or prevent recruitment of down woody debris that could provide suitable substrate for colonization of this species are detrimental. Actions that maintain past, present, and future recruitment of suitable substrate would be beneficial.

*Tritomaria exsectiformis* (liverwort): Occurs in Units 310 (Ranger Creek) and 175 (Dell Springs). Direct effects could occur in all action alternatives if down woody debris is removed from the channel or areas directly adjacent to the channel of Ranger Creek, or the outflow channel of Dell Springs. Indirect effects could occur if downed woody debris in decay classes 1 or 2 are removed from the channel. As woody debris decomposes to class 3, 4, and 5, it provides suitable substrate for colonization by *T. exsectiformis* from existing sites in the channel. Activities that change the water chemistry or hydrology upstream of known sites may negatively affect sites downstream. The site at Dell Springs, adjacent to a dispersed camping area, was discovered in 1997. Although it has been monitored since that time, it is unknown what effects past activities have had on this occurrence of *T. exsectiformis*.

*Schistostega pennata* (glowing cave moss): Found in Unit 315. Salvage of downed trees associated with root wads that are occupied by the species would have detrimental direct effects. Harvest of trees that would open the canopy allowing more light and air movement would have a detrimental indirect effect on known sites and the habitat. Timber harvest, trails, roads, summer homes, collection of special forest products, and other forest activities have the potential, when considered individually or collectively, to cause the decline of known sites.

*Ramaria rubrievanescens* (Marr & Stuntz): Two sites are known in Oregon, one in Douglas County and the other on Odell Butte, Klamath County, DNF in the 7 Buttes Return Analysis Area. Data are lacking regarding the specific response of *R. rubrievanescens* to management practices such as logging, road, trail, and campground construction, prescribed fire and collection of secondary forest projects (Castellano and O'Dell, 1997). Direct, indirect, and cumulative effects to *R. rubrievanescens* from activities associated with the 7 Buttes Return Project cannot be determined based on information known at this time. This species is a Category B fungus that requires strategic surveys (to be implemented before 2011). Therefore, although lack of information exists to determine the impacts of this project on this species, the S&M ROD and S&Gs have been implemented to assure that management occurs with

reasonable assurance of species persistence.

### ***b. Animals***

**Mollusks:** The Crater Lake tightcoil snail surveys occurred during October and November 1999 with no detections confirmed. Additional surveys are scheduled for the spring of 2001 where potential habitat exists, in riparian areas.

**White-headed woodpecker, black-backed woodpecker, pygmy nuthatch, and flammulated owl:** Mitigation measures addressing snags and green tree replacements are incorporated to ensure that species distribution and numbers do not decline.

**Fringed myotis bat, silver-haired myotis bat, long-eared myotis bat, long-legged myotis bat, and pallid bat:** This group is not listed as Survey and Manage but standards and guidelines were prepared to ensure their protection. Mitigation measures addressing snags and green tree patches in Matrix are incorporated.

**Great gray owl:** No great gray owls were located during surveys conducted in 1999 and 2000. With Alternative 2, a reduction in tree density may result in an increased ability of great gray owls to maneuver while foraging in treated stands. Harvest would not occur within nesting habitat, although nesting habitat may develop sooner because of the commercial thinning treatments. Grass, forbs, and shrub development would improve with the thinning treatments, which would improve habitat for the owl's prey species. Lower management zone (LMZ) thinning treatments in Alternative 3 that reduce the basal area further would likely eliminate the possibility of treated stands being utilized for nesting in the short term (approximately 20 years). Conversely, these widely-thinned stands would provide quality foraging habitat for the great gray owl. The effects of Alternative 4 are the same as Alternative 3, except that no treatment would occur in Browns, Wickiup, and Lower Little Deschutes subwatersheds.

## **11. Key Elk Areas**

The Seven Buttes Return planning area contains two Key Elk Areas. One is located near Maklaks Mountain and the other is just south of Davis Lake. No timber harvest is planned within the Maklaks Key Elk Area, but is planned within the Davis Key Elk Area. The total area covered by the Davis Key Elk Area is 2,082 acres and 80% of that is considered hiding or thermal cover. Table 17 summarizes the changes in hiding and thermal cover in the Davis Key Elk Area.

Table 26 Davis Key Elk Area Cover Condition

<b>Alternative</b>	<b>Hiding Cover Remaining</b>	<b>Thermal Cover Remaining</b>	<b>Total Cover Remaining</b>
1	1011 ac. = 49%	666 ac. = 32%	1677 (80%) (current condition)
2	936 ac. = 45%	583 ac. = 28%	1519 (73%)
3	1011 ac. = 49%	636 ac. = 32%	1074 (52%)
4	1011 ac. = 49%	636 ac. = 32%	1074 (52%)

### ***Alternative 1***

Implementation of Alternative 1 would result in no immediate change in vegetative condition. At the present time hiding cover is well distributed across the entire 2,082 acre key elk area and thermal cover stands are predominantly located on Ranger Butte and in those areas nearest Davis Lake on the eastern boundary of the management area. There would be no salvage of down and dead lodgepole to lessen the risk of catastrophic fire in the flats near Ranger Creek and Odell Creek. If a fire were to occur and could not be easily contained, hiding cover capability would be lost for approximately 10-15 years or until regenerated lodgepole reaches an 8-10 foot height capable of hiding elk.

Overall, in the absence of wildfire, there would be a gradual increase in the amount and distribution of hiding cover, as previously thinned plantations would gain enough tree growth to function as hiding cover for summering animals. There would also be a gradual increase in the amount and distribution of thermal cover as stands matured reaching at least 40 feet in height and providing 70 percent or higher canopy cover. This increase would also be dependent on the ability of the stands to survive disease outbreaks if they occurred.

### *Alternative 2*

Implementation of this alternative would result in the commercial thinning of 83 acres of thermal cover, 75 acres of hiding cover thinned to a single story forested condition on Ranger Butte, 134 acres of dead and down salvage within thermal cover stands, and 545 acres of salvage of dead and down lodgepole pine in hiding cover stands. The commercial thinning planned on Ranger Butte is expected to reduce the ability of those stands to function as thermal cover because canopy cover would be reduced below the 70 percent level. It is also assumed these treated stands would minimally function as hiding cover at least in the short-term of 10 -15 years. The salvage of dead and down lodgepole in hiding cover stands is not expected to change the cover capability within those areas and may actually allow more tree growth to occur and provide even better hiding cover within 5 - 6 years.

This alternative would maintain hiding and thermal requirements above the minimums required for forest plan standards and guidelines. To minimize disturbance to animals that may be calving near Ranger and Odell Creeks, a seasonal restriction on all harvest activities would be in effect from May 1 through June 30 for those units near riparian areas. (see mitigation measures for list of units).

The Deschutes Forest Plan specifies road densities within key elk areas should be maintained at a level between 0.5 and 1.5 miles of open road per square mile of land. Currently, there are 10.75 miles of open road (3.33 mi/sq. mi.) within the Davis Key Elk Area. However, 2.5 miles of currently open road are scheduled to be closed with the Royal timber sale which would reduce the open road density to approximately 2.4 miles/sq. mile.

Several system roads including the 4660 and the 4669 which provide access to East and West Davis campgrounds are open weather permitting and contribute to the relatively high road density within this key elk area. There is a proposal to close or obliterate the majority of the 4600.855 spur which is partially within the Davis Key Elk Area. This road segment if closed would reduce the open road density to about 2.2 miles/sq.mile benefitting deer and elk as well as reducing disturbance to nesting bald eagles in the Davis Lake area. Access to East Davis campground would be provided by building a short (150 foot) new road segment from the 4600 to connect with the 855 spur. This action would close about 1.5 miles of the 4600.855 but still provide access to the campgrounds at East and West Davis Lake. New road construction (150 feet) and the closure/obliteration of about 1.5 miles of the 855 spur would be timed to avoid impacts to nesting bald eagles.

### *Alternatives 3 and 4*

Implementation of either alternative would result in 30 acres of thermal cover commercially thinned to a single story

forested condition on Ranger Butte and 550 acres of salvage of dead and down lodgepole. This includes 80 acres near West Davis Campground (unit 840) that was not proposed in alternative 2. There would be no reduction in the amount and distribution of hiding cover because the salvage would only remove the dead and down material that is not concentrated enough to provide effective hiding cover for summering big game animals. As described in alternative 2, salvage removal may increase the residual tree growth and provide even more effective hiding cover in the near future and decrease the time needed for these stands to mature into thermal cover.

The major difference between alternative 2 and alternatives 3 and 4 is that unit #305 would not be commercially thinned leaving an additional 53 acres of thermal cover retained on Ranger Butte. This alternative would maintain hiding and thermal requirements above the minimums required for forest plan standards and guidelines within key elk areas. To minimize disturbance to animals that may be calving near Ranger and Odell Creeks, a seasonal restriction on all harvest activities would be in effect from May 1 through June 30 for those units near riparian areas. (see mitigation measures for list of units).

As similarly described for alternative 2 several open road systems providing access to campgrounds contribute to the high open road density in this management area. The same road closures and new road construction are planned in these alternatives as stated in alternative 2 with the same benefits to deer, elk, and nesting bald eagles.

### *Cumulative Effects*

The silvicultural treatments planned in the original Seven Buttes Environmental Assessment (USDA 1996) in combination with those proposed for this analysis if implemented would still maintain hiding and thermal cover levels above the forest plan minimums of 20 percent in thermal cover and 30 percent in hiding cover stands. These silvicultural treatments are not expected to result in any appreciable change in elk population numbers within this area. Future environmental analysis that may occur in the Seven Buttes area in the next planning cycle 5-10 years from now would take into consideration the existing condition at that time and the direction provided by the Deschutes National Forest Land and Resource Management Plan.

## **12. Big Game Hiding Cover and Forage**

The Deschutes LRMP specifies at least 30 percent of each subwatershed should be maintained in hiding cover for the benefit of mule deer and elk populations. To analyze the effects of the alternatives on hiding cover, it was assumed that silviculture treatments including commercial and precommercial thinning and post and pole thinning of stands providing hiding or thermal cover would reduce the cover capability at least in the short-term and increase at least minimally the amount of forage available to summering big game animals.

### *Alternative 1*

Implementation of this alternative would result in no immediate change in the current cover/forage condition within each six-field subwatershed. Within a ten year period, there would be a gradual increase in the amount and distribution of cover present within most subwatersheds. This is a result of increased tree growth in young forested plantations and also within older stands with a second canopy layer that would provide increased capability to hide deer and elk from view. Conversely, there would also be a gradual decrease in the amount of forage available to summering deer and elk as increased tree growth would reduce the amount of sunlight reaching the forest floor beneficial to browse species such as bitterbrush.

### *All Action Alternatives*

Each action alternative proposes a mix of silviculture treatments including commercial and pre-commercial thinning, post and pole tree removal, down and dead salvage. All green tree treatments are expected to reduce the ability of those forested stands to provide cover for deer and elk at least in the short-term 5-10 years. These treatments are designed to reduce stand crowding, lessen the risk of catastrophic fire and loss to insects. Generally, effective hiding cover would be regained in about 5-8 years after stands had been pre-commercially thinned. Thinning would not occur in every acre of every harvest unit, at a minimum 15 percent of each unit acreage would be left untreated which would contribute to maintaining cover blocks within each harvest unit. In alternative 3 a more intense thinning prescription would be implemented in those units north of Davis Lake to the planning area boundary.

In Alternatives 3 and 4, a minimum of 25 percent of harvest units 15 and 20 would be left untouched to provide quality hiding cover. Alternative 2 would not include this expanded retention and therefore these units would be left more open than in Alternative 3 or Alternative 4.

Dead and down wood salvage is also proposed in each action alternative. In most instances the removal of dead and down would have little impact on hiding cover because logs are not concentrated enough to provide effective hiding cover. No subwatershed falls below 30% hiding cover.

### *Cumulative Effects*

The silvicultural treatments planned in the original Seven Buttes Environmental Assessment (USDA 1996) in combination with those proposed for this analysis if implemented would still maintain cover levels above the forest plan minimums of 30 percent. The silvicultural treatments planned in the Seven Buttes Return environmental assessment are not expected to result in any appreciable change in deer and elk populations within the area. The next planning cycle in the Seven Buttes area may occur within the next 5-10 years. At that time, a new analysis would occur to determine the existing condition as well the as current direction provided by the Deschutes National Forest Land and Resource Management Plan to maintain big game cover.

The Bend-Ft. Rock Ranger District is also preparing an environmental assessment named Charlie Brown to conduct similar silviculture activities for short- and long-term habitat enhancement. Two of the sixth-field watersheds (Browns and Wickiup) in the Charlie Brown planning area extend into the Seven Buttes Return planning area. Cumulative effects analysis show that cover would still exceed 30 percent in the Browns and Wickiup Subwatersheds.

## **13. Roadless Area**

A portion of an inventoried roadless area (RARE II), identified in Appendix C of the 1990 LRMP, of approximately 20,175 acres is situated in the northwest corner of the project area. The Deschutes National Forest manages this area primarily for Dispersed Recreation. It also covers some Bald Eagle management area and Scenic Views management area. No activities are proposed within this roadless area. Harvest activities that are adjacent to the southern end of the roadless area include thinning and fuels reduction around summer home tracts near Odell Lake. Activities to the east of the roadless area include commercial thinning and selection cutting within Late Successional Reserve. No direct impacts to the roadless area will occur from any of the alternatives. An indirect effect from the action alternatives will be a reduced risk of fire spreading into the Maiden Peak Roadless Area from the summer home tracts along Odell Lake because of the proposed thinning and fuels reduction in that area.

## **14. Scenic Views**

The scenery of the Seven Buttes Return Project area is undergoing a gradual but noticeable change. In particular,

previous regeneration harvest, lack of fire, and insect/disease killed trees have caused the scenery to develop characteristics that do not represent the historic, or expected appearance of Central Oregon's high desert forests. Dense stands of lodgepole pine form tunnels of vegetation along roadways, which block views of the surrounding area. In the middle ground, encroaching shade tolerant tree species such as white fir block views and prevent the development of large diameter ponderosa pine and Douglas fir, which are historically the tree species that dominated these forests. Large trees make up a desired component of scenic quality and they probably represented a greater portion of the landscape in the past. Moreover, these conditions create a high risk of large-scale disturbance, which if it occurs could cause a substantial change in the views.

The No Action alternative would allow the current trends to continue. Large trees would continue to fade and die, with replacement trees being many decades away. Small white fir would continue to block views and retard development of replacement trees in the desired species (ponderosa pine and Douglas fir). Risk of fire would remain high.

All Action alternatives thin to improve stand health conditions and to promote development of large tree components. Table x displays in summary the total treatment acres proposed in the various Scenic Views categories (by visual quality objectives). Tables 27 to 30 display the treatments proposed in more detail, showing the type of treatment in each VQO category. For Example, in stands treated with moderate intensity prescriptions to single layer structure (HTH6S), the stands would appear more open, with more of the lodgepole pine and white fir removed and the large trees being more visible. Proposed post-harvest activities would also modify the vegetation to restore scenic views of ponderosa pine, Douglas fir, large trees, lava flows, and surrounding landmarks. Treatments with light intensity, single layer (HTH9S), will also create more open stands than currently exist, but will leave more trees so that the openings would not be as apparent. Treatments to leave multi-layer canopy will be less evident and open up fewer vistas than those of the single-layer objective.

Salvage operations and small tree treatment (PCT) are proposed in the middle-ground only and so no visual change would occur as a result of these actions.

Treatments proposed in all action alternatives would retain most of the large overstory trees within the immediate foreground. A multi-layered canopy would be retained through most of the visible middle ground scenery, which would blend proposed units into the existing forest texture and so would not be noticeable. Slopes in the Seven Buttes area are generally moderate and do not make subtle changes in the forest canopy highly noticed in the middle or background scenery. Treatment along travel routes will result in better views of the middle-ground and background.

Some short-term impacts would occur in the foreground with soil disturbance, slash disposal, and some damage to residual trees and shrubs. For example, in this management area, clean-up is necessary to ensure that the casual observer would not notice an activity has occurred. In Retention areas, clean-up would need to occur within a year of the activity's completion. In Partial Retention, two years would be the maximum amount of time between a disturbance and clean-up. In lodgepole pine stands current conditions present stands of overcrowded, dead and blown down timber. Restoration activities in these stands should meet a visual quality objective of modification.

Table 27 Total Treatment

<b>Visual Objective</b>	<b>Alt 2 Acres</b>	<b>Alt. 3 Acres</b>	<b>Alt. 4 Acres</b>
Retention Foreground	311	286	280
Partial Retention Foreground	589	412	405

Retention Middle ground	162	162	162
Partial Retention Middle ground	2872	2212	1251
<b>Total</b>	3934	3072	2098

If appropriate mitigation measures are taken, the activities proposed in the action alternatives should be consistent with visual quality objectives set forth in the 1990 Deschutes National Forest Land and Resource Management Plan for the Scenic Views Management Area.

Table 28 Treatment in Foreground Retention

<b>Treatment</b>	<b>Alt 2 Acres</b>	<b>Alt. 3 Acres</b>	<b>Alt. 4 Acres</b>
Light Thinning Single-layer	259	82	82
Light Thinning Multi-layer	51	0	0
Light Combination Single/Multi.	1	35	0
Moderate Thinning Single-layer		169	147
Moderate Thinning Multi-layer	0	0	51
Moderate Combination Single/Multi.		0	0
Salvage	0	0	0
Small Tree thin (PCT)	0	0	0
<b>Total</b>	311	286	280

Table 29 Treatment in Foreground Partial Retention

<b>Treatment</b>	<b>Alt 2 Acres</b>	<b>Alt. 3 Acres</b>	<b>Alt. 4 Acres</b>
Light Thinning Single-layer	190	0	0
Light Thinning Multi-layer	19	7	0
Light Combination Single/Multi.	75		
Moderate Thinning Single-layer	272	353	285
Moderate Thinning Multi-layer	33	052	52
Moderate Combination Single/Multi.	0	0	68
Salvage	0	0	0
Small Tree thin (PCT)	0	0	0

<b>Total</b>	589	412	405
--------------	-----	-----	-----

Table 30 Treatment in Middleground Retention

<b>Treatment</b>	<b>Alt 2 Acres</b>	<b>Alt. 3 Acres</b>	<b>Alt. 4 Acres</b>
Light Thinning Single-layer	22	5	5
Light Thinning Multi-layer	0	0	0
Light Combination Single/Multi.	18	0	0
Moderate Thinning Single-layer	0	35	17
Moderate Thinning Multi-layer	0	0	18
Moderate Combination Single/Multi.	0	0	0
Salvage	122	122	122
Small Tree thin (PCT)	0	0	0
<b>Total</b>	162	162	162

Table 31 Treatment in Middleground Partial Retention

<b>Treatment</b>	<b>Alt 2 Acres</b>	<b>Alt. 3 Acres</b>	<b>Alt. 4 Acres</b>
Light Thinning Single-layer	1258	210	94
Light Thinning Multi-layer	1224	172	46
Light Combination Single/Multi.	216	552	0
Moderate Thinning Single-layer	0	454	253
Moderate Thinning Multi-layer	0	650	468
Moderate Combination Single/Multi.	0	0	216
Salvage	154	154	154
Small Tree thin (PCT)	20	20	20
<b>Total</b>	2872	2212	1251

## 15. Recreation

Alternative 1 would offer no improvement to the health and vigor of trees located in the recreation sites. Under this alternative, as trees die and become hazards, they would be removed as part of the routine campground maintenance that occurs in recreation sites. In all action alternatives, treatments are proposed to improve the forest resistance within developed recreation sites. These actions will improve the long-term sustainability of trees in these sites and so protect an important part of the recreational experience.

