The Davis Late-Successional Reserve Assessment (LSRA), Five Buttes EIS, and the Five Buttes BA did an extensive, in depth analysis of the Davis LSR. The full updated copies of these reports are on record at the Crescent Ranger District.

The Davis Late-Successional Reserve Assessment (DLSRA) was prepared by district personnel in 1995 to respond to objectives set for LSRs in the NWFP, in accordance with the NWFP direction, and cover the entire 48,900 acres of the Davis LSR. “The objective of the LSR remains grounded in NWFP direction: [LSR] are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl. These reserves are designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem (ROD C-11)” (Davis LSRA).

The DLSRA developed twenty-eight Management Strategy Areas (MSAs) based on existing habitat conditions and would guide management decisions based on land capability. Some MSAs are capable of providing northern spotted owl habitat while others were designated to emphasize other species or guilds such as black-backed woodpeckers, great gray owls, or bald eagles. For each MSA an existing condition, desired condition, objective, management options, and monitoring and evaluation elements were identified and documented in the LSRA.

The DLSRA was updated in 2007 in response to the 2003 Davis Fire with a drastically changed landscape condition and the advance of new fire and habitat models not previously available. Directly, the revised assessment gave greater acknowledgement to the role of fire and greater emphasis to prevention of large-scale loss of forest vegetation to fire, insect and disease through density management and strategic fuels treatments (Davis LSRA). The DLSR updates and new fire models were incorporated into the Five Buttes Environmental Impact Statement analysis with the new strategies summarized below:

1) establish and maintain strategically placed Fire Behavior Modification Areas to reduce the probability of large scale loss of habitats and territories from fire;
2) include more strategic fuels treatments along with density management to provide NRF and dispersal habitat over time, recognizing that these conditions will shift around the landscape as some areas fade out due to fires, disease, or insects, and as other areas are allowed to grow back into these conditions;
3) a shift away from trying to manage dry ponderosa pine sites for spotted owl habitat; to where large old growth Douglas-fir can be grown in the LSR, spotted owls would be the focal species and NRF habitat would be the short- and long-term habitat objective;
4) controlled access management due to the increase in recreational use and the ongoing reduction of road densities;
5) integrate the CHU objectives within the LSR because of the 2008 designation of Critical Habitat lies entirely within the boundaries of the DLSR.

Habitat analysis completed in 2007 for the DLSR Assessment showed six plant associations and one plant association group were deemed capable of developing into NRF habitat based on the NRF definitions.
currently used by the Deschutes National Forest. Capable means the stand types can support the mix and density of trees to produce NRF habitat below 6,000 feet elevation. Capable habitat was determined from a district-wide analysis of all 54 plant associations within nine plant association groups (PAGs). Those PAGs which currently provide the bulk of NRF habitat and have the productivity to produce the species and density of trees needed to produce NRF habitat were deemed capable. While NRF habitat may occur in stands that do not meet the “capable” definition they most likely developed due to fire suppression and are at even higher risk of “uncharacteristic” loss due to insect, disease, and wildfire than stands that meet the capable definition. The analysis found district-wide, over 92 percent of all NRF habitat was found in six plant associations in addition to all of the mixed conifer wet PAG (Appendix D, Davis LSRA 2007). The NRF capable plant associations and plant association group are described below by overstory or dominant tree species, co-dominants, understory trees if present, and dominant shrub species as described in the publication Plant Associations of the Central Oregon Pumice Zone (USDA 1988).

- **CR-S1-11 - Mixed Conifer/Manzanita.** Stands are rarely dominated by one conifer species but are usually a combination of Shasta fir, western white pine, mountain hemlock or lodgepole pine. White fir, ponderosa pine, and western white pine can be present as subordinates.
- **CW-C2-11 – Mixed Conifer/Snowbrush-Chinquapin/Brackenfern.** Ponderosa dominates overstory with Douglas-fir, white fir, incense cedar as understory co-dominants. Greenleaf manzanita usually subordinate to snowbrush and/or chinquapin.
- **CW-H1-11 – Mixed Conifer/Snowbrush-Chinquapin.** Tree overstory dominated by ponderosa pine on south aspects with sugar pine, white fir, Douglas-fir, or Shasta red fir mainly as regeneration or immatures but as co-dominants on north aspects.
- **CW-S1-14 – Mixed Conifer/Snowbrush.** Stands typically have ponderosa pine as dominant overstory with lodgepole pine and white fir as poles, regeneration and scattered overstory. Lodgepole pine and white fir may dominate on north slopes or more mesic environments.
- **CW-S1-15 - Mixed Conifer/Snowbrush/Sedge.** Lodgepole pine usually subordinate except after logging or burning. White fir, sugar pine, or Shasta red fir can be present as advanced regen or overstory.
- **CW-S9-11 – Wet mixed conifer**
- **CM-S1-11 – Mountain Hemlock/Grouse Huckleberry.** Whitebark pine, subalpine fir, western white pine or Shasta red fir often present in small amounts. Where the mountain hemlock PAG occurs below 6,000 ft. elevation and in transition with mixed conifer plant associations, it is capable of developing NRF habitat.

