# United States Department of the Interior

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In Reply Refer to:
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AUG 19 2011

Memorandum

To: Field Office Supervisor, Roseburg Office, US Fish and Wildlife Service

From: District Manager, Medford

Subject: Submission of Medford BLM, Ashland and Grants Pass Resource Area FY 2011 Ashpass LAA BA

This Biological Assessment (BA) evaluates four timber sales (Jumpin Bean, Rio Climax, Bobar Thin, Robertson Salvage) that "may affect and are likely to adversely affect" (LAA) northern spotted owls. No effects to northern spotted owl critical habitat are anticipated. Listed plants and fish are evaluated under other consultation documents. No other listed species or critical habitats are affected.

Enclosed are *The Medford Bureau of Land Management (BLM), FY11 Ashpass LAA Biological Assessment*; Appendix A which lists Project design criteria for northern spotted owls; Appendix B and C, the Proposed Action Maps; and Appendix D, Rio Climax Owl Site History.

We request formal consultation from the US Fish and Wildlife Service that evaluates these projects. The District has been working with the Service on this BA since March 29, 2011 when these projects were first presented at a Level 1 team meeting. The Draft BA was submitted to the Level 1 team on June 22, 2011 and comments from the Level 1 team have been addressed in this final BA. The BLM anticipates our coordinated work with the Level 1 team have ensured the projects proposed in this BA will meet our joint obligations under the Endangered Species Act 7(a) 1 and 7(a) 2 to conserve habitat for endangered species, to avoid jeopardizing listed species and to avoid adverse modification of designated critical habitat.

For further information, please contact Robin Snider (541) 618-2496.

Attachments

# 2011 AshPass May Affect, Likely to Adversely Affect (LAA)

# Biological Assessment

**(Cite as AshPass LAA BA)**

*An Assessment of Effects to the Northern Spotted Owl*

*Medford District*
*Bureau of Land Management*
*July 2011*

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# 1. INTRODUCTION

The Medford District Bureau of Land Management (BLM) is submitting this Biological Assessment (BA) to the US Fish and Wildlife Service (Service) pursuant to Section 7 (a)(2) of the Endangered Species Act (ESA). Section 7 (a)(2) requires Federal agencies to consult with the Service to ensure their actions will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. Conservation measures described in this BA also meet obligations under Section 7 (a)(1) to conserve habitat.

This Biological Assessment (BA) describes and evaluates the potential effects from the Bobar, Jumpin Bean, Rio Climax and Robertson Salvage timber sales in two Resource Areas. The Rio Climax project will be divided into 3 smaller timber sales (Rio Rumble, Rio Sag, and Rio Power). They are all lumped together in this BA and will be referred to as Rio Climax. BLM requests formal consultation for projects we have determined *may affect, likely to adversely affect (LAA)* the northern spotted owl and concurrence for portions of those projects that *may affect, but is not likely to adversely affect (NLAA)* the northern spotted owl. No other listed terrestrial wildlife species are affected. No wildlife critical habitat occurs within the proposed action.

The effects on plants are evaluated in the FY 2009-2013 Programmatic Biological Assessment for Activities that May Affect the listed endangered plant species Gentner's Fritillary, Cook's Lomatium, McDonald's rockcress, and large-flowered wooly meadowfoam (USDI BLM 2008). Listed fish are evaluated in separate project level consultations.

## Consultation History

Bobar, Rio Climax and Jumpin Bean are new proposals, although some of the areas within these projects were proposed in other projects that never reached fruition. The 2010 NLAA BA (USDI BLM 2010) consultation originally evaluated Robertson Salvage for activities that would maintain habitat. Medford BLM is adding one unit to this project that "may affect and is likely to adversely affect" northern spotted owls. This project is being reinitiated in this consultation.

All projects in this BA were designed to conform to the 1995 Medford District Resource Management Plan (USDI 1995) and the Northwest Forest Plan (USDA USDI 1994a). There is currently ongoing litigation regarding BLM's land use plan. All projects will comply with the plan guidance in place at the date of the Record of Decision (ROD) for that project, however, projects will be consistent with the project descriptions and PDC's described in this BA, or that project will be presented to Level 1 for evaluation to see if reinitiation is necessary.

## Northern Spotted Owl Status Critical Habitat and Recovery Plan

The spotted owl was listed as threatened on June 26, 1990, due to widespread loss and adverse modification of suitable habitat across the owl's entire range and the inadequacy of existing regulatory mechanisms to conserve the owl (USDI FWS 1990a). Subsequent status reviews have reconfirmed that status (USDI FWS (SEI) 2004).