In all action alternatives some short-term disturbance will occur during implementation. However, seasonal restrictions and clean-up requirements will apply to activities that will to reduce these impacts (Appendix B). In Alternatives 3 and 4, the additional restoration proposed in the dispersed sites will not change the current use capacity, although the kind of use will change in some locations because of less motorized access. Barriers to move campers away from water features will not alter access overall. The exception is the road along the lower reach of Ranger Creek, which will be closed. Access to Davis lake along this route will continue as a foot trail or other non-motorized use, but currently, even access by foot is limited because of the water running in the road. The rerouted access to East Davis Campground will be beneficial to the campground by shortening the route from Road 46 by more than a mile. Also, opening the road north of the current closure on Road 850 will increase the dispersed camping opportunities while reducing potential conflicts with bald eagles.

## 16. Old-Growth Management Areas (LRMP) and treatment in LOS

As displayed in Table 32, four units include LRMP Old-Growth Management Area. Unit 810 lies in the Davis LSR. The other three units are located north of the LSR. Treatments in Unit 810 are consistent with the strategy outlined in the LSR Assessment.

Table 32 Treatment acres in Old-Growth MA

Total	AWD Acres	LSR Acres	Total Unit Ac.	Alt. 2 RX	Alt. 3RX	Alt. 4 RX
20	59		945	HTH9C	HTH9Q	
45	129		132	HSV	HSV	
50	45		58	HSV	HSV	
810		144	144	HSL9M	HSL9M	HSL9M

Units are proposed in units 20, 45 and 50 to provide climatic climax, closed canopy where it is most likely to persist. Salvage prescriptions will reduce fuel hazard for protection of the management area, but essential habitat found in snags and down wood would be retained in adequate amounts to maintain the old-growth value. In addition, treatments allow for development of more open, single story structure (LS) within the management area in order to provide more protection for the more dense stand (e.g. by developing more open stands adjacent to the closed-canopy stands, these climatic climax structures are at less risk of loss caused by large scale fire. These treatments provide protection for LOS dependent species. See the discussion above regarding impacts of the project to northern spotted owl, MIS and TES.

## 17. Davis Lake Special Interest Area

A total of 243 acres of treatment are proposed in the Davis Lake Special Interest Area. Units include 205, 215, 265, 275, 310, 755, 815, 820 and 835. Proposed prescriptions in all action alternatives include light or moderate thinning and salvage in order to reduce risk within the special interest areas (which is within the Davis LSR). These treatments are consistent with the special interest area objectives. This MA preserves and provides interpretation of unique geological, biological, and cultural areas for education, scientific, and public enjoyment purposes. The primary benefiting uses of these areas will be for developed and dispersed recreation, research, and educational opportunities.

## 18. Financial Efficiency Analysis

As directed by FSM 1970 and FSH 2409.18 (Amend 2409.18-95-2), a financial review has been conducted for the timber sales expected to result from the vegetation treatments proposed in the Seven Buttes Return Project. The purpose of this analysis is to use the best information available regarding costs and revenues to provide the decision maker with an understanding of the economic and social costs/benefits of the proposed action and alternatives. Exact revenues will depend upon actual selling values, which vary considerably. Exact costs are also dependent upon several variables that can only be known once the actual timber sale is cruised. Therefore the chief function of this analysis is to provide a comparison of alternatives. It does not provide an absolute representation of the net worth of a given alternative.

Summary values are displayed here. A full description of assumptions and values used for this analysis is located in the project file.

Table 33 Relative Financial Results of all Treatments.

	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
Gross Acres in harvest units	15,995	12,730	9,675
Net Acres harvested	12,340	9,810	7,740
Volume harvested (mmbf)	41.8	31.9	23.2
Revenues	\$12,525,000	\$9,381,000	\$6,710,700
Costs	\$11,059,000	\$8,368,000	\$7,241,300
Present Net Worth (PNV)	\$1,466,000	\$1,013,000	(\$504,000)
Benefit-Cost Ratio: All	01.13	1.12	0.93
Total jobs created	1124.4	858.1	597.2
Total income generated	\$31 million	\$24 million	\$17 million
Receipts to Counties	\$3.1 million	\$2.4 million	\$1.7 million

These figures reflect the avoidance of 15% to 25% retention areas as well as riparian reserves.

## **D. Other Disclosures**

### ***1. Wetlands and Floodplains***

Executive Orders 11988 and 11990 direct Federal agencies to avoid, to the extent possible, both short-term and long-term adverse impacts associated with the modifications of floodplains and wetlands. Proposed activities are intended to have a neutral or beneficial effect on the riparian/aquatic system, and so are not expected to adversely affect wetlands and /or floodplains. Proposed activities are compliant with the orders and USDA departmental Regulation 950-3.

### ***2. Prime Farmland, Rangeland, and Forestland***

All alternatives are with the intent of the Secretary of Agriculture Memorandum 1827 for prime farmland, rangeland and forest land. National Forest system lands would be managed with consideration of the impacts on adjacent private lands, and the objectives of the action alternatives would be to reduce potential impacts on adjacent lands from severe disturbances (insect, disease, wildfire). This project area does not contain any prime farm lands or range lands. Prime forest lands on private lands in the project area would benefit indirectly from a decreased risk of impacts from wildfire.

### ***3. Civil Rights and Environmental Justice***

Civil Rights legislation and Executive Order 12898 (Environmental Justice) direct an analysis of the proposed alternatives as they relate to specific subsets of the American population. The subsets of the general population include ethnic minorities, people with disabilities, , and low-income groups. The project is not located in a minority community and would not affect residents of low or moderate income. Therefore the proposed action would not pose a disproportionately high or adverse effect to those populations.

In addition, the effects of this project on the social context of these protected groups are within those described in the Deschutes National Forest Plan. The benefits and risks associated with implementation of any alternative are provided to all members of the public. Therefore, the action alternatives would not pose disproportionately high or adverse effects to minority communities or to low income groups.

### ***4. Consumers***

Forest products would be supplied to the purchaser and indirectly to the public at large by all of the action alternatives. The impacts to consumers of these forest products is likely to be minor because the products supplied by this project represent a fraction of the total forest products supplied to the consumers of this region.

### ***5. Eastside Screens***

Approximately 10,084 acres of the planning area are east of the northern spotted owl range line and subject to the "Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales, Regional Forester's Eastside Forest Plan Amendment #2" (USDA Forest Service, 1995b). As required by the Revised Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (Interim Direction), an analysis of the Historic Range of Variability has been completed for 6th field watersheds in the project area. The complete analysis is part of the project file. The HRV Analysis shows that the Crescent subwatershed is deficient in LOS for certain plant association groups (PAGs). There will be no net loss of LOS, east of the owl line,

from these PAGs.

In all action alternatives, silvicultural treatments on a total of 32 acres within 11 units include a mix of thin to multi-story, thin to single story, post and pole thinning, salvage, and thin to allow more sunlight to reach the highway (to allow for ice melting). None of these acres are within connectivity corridors. Thinning would reduce overstocked stands, advance the growth of the remaining trees and accelerate their development toward mid and late-successional forest that would benefit wildlife species dependent on these types of habitat. No trees greater than 21" DBH would be harvested. Mitigation measures for snag retention, down woody debris, and unthinned areas would be implemented similar to harvest units within the Northwest Forest Plan area (see Appendix B).

## ***6. Reasonably Foreseeable Future Actions Within and Adjacent to the Project Area***

Analysis of cumulative impacts is included as appropriate to each specialist evaluation. The following actions were considered in those reviews because they are near or within the project area and they are likely to occur during the same time as the Seven Buttes Return Project.

- **Precommercial Thinning:** Across the planning area, approximately 3,200 acres of plantations have recently been planned for precommercial thinning. These units are expected to be thinned over the next five years.
- **Charlie Brown Environmental Assessment:** The Bend-Ft. Rock Ranger District, Deschutes National Forest, has prepared an environmental assessment that displays the effects of proposed vegetation management, dispersed and developed recreation improvements, road closures, and wildlife habitat treatments. Vegetation treatments are proposed for the following objectives: maintain large trees, reduce high stand densities, treat dwarf mistletoe, reduce fuels, salvage dead and dying lodgepole, thin young trees, and plant ponderosa pine. The Charlie Brown project area is adjacent to the Seven Buttes Return planning area and has two 6th field watersheds in common with it: Browns and Wickiup. The effects of this project in addition to the current Seven Buttes Return activities are discussed under individual resources as appropriate.
- **Alternative 4 Follow-up:** Selection of Alternative 4 by the decision maker would mean that no activities would occur in the Browns, Wickiup, and Lower Little Deschutes subwatersheds during this entry, based on that decision. However, it is expected that the area would be analyzed in the near future and projects proposed for such things as vegetation management, wildlife habitat management, and road density reduction.

\*This section is taken from the Soils/Hydrology Specialist Report. This report provides the technical and scientific basis for the conclusions discussed here.

\*\*This section summarizes information found in the fisheries report, which provides the technical and scientific basis for this discussion.

GO TO

- [Chapter I](#)

- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)
- [Appendix E](#)

---

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/chapter2.html>

Last Update: 8/9/01

R.A. Jensen

## CHAPTER IV - Consultation with Others

### ***A. Public Notification***

The public was first notified of the proposed project on January 14, 2000. A letter describing the proposed action and requesting input was sent to 134 individuals and groups who have expressed interest in our planning process. Additionally, notice of the proposed action was sent to 179 individuals. The proposed action was also posted on the Deschutes National Forest's Internet site on January 21, 2000.

An article appeared in the Bend Bulletin newspaper on January 23rd, describing the project.

On July 24, 2000, a sign was posted at the intersection of 4660-855 and 4660-855 notifying the public of proposed road closures and changes to the access to Davis Lake. The sign remained there until mid-October.

### ***B. Public Participation***

During scoping, a number of comments were received on the project. One commenter was concerned about proposed road closures and recommended a thorough analysis of any proposed road projects. The other individual suggested that the project identify personal firewood cutting areas and allow small businesses to do much of the work.

Those who commented on the proposed action include the Oregon Natural Resources Council (Nicole Czarnomski), Ben Sunderland, Ochoco Lumber (Tom Partin), and Crown Pacific (Ted Young).

### ***C. Interdisciplinary Team***

Sandy Hurlocker, Team Leader	Beth Peer, Writer/Editor
Jim Stone, Silviculturist	Beth Sanchez, Fisheries Biologist
Duane Monte, Soils Scientist	Brad Houslet, Fisheries Biologist
Rick Cope, Soils/Hydrologist	Maurice Evans, Fuels Specialist
Carolyn Close, Botanist	Herb McLane, Fuels Specialist
Paul Miller, Wildlife Biologist	Steve Ziel, Fuels Specialist

## ***D. Agencies and Tribal Governments Consulted***

Ongoing consultation is underway with the following agencies:

- US Fish and Wildlife Service
- Oregon Dept. of Fish and Wildlife
- Oregon State Historic Preservation Officer
- Klamath Tribes
- Confederated Tribes of the Warm Springs Reservation
- Burns Paiute Tribe

## ***E. References***

USDA Forest Service, 1995a. Davis Late Successional Reserve Assessment, Deschutes National Forest, Crescent, Oregon.

USDA Forest Service, 1995b. Decision Notice for the Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales, Pacific Northwest Region, Portland, Oregon.

USDA Forest Service, 1996. Seven Buttes Environmental Assessment, Deschutes National Forest, Crescent, Oregon.

USDA Forest Service, 1997. Big Marsh Watershed Analysis, Deschutes National Forest, Crescent, Oregon.

USDA Forest Service, 1998. Crescent and Odell Lakes BEMA and Nest Sites Plan, Deschutes National Forest, Crescent, Oregon.

USDA Forest Service, 1999. Odell Watershed Analysis, Deschutes National Forest, Crescent, Oregon.

GO TO

- [Chapter I](#)
- [Chapter II](#)

- [Chapter III](#)
  - Chapter IV
  - [Appendix A](#)
  - [Appendix B](#)
  - [Appendix C](#)
  - [Appendix D](#)
  - [Appendix E](#)
- 

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/chapter4.html>

Last Update: 8/9/01

R.A. Jensen

# Appendix A

## Unit Prescriptions

**Table 1. This table describes the items used in Table 2.**

<b>EA UNIT</b>	The number identifying the unit in the EA
<b>Logging System</b>	<b>Ground:</b> Equipment such as sheer, feller-buncher, skidder, etc. <b>HE/CA:</b> Helicopter or cable system for units > 30% slope
<b>Fuels Treatment</b>	<b>GP/HP:</b> Grapple or machine pile and hand pile <b>HP:</b> Hand pile only <b>UB:</b> Underburn
<b>Riparian Treatment</b>	Acres of possible treatment in riparian reserve.
<b>ALT2RX (Treatment under Alternative 2)</b>  <b>ALT3RX (Treatment under Alternative 3)</b>	<p style="text-align: center;"><b>Harvest Objective Definitions:</b></p> <p><b>HTH:</b> Commercial Thinning- the objective is to leave stocked stand that is below UMZ and with a species and structure that will meet resource objectives. The size of these trees is such that they may be utilized on the commercial market.</p> <p><b>9</b> = Thin to 90% of UMZ (light thinning)</p> <p><b>6</b> = Thin to 60% of UMZ (moderate thinning)</p> <p><b>M</b> = Thin to maintain multi-story stand.</p> <p><b>S</b> = Thin to promote or maintain single-story stand.</p> <p><b>C</b> = Combination of multi and single-story objectives.</p> <p><b>Q</b> = Increase retention area to 25% of unit acres.</p>

<p><b>ALT4RX (Treatment under Alternative 4)</b></p>	<p><b>HSV:</b> Salvage- removal of dead trees to utilize material and reduce fire hazard. May include incidental green tree removal for worker safety.</p> <p><b>PCT:</b> Precommercial thinning- thinning done on smaller diameter trees too small to be utilized commercially.</p> <p><b>HSL:</b> Selection cutting- prescribed in areas where LOS conditions are lacking, with an objective of thinning around selected trees to promote growth.</p> <p>The field in the table shows a combination of a harvest code (e.g. HTH) and the objective (e.g. 9M).</p>
<p><b>GROSS ACRES</b></p>	<p>The total number of acres in the unit.</p>
<p><b>Net ACRES</b></p>	<p>The number of acres in the unit minus the amount of untreated 15% or 25% retention area. This will vary with other factors, such as untreated riparian areas..</p>
<p><b>MGMT</b></p>	<p>NWFP: L – Late Successional Reserve</p> <p>M - Matrix</p> <p>A – Administratively Withdrawn</p> <p>C – Congressionally Withdrawn</p> <p>LRMP: G – General Forest or Partial Retention Middle Ground or Background</p> <p>S = Scenic Retention or Partial Retention Foreground</p> <p>R = Special Recreation use designation</p> <p>B = Bald Eagle Management Area</p> <p>OG – Old Growth Management Area</p> <p>W – Wild and Scenic River Corridor</p> <p>Note: codes indicate significant acreage in a unit.</p>

**Table 2. Individual Unit Information**

Unit	Logging System	Fuels Treatment	Riparian Treatment	ALT2RX	ALT3RX	ALT4RX	Alt 2 ac		Alt 3 ac		Alt 4 ac		MGMT
							Gross	net	Gross	Net	Gross	Net	
5	Ground	GP/HP		HTH9M			312	265					B - M
10	Ground	GP/HP		HTH9S			138	117					S - M
15	Ground	GP/HP		HTH9C	HTH9Q	HTH9Q	416	345	416	303	416	303	G - M
20	Ground	GP/HP		HTH9C	HTH9Q		945	803	945	709			G - M
25	Ground	GP/HP		HTH9S			56	45					G - M
30	Ground	GP/HP		HTH9S	HTH6S		32	27	32	27			G - M
35	Ground	GP/HP		HTH9M	HTH6M		59	40	59	40			G - M
40	Ground	UB		HTH9S	HTH6S		62	53	62	53			G - M
45	Ground	GP/HP		HSV	HSV		132	89	132	89			O - A
50	Ground	GP/HP		HSV	HSV		58	24	58	24			O - A
55	Ground	GP/HP		HSV/ HTH9M	HSV/HTH6M		12	10	12	10			G - M
60	Ground	UB		HTH9S			45	38					S - M
65	Ground	UB		HTH9S			183	156					B - M

70	Ground	GP/HP		HTH9S	HTH6S	HTH6S	88	61	88	61	88	61	G - M
75	Ground	GP/HP		HTH9Q	HTH9Q		194	146	194	146			B - M
80	Ground	GP/HP		HTH9Q	HTH9Q		77	58	77	58			B - M
85	Ground	GP/HP		HTH9Q	HTH9Q		176	128	176	128			B - M
90		GP/HP		PCT	PCT	PCT	26	22	26	22	26	26	G - M
95	Ground	GP/HP		HTH9Q			309	232					B - M
100	Ground	UB		HTH9S	HTH6S		20	17	20	17			G - M
105	Ground	UB		HTH9S	HTH9S		21	18	21	18			B - M
110	Ground	UB		HSV/ HTH9S	HTH6S		69	59	69	59			G - M
115	Ground	UB		HSV/ HTH9S	HSV/HTH6S	HSV/HTH6S	43	37	43	37	43	37	G - M
120	Ground	UB		HTH9S	HTH6S		131	111	131	111			G - M
125	Ground	UB		HTH9S	HTH9S		112	95	112	95			G - M
130	Ground	UB		HTH9S	HTH9S		102	87	102	87			G - M
135	Ground	GP/HP		HTH9Q			193	145					B - M
140	Ground	GP/HP		HTH9M			92	78					G - M
145	Ground	GP/HP		HTH9M			43	37					G - M
150	Ground	GP/HP		HTH9M			91	77					G - M
155	Ground	GP/HP		HTH9C	HTH6C	HTH6C	459	390	459	390	459	390	B - M