Approximately 21,000 acres of forest was burned with about 16,000 acres of that burned to a moderate or high intensity with 75-100% tree mortality. Only around the edges of the fire was there a mosaic of burn intensities with patches of live trees. Overall, the Davis Fire altered 24 percent of the Davis LSR and removed 3,736 acres of NRF habitat. Additionally, another 223 acres of NRF habitat was removed due to related suppression efforts within the LSR (USDA 2004).

Seventy-two percent of the Davis LSR is capable of growing NRF. The Davis LSRA team determined that 15-35 percent of the Mixed Conifer (MC) will be managed as NRF at any one time, reflecting a strategy in which climatic climax (disturbance prone) conditions are embedded into and dispersed about the landscape; this strategy allows for stochastic conditions and NRF to be cycled around the landscape.1

---

1 Supported by the *Scientific Evaluation of the Status of the NSO* (SEI Report) and comments from Eric Forsman and Dr. Jerry Franklin attending a B&B Fire Recovery Project Researchers Review field trip in 2003. For selected references from the SEI report and the content of researchers comments, refer to the Introduction section and Chapter 2.
Approximately 28 percent (9,900 acres) of the plant associations capable of achieving NRF are in an early seral condition. In Ringo management activities are focused on moving these stands types to a late stand condition where eventually they can be cycled into the pool of NRF habitat that is rotated across the landscape.

The LSRA team assumed that stands within 20 years of becoming NRF (that is, “near-NRF”) have two of the three stand attributes with one of them being the structural component that provides foraging habitat (that is, large trees). These stands are also in the pool of acres that could be cycled in and out of NRF. Therefore, about 19,267 acres (60 percent of MC-PP) or 39 percent of the LSR is managed for a combination of NRF and near-NRF, not counting any contribution from Mountain Hemlock (MH), 46 percent is managed for dispersal and 15 percent is maintained in open fire climax with some dispersal.

DLSR Table 1 was taken from the Davis LSR Assessment (Davis LSRA Table 3-3). DLSR Table 1 lists the desired condition for the Davis LSR. This strategy would maintain islands of NRF bordered by more open stands that are managed to alter fire behavior, and would cycle capable stands in and out of NRF on the landscape.

<table>
<thead>
<tr>
<th>PAG</th>
<th>Suitable Habitat</th>
<th>≥UMZ but &lt; Suitable</th>
<th>&lt; UMZ, &lt; Suitable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Climatic Climax (Range)</td>
<td>Acres (Range)</td>
<td>% Fire Climax** (Range)</td>
</tr>
<tr>
<td>MH 7,910 (16%)</td>
<td>70</td>
<td>5,537</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>(50-70)</td>
<td>(3,164-5,537)</td>
<td>(0-30)</td>
</tr>
<tr>
<td>LPW/LPD 9104 (19%)</td>
<td>50</td>
<td>4,552</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>(30-70)</td>
<td>(2,731-6,373)</td>
<td>(0-20)</td>
</tr>
<tr>
<td>MCW/MCD 30,715 (63%)</td>
<td>25</td>
<td>7,679</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>(25-45)</td>
<td>(7,679-12,822)</td>
<td>(15-35)</td>
</tr>
<tr>
<td>PPW/PPD 1,013 (2%)</td>
<td>60</td>
<td>608</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>(40-80)</td>
<td>(405-810)</td>
<td>(10-60)</td>
</tr>
</tbody>
</table>

**Fire Climax can be sustainable with the application of fire.
*Early-Mid Seral stage is not necessarily devoid of large trees.
PAG = plant association group; MH = mountain hemlock; LPW/LPD=lodgepole pine wet/dry; MCW/MCD=mixed conifer wet/dry; PPW/PPD = ponderosa pine wet/dry

There are no plant associations within the Davis LSR that can sustain spotted owl nesting roosting and foraging (NRF) habitat indefinitely. The original LSRA recognized that fact and set up goals in Davis LSRA Chapter 3 for the percent of the LSR, by PAG, that would be habitat at any given time (DLSR Table 1). Analysis from the updated DLSRA found that the percentage of the landscape that can exist as NRF habitat at any one time may be less than originally thought. This is due to the length of time it takes to grow back nesting habitat from a stand replacement event, such as a fire or extensive mortality of the

DLSRA-3
large trees from bark beetles. Another factor is that some sites previously identified as mixed conifer sites, such as those that occur on the south side of some buttes, are really ponderosa pine sites with little potential to provide suitable NRF habitat through time. Although these areas would continue to provide northern spotted owl dispersal habitat, they are better suited to be managed for late-successional species such as white-headed woodpeckers and flammulated owls while maintaining fuels conditions that minimize active crown fire.

Since NRF conditions are not sustainable in eastside fire-adapted ecosystems, the NRF present on the landscape would change locations through time. Over time for the DLSRA, the desired percentages of each PAG in the “sustainable” or “transitional” conditions will shift spatially throughout the LSR based on the existing conditions of vegetation and the associated habitats. In accomplishing this goal, NRF habitat would also shift spatially throughout the landscape keeping viable spotted owl habitat (NRF, near-NRF or dispersal) and connectivity on the landscape.

It is assumed that the disturbance events in NRF stands would set the stands back to mid-seral or early seral conditions. These stands would need to be managed for an appropriate mix of tree species and kept fairly well thinned (open grown) so they could grow back to large tree-dominated structures as quickly as possible. PAGs that are capable of producing large Douglas-fir will be managed for NRF. Most of the dry ponderosa pine habitat in the LSR is suitable as habitat for species such as white-headed woodpeckers and bald eagles. These stands have little or no potential to be suitable NRF for the northern spotted owl. Lodgepole pine and mountain hemlock (dry) areas also have little or no potential to be NRF for the northern spotted owl. These stands will be allowed to continue their natural disturbance processes in most areas.

To date 16 percent of the LSR is in NRF habitat. NRF habitat is primarily in Mixed Conifer Dry. **DLSR Table 2** depicts the distribution of NRF across the PAGs. Nonforest are those areas consisting of wet meadows, dry meadow/shrublands, streams, lakes, lava flows. NRF in these areas are forest encroaching on nonforest habitats.

**DLSR Table 2. Distribution of NRF habitat amongst the PAG within the Davis LSR**

<table>
<thead>
<tr>
<th>PAG</th>
<th>Acres</th>
<th>Acres of NRF</th>
<th>NRF as a % of PAG</th>
<th>NRF as a % of LSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPD</td>
<td>7,966</td>
<td>33</td>
<td>0.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>LPW</td>
<td>1,139</td>
<td>9</td>
<td>1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>MCD</td>
<td>30,020</td>
<td>6,569</td>
<td>22%</td>
<td>13.4%</td>
</tr>
<tr>
<td>MCW</td>
<td>700</td>
<td>114</td>
<td>16%</td>
<td>0.2%</td>
</tr>
<tr>
<td>MHD</td>
<td>7,909</td>
<td>1,122</td>
<td>14%</td>
<td>2.3%</td>
</tr>
<tr>
<td>PPD</td>
<td>653</td>
<td>72</td>
<td>11%</td>
<td>0.1%</td>
</tr>
<tr>
<td>PPW</td>
<td>359</td>
<td>70</td>
<td>19%</td>
<td>0.1%</td>
</tr>
<tr>
<td>NonForest</td>
<td>380</td>
<td>9</td>
<td>2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>ALL</td>
<td>49,126</td>
<td>7,998</td>
<td>16.3%</td>
<td></td>
</tr>
<tr>
<td>Totals with Sky²</td>
<td>49,126</td>
<td>7,884</td>
<td>16%</td>
<td></td>
</tr>
</tbody>
</table>

**DLSR Table 2** includes all harvest treatments completed from the Five Buttes EIS, except for the Sky timber sale. It is estimated to remove approximately 73 acres of NRF in MCD and 41 in MHD.

² Since the Ringo analysis areas was completed the FBI Sky timber sale has been dropped and as such the effects are no longer relevant.
Reducing total NRF within the LSR to 7,884 acres, from 8,000. Total NRF within the Davis LSR with the estimated reduction from SKY timber sale would be 16 percent with 22 percent within the MCD PAG. This is within the DLSRA Table 3-3 range of 15-35 percent of the LSR for desired condition of NRF habitat.

*Because Ringo does not propose to reduce NRF habitat, there will be no further analysis of NRF.*

Existing Condition
Alternative A Direct and Indirect Effects
*Measure:* Acres changes in habitat type within the Davis LSR.

DLSR Figure 1 depicts overlapping boundaries of the Ringo project area, Davis LSR, Davis LSRA management strategy areas (MSA), the Davis Fire, and the northern spotted owl CHU and home ranges. The Ringo project area overlaps 6,871 acres of the 48,900 acre Davis LSR and 6,859 acres of DLSRA MSAs (MSAs Q, R, S, T total 10,175 DLSRA acres). The Davis Fire burned 11,720 acres (24 percent) of the Davis LSR and Davis MSA F, H, L, M, N, O, P, Q, R, S, and V, partial or complete MSAs were lost (DLSR Figure 1). Overlapping Davis Fire and Ringo project area is 8,379 acres (22 percent). In total, there are 1,989 acres which overlap Ringo project area with the Davis LSR and the Davis Fire.
Within the overlapping portion of the Ringo project area, there are four DLSRA MSAs: MSA Q, R, S, and T (DLSR Figure 2). DLSR Figure 2 depicts the percentage of MSA within the project area. The four overlapping MSAs were designated for two different types of habitat, mixed conifer for northern spotted owl (MSA Q, S, and T) and lodgepole pine habitat for black-backed woodpeckers (BBWP) and northern spotted owl dispersal (habitat connectivity) (MSA R). The two types of MSAs are described below.