160	Ground	UB		HTH9S	HTH6S	HTH6S	73	48	73	48	73	48	G - L
165	Ground	UB		HTH9S	HTH6S	HTH6S	49	42	49	42	49	42	G - L
170	Ground	GP/HP		HTH9M	HTH9M	HTH9M	14	10	14	10	14	10	G - L
175	Ground	GP/HP		HTH9M/ S	HTH6M/S	HTH6M/S	104	43	104	43	104	43	S - M
180	Ground	GP/HP		HTH9M	HTH9M	HTH9M	27	20	27	20	27	20	G - L
190	Ground	UB	0	HTH9S	HTH6S	HTH6S	43	37	43	37	43	37	G - L
195	Ground	GP/HP	0	HTH9M	HTH6M	HTH6M	54	46	54	46	54	46	G - M
200	Ground	GP/HP	0	HTH9S	HTH9S	HTH9S	99	58	99	58	99	58	S
205	Ground	GP/HP	0	HSV/ HTH9S	HSV/HTH9S	HSV/HTH9S	286	235	286	235	286	235	B - L
210	Ground	UB	0	HTH9S	HTH9S		64	34	64	34			B
215	Ground	GP/HP		HSV	HSV	HSV	19	11	19	11	19	11	G - L
220	Ground	GP/HP		HTH9M	HTH6M	HTH6M	22	19	22	19	22	19	G - L
225	Ground	GP/HP		HTH9M	HTH6M	HTH6M	61	52	61	52	61	52	G - L
230	Ground	GP/HP		HTH9M	HTH6M	HTH6M	40	34	40	34	40	34	G
235	Ground	UB		HTH9S	HTH6S	HTH6S	6	5	6	5	6	5	G - L
240	Ground	GP/HP		HTH9S	HTH6S	HTH6S	106	52	106	52	106	52	G - M
245	Ground	GP/HP		HTH9S	HTH6S	HTH6S	68	58	68	58	68	58	G
250	Ground	UB		HTH9S	HTH6S	HTH6S	11	9	11	9	11	9	S - M

255	Ground	GP/HP		HTH9S	HTH6S	HTH6S	23	14	23	14	23	14	W - C
260	Ground	UB		HTH9S	HTH6S	HTH6S	40	34	40	34	40	34	B - L
265	Ground	GP/HP		HTH9Q			214	110					B - L
270	Ground	UB		HTH9S	HTH6S	HTH6S	18	15	18	15	18	15	G - L
275	Ground	UB	30	HTH9S	HTH6S	HTH6S	63	26	63	26	63	26	R - A
280	Ground	UB		HTH9S	HTH6S	HTH6S	111	94	111	94	111	94	B - L
285	Ground	GP/HP		HTH9M	HTH6M	HTH6M	128	109	128	109	128	109	G
290	Ground	UB		HTH9S			94	80					G - L
295	Ground	UB		HTH9S	HTH6S	HTH6S	28	24	28	24	28	24	B - L
300	Ground	UB		HTH9S	HTH6S	HTH6S	300	255	300	255	300	255	B - L
305	Ground	GP/HP		HSV/ HTH9S			128	108					G - L
310	Ground	GP/HP	20	HSV/ HTH9S	HSV/HTH9S	HSV/HTH9S	51	27	51	27	51	27	S - L
315	HE/CA	GP/HP		HSL9M			85	39					R - A
320	HE/CA	GP/HP		HSL9M	HSL6M	HSL6M	46	38	46	38	46	38	B - M
325	Ground	GP/HP	105	HSV/ HTH9M	HSV/HTH9M	HSV/HTH9M	123	105	123	105	123	105	G - L
330	HE/CA	GP/HP	3	HTH9M	HTH6M	HTH6M	28	20	28	20	28	20	B - L
335	HE/CA	HP		HSL9M	HSL9M	HSL9M	23	20	23	20	23	20	G - L
340	Ground	GP/HP		HTH9S	HTH9S	HTH9S	12	10	12	10	12	10	S - L

345	Ground	GP/HP		HTH9M			374	318					G - L
350	Ground	GP/HP		HTH9S	HTH9S	HTH9S	7	6	7	6	7	6	S - L
355	HE/CA	HP		HTH9M	HTH9M	HTH9M	11	9	11	9	11	9	G - L
360	HE/CA	GP/HP	10	HTH9M	HTH6M	HTH6M	52	25	52	25	52	25	R - A
365	HE/CA	HP		HTH9M	HTH9M	HTH9M	16	14	16	14	16	14	G - L
370	Ground	GP/HP	3	HTH9S	HTH9S	HTH9S	126	97	126	97	126	97	G - L
380	Ground	GP/HP		HTH9M	HTH6M	HTH6M	69	59	69	59	69	59	G - L
385	HE/CA	GP/HP		HTH9M			104	88					G - L
390	HE/CA	HP	3	HTH9M	HTH6M	HTH6M	11	6	11	6	11	6	R - A
395		GP/HP		PCT	PCT	PCT	13	11	13	11	13	11	G - L
400	Ground	GP/HP		HTH6S	HTH6S	HTH6S	90	64	90	64	90	64	G - M
405	Ground	GP/HP	20	HSV/ HTH9M	HSV/HTH9M	HSV/HTH9M	38	20	38	30	38	20	G - L
410	Ground	GP/HP		HTH9M			90	76					G - L
415	Ground	GP/HP		HTH9M			38	32					G - L
420	Ground	GP/HP		HTH9M	HTH9M	HTH9M	59	50	59	50	59	50	G - M
425	Ground	UB		HTH9S	HTH6S	HTH6S	12	10	12	10	12	10	G - L
430	Ground	GP/HP		HTH9M	HTH6M	HTH6M	177	150	177	150	177	150	G - L
435	Ground	GP/HP		HSL9M	HSL9M	HSL9M	367	282	367	282	367	282	G - M

440	Ground	GP/HP		HSL9M			56	48					G - M
445	Ground	GP/HP		HSL9M	HSL9M	HSL9M	28	24	28	24	28	24	G - M
450		GP/HP		PCT	PCT	PCT	79	67	79	67	79	67	G - M
455	Ground	GP/HP		HSL9M	HSL9M	HSL9M	203	173	203	173	203	173	G - M
460	Ground	GP/HP		HTH9C	HTH6C	HTH6C	175	149	175	149	175	149	W - C
465	Ground	GP/HP		HSL9M	HSL9M	HSL9M	35	30	35	30	35	30	G - M
470	Ground	GP/HP		HSL9M	HSL9M	HSL9M	59	38	59	38	59	38	G - M
475	Ground	GP/HP		HSL9M	HSL9M	HSL9M	75	44	75	44	75	44	G - M
480		GP/HP	0	PCT	PCT	PCT	112	95	112	95	112	95	G - M
485	Ground	UB		HTH9S	HTH9S	HTH9S	172	109	172	109	172	109	G - M
490	Ground	GP/HP		HTH9M	HTH6M	HTH6M	21	18	21	18	21	18	R - A
495	Ground	GP/HP		HSL9M	HSL6M	HSL6M	80	68	80	68	80	68	B - M
500	Ground	UB		HTH9S	HTH6S	HTH6S	22	19	22	19	22	19	S - M
505	Ground	GP/HP		HSL9M	HSL9M	HSL9M	75	39	75	39	75	39	G - M
510	Ground	GP/HP		HTH6M	HTH6M	HTH6M	35	18	35	18	35	18	G - M
515	Ground	GP/HP		HTH9S	HTH6S	HTH6S	63	54	63	54	63	54	G - M
520	Ground	GP/HP		HSL9M			101	86					G - M
525	Ground	GP/HP		HSL9M			54	46					G - L
535	Ground	GP/HP		HTH9M	HTH6M	HTH6M	8	7	8	7	8	7	S - L

540	Ground	GP/HP		HSL9M			38	32					G - M
545	Ground	GP/HP		HTH9S	HTH6S	HTH6S	23	11	23	11	23	11	G - M
550	Ground	GP/HP		HTH9M	HTH9M	HTH9M	408	347	408	347	408	347	G - M
555	Ground	GP/HP		HTH6M	HTH6M	HTH6M	28	21	28	21	28	21	G - M
560	Ground	GP/HP		HTH6M	HTH6M	HTH6M	103	85	103	85	103	85	G - M
565	Ground	GP/HP		HSL9M			27	23					G - M
570	Ground	GP/HP		HSL9M			76	65					G - M
575	Ground	GP/HP		HTH6S	HTH6S	HTH6S	18	14	18	14	18	14	G - M
580	HE/CA	HP		HSL9M	HSL6M	HSL6M	71	60	71	60	71	60	G - M
585	Ground	GP/HP		HTH6S	HTH6S	HTH6S	59	50	59	50	59	50	G - M
590	Ground	GP/HP		HTH6S	HTH6S	HTH6S	113	96	113	96	113	96	G - M
600	Ground	GP/HP		HTH9M	HTH6M	HTH6M	6	5	6	5	6	5	G - M
605	Ground	GP/HP		HSL9M			18	15					G - M
610	Ground	GP/HP		HSL9M	HSL9M	HSL9M	250	192	250	192	250	192	G - M
615	Ground	GP/HP		HTH6S	HTH6S	HTH6S	27	23	27	23	27	23	S - M
620	Ground	GP/HP		HSL9M	HSL9M	HSL9M	189	161	189	161	189	161	G - M
625	Ground	GP/HP		HTH9M	HTH9M	HTH9M	43	37	43	37	43	37	G - M
630	Ground	GP/HP		HTH9M	HTH6M	HTH6M	49	42	49	42	49	42	G - M
635	Ground	GP/HP		HTH9M	HTH9M	HTH9M	7	6	7	6	7	6	G - M

640	Ground	GP/HP		HSL9M	HSL6M	HSL6M	14	12	14	12	14	12	G - M
645	Ground	GP/HP		HSV	HSV	HSV	123	105	123	105	123	105	G - M
650	Ground	GP/HP		HSL9M	HSL9M	HSL9M	88	63	88	63	88	63	G - M
655	Ground	GP/HP		HTH9M	HTH6M	HTH6M	58	49	58	49	58	49	G - L
660	Ground	GP/HP		HTH9M	HTH6M	HTH6M	100	85	100	85	100	85	G - L
665	Ground	GP/HP	100	HTH6S	HTH6S	HTH6S	601	450	601	450	601	450	G - M
670	Ground	GP/HP		HSL9M	HSL6M	HSL6M	47	40	47	40	47	40	G - L
675	Ground	GP/HP		HTH9M	HTH9M	HTH9M	10	8	10	8	10	8	G - M
680	Ground	GP/HP		HTH6S	HTH6S	HTH6S	249	189	249	189	249	189	S
685	Ground	GP/HP		HSL9M	HSL9M	HSL9M	54	46	54	46	54	46	G - M
690	Ground	UB		HTH9S	HTH6S	HTH6S	85	72	85	72	85	72	G - M
695	Ground	UB		HTH9S	HTH6S	HTH6S	49	39	49	39	49	39	G - M
700	Ground	GP/HP		HTH9M	HTH6M	HTH6M	42	36	42	36	42	36	G - M
710	Ground	GP/HP		HTH9M	HTH6M	HTH6M	61	52	61	52	61	52	G
715	Ground	GP/HP		HTH6S	HTH6S	HTH6S	27	15	27	15	27	15	S - M
720	Ground	UB		HTH9S	HTH6S	HTH6S	9	8	9	8	9	8	G
725	Ground	GP/HP		HSL9M	HSL6M	HSL6M	15	13	15	13	15	13	G - L
730	Ground	GP/HP		HSL9M	HSL6M	HSL6M	14	12	14	12	14	12	R - A
735	Ground	GP/HP		HTH9Q	HTH9Q		236	104	236	104			G - M

740	Ground	GP/HP		HSL9M	HSL9M		127	102	127	102			G - M
745	Ground	GP/HP		HSL9M	HSL9M		113	96	113	96			G - M
750	Ground	GP/HP		HTH6S	HTH6S	HTH6S	29	25	29	25	29	25	G - M
755	Ground	UB	20	HTH9S	HTH6S		30	24	30	24			B - L
760	Ground	GP/HP		HSV	HSV		94	80	94	80			G - M
765	Ground	UB		HTH9S	HTH6S		189	161	189	161			G - M
770	Ground	GP/HP		HSV	HSV	HSV	132	86	132	86	132	86	G - L
775	Ground	GP/HP		HTH9S	HTH6S	HTH6S	34	29	34	29	34	29	B - L
785	Ground	UB	5	HTH9S	HTH6S	HTH6S	33	21	33	21	33	21	S - L
790	Ground	GP/HP		HSL9M			53	45					G - M
795	Ground	GP/HP		HTH9M	HTH6M	HTH6M	103	75	103	75	103	75	G - M
800	Ground	GP/HP		HTH9M	HTH6M	HTH6M	102	77	102	77	102	77	G - M
805	Ground	GP/HP		HSL9M	HSL6M	HSL6M	97	78	97	78	97	78	G - M
810	HE/CA	GP/HP		HSL9M	HSL9M	HSL9M	144	122	144	122	144	122	O - L
815	Ground	GP/HP	20	HSV	HSV	HSV	215	165	215	165	215	165	R - A
820	Ground	GP/HP		HSV	HSV	HSV	20	17	20	17	20	17	G - L
825	Ground	GP/HP		HSV	HSV	HSV	79	67	79	67	79	67	G - L
830	Ground	GP/HP		HSV	HSV	HSV	41	35	41	35	41	35	G - L
835	Ground	GP/HP		HSV	HSV	HSV	354	294	354	294	354	294	R - L

840	Ground	GP/HP	20	HSV	HSV	HSV	80	56	80	56	80	56	R - L
-----	--------	-------	----	-----	-----	-----	----	----	----	----	----	----	-------

GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)
- [Appendix E](#)

---

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/appendixa.html>

Last Update: 8/10/01

R.A. Jensen

## APPENDIX B

# Mitigation Measures, Objectives, and Monitoring

Alternatives are designed to be consistent with the desired condition and standards and guidelines specified in the Deschutes National Forest Land and Resource Management Plan (LRMP). Direction contained in the Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards For Timber Sales (Eastside screens), Inland Native Fish Strategy (INFISH), the Northwest Forest Plan, and General Water Quality Best Management Practices (BMP).

The following measures are to be applied to all of the action alternatives whenever the applicable site-specific conditions are present. Mitigation Measures are identified as **M**; Objective-based methods of project design to manage resources are identified with **O**; restoration or enhancement measures are identified with **R**.

### Watershed

1. Within the Crescent, Moore, Odell, and Odell Lake subwatersheds, assure that management activities do not result in more than 30 percent of the subwatershed being in a hydrologically disturbed condition at any one point in time. **O**

### Soil and Water

2. Management practices should be designed so that no more than 20 percent of an activity area (i.e., harvest unit, fuels treatment unit etc.) may have detrimentally disturbed soil (compaction, erosion, displacement or severely burned). This should include fuels management - both burning and mowing operations) (LRMP SL-1, SL-3; Timber BMP T-2, T-3, T-14; Fuels BMP F-2). **O**

3. After treatment, if post harvest monitoring shows an activity area to have more than 20 percent detrimental soil conditions then appropriate rehabilitation efforts will be initiated within these activity areas to reduce detrimental conditions below 20 percent. (LRMP SL-1, SL-3; Timber BMP T-2, T-3, T-13; Fuels BMP F-2). **R**

4. To avoid excessive soil disturbance, such measures as establishing designated skid trails, yarding corridors, and directional felling may be used to meet the 20 percent objective. Skid trails, landings and temporary roads would be rehabilitated/stabilized after the sale. (LRMP SL-1, SL-3; Timber BMP T-11, T-16). **O**

5. Where available on ponderosa pine sites, a minimum of 3 to 5 tons per acre of large woody debris

(greater than 3-inches in diameter) must be retained within activity areas for long-term site productivity.

(LRMP SL-1) **M**

6. Assure that on Lodgepole Pine and Mixed Conifer sites, a minimum of 5 to 10 tons per acre of woody debris (greater than 3-inches in diameter) is retained within activity areas for long-term site productivity.

(LRMP SL-1). **M**

7. Restrict ground-based equipment, including brush mowing to slopes less than 30 percent. This restriction includes mechanical falling. On units with mostly flat ground with occasional steep pitches, ground based equipment could be used in consultation with a soil specialist to assure minimal soil disturbance occurs.

8. The following units should receive special attention from a soil specialist during prescription writing, unit layout, etc. These units contain soils identified as being highly sensitive in the Land and Resource Management Plan for the Deschutes National Forest (EA Units 760, 765, 220, 240, 255, 400, 410, 455, 460, 465, 490, 495, 510, 515, 540, 545, 580, 640, 665, 680, 715, 730, 750, 790, 805, 385, 415, 100, 305, 310, 335, 355, 160, 325, 345, 365, 370, 375, 405, 440, 315, 320, 330, 360, 390, 80, & 95). (LRMP SL-5; Veg Manipulation BMP VM-1; Timber BMP T-3, T-9, T-13). **M**

## **Channel Morphology/ Riparian Areas/ Fisheries**

9. Do not construct fire line in riparian areas when conducting prescribed burns. Prescribed burning is allowed to back burn through riparian reserves and riparian habitat conservation areas. Fire prescriptions should not consume woody material over 3". **M**

10. During prescribed burning operations no bucking of down woody material that is in stream or crosses any stream channel, unless some re-alignment is needed to maintain a safe fire break, and as long as such realignment is done so that the wood remains in the stream and is not made subject to being moved downstream. Generally, wood realignment may be necessary in intermittent stream corridors, where wood movement is not an issue.. The intent is to maintain adequate wood in appropriate distributions along stream courses. Also, bucking of down wood within the riparian reserve needs to meet length requirements for coarse woody debris objectives. **M**

11. In units 265, 765, and 755 (east side of Davis Lake), use only designated skid trails in stands with soil types 30 and 8. Subsoil skid trail and cover with litter after use. The exception to this restriction may be a mechanical harvester making a single pass through an area, which is lower impact than several trips by a skidder. **M**

12. Riparian salvage operations will not occur during wet soil periods and so operations will only be allowed in riparian areas from June 1st - Sept 30, unless other restrictions (such as eagle restrictions) make operations impossible. An extension into October may be permissible if actual soil conditions allow. **M**

13. Keep landings outside of Riparian Reserves where possible. Most of units 325 and 275 like within riparian reserves and so landings may be necessary, but these landings may only be located away from riparian vegetation. **M**

14. Mechanized harvesting and hauling equipment will be kept out of riparian reserves and riparian habitat conservation areas. Exceptions will be approved on a case-by-case basis, an only if no other means is available to accomplish the riparian improvement objectives and if equipment can be used consistently with riparian protection objectives. **M**

15. Because of Crescent Creek's water quality limited status (Clean Water Act section 303d), no mechanized harvest equipment or commercial harvest should occur in the riparian reserve adjacent to Crescent Creek. This includes units 240, 255, 400, 460, 665, 680, and 690. **M**

16. Unit 325 along Odell Creek will have no harvest treatment within 75 feet of stream bank. Between 75 and 300 feet, harvest equipment is not allowed off designated FS roads and current user-created roads. Skid roads may be permitted if other roads are not available and if pulling line and winching logs would cause more soil disturbance than skidding. Where soil damage is not an issue, directional felling and line pulling should take priority over skidding.. **M**

17. Dispersed campsites associated with user-defined roads along Odell Creek and FS road 4660 will be moved back approximately 100 feet from stream banks. **R**

## **Wildlife**

### *Snags and Coarse Woody Debris*

#### **Snag and Dead wood management within the Davis LSR**

18. Table 3-2 in the Davis LSR Assessment specifies the levels of snags and down woody debris that will be retained to provide desired suitable habitat conditions by PAG. Treated stands will retain dead wood that represents the species composition of the original stands. The material that is retained will be among the largest available. Adequate green tree replacements will be retained to provide future dead wood at levels specified in Table 3-2. **M**

As stated in the LSRA, the following objectives must be met where wood is available:

Management of dead wood in commercial thinning, selection cutting, shelterwood harvesting, firewood cutting and underburning:

18a. Snags and down woody debris that meet the following size criteria will be retained in all decay class where it is available. This emphasis should be included during timber harvest and post-sale activity:

Mixed conifer PAG:

Snags: 12-20" dbh 3-9 /acre and >20" dbh 0.75-2 /acre

Logs: = 15" diameter or largest available, 3 to 4 whole tree per acre. **M**

**Ponderosa Pine PAG:**

Snags: 18-28" dbh 1-3 /acre and >28" 1-5 /acre

Logs: = 20" diameter and = 120 linear feet per acre OR 2 whole trees per acre. **M**

**Lodgepole Pine PAG:**

Logs: = 11" diameter or largest available, and 12 - 14 whole trees per acre.