<table>
<thead>
<tr>
<th>MSA</th>
<th>MSA Type</th>
<th>Acres in Ringo PA</th>
<th>MSA Acres</th>
<th>Percent within Ringo PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSA Q</td>
<td>Spotted Owl</td>
<td>1396</td>
<td>4113</td>
<td>34%</td>
</tr>
<tr>
<td>MSA S</td>
<td>Spotted Owl</td>
<td>1528</td>
<td>2128</td>
<td>72%</td>
</tr>
<tr>
<td>MSA T</td>
<td>Spotted Owl</td>
<td>3167</td>
<td>3166</td>
<td>100%</td>
</tr>
<tr>
<td>MSA R</td>
<td>BBWP/Connect</td>
<td>768</td>
<td>768</td>
<td>100%</td>
</tr>
</tbody>
</table>

DLSR Figure 2. Percentages of Overlapping MSAs within the Ringo Project Area.

Currently not all of the MSAs within the Ringo project area are functioning, mainly due to the 2003 Davis Fire. DLSR Figure 3 illustrates the acres of each MSA (Q, R, S, and T) overlapping the project area and how many acres were burned over by the Davis Fire. Management Strategy Area Q was completely burned over by the Davis Fire. Management Strategy Area S was partially burned leaving 66 percent unburned. The MSA R was only partially burned over leaving 92 percent unburned. Management Strategy Area T was not burned over by the Davis Fire.
Currently the overlapping Davis Fire and MSAs are dominated by early serial species (e.g. manzanita and snow brush) with scattered saplings (from regeneration and planting) growing through the brush. Figure 4 depicts the amount of viable habitat acres within each MSA by plant association group (PAG) within the Ringo project area. Management Strategy Area Q was completely burned over by the Davis fire leaving no spotted owl NRF habitat. The Davis and part of Saddle Butte home ranges were within this MSA, but were lost due to the fire. For MSA R, the dominate PAG type is lodgepole pine, providing black-backed woodpecker habitat and scattered dispersal habitat for northern spotted owl. Only 59 acres were burned by the fire, leaving the majority of the MSA (768 ac) available for black-backed woodpecker nesting and foraging. Management Strategy Area S burned 523 acres of mixed conifer PAG type, leaving 1,003 acres (66 percent) of habitat to possibly contribute to NRF or dispersal habitat. For MSA T, the majority of PAG acres are within the mixed conifer, 3,111 acres. This MSA is currently providing NRF and dispersal habitat. In addition, the Ringo home range overlaps with MSA T.
Mixed conifer (MC) for northern spotted owls MSAs Type encompasses approximately 27,822 acers (56 percent) of the Davis LSR. The MSAs included within this type are C, E, F, K, P, Q, S, T, U, V, W, AA, and BB, of which the Ringo project area overlaps Q, S, and T. The MC MSA Type is comprised of areas with the highest site productivity and potential to produce and sustain NRF habitat over time. It contains areas that currently function as nesting, roosting and foraging habitat for the northern spotted owl as well as providing habitat for other old growth related species with similar needs. These include goshawk and great gray owls. Two home ranges within the DLSRA overlap with the Ringo project area Davis and Saddle Butte. However, Davis and Saddle Butte no longer function as a result of the Davis Fire. Although, all or large portions of NRF habitat within MSAs were also lost due to the Davis Fire, the main focus remains to develop habitat for the northern spotted owl.

The desired condition is to manage at least 60 percent of the remaining unburned area toward a climatic-climax condition through time maintaining 15-35 percent in NRF habitat. This requires a landscape-scale strategy to cycle in and out of NRF habitat while maintaining the large tree component throughout the cycle. The cycling from non-NRF, to near NRF to NRF (definitions following) across the landscape over time would reduce risk to large and contiguous blocks of habitat disturbance processes. The objective of these MSAs is to provide habitat for the spotted owl, which is relatively the most vulnerable to disturbance processes. (DLSRA 2007).
Near-NRF has potential for becoming NRF with the required stand attributes. This is further stratified to two areas long- and short-term. Long-term - it would generally take more than 20 years to become NRF. These are plantations (stands classified as in the early structural stage) that may not currently have any of the required stand attributes. Short-term - stands have most of the attributes in place. Canopy cover can be 25-40 percent. Modeling has shown most stands can acquire the missing component(s) and canopy cover (if less than 40 percent) within 20 years or less.

Those stands currently in an early successional stage (Davis Fire) would be managed under the appropriate fire regime until the trees are large enough to consider moving toward dispersal or NRF habitat. From a more active management scenario, not all the climatic-climax stands in these MSAs would remain static. Stands dominated by ponderosa pine and sugar pine, may be more appropriate to be cycled into a more open, fire-climax condition better suited for white-headed woodpecker and habitat. These stands would be incorporated into a landscape-scale fire risk reduction strategy, where ladder, canopy and ground fuels can be modified in a way to alter fire behavior and increase probability of initial attack forces containing the fire.

Mixed conifer should be managed to obtain or move towards the conditions identified in the NRF description and the mixed conifer climatic-climax suitable habitat as described in DLSRA. This includes allowing the LSR to continue functioning naturally, relatively unmanaged. (DLSRA 2007). For the Ringo project area the MC includes MSAs Q, S, and T. However, MSA Q and portions of S can no longer provide NRF habitat (refer DLSR Figure 4).

The Mixed Conifer MSA type is predominately comprised of mixed conifer, 68 percent, with a small portion of lodgepole pine, one percent (DLSR Figure 5). For the Ringo project area, mixed conifer PAG is outside of HRV. The mid seral medium to large tree dense stands (M5a) within this PAG are overstocked within stands that threaten to stagnate growth and development of late and old structure. These stands are also encroaching upon historic/current ponderosa pine stands and meadows. (DLSRA 2007)
The DLSRA is designed to maintain areas in a contiguous, multi-storied, forested condition throughout the LSR (DLSRA 2007). The Davis Fire burned over 31 percent of this MSA type, in both PAG types. Due to the severity of the fire, the 31 percent is no longer able to support NRF or dispersal habitat for the northern spotted owl. In the 31 percent vegetation is early seral stage, brush and with scattered small sized trees. Refer to Draft Ringo Forested Vegetation Report for current mixed conifer conditions.

Lodgepole (LP) habitat for black-backed woodpeckers and connectivity MSAs Type encompass 2,362 acres (8 percent) of the Davis LSR. The LP Type includes MSAs A, D, and R. The Ringo project area overlaps a small portion of this MSA, less than two percent, all of which is MSA R. They are mostly comprised of the lodgepole PAG and connect other large patches of late and old-structured suitable lodgepole habitat within the Davis LSR. The location and physiographic features of these areas also make them an important link for connecting existing spotted owl activity centers.

The Lodgepole Pine MSA type is predominately comprised of lodgepole pine PAG, 62 percent, with a smaller portion of mixed conifer PAG, 29 percent (DLSR Figure 4). The DLSRA is designed to maintain areas in a contiguous, multi-storied, forested condition throughout the LSR (DLSRA 2007). The Davis Fire burned over 31 percent of this MSA type, in both PAG types. Due to the severity of the fire, the 31 percent is no longer able to support NRF or dispersal habitat for the northern spotted owl. In the 31 percent vegetation is early seral stage, brush and with scattered small sized trees. Refer to the Draft Ringo Forested Vegetation Report for current lodgepole pine conditions.
The viable portion of MSA R is comprised of 68 percent of lodgepole pine PAG and 32 percent of mixed conifer PAG. This MSA portion of the DLSRA is designed to provide a lodgepole forest ecosystem that provides suitable late and old structural (LOS) habitat for black-backed woodpeckers, and dispersal habitat for northern goshawk and the northern spotted owl, at intermittent stages through its life cycle. The lodgepole pine PAG stands are composed of trees in the pole to small size classes, and while individual medium and large trees do occur in lodgepole pine it is rare that an area would contain enough of them to be classified as having medium or large tree structure. The lodgepole pine PAG within the Ringo project area is within HRV (Draft Ringo Forested Vegetation Report). The mixed conifer PAG stands are composed of small to medium-large sized trees. This PAG is the most departed from the HRV largely as a result of the higher productivity and fire suppression. (Draft Ringo Forested Vegetation Report).

Direct, Indirect, Cumulative Effects and Determination
Alternatives B and C - Action Alternatives

Approximately 516 acres of Davis LSR (MSA Q, R, S, and T) is proposed to be treated through HTH and SDT treatments. Action Alternatives would result in the removal of approximately 45 acres of dispersal habitat in the short-term within MSA R, S, and T. The majority of the proposed treatment stands in Davis LSR are young ponderosa pine stands. That along with their location makes them desirable for fire climax management. Approximately 172 acres of HTH and 230 acres of SDT would promote the ponderosa pine fire resilient species. The climatic climax stands are on the north side of Ringo Butte and have more true fir. The propose 110 acres of treatment in these stands would maintain the species diversity needed for NRF development.
Mixed Conifer (MC) for northern spotted owls MSA (Q, S, and T)
Ringo proposed treatments within the MSA Q, S, and T are the same for Alternatives B and C. DLSR Figure 8 depicts acres of treatments by MSA within the MC for northern spotted owl habitat type. Within the MC habitat type, Alternatives B and C propose HTH (148 acres) and SDT (339 acres) treatments. The SDT treatment proposes to treat the understory without removing any large trees. The HTH treatment would thin from below and remove some overstory trees, refer to the Draft Ringo Forested Vegetation Report.
DLSR Figure 8. Acres of Treatments by MSA within the MC for Northern Spotted Owl Habitat Type.