**M**

Snags: 5 snags/acre > 7" dbh. **M**

18b. If snags that meet the criteria described above must be felled to meet OSHA safety regulations, they should be left on site. **M**

18c. If treated stands are below the following snag levels, snags will be created (or diseased and/or defective trees retained) to accomplish this level:

18d. If trees are being felled to meet stand health (basal area) objectives, whole trees that are among the largest felled should be left on site at levels specified above. Do not fall trees for down wood requirements that lower the target basal area below desired levels. **M**

**Down Wood Management West of the Northwest Forest Plan Line, Outside of Late Successional Reserve**

19. In mixed conifer and ponderosa pine PAGs, on average, leave a minimum of 120 linear feet of logs per acre >16" in diameter and 16 feet long, or among the largest available, where this type of wood exists prior to treatment. Within the lodgepole pine PAGs 120-160 lineal feet equates to 5-7 trees and within the ponderosa pine and mix conifer PAGs 3-4 whole trees per acre will be retained. **M**

20. Within riparian habitat, key elk areas, and marten habitat where the down material is present prior to treatment, leave on average 300 lineal feet of down logs per acre of the largest material available if feasible operationally. If the largest material is on top (as is often the case in jackstraw blowdown), then leaving smaller material closer to the ground would be allowable. Within the lodgepole pine PAGs this would equate to about 12 trees per acre and within the mixed conifer and ponderosa pine PAGs this would equate to about 5 trees per acre. **M**

21. Decay class 1 and 2 down logs will be left, preferably the entire tree. Down woody material in

advanced stages of decomposition will be left in all harvest units where available. This material should be scattered across the entire unit and left in clumps wherever possible. Concentrations of logging slash, cull logs, fallen trees will be left at an average rate of 1 per acre after timber harvest. **M**

22. To the extent possible, use preventive measures to minimize the loss of snags and down wood and to protect snags, down logs, and slash piles from underburning operations. **M**

### ***Down Wood Management East of the Northwest Forest Plan Line***

23. Regional Forester's Forest Plan Amendment No. 2 direction for levels of down woody debris to be maintained per acre on average is as follows:

<b>Plant Associations</b>	<b>Pieces/Acre</b>	<b>Dia. Small End</b>	<b>Piece Length/Total Lineal Ft.</b>
	3-6	12"	>6 feet, 20-40 feet
Ponderosa	15-20	12"	>6 feet, 100-140 feet
Mix Conifer	15-20	8"	>8 feet, 120-160 feet
Lodgepole	3-6	12"	>6 feet, 20-40 feet

24. Within the lodgepole pine PAGs 120-160 lineal feet equates to 5-7 trees and within the ponderosa pine and mix conifer PAGs 1 whole trees will be retained. One whole ponderosa pine tree may be left on an every-other-acre basis to met the 0.5 tree per acre requirement.

25. Within riparian habitat, key elk areas, and marten habitat where the down material is present prior to treatment, leave on average 300 lineal feet of logs per acre of the largest material present. Within the lodgepole PAG this equates to approximately 12 trees per acre and within the ponderosa and mix conifer PAGs this equates to 5 trees per acre.

26. Decay classes 1-3 will be left. Leave the entire tree wherever possible. Down woody material in advanced stages of decomposition will be left in all harvest units where available. This material should be left scattered across the unit and left in clumps wherever possible.

27. During underburning operations, use preventive measures to minimize the loss of snags and down wood. **M**

### **Snag Management East and West of the Northwest Forest Plan Line**

28. Lodgepole and Mixed Conifer Snags Leave an average of 4.5 snags per acre distributed throughout the unit. Snags should be selected based on the following criteria: >12" dbh and >20 feet in height, the

tallest trees preferred. If >12" dbh trees are not available prior to harvest activities, select among the largest available. Snags cut for OSHA requirements will be left on site if needed. **M**

29. Ponderosa Snags Sufficient trees to serve as green tree replacements will remain in the units following harvest and post sale activities. Retain all ponderosa pine snags >16" dbh. If 3 ponderosa pine snags per acre >16" do not exist, retain those of the largest available. Snags cut for OSHA requirements will be left on site if needed for down wood requirements. **M**

30. Nesting, Roosting, Foraging (NRF) Habitat Retain existing snags that do not pose a safety hazard to forest workers during commercial harvest operations and post sale silvicultural and burning operations. **M**

### **Survey and Manage Wildlife Species**

32. The Record of Decision for the Survey and Manage SEIS, signed in January 2001, requires surveys to be conducted for the Crater Lake Tight Coil Snail and to protect all known sites. Habitat affected by these veg. treatments is limited to riparian vegetation, which is only proposed for treatment in Units 175, 205, 240, 310, 325, 370, 400, 405, 510, 840. At this time, surveys have not been completed for these units; however, they are scheduled to begin in the spring of 2001. Surveys would be conducted to protocol and known sites protected in accordance with management recommendations that were approved in October 1999. **M**

### **Threatened and Endangered Species and Forest Plan Standards and Guidelines**

#### **Bald Eagles (LRMP M3-15, 24 and 2000 Programmatic Biological Assessment (USDA and USDI 2000b)).**

32. Active nest sites will be protected from disturbing activities within 0.25 mile non line-of-sight and 0.50 mile line-of-sight of the nest by restricting site-disturbing operations during the period of January 1 - August 31. The seasonal restriction applies to hauling, timber harvest, prescribed burning, and/or pre-commercial thinning or any additional activity determined to be potentially disturbing by the district wildlife biologist. This measure will apply to the following harvest units: 75, 80, 85, 205, 265, 280, 290, 315, 320, 330, and 360. **M**

33. Designated Bald Eagle Management Areas (BEMAs) and adjacent areas provide winter roosting habitat for wintering bald eagle populations. Winter roosting habitat will be protected from disturbing activities such as timber harvest and/or burning operations by restricting operations in these areas during the period of November 1- March 31. This measure will apply to the following units: 75, 80, 85, 135, 255, 265, 315, 320, 330, 360, 390, and 755. (LRMP M3-14)

34. All snags within 500 meters (1650') of a bald eagle nest or roost should be protected when safety considerations do not prevent it. (Pacific Bald Eagle Recovery Plan, USDI 1986). **M**

35. Any silvicultural operation or prescribed fire treatments that occur within BEMAs will be in compliance with the goals and recommendations identified in the site specific management plan for that area. The following documents are referenced in the Biological Evaluation for the 7 Buttes Return project: "Crescent and Odell Lakes Bald Eagle Management Area and Nest Site Plans" and "Bald Eagle Site-Specific Management Plan for the Davis Lake East and West Nest Sites and Wickiup South Nest Sites". **M**

36. Post-sale burning activity of slash in winter roosting habitat will meet the following where conditions exist: maintain a range of 180-274 trees per acre of pole and seedling-sapling size to allow multiple canopy conditions to return. Site-specific conditions would dictate actual numbers and spacing of understory trees. **M**

37. A wildlife biologist and/or silviculturist would assist the marking crews and provide direction to identify resource objectives within the BEMAs, preferably on site. **M**

### **Northern Spotted Owl**

38. In Nesting, Roosting, and Foraging (NRF) habitat within Davis LSR, silvicultural treatments will be designed such that treated stands retain the highest quality of spotted owl habitat possible while accomplishing risk reduction objectives. The exception would be in those stands identified within BEMAs where single story stands are desired. All treated stands will remain functional foraging habitat for the spotted owl and will retain >50% canopy cover on average throughout the stand. (see #90 for removal of trees >21"). **M**

39. For NRF habitat outside the Davis LSR, silvicultural treatments will be designed such that treated stands at a minimum remain functioning spotted owl dispersal habitat following treatment. **M**

40. No harvest treatments will occur in spotted owl NRF habitat within 1.2 miles of any known spotted owl activity center, during this entry. **M**

41. No timber harvest activities including hauling, road construction, and/or burning activities may occur within 0.25 mile of a known spotted owl activity center during the breeding season of March 1 - September 30 unless it is determined through surveys that the pair was non-nesting or the nesting attempt failed. This measure applies to units 160, 165 and 335. During sale operations, if future surveys locate owls within this distance of other units, these restrictions would need to be applied. **M**

42. Vegetation burning treatments in NRF habitat will meet the following specifications in order to accomplish resource objective for stand management within NRF habitat: to maintain foraging and dispersal habitat and allow the development of NRF habitat, retain pole and seedling/sapling sized trees, where available, of 180 - 274 trees per acre. Site-specific conditions would dictate actual trees retained and the spacing of understory conifers. The intent is to provide understory clumps, gaps, and release of

trees that will respond to thinning treatments. **M**

## **Wolverine**

43. There are no documented wolverine denning sites on the Crescent Ranger District. In the event a natal den is discovered or suspected before or during harvest operations, they will be protected from disturbing activities within 2 miles of the den by restricting those operations during the period of February 1 - May 30. **M**

## **Greater Sandhill Crane**

44. If active sandhill crane nests are discovered, sites will be protected from disturbing activities within 0.25 miles of the nest during the period of March 1 - August 31. **M**

## **Osprey**

45. (LRMP WL-2) - Active osprey nest sites will be protected by maintaining the forested character of an area at least 300 feet in radius around the nest. At least 4 dominant overstory trees per acre, favoring ponderosa pine, will be maintained in the area to serve as nest and perch trees. **M**

46. (LRMP WL-3) Active nest sites should be protected from disturbing activities within 0.25 mile (1 mile for the use of explosives) of the nest by restricting site disturbing operations during the period of April 1 - August 31. The seasonal restriction applies to hauling and harvest. A nest site may be considered inactive for the year if nesting activity is not evident by May 15. This limited operating period applies to the following units: 10, 15, 20, 35, 45, 115, 155, 165, 205, 315 and 345. **M**

## **Northern Goshawk**

47. For existing and newly discovered nest sites, the following mitigation measures will apply: Harvest will be deferred in 30 acres of the most suitable nesting habitat surrounding the nest tree(s). **M**

48. A 400 acre post-fledgling area will be established around the nest site. Harvest activities may occur in this area, however, late and old structured stands should be maintained and younger stands enhanced to move them towards a late-successional forested condition. **M**

49. Locating new roads within a 30-acre nest stand will be avoided. **M**

50. Active nest sites should be protected from disturbance between March 1 and August A nest site would be considered inactive for the year if nesting activity is not evident by May 15. **M**

## **Elk and Mule Deer (LRMP WL 47,49,54, and 55)**

51. Mule deer fawning and elk calving areas should be protected from disturbing activities by restricting timber harvest operations during the period of May 1 to June 30. This limited operating period applies to the following units: 240, 255, 305, 325, 370, 400, 405, 545, 665, 815, 820, and 835. **M**

### **American Marten (LRMP WL-63)**

52. Where piles are created or already exist, retain at least one small (5' tall, 10' wide and 10' long) slash/grapple pile of down logs, tree tops, or other material per acre after timber harvest and/or fuels reduction operations. These structures will provide resting sites for marten and serve as suitable habitat for small mammals that are preyed upon by marten. **M**

### **Great Gray Owls (LRMP WL 31-34, ROD C-21)**

53. Active nest sites will be protected by maintaining a forested stand at least 30 acres in size to include the nest and adjacent forested riparian or meadow habitat. A minimum 300 foot forested buffer would also be retained between the nest and an opening. A 0.25 mile protection zone would be established around known great gray owl nest sites. **M**

54. Active nest sites will be protected from disturbing activities within 0.25 mile of the nest by restricting operations during the period of March 1 to June 30. A nest site may be considered inactive for the year if nesting activity is not evident by May 15. **M**

### **Great Blue Herons (LRMP WL 35)**

55. The vegetative characteristic of heron rookeries will be protected and seasonal restrictions from disturbing activities should be in effect from March 1 to August 31 within a 0.25-mile radius around the nest tree(s) if the herons are documented to be nesting. The limited operating period on timber harvest, road construction, and burning will apply to the following harvest unit: 115. **M**

### **Other Wildlife Species Requiring Limited Operating Periods**

56. Active roosts and nest sites shall be protected from disturbing activities such as timber harvest, road construction, and prescribed burning during their respective nesting season. This will apply to species listed as Management Indicator Species (MIS) or other species of concern. The following species were not mentioned in previous mitigation measures but are listed below with their respective restricted dates and affected distance zone. **M**

Golden eagle	February 1 - July 31	0.50 mile
Cooper's hawk	April 15 - August 31	0.25 mile

Sharp-shin hawk	April 15 - August 31	0.25 mile
Red-tail hawk	March 1- August 31	0.25 mile
Flammulated owl	March 1 - August 31	0.25 mile
Pileated woodpecker	April 15 - July 15	0.25 mile
Northern 3-toed woodpecker	April 15 - July 15	0.25 mile

57. In Units 20, 35, and 240 prohibit logging and road construction activities during the period of 3/1 to 8/31 due to red-tail hawk nest sites. Logging activities may resume if surveys determine the nest sites are inactive for that particular season. **M**

### **Retention Areas**

58. In all treatment units a minimum of 15 percent of the planned acreage will be left untreated (thinning, salvage, or any post-sale treatment including underburning) to provide diversity across the landscape and maintain undisturbed habitat. Some specific units will have retention areas increased to 25 percent for increased habitat diversity in locations that require this extra measure (see alternative description for these units). **M**

### **Species with special or unique habitats**

59. Unique habitats such as springs, seeps, talus slopes, rock outcrops, and aspen groves will be protected during project development. Site-specific buffer distances would be assigned during trees marking, but would generally be at least 100 feet. Some exceptions may occur in aspen stands that allow the removal of competing conifers and where underburning may be required to re-establish aspen. Known aspen groves are north of Davis Lake and west of Wickiup Reservoir. Specific areas will be identified during prescription writing. **M**

60. A contract provision would be inserted into each timber sale contract that would provide protection for endangered and threatened species and federally proposed or designated critical habitat. This provision is designed to afford protection to those species that may be discovered or federally listed during the life of the timber sale contract, as well as during any post-sale activities. **M**

### **Fuels and Slash Treatment**

61. All State Air Quality regulations will be followed. **O**

62. Warning signs will be posted at prominent road junctions to inform the public of burning operations, and will remain in place until there are no visible smokes. If feasible, roads may be closed for the

protection of public safety. **O**

63. Retention areas and Riparian areas will not be deliberately ignited. To the extent practical, these areas will be protected during burning operations. **O**

64. Local businesses will be notified prior to the burning season and on the day of planned burns to inform the public of the intent to burn. Also, adjacent landowners will be notified of burning operations conducted in units within 1/4 mile of their property. **O**

65. Job hazard analyses are filed at the Crescent Ranger District office that list appropriate mitigation measures to protect workers' health. Pre-burn safety briefings will be conducted before burns to detail safety hazards specific to the unit being burned. **O**

66. Grapple piling using excavator-sized machines with ground pressures exceeding 5 pounds per square inch (PSI) are limited to existing skid trails and landings. Single pass restrictions and maximum machine ground pressure requirements of 5 PSI are recommended for operations between skid trails. All grapple piling will be done with boom-mounted machinery. **M**

67. During harvest prescription writing, specific consideration should be given to the post-sale fuel reduction feasibility to assure that the fire hazard reduction can be achieved within the expected costs. **M**

68. Smoke emission will be reduced through utilization to the extent practical (i.e. yarding with limbs attached, etc.). **O**

## **Noxious Weeds**

69. In Unit 665 where weeds are found, logging equipment and road maintenance equipment will be cleaned before it leaves affected units to move to other sites. Include clean equipment provision in timber sale contracts. **M**

## **Survey and Manage Plant Species**

According to the Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (USDA, USDI, 2001):

70. Manage known sites of *Schistostega pennata* (glowing cave moss) [EA Unit 315] and *Tritomaria exsectiformis* (liverwort) [EA Units 175, 210] according to the management recommendation documents for bryophytes dated October 1996. **M**

71. Manage high-priority sites (which have not yet been determined), until high priority sites are

determined, manage all known sites for Bryoria tortuosa (uncommon forage lichen) [EA Unit 215] according to management recommendations documents for lichens (March 2000), and for Buxbaumia viridis (bug-on-a-stick moss) [EA Units 315, 320, 330, 345, 360, 390, 645] according to management recommendations documents for bryophytes (October 1996 and Holmberg, 1999). **M**

## **Cultural Resource Mitigations**

73. Mitigation measures have been identified for proposed treatments in units 325, 815, 835, and 840, as well as the recreation restoration activities at Davis Arm of Wickiup and Ranger Creek. In these locations four eligible cultural resource sites are involved in these proposed units. A draft data recovery and site treatment plan has been developed and will be completed before any project operations occur in the vicinity of these sites. For other sites, mitigation measures in general use the primary strategy of avoidance to eliminate impacts to the sites. In some cases, this involves revising the unit boundary to exclude the site or flagging the site for avoidance within the unit. In the four units listed, avoidance is not possible while still meeting the intent of the activity **M**

74. During fire treatments, the CR sites may get burned over but protection can be achieved for each entry of the proposed action provided there is no hand or machine fire line constructed around the site boundaries within the unit and there is no mop-up afterwards. In the units where continued introduction of fire is proposed, monitoring after the burn activity by an archaeologist is necessary to describe and evaluate the actual effects. This would allow for greater discovery due to increased ground visibility. **M**

75. Sites within units proposed for mowing would be flagged for avoidance prior to mowing. In a few of these mowing units, the mower height would be raised and no vehicle turning would be allowed in the sites. **M**

## **Recreation and Scenic View**

Apply the following criteria to guide harvest and post harvest activities in visually sensitive locations and developed recreation sites.

76. Within affected developed recreation sites, commercial logging should occur outside of the summer recreation season. The summer recreation season is considered to be from Memorial Day weekend through Labor Day weekend.

77. Skid trails should be designed to minimize their visibility from highways. Seek opportunities to place trails where a cut or fill situation along the affected roadway will screen the skid trail. Other topographic features may help block views to trails.

78. Landings should be placed to minimize their visibility to travelers. Use existing disturbed areas such as old landings and roads.