DLSR Figure 9 depicts acres of dispersal habitat within MSA S and T within Alternative B and C proposed treatment units. Management Strategy Area Q was burned over and does not provide MC old growth habitat, NRF, or dispersal habitat. SDT treatments, nine acres within MSA S and 67 acres within MSA, would not remove overstory, thus it would not remove dispersal habitat. Commercial treatment (HTH) within MSA S would potentially remove 39 acres of dispersal habitat, 14 percent of 269 dispersal acres. One acre of dispersal habitat within MSA T would be removed, less than one percent of 713 dispersal acres. Overall, Alternatives B and C would remove four percent, 40 out of 982 acres, of dispersal habitat within MSA S and T.

DLSR Figure 9. Acres of Treatments by MSA within the MC for Northern Spotted Owl Dispersal Habitat.
The HTH treated units would primarily thin from below removing the smallest trees, understory, first and until the desired density is achieved. This proposed treatment would remove more of the understory than the overstory and increase growth rate in the larger trees. Proposed HTH treatments would move stands toward climatic-climax suitable habitat. In the long term, treated stands would provide conditions for individual trees to grow larger and produce larger limb structures, encourage healthier multi-species understory, and be more resilient to risk events. In addition, treatments would allow for the cycling of dispersal and NRF habitat over time.

There are 8,057 acres of dispersal habitat within these MC MSAs. The Ringo project proposed to commercially treat (HTH) 40 acres, or less than one percent, of all dispersal habitat. The project would also treat 76 acres, or less than one percent, of dispersal with SDT treatment. These acres would remain as dispersal habitat post treatment.

Proposed treatments would not treat NRF and would leave unmanaged blocks of the dispersal throughout this MC habitat type. Within 20 to 30 years, the units would return to dispersal habitat providing better habitat conditions moving some stands towards NRF.

*Lodgepole Pine (LP) habitat for black-backed woodpeckers and connectivity MSA (R)*

There are no proposed treatments within LP for MSA R. However both Alternative B and C propose to treat 29 acres within mixed conifer PAG within this MSA. There are 27 acres proposed treatment of HTH and two acres of SDT. Of this only approximately 5 acres of dispersal habitat would be treated with HTH, removing the overstory within the short term. The Ringo project would not remove black-backed woodpecker habitat within the LP Type (MSA R).

For Alternatives B and C, approximately four percent of the MSA would be commercial treated within mixed conifer. Lodgepole pine habitat for black-backed woodpecker and connectivity would continue to be managed for black-backed woodpeckers on approximately 768 acres within the MSA R and on 2,203 for all of the Davis LSRA (MSA A, D, and R). The Ringo project would treat approximately one percent of mixed conifer within the MSA A, D, and R, leaving a large unmanaged block of the black-backed woodpecker and connectivity habitat type.

**Cumulative Effects**
The [Wildlife Intro Table 6](#), Present, and Reasonably Foreseeable Future Actions in the EIS was reviewed for cumulative effects. The Region 6 Invasive Plant EIS (2005) and Invasive Plant Treatments for the Deschutes and Ochoco National Forests and the Crooked River National Grassland – Final Supplemental EIS (2012), Deschutes and Ochoco National Forests and Crooked River National Grassland Travel Management Project EIS (2011), Seven Buttes EA (December 1996), Seven Buttes Return EA (July 2001), BLT EIS (2008), and Davis Fire Restoration Project (2003) are all part of existing condition and as such there would be no cumulative effects. The 2012 Crescent Roadside Firewood Strategy, Small Diameter Tree Thinning (2013), Crescent Lake Wildland Urban Interface Fuels Reduction (2004), Three Trails OHV (2010) project, Actions from the Marsh EA (2016), and the Forestwide Firewood CE (Future) do not overlap the Davis LSR and/or the Ringo project area and as such would have no cumulative effects.

The Five Buttes (2007) project does overlap the Davis LSR and Ringo project area and has yet to be fully implemented. The Five Buttes project has completed all but one timber sale, Sky, which is not within the project area nor the Davis LSR. Within the overlapping area of Five Buttes and the Ringo project area there are no active Five Butte units, including fuel treatment units. Therefore there would be no cumulative effects.
Conclusion
Alternative A
Alternative A effects to the Davis LSR and habitat of wildlife species, e.g. northern spotted owl, would be similar to that previously described. This alternative would not take any steps toward meeting the DLSRA objectives of cycling NRF habitat in the LSR over time. Encroachment of fire intolerant trees and stand density would continue to increase providing dense habitat, e.g. spotted owl or American marten.

Though Alternative A would continue to provide habitat, in the long term quality dense habitat would be diminished or replaced due to stochastic events. In the long term stand quality would reduce, stands would become too dense for some species, large trees would have a reduction in canopy due to stress and lack of room to grow, tree growth would slow, and the overall health and resiliency of the stand would diminish. Large tree components and the ability of stands to cycle NRF and dispersal habitat, dense habitat, across the landscape would diminish.

As evidenced in the Davis Fire there is the potential for large scale wildfire events to severely affect National Forest system lands in the east-Cascades province within the Davis LSR. Fuel loadings and stand density are higher than historical conditions on much of the planning area, increasing the risk for an additional large scale disturbance event (refer to Draft Ringo Forested Vegetation Report). Some of the most desired characteristics of stands (such as fire resistant large ponderosa pine and Douglas-fir) are at risk because the increasing true fir, fire intolerant trees species, component creating a structure that allows ground fires to reach the crowns of the larger trees. The Davis LSR Assessment found current encroachment of white fir and lodgepole, fire intolerant species, comprise the majority of second-story vegetation and are not considered suitable replacement trees. The Davis LSR Assessment (2007 revision approved by the Regional Ecosystem Office) found that the most immediate need within the LSR was to reduce the risk of large-scale effects of insect activity, disease or wildfire in the existing late- and old-structured stands. The Revised LSRA concluded that in some Management Strategy Areas there is an immediate need to reduce stand density and fuel loadings as well as modify fuel arrangements before habitat loss occurs in the late- and old-structured stands.

Alternatives B and C
Mixed Conifer (MC) for northern spotted owls MSA habitat type
The selection of either alternative would result in the removal of approximately 45 acres of dispersal habitat in the short-term within MSA R, S, and T. Overall, the Ringo project would remove less than one percent of dispersal habitat within the Davis LSRA MC northern spotted owl habitat type (MSA Q, S, and T). Within 20-30 years the treated stands would return to dispersal habitat (Draft Ringo Forested Vegetation Report). In the long-term, treatments promote growth in development of NRF conditions, they would cycled from dispersal to NRF within the Ringo project area portion of the Davis LSR.

Lodgepole Pine (LP) habitat for black-backed woodpeckers and connectivity MSA habitat type
There are no proposed treatments within LP for MSA R. The Ringo project would treat approximately one percent of mixed conifer within the LP habitat type. Post treatment, the Ringo project would leave a large unmanaged block of the black-backed woodpecker and connectivity habitat type across the LP MSA habitat type.

Per Davis LSRA, there needs to be a mix of conditions on this landscape to provide current and future habitat structures for a variety of wildlife species. Thus, by the design of the project, there will be areas on the landscape that remain at risk. See the Davis Late-Successional Reserve Assessment for further discussion.
**Consistency with the Davis LSR and LSRA**

There are no treatments proposed within NRF. There would be no change in the amount of NRF acres available within the MC habitat type. The Davis LSRA goal of maintaining, “…the highest site productivity and potential to produce and sustain NRF habitat over time...” and “It contains areas that currently function as nesting, roosting and foraging habitat for the northern spotted owl as well as providing habitat for other old growth related species with similar needs...” would be met by the Ringo project within NRF habitat.

**Mixed Conifer (MC) for northern spotted owls MSA habitat type**

The total 45 acres of dispersal habitat within the Davis LSR and MSAs (R, S, and T) which would be removed equates to less than one percent within the Ringo Project area and only trace amounts of acres on the Deschutes NF. In addition, these percentages do not take into account the Resource Protection Measure of retaining 15-20 percent of each treatment unit. The Ringo project would not remove, downgrade, or degrade NRF, connectivity, or dispersal habitat for the northern spotted owl. Ringo project would maintain those levels of dispersal and/or “Near NRF” within the DLSR Table 1, 0-30 percent of DLSR within MH habitat and 25-45 percent of DLSR within mixed conifer habitat, and within the Five Buttes EIS.

**Lodgepole Pine (LP) habitat for black-backed woodpeckers and connectivity MSA habitat type**

The Ringo project does not propose to treat lodgepole pine within the LP habitat for black-backed woodpeckers and connectivity MSA habitat type. Post treatment, the Ringo project would leave a large unmanaged block of the black-backed woodpecker and connectivity habitat type across the Davis LSR.