79. A landscape architect or another qualified person from the USFS should designate landings and parking areas for equipment if areas under consideration are visible from popular viewpoints such as roads and recreation sites. Landings closer than 200 feet to these views need approval by the District Ranger.
80. An excessive amount of visible root wads should be removed from the view of travelers or sufficiently screened by foreground vegetation.
81. Visible slash should be piled and disposed of, or utilized on skid trails to restore their original appearance, i.e. ground litter.
82. In lodgepole salvage units, as much as possible, lodgepole pine seedlings and saplings should be protected to visually break up large areas void of overstory trees. The retention of snags and green overstory trees should be randomly grouped versus uniformly distributed across the units. Retain shrubs if possible. Bare pumice soil should not dominate the landscape.
83. Stumps visible from sensitive roadways and recreation sites should be cut low and angled away from the road so that the face is not visible from the road.
84. Along visually sensitive roads, such as Highway 58, Road 46 and County Road 61, trees designated as leave trees would be marked on the side of the tree that is facing away from scenic corridors, campgrounds, and trailheads. After treatment is completed, tags, ribbons, boundary signs and other means of designating activity areas would be removed.
85. Vegetation marked for removal along a unit boundary that is adjacent to a visible clearcut should be marked to help blend/feather the affected clearcut boundary into the new unit.
86. Vegetation marked along a potentially visible unit boundary adjacent to an unharvested area should be marked to blend/feather the boundary and prevent the creation of a visible line on the landscape.
87. In potentially visible units, retain the 15% untreated area to help break up uniform thinnings and screen roads, landings, skyline corridors and skid trails.
88. If timber markers can see Highway 97, 58, or other major travel routes when laying out a unit, consider that unit to be highly visible from the route in sight. Consequently, ensure that mitigation measures for scenery management are implemented.
89. Retain existing groupings of large and medium sized trees (> 21") and character trees to the greatest extent possible in the immediate foreground. For example, groups of medium/large trees growing within 10-15 feet of each other should be left, rather than thinned.

## Large Tree removal/retention

90. The removal of trees greater than 21 inches in diameter (breast height) may occur under very limited circumstances for the following reasons:

- a) To remove scattered mistletoe infected trees in relatively clean stands to prevent spread of the disease;
- b) In stands where stocking levels above the UMZ in trees over 21 inches DBH, where some of the smallest of the big trees will need to be cut to obtain desired stocking levels (this should occur mainly in true fir species, NOT ponderosa pine or Douglas fir);
- c) Mixed species stands where true fir are removed to reduce host trees for pathogens such as western spruce budworm
- d) Stands where a multi-story conditions is desired, such as for great gray or spotted owl habitat, and it is necessary to remove large trees to maintain desired stocking levels while at the same time providing a multi-storied stand.

91. In NRF habitat within the LSR, any large trees (>21" dbh) will only be removed from the site after site-specific approval of the District Ranger (LSRA page 3-28).

92. As a general rule, large tree removal should be rare, which means that large trees will comprise fewer than 5 percent (on average) of the trees to be removed during project activities.

93. Outside the area covered by the Northwest Forest Plan, the "Eastside Screens" would apply. Until this direction changes, no trees greater than 21 inches in diameter will be removed through commercial harvest, although these trees could be cut down as described in #90 and left on site to meet habitat needs.

## MONITORING

### *Watershed/Hydrology*

Shade in the riparian treatment areas will not decrease below 30% as determined with a Solar Pathfinder. The assumption when doing the riparian prescriptions will be that 30% canopy cover in the stand adjacent to the stand will be sufficient for the 30% shade on the stream channels being treated.

Shade measurements should be made on reaches above and below the riparian treatment areas. The shade measurements should be made in May or June of 2001 and need to be made again during implementation so that a shade requirement is not decreased less than potential range.

To maintain watershed health and validate hydrologic disturbance assumptions, the analyzed watersheds

should be monitored to determine if increased sedimentation may be occurring due to higher peak flows, longer peak flow durations, and/or longer bankful stages that might be contributing to channel alteration (e.g. bank scour).

Conduct Watershed Improvement Needs Inventories (WINIs) within watersheds that presently exceed 25% hydrologic disturbance. WINIs would identify potential improvement projects to help rehabilitate these watersheds back to below 25% (e.g. road obliteration projects).

Within the Browns, Wickiup, and Lower Little Deschutes subwatersheds, develop a monitoring program to evaluate the effects of further vegetation manipulations on the stability of ephemeral drainages.

## ***Wildlife***

Bald eagle habitat objectives will be included in the burn plans that affect BEMAs, winter roosting habitat, and/or individual eagles. A wildlife biologist should be available during burning operations to monitor bald eagle response to the activity.

## **Survey and Manage Plants**

*Bryoria tortuosa*: Although the species appears to be more common than originally thought on the east side of the Cascades, the response of *B. tortuosa* to management treatments is unknown. Treated sites should be monitored to establish the range of treatments compatible with long-term persistence of *B. tortuosa* populations in these vegetation zones. If negative effects are noted, management prescriptions should be re-evaluated.

*Allotropia virgata*: Removed from Survey and Manage list, 2001 Record of Decision. Monitoring of management activities is highly recommended to determine whether retention areas are protecting populations of *Allotropia virgata* from ground-disturbing activities such as timber harvest or road construction. Monitoring should also be conducted to determine the effects of prescribed burning and matsutake harvest on *Allotropia virgata*.

## **Soils**

Strive to maintain fine organic matter (organic materials less than 3-inches in diameter; may be commonly referred to as the duff layer) over at least 65 percent of an activity area (pertains to both harvesting and post harvesting operations). The preference is for the fine organic matter to be undisturbed, but if disturbed, it should be of sufficient quantity and quality to avoid detrimental nutrient cycle deficits (short term nutrient cycling). If the soil and potential natural plant community (i.e., site) are not capable of producing fine organic matter over 65 percent of the area, adjust minimum amounts to reflect potential soil and vegetation capabilities. ( LRMP SL-6; Fuels BMP F-2; Timber BMP T-13).

Within burn units, avoid exposing more than 25-30% bare mineral soil. Soil types have a moderate to

severe rating for susceptibility to loss of productivity resulting from higher intensity fires, due to thin mineral "A" surface soil horizons and less than two percent organic matter in the mineral soil (NRCS Soil Interpretations). Total nitrogen distribution in east side forests show approximately 70% of the N occurring in the mineral soil, approximately 12% of the total N in the litter/duff layer, and the remainder existing in the vegetation. Standards of less than 25-30% exposure of mineral soil are recommended by (Boyer, 1980). Conserving some litter/duff assures some nutrients will remain on site. Conserving some of the litter/duff layer is also important for preventing soil erosion, mitigating soil compaction, and soil microorganisms. If the soil and potential natural plant community are not capable of producing fine organic matter over 100 percent of the area, adjust minimum amounts to reflect potential soil and vegetation capabilities. (LRMP SL-6; Fuels BMP F-2; Timber BMP T-13).

## GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- Appendix B
- [Appendix C](#)
- [Appendix D](#)
- [Appendix E](#)

---

### [Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/appendixb.html>

Last Update: 8/10/01

R.A. Jensen

# APPENDIX C

## Odell Watershed Riparian Reserves And Aquatic Conservation Strategy Objectives

### Odell Watershed Analysis & Riparian Reserve Widths

*The Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*, also known as the Northwest Forest Plan, provided interim widths for Riparian Reserves. Riparian Reserves are lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use. During the watershed analysis process, final Riparian Reserve boundaries are recommended. The Odell Watershed Analysis was completed in October 1999. The Odell Watershed was divided into six Landscape Areas based on trends and goals in common. The final widths for Riparian Reserves in the Odell Watershed are described below for each Landscape Area. Discussion of riparian reserves, and justification for these widths can be found in the Odell Watershed Analysis (USDA Forest Service, Deschutes National Forest, 1999).

Landscape Area	Riparian Reserve Widths
1. West Odell Creek	The entire landscape area will be managed as Riparian Reserve, where any activities conducted within this zone are to be complimentary to riparian goals. See map next page.
2. East Odell Creek	Minimum 300 feet either side of Odell Creek, extending to vegetation zone break. Intermittent channels as described in ROD.
3. Odell Lake/Willamette Pass	As described in ROD.
4. Davis Lake	For the lake, a 300' Riparian Reserve and 150' for the associated wetlands adjacent to the lake. The resulting reserve is the larger of the two conditions applied. Odell and Ranger Creek will have 300' reserve width; Moore Creek will have a 150' reserve width.
5. Mountain Hemlock Association	Intermittent or seasonal channels = 150' reserve area. Upper Trapper Cr. = 300' reserve area.
6. Central Conifer Association	Moore Creek will have a 150' buffer. Other intermittent channels as described in ROD.

## **Aquatic Conservation Strategy Objectives**

The following is a discussion of how the project alternatives meet ACS Objectives of the Northwest Forest Plan (B-11). The following watershed assessments have been completed for the project area west of the owl line: Odell Watershed Analysis (1999), Big Marsh Watershed Analysis (1997), and Browns/Wickiup Watershed Analysis (1997).

### **1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.**

#### Alternative 1

Alternative one does not restore or maintain but allows for the further degradation of parameters that contribute to the distribution, diversity and complexity of watershed and landscape scale features.

#### Alternative 2

Alternative two would allow an increase in the diversity and complexity of watershed and landscape scale features across the landscape by decreasing stands' susceptibility to disease, insect and fire outbreaks on a large scale and allowing natural plant and animal species to thrive under more natural conditions. The riparian treatments would also encourage wet-associated plant groups to flourish.

#### Alternative 3

Alternative three would contribute to the distribution, diversity, and complexity of watershed and landscape scale features by decreasing stands' susceptibility to disease, insect and fire outbreaks on a large scale and allowing natural plant and animal species to thrive under more natural conditions. The riparian treatments would also encourage wet-associated plant groups to flourish.

#### Alternative 4

Alternative four would provide the same stand treatment scenario as alternative three without the treatments in the Browns, Wickiup and Lower Little Deschutes sub-watersheds. The emphasis on a longer return interval for these subwatersheds offers the lowest level of disturbance over the next 30 years.

### **2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.**

### Alternative 1

No action would allow insect, disease, and fire outbreaks to continue within and across watersheds. No management or treatments that include fire and thinning would allow the continuation of increased stocking and increase the fire intensity and severity above natural levels. Fires of increased intensity and severity would create fragmentation within and between watersheds of greater size and of longer duration than under natural conditions.

### Alternatives 2 and 3

These alternatives will maintain riparian corridors with down woody debris as well as increase the complexity of the riparian areas to allow deciduous species, such as willows, to flourish and provide the habitat required for connectivity within and between watersheds. This is true of the objectives in small areas of treatment along Moore Creek as well as the treatment along Odell Creek. These alternatives will allow for maintenance of spatial and temporal connectivity within and between watersheds by allowing large blocks of some forest to remain with the intent to maintain connectivity and improve diversity along some of the corridors within watersheds.

### Alternative 4

Alternative four would provide the same stand treatment scenario as alternative three without the treatments in the Browns, Wickiup and lower Little Deschutes sub-watersheds.

## **3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.**

### Alternative 1

Alternative one allows for the further degradation of current conditions of the physical integrity of the aquatic system. A risk of high-severity fire, the continuation of user created roads within the riparian reserves, and encroachment of dispersed recreation sites along streams and lakes, especially those waterbodies containing the threatened bull trout, will further degrade the physical integrity of the aquatic system.

### Alternatives 2 and 3

Alternatives 2 and 3 would maintain and restore the physical integrity of the aquatic systems within the sub-watersheds proposed for treatment by treating only where needed in riparian areas, to improve stand health, and reduce the risk of large-scale disturbance by fire, beetles, or disease. Such large-scale disturbance would produce a large die-off leaving reduced water up-take and increased overland flow and spring discharge.

### Alternative 4

This alternative will have the same affect as alternatives 2 and 3 without treatments in the Browns, Wickiup, and lower Little Deschutes sub-watersheds which all contain ephemeral and intermittent

drainages only. Approximately 3500 acres within these watersheds would not be treated compared with alternative 2 and 3.

**4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.**

#### Alternative 1

No action would allow continued degradation of shorelines and stream banks by continuing to allow use of user created roads in riparian reserves and dispersed campsites along Davis Lake and Odell Creek.

#### Alternatives 2 and 3 and 4

The project will follow Best Management Practices (BMPs) to maintain water quality. Alternatives 2, 3 and 4 propose to re-vegetate and restore dispersed and developed campsites, which would reduce sediment routing to streams and reduce the risk of high intensity fires. Water temperatures or other water quality parameters of concern in the project area, would not be substantially affected by this project.

**5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.**

#### Alternative 1

Alternative one does not maintain or restore the natural sediment regime. No action would continue to have increased network drainage from user-created roads within the riparian reserve. Dispersed camping along streams removes potential instream trees and flood plain trees as dead trees are cut for firewood. Removal of these potential trees alters sediment storage and transport. During high flow events.

#### Alternatives 2, 3 and 4

The action alternatives would begin to restore the sediment regime to more natural, episodic levels through road maintenance and repair that would reduce the likelihood of chronic, road related sediment directly entering the stream channel.

Road construction and obliteration as well as timber hauling have the potential to cause an increase in the sediment to the streams within this planning area. However, by applying Best Management Practice (BMPs) and Deschutes National Forest Standards and Guidelines, any increase in sedimentation would be short-term.

By maintaining a no-harvest zone adjacent to stream channels, additional introduction of sediments will not significantly increase over current sediment levels. Stand density management will accelerate conversion of the current riparian conditions to a more diverse and complex desired condition, resulting in long term improvements to bank stability and sediment storage capacity provided by increases in in-stream woody material. Water quality will remain the same and improve as larger trees fall into the riparian area. Accelerated growth in the riparian area will help restore the natural sediment regimes under which the aquatic system evolved.

Under alternatives 2 and 3, the proposed road closures would benefit the riparian areas by decreasing the effects that are occurring as mentioned above in alternative one.

**6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.**

Alternatives 1, 2, 3 and 4

None of the alternatives are expected to affect base flow conditions. Equivalent Clear-cut Acres (ECAs) values for this planning area will remain at or below recommended threshold values. The timing, magnitude, duration, and spatial distribution of flows will be maintained. All wet areas (less than 1/4 ac.) that are associated with stream courses will be protected through the implementation of riparian reserves.

**7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.**

Alternative 1

This alternative would allow succession of riparian areas to increase more rapidly, encouraging drier site vegetation such as lodgepole pine. Over time, as lodgepole pine encroaches on wet areas the water table may be lowered due to increases in transpiration.

Alternatives 2, 3, and 4

The proposed actions are expected to have minimal effects on low flow conditions. Thinning treatments in riparian reserves are not expected to have any effect on floodplains or water table elevations. Equivalent Clearcut Acre (ECA) values for this planning area will be at or below recommended threshold values.

With the implementation of BMPs, it is anticipated that in stream flows would be maintained and restored sufficiently to create and sustain riparian, aquatic, and wetland habitats, and to retain patterns of

sediment, nutrient, and wood routing.

There are a number of small wetlands within this project area. Some of these wetlands are close enough to proposed harvest units that their water level may fluctuate up or down for short periods of time. The water table adjacent to wet areas has always varied due to changes in climate or localized changes in water routing. This short-term variation is thought to be negligible in both size and duration.

With riparian treatments, lodgepole encroachment and high stocking will be reduced to provide longer water retention time for low flow in late summer months. The timing, variability and duration of floodplain inundation and water table elevation in meadows and wetlands will not be measurably affected.

**8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.**

#### Alternative 1

Current conditions would be maintained with the risk of high fire intensity. The encroachment of conifer species over the long term will impact diversity of riparian areas.

#### Alternatives 2, 3 and 4

Localized treatments in the riparian areas will reduce the risk and effects of high intensity wild fires. The existing species composition would be maintained or enhanced by thinning and under burning activities. All action alternatives begin the restoration of riparian vegetation diversity by prescribed riparian reserve thinning or under burning which would increase the diameter of overstory trees to generally increase structural diversity and provide for a more rapid development of future sources of large woody material into the stream channel. Biological, physical, and chemical integrity of water quality will remain intact by maintaining current canopy cover and streamside shade within riparian reserves.

Appropriate rates of surface erosion, bank erosion and channel migration would be maintained by implementing BMPs, Forest Standards and Guidelines, and by applying riparian reserve widths outlined in the Northwest Forest Plan and in the Odell Watershed Analysis.

Implementation of riparian reserves as recommended in the Northwest Forest Plan would maintain current species composition and structure, and provide adequate summer and winter thermal regulation, and supply and distribute large wood sufficient to sustain physical complexity.

## **9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.**

### Alternative 1

No Action does not maintain or restore habitat but allows for continued succession of wetland species to upland species by encouraging lodgepole encroachment in wet meadows and riparian reserves.

### Alternatives 2, 3 and 4

One of the main objectives of the Seven Buttes projects is to maintain and enhance late and old structure forested habitats. This would be accomplished through understory thinning and salvage of excess dead and down coarse woody material to reduce the risks of losing these stands to insects, disease, or catastrophic wildfires. By reducing competition within identified stands, it is expected increased tree growth would occur on the understory trees as well as helping to maintain the health and vigor of the overstory component. Pre-commercial thinning may also occur where needed to maximize tree growth within riparian zones.

These silvicultural treatments would maintain and improve habitat and the microclimatic conditions needed for many native plants, including bryophytes, lichens, fungi, and vascular plants and amphibians and mollusk species. The retention and development of large-diameter trees in a relatively closed canopy forest are also important for many resident and migratory birds that depend on or selectively seek riparian zones for their breeding and/or foraging habitat.

There is no regeneration timber harvest proposed with this project that would eliminate or retard the development of habitats needed to support well-distributed populations of riparian-dependent species. All silvicultural treatments proposed are consistent with the objectives of the Davis Late-Successional Reserve Assessment and the recommendations provided in the Odell Watershed Analysis.

## GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- Appendix C
- [Appendix D](#)

- [Appendix E](#)
- 

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/appendixc.html>

Last Update: 8/10/01

R.A. Jensen

## APPENDIX D

### Glossary

**Activity Center** - (Spotted owl activity center) An area of concentrated activity of either a pair of spotted owls or a territorial single owl.

**ACSO** - Aquatic Conservation Strategy Objectives of the Northwest Forest Plan.

**Basal Area** - The square feet of tree stem at 4 1/2 feet above the ground.

**Canopy** - The part of any stand of trees represented by the tree crowns; canopies may occur in layers.

**Connectivity (of habitat)** - The linkage of similar but spatially separated vegetative stands (such as mature forests) by patches, corridors, or "stepping stones" of the same vegetation across the landscape; also, the degree to which similar habitats are so linked.

**Critical Habitat** - Under the Endangered Species Act, critical habitat is defined as (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species, when it is determined that such areas are essential for the conservation of the species.

**Crown Fire** --

**Desirable Species** - Any species of plant or animal that is considered to be compatible with meeting management goals and objectives.

**Dispersal Habitat** - Habitat that supports the life needs of an individual animal during dispersal. Generally satisfies needs for foraging, roosting, and protection from predators.

**Disturbance** -- An event that causes significant change in structure, function, or composition through natural events such as fire, flood, wind, earthquake, mortality caused by insect or disease outbreaks, or by human-caused events, e.g. the harvest of forest products.

**Effects** - Effects, impacts, and consequences are synonymous. Effects may be direct, indirect, or cumulative, and may fall in one of these categories: aesthetic, historic, cultural, economic, social, health, or ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems).

**Endangered Species** - Any species of plant or animal defined through the Endangered Species Act as

being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register.

**Ephemeral** -- Stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.

**Evapo-transpiration** - Loss of water from the soil both by evaporation and transpiration from the plants growing on it.

**Fire Hazard** - The severity of wildfire occurrence based on existing fuel profiles.

**Fire Risk** - The probability of a fire occurrence based on ignition sources (human vs. lightning).

**Fire Severity** - The effect of fire on plant communities and soil. For trees, it is often measured as the percentage of basal area killed by fire.