The Ringo project does not propose to remove spotted owl nesting, roosting, or foraging habitat. Resource Protection measure are in place to insure owl connectivity between home ranges, CHUs, LSRs, and NRF. The Ringo project would maintain the DLSRA strategy of maintaining, “…islands of NRF bordered by more open stands that are managed to alter fire behavior, and would cycle capable stands in and out of NRF on the landscape.” The DLSRA stated that this, “…strategy is more likely to retain habitat for spotted owls over the long-term than is the status quo.” Since no NRF is being removed the Ringo project would maintain those levels of NRF within the DLSR Table 1 (DLSR Table 3-3), 15 percent of DLSR within mixed conifer habitat, and the Five Buttes EIS.

Also, based on the interagency REO LSR Work Group’s review and recommendations, the REO concurs with the Deschutes National Forest’s conclusion that vegetation management activities in the Five Buttes project area on the Crescent Ranger District are consistent with the Northwest Forest Plan. The basis for the review was: Silviculture, risk reduction, and salvage treatments in LSRs are subject to REO review under the NWFP S&Gs (C-12-15). As required by the NWFP S&Gs (C-11), the Forest prepared a Late-Successional Reserve Assessment (LSRA). The Davis LSRA, which encompasses much of the Five Buttes project, was recently revised, reviewed, and found to be consistent under the NWFP S&Gs (C-11).

The Ringo project would maintain and incorporate those strategies listed within the DLSR summarized below:

1) *establish and maintain strategically placed Fire Behavior Modification Areas to reduce the probability of large scale loss of habitats and territories from fire;*
   
   There are two Fire Behavior Modification Areas which overlap the project area. Within these two, underburning and reduction of fuels treatments are proposed.

2) *include more strategic fuels treatments along with density management to provide NRF and dispersal habitat over time, recognizing that these conditions will shift around the landscape as some areas fade out due to fires, disease, or insects, and as other areas are allowed to grow back into these conditions*;
Ringo project proposed HTH, MLT, SDT, HIM and underburning treatments throughout the project area to reduce tree densities, tree species competition and fuel loading. As well as creating stands that would cycle through more resilient dispersal and/or NRF over time, where appropriate.

3) *a shift away from trying to manage dry ponderosa pine sites for spotted owl habitat; where large old growth Douglas-fir can be grown in the LSR, spotted owls would be the focal species and NRF habitat would be the short- and long-term habitat objective;*

The Ringo project proposes to manage for ponderosa pine where it is the dominate species and does not have NRF capabilities in the short and/or long term. Where stands have NRF capabilities, proposed treatments stands would be managed toward climatic-climax suitable habitat.

4) *controlled access management due to the increase in recreational use and the ongoing reduction of road densities;*

The Ringo project does not propose to increase recreation, nor does the project propose to open more roads.

5) *integrate the CHU objectives within the LSR because of the 2008 designation of Critical Habitat lies entirely within the boundaries of the DLSR.*

The Ringo project integrated CHU, LSR, and DLSR objectives within proposed treatments and Resource Protection Measures. The project will not treat NRF habitat. Where applicable, treatments would move stands toward climatic-climax suitable habitat. In the long term, treated stands would provide conditions for individual trees to grow larger and produce larger limb structures, encourage heathier multi-species understory, and be more resilient to risk events. In addition, treatments would allow for the cycling of dispersal and NRF habitat over time.

Alternatives B and C propose commercial thinning treatments within the Davis LSR. These treatments comply with the Regional Ecosystem Office (REO) Memorandum July 9, 1996 and September 30, 1996 - Criteria Exempting Certain Commercial Thinning Activities from REO Review and with the Regional Ecosystem Office Memorandum May 10, 2007 - REO Review of the Davis Late-Successional Reserve Assessment (April 2007 revision). In which they stated, for the current condition of the Davis LSR, “The composition, density and structure of these stands (while suitable for late-successional species of interest such as the northern spotted owl) make them less resilient to loss by stand-replacing events, such as fire or insect and disease. A major goal of management within the Davis LSR is to minimize the likelihood of an active crown fire event. If such an event occurred, timber stands would not be in a condition to sustain the event over large areas of the landscape, thus retaining valuable, suitable late-successional habitat that may be more vulnerable to loss.”

The Ringo project proposes commercial harvest (HTH) and thinning (SDT) to occur in Davis LSR stands created by even aged regeneration harvest within the last 50-60 years. These stands currently are overstocked, are composed primarily of ponderosa pine, and are single storied with simplified structures. Tree sizes averaged around 10 inch DBH with few if any trees larger than 20 inch DBH present.

Commercial thinning treatments consist of thinning from below with variable density components, including, heavily thinned areas or openings up to ¼ acre on 3-10 percent of each stand. This treatment would accelerate the development of late-successional conditions and make the future stand less susceptible to natural disturbances, like an active crown fire event. Where applicable, proposed treatments would manage for spotted owl habitat within dry ponderosa pine stands, as stated in the May 10, 2007 REO letter.