**Fuel Loading** - The weight of fuel present at a given site; usually expressed in tons per acre. This value generally refers to the fuel that would typically be available for consumption by fire.

**Group Selection** -- A stand management method in which silviculturists identify groups of trees that need to be removed from a stand of trees in order to meet management objectives.

**Habitat** - The area where a plant or animal lives and grows under natural conditions. Habitat consists of living and non-living attributes, and provides all requirements for food and shelter.

**Habitat Fragmentation** - The splitting or isolating of patches of similar habitat, typically forest cover. Habitat can be fragmented from natural conditions, such as thin or variable soils, or from forest management activities, such as clear-cut logging.

**Harvest** - Felling and removal of tree stems from the forest.

**Hydrologic Disturbance** - A measure of the cumulative effects to watershed health and integrity based on the amount of past harvest, roads, and large fires.

**Imminent Susceptibility** - A situation where the conditions are such that it is very likely there will be significant change in structure or character of forest stands on a large scale as a result of insect or disease attack and/or fire within the next ten years.

**Ladder Fuels** - A continuous vertical arrangement of dead woody debris that allows fire to easily go from ground level into the tree canopy.

**Lower Management Zone (LMZ)** - A stand density level, about 2/3 of UMZ. Thinning stands to LMZ lengthens the time between treatments because it would take longer for the density to reach a higher level. See Upper Management Zone.

**Multi-storied** - Forest stands that contain trees of various heights and diameter classes and therefore support foliage at various heights in the vertical profile of the stand.

**NEPA** - National Environmental Policy Act.

**Overstory** - Trees that provide the uppermost layer of foliage in a forest with more than one roughly horizontal layer of foliage.

**Plant Association** - The distinctive combination of trees, shrubs, grasses, and herbs occurring in a theoretical or climax community or a series of communities.

**Peak Flow** - The moment of highest discharge in a storm period or runoff event.

**Prescribed Fire** - Fire that is planned and used to meet specific management objectives.

**Project Area** - An area, regardless of size, which is being considered for one or more management activities through the NEPA analysis process.

**Roost** - The resting behavior of an animal.

**Sensitive Soil** -- a soil that has inherent properties that makes it highly susceptible to being detrimentally compacted, displaced or puddled when manipulated by ground-based equipment

**Seral Stages** - Seral stage describes the phase of development of a plant community. Early seral species are those species you would expect to find on a site soon after a major disturbance, like fire. Late seral are the species that can come in under a fully developed vegetative canopy, such as true firs, lichens, etc.

**Stand** - Vegetation occupying a specific area that is sufficiently uniform in composition, size, arrangement, structure, and condition as to be distinguished from the vegetation in adjoining areas.

**Structure** - The physical organization and arrangement of vegetation; the size and arrangement (both vertical and horizontal) of trees and tree parts.

**Sustainability** - The ability of an ecosystem to maintain its organization and autonomy over time including but not limited to maintenance of ecological processes, biological diversity, and productivity.

**Upper Management Zone (UMZ)** - The stand density level at which a suppressed class of trees begins

to develop. In pine forests, this is the level beyond which there is imminent risk of catastrophic loss of overstory trees to bark beetles.

**Underburn** - Using prescribed fire under the canopy of an existing stand of trees for botanical or wildlife habitat objectives, hazard reduction, or silvicultural objectives.

**Understory** - The trees and other woody species growing under the canopies of larger adjacent trees and other woody growth.

**Viability** - The ability of a wildlife or plant population to maintain sufficient size so that it persists over time in spite of normal fluctuations in numbers usually expressed as a probability of maintaining a certain population for a specified period.

**Viable Population** - A wildlife or plant population that contains an adequate number of reproductive individuals appropriately distributed on the planning area to ensure the long-term existence of the species.

**Watershed** - The drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.

**Wildfire** - Any wildfire fire that does not meet management objectives, thus requiring a fire suppression response. Once declared a wildfire, the fire can no longer be declared a prescribed fire.

**Woody Debris** - Dead pieces of woody vegetation such as stems, limbs, or leaves that are on a site.

GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- Appendix D
- [Appendix E](#)

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/appendixd.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/appendixd.html>

Last Update: 8/10/01

R.A. Jensen

# APPENDIX E

## Response to Comments

### A. Comment Process Used

Notice for Public Comment was published in the Bend Bulletin May 23, 2001. The public comment period ran from May 24, 2001 until June 25, 2001.

On May 21, 2001, copies of the Seven Buttes Return EA were mailed to 24 individuals or organizations who were known to have an interest in the project or who requested an EA. Letters were also mailed to about 300 individuals or organizations informing them of the availability of the EA and asking if they would be interested in reviewing it.

Three comment letters were received: Oregon Natural Resources Council (ONRC), the Forest Conservation Council (FCC), and the US Fish and Wildlife Service (USFWS). The following list shows the general topics raised by the comments.

<u>Purpose</u>	<u>Analysis</u>
Supports Restoration Goals	Bald Eagles Economics Fire Ecology/Fuels management concerns Imminent susceptibility definition Large tree removal Lynx NEO Tropical/Migratory Birds Protect Forests as Carbon Recreation site restoration Roadless Concerns Roads Scenic Views Snags and Cavity Dependent Species Species viability Spotted owl/CHU Impacts Spotted owl Cumulative effects Spotted owl NRF Survey and Manage Species Impacts Water Quality
<u>Alternatives</u>	
Alternative Preference Expressed Avoid impacts caused by ground-based activities Avoid Old Growth Management Areas Consider a restoration-only alternative Consider Large Habitat Blocks as single units Define thinning Drop timber harvest in LSR, CHU, BEMA, etc.t Salvage Salvage in LSRs Use Fire for Restoration	

Two comments supported the general restoration purpose of the project, while other comments offered suggestions for additional alternatives to consider (for example, a "restoration only" alternative), or for additional analysis to conduct (specifically asking for more study of the roadless issue among others).

Several comments resulted in clarifications to the EA. No substantial additional analysis was conducted to respond to these comments.

## B. Response to Specific Comments

Comments have been listed by subject, with the abbreviation for the commenter included for reference:

USFWS	US Fish and Wildlife Service	Kemper M. McMaster
FCC	Forest Conservation Council	Bryan Bird
ONRC	Oregon Natural Resources Council (with Cascadia Wildlands Project)	Leeanne Siart

### 1. Purpose

#### ***Support Expressed for Restoration Goals***

*FCC: FCC generally supports the genuine restoration components of the Seven Buttes Return Timber Sale, such as riparian reserve designation, restriction of motorized vehicle use, inactivation and decommissioning of roads, and closure of dispersed campsites.*

*USFWS: The Service recognizes the need to restore forest conditions within the range of natural variability. In habitat that is suitable for northern spotted owl and other Late Old Structure associated species, the Service supports silvicultural prescriptions that target thinning shade tolerant trees from below and encouraging multi-storied stands with a dominant overstory. This type of treatment will reduce the risk of epidemic insect and disease outbreak, and large-scale fire disturbance while promoting late successional/old-growth function and structure.*

Response: The project's purpose is described in the EA (pages 1-2). The purpose is to reduce risk in order to restore a more historic condition within the dry forests east of the Cascade Crest, while maintaining habitat for species, such as spotted owls, which require a more closed forest. Road closures, disperse use impacts, and other general restoration items were included in the analysis. However, the main objective of the project is vegetation restoration (EA page 3, Table 1).

## **2. Alternatives**

### ***Alternative Preference Expressed***

*USFWS: After reviewing the four alternatives, the Service recommends implementing Alternative 4. The written discussion on Alt 4 seems to indicate that the Browns, Wickiup and Lower Little Deschutes subwatersheds have not been thoroughly reviewed. Deferring the three watersheds can provide more complete analysis and allow development of a more comprehensive plan to base management decisions on the best possible information.*

Response: The discussion regarding difference between Alternative 3 and Alternative 4 does not rest on the availability of vegetation information (EA pages 18-19). The lacking information concerns other restoration opportunities, such as potential road restoration, recreation site restoration, aspen restoration, and the like (EA page 78). As stated in the EA, deferring these watersheds would provide for better coordination and funding for projects that are not otherwise connected. This approach also allows for a longer period of rest until the next entry would be needed (EA page 19).

### ***Avoid impacts caused by ground-based activities***

*ONRC: Ground-based logging methods are very destructive and should not be used as a harvest prescription.*

*ONRC: Hand pile and underburn only for fuels treatment. Do not grapple or machine pile.*

Response: Ground-based methods for logging and post-logging activities have been described in the EA (page 23). Impacts of these methods are included in the soils discussion (page 47-49). Measures are included in the EA to reduce impacts of these activities (EA Appendix B, page 1-2).

Commercial harvest is proposed to meet restoration objectives, not capture a high timber volume per acre, so that cable or helicopter logging systems were only proposed on slopes greater than 30 percent where mechanical methods are not feasible. Cable and helicopter systems have resource trade-offs: for example, generally cable systems require more road construction to reach landings, and helicopter systems require large landings. These systems are also more expensive, and the low volumes per acre found in many units cannot support the cost. Systems. Similarly, hand piling is very expensive when applied on a large-scale. Underburning is not appropriate in certain sites, where true fir or lodgepole pine comprise much of the under and middle story because these species do not tolerate fire as well as other species.

### ***Avoid Old Growth Management Areas***

*ONRC: All units in OG management areas, especially salvage units 45 and 50, should be dropped from*

*the project.*

Response: The old-growth management areas were included in the alternatives because of the need to treat them was demonstrated by current vegetation conditions (EA page 1-2, and 14).

In the Seven Buttes Return Project Area, two of the three old-growth management areas slated for treatment lie outside the LSR. The third lies within the Davis LSR boundary. Treatments to reduce risk to large trees is consistent with the direction found in the 1990 Forest Plan (page 4-150, M15-4).

No programmed harvest or wood removal is permitted in these old growth areas; however, vegetative manipulation including removal may occur to perpetuate or enhance old growth characteristics. Units 45 and 50 have been proposed to reduce risk within these old growth management areas, which are classified as lodgepole pine plant community group.

The Davis LSR Assessment (1996) direction indicates that the old-growth management area in the LSR should not be entered, and so Unit 810 has been dropped from further consideration. This point of direction had not been accounted for until this most recent project review. On the other hand, Units 45 and 50 lie in matrix, and so have been included in Alternatives 2 and 3 in order to meet old-growth management area objectives.

### ***Consider a restoration-only alternative***

*FCC: The FS has failed to analyze an adequate range of alternatives. Given the insignificant contribution of wood fiber to America's consumption requirements from national forest lands, the vast economic contribution of non-timber related jobs and income, and the growing body of scientific knowledge recognizing the ecological and economic advantages of non-commercial restoration, the agency has no excuse for not analyzing a non-commercial, restoration only alternative.*

*FCC: A timber sale and all of its associated activities can only exacerbate the problems and results in more costs economically and ecologically than benefits.*

*FCC: The forest service cannot exclude a non-commercial alternative merely because existing funding structure would make it difficult.*

*FCC: We request that a restoration alternative be developed and analyzed in the final EA and that all costs and benefits, both monetary and non-monetary, of such an alternative be disclosed. Until such action is taken, this NEPA analysis is considered incomplete.*

*FCC: A non-commercial restoration alternative for the SBR Timber Sale area should have been analyzed. The no-harvest, restoration alternative is clearly reasonable and should have been analyzed.*

*FCC: A commercial timber sale can only exacerbate current problems. A non-commercial timber sale*

*alternative will eliminate those problems.*

*FCC We challenge the contention that commercial timber harvest can achieve the desired restoration goals, especially of bald eagle and northern spotted owl habitats, in a manner that maximizes environmental and economic benefits to costs.*

*FCC: All restoration objectives can be met without conducting a commercial timber sale*

Response: The EA considers the impacts of the proposed treatments in relation to the change in habitat (pages 29-43, 54-71), change in fuel conditions (pages 49-51), soils (pages 47-49), forest health (pages 43-45), and water quality (pages 45-47). Other resource impacts are also described in the EA, Section 3.

The impacts of using a timber sale would be the same as using another means, such as a "restoration only" contract paid for with appropriated dollars. Although the thinning has been proposed primarily to benefit wildlife habitat and other ecologically desirable outcomes, a by-product of those activities will be a certain amount of merchantable wood products (EA page 75). Whether this material is taken away by a purchaser willing to pay the government for it, or whether it is taken away by a contractor paid at government expense, the material must be removed to accomplish the restoration goals.

Appendix B in the EA includes a list of resource objectives and mitigation measures that will apply to various activities, both commercial timber harvest and post-harvest actions. Contract provisions and administration assure that these protection measures are carried out, whether in commercial timber sales or a service contract.

## ***Consider Large Habitat Blocks***

*USFWS: The Service encourages the District to treat Hamner Butte, Maklaks Mountain, and North Black Rock as large individual units. Management should be prescribed for each unit as a whole when conditions within these blocks begin to lose the desired structural components at catastrophic levels. Activities should be conducted in short time frames using long re-entry rotations for treatment. Along with Hamner Butte and Maklaks Mountain, the Service recommends deferring management as much as possible in the short-term within North Black Rock to protect connectivity that is providing an east-west link between northern spotted owl pairs.*

Response: The blocks described in the comment were considered during project development because of the need to treat to protect the large trees in these connectivity areas. During the preparation of the LSR Assessment, several Management Strategy Areas (MSAs) were preserved in the short term, and were to be treated only if the stands began to lose the structural components at catastrophic levels. Other MSAs were listed with an emphasis for treatment in the short term in order to protect and maintain these important structural components for a longer time.

These blocks cross a number of stand type boundaries, and so were broken down into stands rather than

considered as one treatment unit. However, one of the wildlife criteria to evaluate alternatives centered on the impact of the alternatives to these blocks (EA page 34).

The importance of these areas for connectivity motivated the need to treat in at least parts of them. If a large-scale disturbance degrades habitat below useful effectiveness levels, the connection would be diminished to a higher degree and for a longer period of time than that proposed with any of the Seven Buttes Return action alternatives. Alternative 2 treats a larger portion of the Maklaks and North Black Rock block than Alternatives 3 or 4.

The strategy of avoidance was considered and is described in the EA under the effects of Alternative 1 (Page 34-35). During project design, no unit was proposed for the Hamner Butte block. In Alternative 2, several units were proposed for the Maklaks Mountain block, and several units were proposed for the North Black Rock block. The proposed treatment areas were included as discussed in the EA (page 1-2, 34) in order to reduce the long-term risk of habitat loss, especially to the large trees that are at greatest risk and that will be hardest to replace once they have died.

The habitat east of the Black Rock block is in matrix lands, on the far eastern edge of the northern spotted owl range. These owls make a unique genetic contribution to the owls persistence, and so need to be protected. As such, treating within part of the connectivity block proposes to maintain a longer-term benefit without eliminating the useful habitat farther up slope. This difference in approach was analyzed in the difference between Alternative 2 (which treats most of the slope), and Alternative 3, which treats a smaller amount of the slope. The impacts of not treating the slope are discussed under the impacts of the no action alternative (page 34).

## ***Define thinning***

*ONRC: The EA does not adequately discuss the age and size of trees that will be harvested (or age and size of trees left behind).*

*ONRC: Please be clear on harvest prescriptions. How much thinning, salvage, and "selective" cutting will be taking place on each unit. The EA discusses 15% and 25% retention areas, but is not clear on the amount of harvest from the non-retention areas.*

Response: The EA describes the proposed treatments by the level of intensity and by whether they have an objective of single storied or multi storied (page 23, Table 3). The EA describes the objectives for treatment (page 3, Table 1; page 16 Table 2). As discussed under the action alternatives section (pages 16-18), the intent of treatment is to remove enough of the stand to reach 90 percent UMZ or 67 percent UMZ. The amount to be removed from each stand will depend upon how much material is actually on the site (e.g. a stand at 250% UMZ would require more removal than a stand at 200% UMZ). Actual prescriptions will be written for each stand to meet these objectives as described in the EA (page 23, Table 3 and Appendix A, Table 2).

## **Drop timber harvest in LSRs, CHU, BEMA and River Corridor**

*ONRC: All units with commercial harvest in LSR, BEMA, CHU and W&S River corridors should be dropped from the project.*

Response: The reasoning for including units in these management areas has been included in the EA (page 1-2 and 3). The EA also discusses alternatives that would have dropped these areas from consideration (page 15). Units proposed for treatment are consistent with direction found in the LSR Assessment and BEMA management plans. Alternatives that avoided treatments in the LSR/CHU or BEMAs would not meet the purpose of the project.

Only incidental treatment is proposed within the Crescent Creek Wild and Scenic River Interim Corridor. This means no units were planned within the corridor, but portions of units that lie within the quarter mile interim boundary were not truncated at the quarter mile line. Effects are described (EA page 52).

## **Salvage**

*ONRC: ONRC does not support salvage because it increases fire hazard, especially when dead trees less than 10 inches diameter will be left behind. Harvesting all the larger diameter trees (> 10 inches), especially in old-growth preserve is not acceptable. Large trees need to be left behind.*

*ONRC: Pile burning fuels is not acceptable; it leaves the area prone to invasives [weeds].*

*ONRC: At the most, take only a small percentage of the trees that are already dead. If living trees do eventually die, they will be providing habitat for wildlife as snags.*

*ONRC: Forest Health is not an adequate reason to salvage an area. Scientific evidence demonstrates that salvage logging typically results in damage to soils, streams and wildlife habitat. Insects, disease and fire are all normal events in a forest.*

Response: Reasoning for salvaging as part of this project is discussed in the purpose and need section of the EA (pages 1-3). Forest health does not directly drive the need to salvage since dead trees do not compete with living trees for resources, such as light, water and soil nutrients. However, large accumulations of dead material do pose a risk to green trees by causing fires to be more intense and cause more severe damage than they did under historic conditions. Although insect and disease mortality is a normal phenomenon in the forest, current levels of dead are far above the normally occurring amounts, and so a fire occurring in these conditions is much more likely to reach catastrophic proportions (EA page 49-50).

Salvage treatments specifically allow for reducing fuels in all sizes, not just the merchantable material. For the most part, fuels reduction is accomplished through the salvage sale operation. Fuels are further

reduced by post-sale activity fuel treatments (page 1-3). The EA describes the beneficial effects of this fuel reduction in terms of fuel loading and expected fire behavior (pages 49-51). Measures are included in the EA Appendix B to assure that impacts from the sale and post-sale activities meet objectives for soil protection (Appendix B, page 1), habitat maintenance by keeping necessary dead wood for habitat (Appendix B, page 3-5), riparian habitat/fish (Appendix B, page 2), and noxious weeds (Appendix B, page 9).

The question of reducing fuel loading is a specific issue considered during analysis (EA page 12) so that treatments must include design features that allow for follow-up fuels treatments. Measures are included that provide for meeting this project objective (Appendix B, page 9).

Large-tree retention guidance has been expanded in the EA (page 20) and Appendix B (page 13). This guidance is also found in the Davis LSR Assessment (page 3-28) and the "Eastside Screens."

## **Salvage in LSRs**

*ONRC: The ROD says that "all standing live trees should be retained" (C-14). But standing trees and snags may need to be cut for safety reasons. The EA failed to consider just keeping workers out of the safety zone around hazard trees.*

*ONRC: The Northwest Forest Plan ROD says that the intent of the LSRs is to "prevent negative effects," but the EA does not adequately identify any negative effects this project would be preventing. In fact, when viewed from a landscape perspective, there are no negative effects to be avoided, and if there were this project would not do so.*

*ONRC: The NWFP ROD also says "salvage operations should not diminish habitat suitability now or in the future." But this project will diminish habitat quality by removing standing trees for safety reasons and by putting adjacent forests at risk from damage from edge effects.*

*ONRC: The agency must manage LSRs in a way that will protect and enhance conditions of late-successional and old-growth forest ecosystems. The presence of insect-damaged, fire-damaged, diseased or dying trees are a normal occurrence in a healthy forest ecosystem. They are not unusual circumstances. Diseased, dead or dying trees provide habitat for species associated with late-successional forests. These trees are greater value to the health of these ecosystems left in place. Logging or thinning, including salvage logging in LSRs will not protect or enhance old-growth or late-successional conditions. Logging, thinning, and salvage activities in naturally regenerating stands will impede the development of these conditions. The agency must protect late-successional forest by not allowing logging, thinning, or salvage of any naturally regenerating stands in LSRs.*

**Response:** The portion of the Seven Buttes Return Project that is located in the Davis LSR took its direction for treatment from the LSR Assessment (EA page 7). Only actions that met the treatment criteria for each LSR management strategy area were carried into the analysis. The LSR Assessment

identifies criteria for treatment, including salvage of dead material (LSRA page 3-17). Salvage in the LSR was proposed where current high fuel loads have a high potential to impact the rest of the LSR habitat.

Specifically, the area south of Davis Lake has a high concentration of dead lodgepole pine. Fire in these fuels is a naturally occurrence under a lodgepole pine regeneration succession. Such a fire has the potential to move up the slopes of adjacent mixed conifer forests, which currently provide habitat to a range of late-successional associated species, such as northern spotted owls. This reasoning is discussed in the EA (pages 1-3, 15, 16, 17).

### ***Use Fire for restoration***

*ONRC: Logging also has many effects that fires do not have. Soil compaction, roads, weeds, etc.*

*ONRC: It would be better to just do a controlled prescribed burn at the right time of the year without logging. The EA should have considered such an alternative.*

*USFWS The Service also recommends that fire, which had played a significant role in the maintenance of these habitats historically, be re-introduced to ecosystems. Understory thinning with post harvest treatment of fuels through prescribed fire is recommended in the dry mixed conifer and ponderosa pine Plant Association Groups. The use of fire can reduce the insect and disease risk, cycle nutrients back into the soil, and will help to maintain shade intolerant species adapted to these sites. This will keep canopies more open, increase vigor and maintain the native understory shrub and forb components.*

Response: Using fire as a tool is endorsed by the LSR Assessment and the NWFP standards and guidelines, as well as scientific research and conclusions drawn in the Central Oregon region. One purpose of the project is to return fire to the ecosystem as a natural agent of fuels reduction wherever practical (EA page 1).

These sources also recognize that in many places, current vegetation conditions do not permit the use of fire without first reducing the amount and distribution of dead woody fuels on the ground and live ladder fuels connecting ground fires with crowns of large trees. Fire in these situations would burn at higher intensities than found historically. Damage to large trees would be greater than that caused by fires under historical conditions so that normally fire resistant Douglas fir and ponderosa pine would not survive fires under these conditions (EA page 2).

The alternatives include underburning in stands that are resistant to fire effects, as well as other fuel reduction methods in stands where the fire effects would not be beneficial (EA page 17).

## **3. Analysis**

## **Bald Eagles**

*ONRC: The EA states that this project is likely to affect bald eagle habitat and may affect bald eagle populations. ONRC is very concerned about this. Taking into account the water crisis in the Klamath Falls area, where about 1,000 bald eagles are at risk, we need to protect populations around Crescent, Odell and Davis Lakes, and Wickiup Reservoir that much more. Can the bald eagles dependent on these areas wait for these long-term benefits to kick in? The EA does not adequately analyze this.*

Response: One of the driving purposes for the project is to provide beneficial vegetation conditions for bald eagles. This is recognized in the EA (pages 1-3) and sanctioned by the LSRA (pages 2-11, 4-64 to 4-70, 4-82 to 4-89, 4-120 to 4-135) for treatments around Davis Lake. BEMA Management Plans provided direction for treating in the stands near Davis Lake and Wickiup Reservoir. Analysis found in the EA indicates that without taking some action, loss of large trees is very likely, which will have an impact on the eagles using the project area. Although treatments will have an impact to the eagle (EA pages 39-43), these impacts are short-term while the impacts of no action will result in losing large trees, the components of the eagle habitat that will be most difficult to replace, and the component that cannot be replaced in the short term. Maintaining bald eagle habitat and minimizing short-term impacts is a key issue considered during analysis (EA page 11).

Therefore the trade off discussed in the EA is to reduce habitat effectiveness in the short term by reducing the number of smaller trees, which can be replaced in a short time. The benefit of this effect is that the large trees will be more likely to live longer and contribute their key habitat component for a longer time. Measures and objectives found in Appendix B (pages 5-6) will reduce short-term impacts. For example, seasonal operating restrictions will avoid potential disturbance to nest sites near treatment units.

*USFWS : p. 53, sixth paragraph: How will treatment in units 330, 360, and 390 (near Odell Creek) affect the two nesting pairs of bald eagles near these units?*

Response: Discussion of the effects of all proposed treatments to bald eagles is found in the EA (page 28, 39-43). Appropriate seasonal operating restrictions apply to these three units to assure no disturbance to nesting sites or winter roosting sites (Appendix B, page 5).

## **Economics**

*FCC : The dollar value of undisturbed forest or standing timber should have been calculated and used in the analysis of economic costs associated with the SBR Timber Sale. The value of ecosystem services provided by standing forests has never been evaluated and compared with their value as lumber. Economic benefits of standing forests include but are not limited to clean air and water, balance of global geochemical cycles, and buffering of carbon emissions resulting from the burning of fossil fuels. It has been shown that the rate of carbon loss to that of accumulation is much greater during harvest and there is a net transfer of carbon from biomass to atmospheric CO2. Further, the carbon stored in*

*forest regrowth is less than that in the original forest biomass.*

*FCC : The EA and project record fail to place any economic value on existing uses and functions of the sale area, including recreation, flood control, pest control, carbon sequestering, and many other "ecosystem services." In addition, the economic analysis fails to consider a wide range of costs that will be incurred by the public through loss of these "ecosystem services" and other externalized costs such as increased flooding, increased risk of death, injury and property damage from logging operations, and increased fire risk. (the EA fails to examine how both increased access and increased slash in the short term will create a window of time where fire risk will be increased above what currently exists.*

*FCC : The forest service is required by law to manage national forest system lands and programs to maximize social and economic benefits for the American people. The Forest Service has failed to complete an economic analysis of the Seven Buttes Return Timber sale that provides the public with a full and fair accounting of net economic benefits. Instead, the economic analysis is limited to net costs incurred by the Forest Service and project administrators for county receipts as well as sale preparation and administration.*

Response: As directed by FSM 1970 and FSH 2409.18 (Amend 2409.18-95-2), a financial review has been conducted for the timber sales expected to result from the vegetation treatments proposed in the Seven Buttes Return Project. The purpose of this analysis is to use the best information available regarding costs and revenues to provide the decision maker with an understanding of the economic and social costs/benefits of the proposed action and alternatives (EA page 75) Other benefits, such as wildlife habitat protection, water quality preservation, and public safety, comprise the purpose of the project (EA pages 1-3). Although no dollar values have been attached to these benefits, the Northwest Forest Plan and the LSR Assessment have placed a high value on protecting and maintaining these forest characteristics.

*FCC : FCC incorporates by reference previous appeals in Region 6 for a complete description of this issue.*

Response: Comments or appeals on other projects cannot be incorporated by reference into comments on this project.

## **Fire Ecology/Fuels management concerns**

*ONRC: Thinning also increase wind and light penetration of the canopy and causes fuels to dry out, which makes them more prone to burn and increase the time it takes woody material to decompose.*

*ONRC: Logging very likely will have little effect on the severity or controllability of large intense canopy fires that are of the most concern both environmentally and economically. If proposed logging has any effect it will likely lead to increased controllability of low intensity ground fires, but these lower intensity fires are precisely the fires that are beneficial ecologically and should probably not be*

*controlled. So logging will help control fires which should remain wild and free, while logging will fail to control that which is most destructive.*

*ONRC: The EA fails to acknowledge that logging often increases fine fuel loads while removing large logs that are relatively less prone to burn.*

Response: The purpose of the project is to reduce the severity of wildfires in the project area. Once harvest and post-harvest activities are completed, the risk of fire reaching severe levels is substantially reduced (EA pages 1-3 and 49-51). Fires that start in treated areas are less likely to reach intensities that make them impossible to control. Fires that start in untreated areas that lie adjacent to treated areas are also less likely to grow to such large size that they have a landscape-scale impact.

The impact of vegetation management to fuel loadings is included as an issue during the analysis (EA page 12). Fuel loading benefits of treatment are described in the EA (pages 49-51). Whether logging slash or slash from contract operations (such as small tree thinning paid for by appropriated funds), there is no inherently greater increase in the fuel loading caused by a timber sale when compared with a non-commercial operation (such as contract thinning). In the ponderosa pine, lodgepole pine and mixed conifer forests proposed for treatment in this project, the increased exposure to sun and wind has a small impact on the fuels moisture. In the drier climate east of the Cascade Mountains, shade plays a much smaller role in moisture retention than it does on the wetter west side.

### ***Imminently Susceptible Definition***

*USFWS : P. 31, Alt. 1: How are stands determined to be imminently susceptible to insects, disease, or fire? What is the accuracy of this prediction?*

Response: The definition of the imminent susceptible condition is found in the Davis LSR Assessment (LSRA page 4-1) and EA Appendix D (Glossary). This definition was further refined in a White Paper written by Deschutes National Forest specialists appointed to a science team. The white paper provided procedures to classify stands based on stand density for a given site, as well as tree size, plant associations, and the type of pathogen that poses the greatest risk. Stand characteristics were also describe to indicate when stands would be most likely to be catastrophically damaged by wildfire.

In both of these definitions, probability enters into the determination. As noted in the White Paper, "risk/hazard models are not intended to precisely reproduce the complexity of nature, but rather to identify and relate key biological features which may have predictive value. . . Thus, risk/hazard projections may not accurately predict a specific scenario for a stand or an area, only likely scenarios. Just because a stand is at high risk. . . . Does not mean it will surely happen; only that it is very likely to happen." (LSRA Appendix page 1).

In the case of the Seven Buttes Return Project's determination of at risk stands, data from a variety of sources (satellite imagery, stand exams, etc.) were analyzed using a stand structure and density model.

These stands served as the basis for developing the proposed action (EA page 15).

## **Large tree removal**

*USFWS : p. 33, second paragraph: The second sentence states that "trees to be removed would be less than 21 inches diameter with few exceptions." What are the exceptions? Under the Seven Buttes Environmental Assessment and BA, removal of trees greater than 21 inches was to occur rarely (less than 2 percent). Trees within the LSR would not be removed from the site without the site-specific approval of the District Ranger. Will the Seven Buttes Return project differ from the Seven Buttes project in regards to trees greater than 21 inches?*

Response: During implementation of the Seven Buttes project, an attempt was made to define "rare" in terms of the need to remove trees greater than 21 inches. A wildlife biologist and silviculturist used 5 percent as a general measure. During actual Seven Buttes sale preparation, trees greater than 21 inches were cruised and tallied so exact figures could be kept. As a result, it has been noted that the actual number has been approximately 2 percent. The 5 percent figure has been incorporated into the Seven Buttes Return EA to clarify this point and provide more direction about trees greater than 21 inches in diameter (EA page 20 and the EA Appendix B page 11).

## **Lynx**

*ONRC: ONRC is greatly concerned over the impacts this project may present to lynx and lynx habitat. Lynx are specialized predators which can be adversely impacted by habitat alteration and increased human access. The loss of lynx and other forest carnivores can have far reaching impacts on ecosystem structure and function and this possibility should be analyzed completely. On January 11, 200 ONRC mailed a letter specific to the lynx concerns. The Biological Evaluation and Environmental Assessment or EIS should specifically and thoroughly address the issues concerning lynx raised by ONRC in our letter.*

Response: Lynx analysis has been conducted consistent with the latest direction. This analysis is documented in the BA (pages 25-26), with a determination of "May affect, but is not likely to adversely affect the Canada lynx." This conclusion appears in the EA (page 64).

## **NEO Tropical/Migratory Birds**

*USFWS : P. 61, last sentence: The last sentence seems to indicate that since the environmental conditions are more favorable in maintaining multistoried habitats on the Westside of the Cascade Mountains, there is no need to consider the chickadee and warbler type species as they are not supposed to be there to begin with. The Service would argue that their presence on the eastside of the Cascade Mountains is no less important than those individuals on the westside. The same reasoning is repeated on page 63.*

*USFWS : p. 61, fourth paragraph: The Service disagrees with the second to last sentence which states that the Townsend's warbler, red-breasted nuthatch, mountain chickadee and the warbling vireo were not historically present in dryland habitats until white fir and lodgepole pine became established in the understories. The Townsend's warbler prefers fir forest at moderate to high elevations. However, Townsend's warblers will migrate and forage through dry conifer habitat. The red-breasted nuthatch and mountain chickadee utilize a wide variety of forested habitats (both dry and wet) including juniper. The warbling vireo does not prefer dense conifers but can be found in riparian areas bisecting mixed conifer habitat and most likely forages in parts of the dryland habitat.*

Response: The species and habitat associations described in the EA in the neotropical bird section come from papers prepared by Bob Altman of the American Bird Conservancy. Papers include a technical paper title "Conservation Strategy For Birds of the East-slope of the Cascade Mountains in Oregon and Washington." This paper was prepared for Oregon-Washington chapters of the organization "Partners in Flight."

Collectively, these papers identified avian species and habitats that are declining. Species on a declining trend are referred to as target species. Species with stable or increasing populations are referred to as non-target species. Habitat restoration, particularly in the ponderosa pine zones is emphasized as a conservation strategy.

According to Altman's paper, the species mentioned in these comments are non-target species. With dry forest restoration actions, minimal habitat loss/alteration for non-target species is expected because these species are opportunistically present in dry forest sites. These species are not a conservation concern in this habitat because of their association with other forest types. Most non-target species are "naturally" present in the wetter forests of the region, where typical conditions include a well-developed under story (multi-storied, etc.) Altman also states that the restoration of dry forest habitat is among the highest priorities for bird conservation in the western North America because the more open stands have become rare, which limits habitat for species associated with these habitats.

The EA acknowledges there will be a reduction in habitat for species for species associated with dense forested conditions (non-target), but species associated with more open conditions (such as the white-headed woodpecker) will benefit (pages 61-63).

## **Protect Forests as Carbon**

*ONRC: On August 1, 2000, the US government submitted its position on land use and forestry as it related to carbon sequestration and it "[p]roposes strong incentives to remove carbon from the atmosphere through sound land management and to protect existing reservoirs of carbon, for example those in mature forest." The submission also: "Strongly supports rules - including definitions of key terms such as reforestation - that help protect forests and avoid creating "perverse incentives" (fore example, to log old growth forests)."*

Response: Carbon sequestration measurements lie outside the scope of this vegetation management project. The purpose of this project is to protect and restore old-growth habitats. Although biomass will be removed from the forest as a result of this project, the benefit of risk reduction means that fewer trees will die as a result of insects and disease, and fewer acres of forest will burn with high intensity. Protecting current forests and maintaining them is not inconsistent with the general policy expressed by the comment.

## **Recreation site restoration**

*USFWS : p. 53, second paragraph: The second sentence states, "previously damaged areas that are not in use would be rehabilitated." Does this mean that some damaged areas would not be rehabilitated due to the simple fact that people want to use them at this time? Are there ways to rehabilitate a site to improve water quality and still allow some public use?*

Response: The paragraph in question has been clarified. The objective of the rehabilitation is to reduce impacts of current use, but accomplish it in such a way as to allow use to continue at some level (EA page 53 and Appendix B page 2). However, some proposed activities, such as closure of the road along Ranger Creek, will occur even though it precludes some uses, such as motorized access (EA page 18).

## **Roadless Concerns**

*ONRC : Roadless areas greater than 1,000 acres, whether they have been inventoried or not, provide valuable natural resource attributes that must be protected. These include: water quality; healthy soils; fish and wildlife refugia; centers for dispersal, recolonization, and restoration of adjacent disturbed sites; reference sites for research; non-motorized, low-impact recreation; carbon sequestration; refugia that are relatively less at-risk from noxious weeds and other invasive non-native species, and many other significant values . . .*

*ONRC : The project involves activities in such unroaded areas (identified in an attached map). The NEPA analysis for this project does not adequately discuss the impacts of proposed activities on all the many significant values of roadless areas.*

*ONRC: An EIS is needed to consider significant environmental impacts of proposed activities in roadless areas. The EA states that none of the treatment areas can be considered unroaded lands, but our maps show the contrary. Areas near Odell Lake and Davis lake [on the ONRC map] show the contrary. Judging from the controversy surrounding roadless lands these days, further analysis of these areas would need to occur in an EIS. The agency should consider the effects of this project on uninventoried roadless areas like the Rogue River National Forest considered in the recent Mill Creek DEIS (even though the Rouge NF did a bad job of analyzing the impact to roadless areas values).*

*ONRC: All units in un-roaded (uninventoried roadless) should be dropped from the project regardless if they are adjacent to a road; they are still in a roadless area.*

Response: A discussion of the roadless issue is found in the EA (pages 13, 72). The analysis followed the most recent direction regarding inventoried roadless areas. For the Deschutes NF, these areas have been considered in the 1990 Forest Plan. The record of decision for the Deschutes Forest Plan states that no scheduled harvest will occur (1990 ROD page 7). None of the Seven Buttes Return Project lies within the Maiden Peak Roadless Area (EA page 72).

Precise mapping is not possible based on the map provided by ONRC, but estimates indicate the following units may overlap the ONRC map of concern: 315, 330, 360, 390, 335, 355, 365, and 375. As stated in the EA, all of these units are adjacent to existing roads.

Units 315, 330, 360 and 390 lie adjacent to Oregon State Highway 58, one of the State's busiest routes over the Cascades Mountains. Treatments are proposed around existing recreation residences. The purpose of these treatment units is to reduce the risk of fire getting into the roadless area from recreation facilities.

Units 335, 355, 365, and 375 lie between Forest Road 350 and Forest Road 450, midslope on Maklaks Mountain. The purpose of these units is to thin to maintain large trees. Logging of any commercial timber would be by helicopter or cable system, with no new roads constructed. Small-tree thinning would be by hand (no ground-based equipment).

The specific treatment units do not appear to lie in a location or propose treatments that affect the characteristics listed in the comment. The analysis considered the impact of the proposed activities to watersheds (EA page 45-47), water quality (EA page 52); soils (EA page 47), fish (EA page 53), wildlife (EA page 29 to 38), recreation (EA page 74) and other resources. The comment does not identify specific actions or locations that indicate why the analysis included in the EA does not adequately address these issues.

Finally, until such time as a proposal becomes acted on by the Congress or considered by another appropriate decision making process, no direction exists to provide these areas with different management emphasis than that found in the forest plan.

*ONRC : Roadless area boundaries are an issue that has never been validated in any NEPA process. Only arbitrary Forest Service designation, outside of any public appeal opportunity, has set these boundaries. As a part of this NEPA analysis, the roadless boundaries should be validated.*

Response: The boundaries for the inventoried roadless areas have been identified with the 1990 Deschutes Forest Plan, which underwent environmental review in the 1980s, with a decision made in 1990. The Seven Buttes Return Project does not propose any permanent road construction. Units that lie near the Maiden Peak Roadless Area will not include any temporary road construction because of the yarding system (cable or helicopter).

*ONRC: The Forest Service Washington Office ruled in its appeal decision of the IDAHO Panhandle Forest Plan appeal that roadless areas must be evaluated individually when logging is to occur in them.*

*ONRC: An action does not have to occur inside a RARE II boundary to affect a roadless area because RARE II is not the final word on roadless lands. As the Forest Service is abundantly aware, the court ruled in California v. Block that actions affecting wilderness status could not rely on RARE II. The court ruled that RARE II did not comply with NEPA and "was inadequate to support the non-wildness designations of the disputed areas and therefore violated NEPA." In the present case, the Forest Service is relying on the illegitimate RARE II boundary of this roadless area to support its contention that logging may occur in de facto roadless land without affecting future wilderness designation.*

Response: RARE II made a decision at the national level regarding those areas that would be eligible for wilderness status and those areas that would be available for multiple-use management. The California court decision did not invalidate the criteria for evaluating wilderness lands, only the process used to make a final determination about whether those lands should be wilderness or available for multiple-use management. After that decision Congress acted to designate wilderness areas in Oregon from the inventoried RARE II lands (1984 Oregon Wilderness Act.) Unlike Idaho, the Wilderness Act for Oregon sorted out those areas that should be included in the wilderness system and those that were available for other uses (following appropriate forest planning consideration).

For the Deschutes National Forest in the 1980s, those RARE II inventoried roadless areas that were not designated as wilderness by the Congress were considered during the forest planning process. As part of the forest plan decision, these areas were not scheduled for timber harvest during the lifetime of the 1990 Forest Plan (Deschutes LRMP ROD page 7).

Forest Service Handbook direction (FSH 1909.15) requires that an EIS be written if a proposal affects a roadless area. The Seven Buttes Return Project does not affect such a roadless area.

## **Roads**

*ONRC : No more roads. The existing Forest Service road system should be adequate. Building more roads, even temporary ones, is unnecessary. Temporary roads degrade the environment.*

Response: The only roads proposed for this project are temporary roads that would be used to haul material away from the logging units (EA page 20). The main purpose behind temporary roads is to reduce soil impacts that would be caused by yarding material long distances if no roads were available. In some units, yarding systems, such as cable, require landings near the top of the unit, but the instance of these for the Seven Buttes Return Project is limited since roads lie adjacent to treatment units and relatively small amounts of cable yarding are proposed.

## **Scenic Views**

*ONRC: Removal of trees along highways and roadways does not appear to be necessary. The EA does not adequately discuss the reasons for removal beyond the "forest health crisis" rhetoric of insect/disease/fire mortality. We want scenic drives and views to be left in their natural state. If the drive along Century Dr./Hwy 97 south of Bend is any indication of what this project proposes, it has gone too far. Mowed over forests are not what residents and visitors should have to look at. Natural and native forests are more desirable.*

Response: Treatments have been proposed along Forest Road 46 to reduce the fire hazard along high use corridors, reduce the amount of ice accumulation, and to improve scenic quality (EA page 1-3). Forest health will benefit, but was not the primary consideration along Road 46. Measures have been included in the project design criteria to meet appropriate visual quality objectives (EA page 72, Appends B, page 10-11).

The Forest Plan also includes a goal for visual management to provide forest visitors with high quality scenery that represents the natural character of Central Oregon (LRMP page 4-121). According to the LRMP, landscapes will be enhanced by opening views to distant peaks, unique rock forms, etc. The desired condition for ponderosa pine is to achieve and maintain visual diversity through variations of stand densities and size classes. Large, old-growth pine will remain an important constituent. The proposal to reduce risk of large-tree loss is consistent with these goals.

## **Snags and Cavity Dependent Species**

*ONRC: The snag retention requirements in the applicable management plan Standards and Guidelines for this project fail to retain enough snags to provide habitat for viable populations of cavity dependent species. Since snags have a patchy spatial distribution, surveys to determine snag abundance require very large sample sizes relative to other general vegetation surveys. This was not recognized until relatively recently, so most past surveys conducted to determine natural snag abundance have therefore grossly underestimated the true abundance of snags. This has led the agency to underestimate the number of snags necessary to protect species. This new information must be disclosed and documented in an EIS and it requires a forest plan amendment.*

*ONRC: Snags should be carefully inventoried by species, size, decay status, quality, and location during project planning, and they should be treated as "special habitats" and given protection during project planning and implementation (i.e. keep workers out of the vicinity of snags so that OSHA doesn't order them cut). For instance, the May 2001 Wolf Vegetation management Project on the Wallowa-Whitman NF includes a mitigation measure protecting trees from being harvested if they are near hazardous snags > 15 inches dbh. The NEPA document does not adequately address the need to protect and provide snag habitat.*

*ONRC: The agency must do away with the caveat that they will protect snags "except where the create a safety hazard." This is based on a false choice between snags and safety. The agency can just buffer snags from activities that involve workers, then all ecologically important snags can be protected. The*

*agency must consider this as an alternative to their proposed "management by caveat." An example of this was the Umpqua NF, Cottage Grove Ranger District's 2001 decision to burn a picnic table near Moon Falls in order to avoid placing the public in a hazardous situation with respect to a nearby snag. Similarly, the agency here should save the snags by avoiding the activity in the hazard zone around the snags.*

*ONRC: Current direction for providing wildlife habitat on public forest lands does not reflect findings from research since 1979; more snags and dead wood structures are required for foraging, denning, nesting, and roosting than previously thought. Current science shows that 4 snags per acre minimum are required for 100% population potential for woodpecker species associated with snag cavities.*

*ONRC: Bats, martens, woodpeckers, bears, and many other species are dependent upon snags. Current direction for protecting and providing snags does not meet the needs of the many species associated with this unique and valuable habitat component.*

*ONRC: The EA must at least disclose how many large snags will be protected vs. felled for safety under the preferred alternative.*

Response: Relevant direction has been followed in the design of this project. This direction includes Standards and Guidelines found in the Northwest Forest Plan and the Davis LSR Assessment. Specific snag direction is located in Appendix B of the EA (Appendix B, pages 3-5).

The determination of the adequacy of these standards to meet species viability needs lies outside the scope of a project-specific analysis. The EA discusses the effects anticipated to species of concern. The project is consistent with the Forest Plan, as amended by the Northwest Forest Plan, the Eastside Screens, and INFISH. The Forest planning level is the appropriate level for determining necessary guidelines for meeting viability needs of species. Ongoing monitoring of the Forest Plan occurs, with a copy of the latest Deschutes National Forest monitoring report available each year.

The number of snags necessary to remove for safety reasons is a function of the stand and the equipment used. For example, mechanical harvesters are allowed to operate in areas where more snags are present when compared with hand falling. Moreover, retention requirements (15% of each treatment unit) provide a portion of each treatment area to insure no conflict arises between worker safety and habitat.

Impacts of the proposed activities on various species is discussed in the EA (page 29-43, 54-66).

*ONRC: Additional snags should be left because illegal firewood cutting is almost certain to take a heavy toll on snags over the next several decades.*

Response: Snag levels are based on the needs of the species as defined through the LSR assessment and other sources. The impact of illegal activities has not been considered.

## **Species viability**

*FCC: The FS has not determined the "minimum number" of reproductive individuals that would constitute a viable population. The Forest Service is required by law to determine this minimum number of reproductive individuals before implementing activities that might impact those individuals or populations such as are planned in the SBR Timber sale. The Forest Service cannot permit these activities without knowing the location and number of individuals of these species that would enable determination of whether habitat for each vertebrate is well-distributed to facilitate interaction. Until such information is provided the Forest Service cannot know whether it is providing sufficient habitat to support the minimum number of reproductive individuals nor that the habitat is distributed in such a manner as to permit interaction.*

*FCC: Because the FS has no such data for most species adversely affected by the proposed management activities, and because what data there is suggests that such species are declining and otherwise at risk, the FS runs afoul of viability and diversity requirements set forth in forest planning regulations (36 CFR 219.19 and 219.26). In addition, any decision made on the SBR Timber Sale and associated activities without the above-described information would be considered arbitrary and capricious and constituted agency action unlawfully withheld or unreasonably delayed in violation of the APA.*

*FCC : The SBR Timber Sale will jeopardize the viability of species that thrive in naturally disturbed forest. It will intervene in natural disturbance processes that are vital to ecosystem sustainability, and it will degrade water quality and watershed condition. The analysis on which the Forest has relied is inadequate, flawed and biased in a number of ways, rendering any potential decision arbitrary and capricious.*

*FCC: The SBR Timber Sale includes commercial harvest, ground-disturbing activities associated with timber harvest, and other vegetative manipulation. These activities are likely to jeopardize the viability of species that find optimal habitat in forests with well-developed structures, and forests naturally disturbed by fire, disease and insect pathogens. These include threatened, endangered, and sensitive species as well as management indicator species including the Oregon spotted frog, northern goshawk, Pacific fisher, redband trout, Canada lynx, California wolverine, as well as neotropical migratory bird species.*

*FCC: For many of these species the FS has no up-to-date population data describing population numbers, locations, and trends, nor monitoring data on which the agency can rely to determine that the actions proposed in the context of the SBR Timber sale will maintain numbers and distribution of these species sufficient for insuring long term viability.*

**Response:** Based on the analysis found in the EA, BE and BA, as well as the general direction and analysis found in the Davis LSR Assessment and the Northwest Forest Plan, the project will not jeopardize viability of species. The purpose of the project is to restore conditions and processes that occurred historically, thus making the landscape more sustainable as a whole.

The EA describes how the mix of single-storied (fire climax) habitats will be developed along with the multi-storied conditions. A driving purpose of the project is to maintain habitat over the long term for species associated with well-developed structure (multiple canopy layers).

Management indicator species (MIS) were considered, including those that rely on more open habitats created by natural disturbance (EA page 54-63).

No specific indication was given in these comments regarding how the project would degrade water quality or watershed condition. The purpose of the project is to protect and maintain these values. Discussions are included in the EA regarding the impacts of the project to watershed condition and water quality (EA pages 45-47 and 53-54).

A discussion of the impacts of the alternatives on threatened, endangered and sensitive species is found in the EA (page 29-43, 63-67).

### **Spotted owl cumulative effects**

*USFWS : Page 38, second cumulative effects paragraph: Most of the second paragraph does not demonstrate any relation to cumulative effects to the Seven Buttes Return project. This occurs again on page 43 for bald eagles.*

Response: The description of cumulative effects has been clarified (EA page 38).

### **Spotted owl/CHU Impacts**

*ONRC : The project may result in negatively impacting northern spotted owls because FS protocol surveys have not been completed for the entire planning area. Surveys need to be completed before a decision is made.*

Response: Surveys have been completed to protocol (EA page 30). The statement in the EA has been changed to reflect this. No owls have been identified outside those already known to exist in the project area.

*ONRC : The EA also states that this project is likely to adversely affect the northern spotted owl. The nine activity centers, including eight Critical Habitat Units, for the spotted owl should be left alone. Don't degrade them any further.*

*ONRC : The EA states the short-term effects will adversely affect the spotted owl. Is the short-term risk worth it? Can the owls dependent on these areas wait for these long-term benefits to kick in? The EA does not adequately analyze this.*

Response: Eight owl activity centers occur in the planning area. However, no suitable owl habitat is proposed for treatment within those activity areas (EA page 7 and 29). Owl habitat is proposed for treatment in the Critical Habitat Unit (EA page 35, BA page 15-16). Treatments are proposed to reduce NRF to dispersal habitat, but these treatments are proposed on dry sites to improve bald eagle habitat. These dry sites are not considered capable of providing long-term NRF habitat for owls. Impacts to owl habitat have been considered as a key issue during the analysis (EA pages 10-11).

## **Spotted owl NRF**

*USFWS : Page 38, first cumulative effects paragraph: Does the 13 to 24 percent degradation of NRF include the 1,054 acres from the Seven Buttes project?*

*USFWS : p. 31, Alt. 22: The first sentence referees to total nesting, roosting, foraging habitat that would have commercial harvest. Does this include what has not been completed in the Seven Buttes project? Having included acres not completed under the Seven Buttes projects and not clarifying when this is occurring makes it difficult to understand just what is occurring. If not, should note what this statement is based on.*

Response: The discussion of the cumulative effects has been modified to incorporate the Seven Buttes Project acres as part of the baseline (No Action) in order to simplify this presentation. This is reflected in the EA (page 31, 32 and 38).

*USFWS : p. 31, last sentence: The last sentence states that nesting, roosting, foraging conditions return when canopy cover increases to approximately 50 percent. Research on the westside of the Cascade Mountain range indicates that canopy cover needs to be between 60 to 80 percent before this occurs. Realizing that the eastside of the Cascade Mountain range is different, do you have data to support your conclusion?*

Response: The current definition of NRF habitat used by the Deschutes National Forest is described in the 2001-2003 Programmatic BA (Appendix A, page 3). NRF is considered as forested stands regardless of plant association having a total canopy cover greater than 40 percent AND a canopy cover of at least 5 percent in trees greater than 21 inches diameter breast height (DBH). The 40 percent level was used since these areas of NRF habitat often contain inclusions or patches of forest with 60 percent or greater canopy cover, but also contain more open areas that reduce the average. Owls on the Deschutes NF have been documented in stands with 40 percent canopy cover.

Multi-story treatments of NRF habitat in Seven Buttes return is anticipated to reduce canopy cover to between 40 and 50 percent post treatment (harvest and post-harvest activities). The 40 percent level is expected from the moderate treatments (67% UMZ). Some variations in canopy cover would be expected depending on site-specific conditions such as tree species present, stems per acre, canopy width among trees, and how well developed the under story is. In some units, post-treatment canopy may even be closer to 60 percent, but in all cases would be at least 40 percent. This would meet the

definition of NRF habitat described in the BA.

The 50 percent figure was used in the analysis as a conservative measurement, which gives stands at the lower level of canopy cover (40%) time to increase crown width and allow the under story to grow additional height and crown before it is counted as owl NRF. Thus the 50 percent level would provide higher quality habitat because the stands would provide greater security from avian predators and increased thermal regulating ability.

*USFWS : p. 3 3rd row in table: how does favoring ponderosa pine, Douglas-fir, western white pine, and sugar pine enhance northern spotted owl NRF habitat when prescriptions require thinning the stand.*

*USFWS: Page 38, first cumulative effects paragraph. In relation to the sustainable habitat question from above, how will ponderosa pine, an open crown species, create blocks of sustainable nrf?*

*USFWS : p. 30, paragraph 1: The paragraph states that treatments are expected to develop more sustainable nesting, roosting, foraging habitat for northern spotted owl. In a recent field trip with Forest Service personnel, it was stated that the LSR is mostly mixed conifer dry and that northern spotted owl habitat can not sustain itself without repeated entries for thinning every 10 to 20 years. In 1995 and 1996, the Deschutes National Forest defined sustainable northern spotted owl habitat as habitat that could sustain itself for 40 plus years without management entries. How will multi-story treatments in mixed conifer dry enable stands to develop into more sustainable northern spotted owl habitat?*

Response: The purpose of this action is acknowledged in the LSRA and the EA. Owl habitat is NOT sustainable without some form of management on these drier mixed conifer sites over the long term (LSRA pages 1-3 and 2-5). These forests nevertheless currently provide habitat that meets the needs of owls. No action means that these stands will degrade in value as owl habitat. In the absence of fire, one of the first component of these stands to be lost will be the large trees, which represent the most difficult component to replace because of the time required to grow replacement big trees. Therefore, although self-sustaining habitat might be the goal in ideal conditions, the current conditions in this project area point to the need for management activities to reduce stand density to a level where the dry mixed conifer stands can provide for most of the owl habitat needs. Short-term impacts mean that the stands treated will not be providing NRF. However, as untreated stands fade and are not able to provide the NRF, treated stands will be coming back into NRF characteristics, and they will still contain the large trees necessary to be classified as NRF.

Ponderosa pine and Douglas fir offer some of the most sustainable species of large trees on the drier mixed conifer growing sites. Currently, white fir species tend to dominate these sites because of their shade-tolerant regeneration abilities. White fir are not long-lived as large trees and are more susceptible to insects/disease and fire effects. As these trees dominate sites, they compete with the large sized ponderosa pine and Douglas fir, which eventually are lost as green structural components.

Therefore, trends in these forests if they go unmanaged will not favor the long-term establishment or

maintenance of large tree habitat. Thinning of these stands emphasizes thinning out smaller trees that compete with these large trees for resources. Favoring ponderosa pine and Douglas fir is emphasized because they are the best big trees for these sites.

## **Survey and Manage Species Impacts**

*ONRC: Are the buffers adequately protecting the species? One or two site potential trees may not be adequate protections. Larger buffers may be needed, but we will not know this until adequate research and analysis is completed. Management recommendations need to go through a NEPA analysis.*

*ONRC: The EA does not adequately disclose how or when surveys were conducted. We cannot tell from the EA whether or not the protocol was complied with. Where and how are the buffers placed?*

*ONRC : Survey and Manage species are not adequately discussed in this EA and information regarding impacts to species must be properly studied before any activity occurs in their habitat.*

*ONRC: An example of inadequate information associated with this EA is Ramaria rubrievanescens on page 68 of the EA. The EA states "Direct, indirect, and cumulative effects to R. rubrievanescens . . . cannot be determined based on information known at this time." If this is the case, ground-disturbing activities should not be taking place in their habitat until the effects on the species are known.*

Response: All required surveys have been completed for appropriate S&M species. This has been clarified in the EA (pages 69-70).

Protocols and survey information is available for public review but was not included in the EA. The EA describes the impacts of the project to Survey and Manage Species . The discussion about Ramaria rubrievanescens has been clarified to include information from the 2001 Survey and Manage ROD (page 9). This species is a Category B fungus species that requires strategic surveys (to be implemented before 2011), rather than predisturbance surveys.

Therefore, although lack of information exists to determine the impacts of this project on this species, the S&M ROD and S&Gs have been implemented to assure that management occurs with reasonable assurance of species persistence. The project is consistent with the S&M ROD.

## **Water Quality**

*ONRC : The EA does not adequately address impacts this project will have on water quality, especially within the Odell Key Watershed.*

Response: Water quality impacts are described in the EA (page 45-46 and 52-54). The project is consistent with the Odell Watershed Analysis (1994 and 1999). The comment does not indicate

specifically how the analysis fails to provide adequate impact analysis for the Odell Key watershed.

GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)
- Appendix E

---

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/crescent/7buttesreturn/appendixe.html>

Last Update: 8/13/01

R.A. Jensen