Final rule for revised designation of critical habitat for the northern spotted owl was published by the Service in the Federal Register and signed on August 12, 2008 (73 Federal Register 157:47326) and became effective on September 12, 2008. Critical Habitat includes the primary constituent elements that support nesting, roosting, foraging, and dispersal. Designated critical habitat also includes forestland that is currently unsuitable, but has the capability of becoming NRF habitat in the future (57 FR 10:1796-1837).

On June 30, 2011, the US Fish and Wildlife Service (Service) released the *Revised Recovery Plan for the Northern Spotted Owl (Strix occidentalis caurina)* (USDI FWS 2011). Recovery plans are not regulatory documents; rather, they provide guidance to bring about recovery and establish criteria to be used in evaluating when recovery has been achieved. The BLM continues to work with the Service to incorporate Recovery Goals and Actions consistent with BLM laws and regulations.

The BLM is a participant in the inter-organizational spotted owl working group (Recovery Action 1) and will continue demographic monitoring to address Recovery Actions 2 and 3. The BLM will incorporate other Recovery Actions to the extent possible. Recovery Action 32 (RA 32) recommends the maintenance of *all of the older and more structurally complex multi-layered conifer forests on Federal lands in order not to further exacerbate the competitive interactions between spotted owls and barred owl (USDI FWS 2010).*

The Rogue River-Siskiyou National Forest and the Medford District BLM developed an interagency methodology for identifying RA32 structurally complex forest stands (USDA, USDI 2010). The most current methodology (version 1.3, January, 2010) is being used to identify RA 32 stands in the proposed action area. RA 32 high quality habitat is older, multi-layered, structurally complex forests that are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees. This is a subset of NRF habitat and may vary due to climatic gradients across the range (USDI FWS 2010).

## Definitions

**Table 1. Northern Spotted Owl Breeding Periods**

| Entire Breeding Period | Critical Breeding Period | Extended Breeding Period |
|---|---|---|
| March 1-September 30 | March 1-June 30 | July 1-September 30 |

**Nesting, Roosting, and Foraging (NRF) Habitat** for the northern spotted owl consists of habitat used by owls for nesting, roosting, and foraging. Generally, this habitat is multistoried, 80 years old or older (depending on stand type and structural condition), and has sufficient snags and down wood to provide opportunities for nesting, roosting, and foraging. The canopy closure generally exceeds 60 percent, but canopy closure or age alone does not qualify a stand as NRF. Other attributes include a high incidence of large trees with various deformities (e.g. large cavities, broken tops, mistletoe infestations, and other evidence of decadence), large snags, large

accumulations of fallen trees and other woody debris on the ground, and sufficient open space below the canopy for owls to fly (Thomas *et al*., 1990).

In southwest Oregon, NRF habitat varies greatly, but is typified by mixed-conifer habitat, recurrent fire history, patchy habitat components, and a higher incidence of woodrats (a high quality spotted owl prey species). It may consist of somewhat smaller tree sizes. One or more important habitat components, such as dead down wood, snags, dense canopy, multistoried stands, or mid-canopy habitat, might be lacking or even absent in portions of southwest Oregon NRF. NRF habitat also functions as dispersal habitat.

**Dispersal Habitat** is a subcategory of "all dispersal" habitat for northern spotted owls. All-dispersal is defined as dispersal plus NRF. Throughout this document, "dispersal" will be used to describe dispersal-only habitat. Thomas *et al*., 1990, defined dispersal habitat as forested habitat more than 40 years old, with canopy closure more than 40 percent, average diameter greater than 11 inches, and flying space for owls in the understory and does not provide the components found in NRF. It provides temporary shelter for owls moving through the area between NRF habitats and some opportunity for owls to find prey; but it does not provide all of the requirements to support an owl throughout its life. Dispersal will be used throughout this document to refer to habitat that does not meet the criteria to be NRF habitat, but has adequate cover to facilitate movement between blocks of NRF habitat.

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

**Non-habitat** does not provide habitat for northern spotted owls and will not develop into NRF or dispersal in the future.

**Treat and Maintain NRF or Dispersal Habitat** is the treatment defined when an action or activity in NRF or dispersal habitat removes some trees, but does not change the conditions that would classify the stand as NRF or dispersal post-treatment, as defined by Thomas et al. (1990). The NRF stand will retain at least 60 percent canopy cover, large trees, multistoried canopy, standing and down dead wood, diverse understory adequate to support prey, and may have some mistletoe or other decay. Dispersal habitat will retain at least 40 percent canopy, flying space, and trees 11 inches diameter at breast height (dbh) or greater, on average. The habitat classification of the stand following treatment will be the same as the pretreatment habitat classification.

**Downgrade NRF** alters the condition of spotted owl NRF habitat so the habitat no longer supports nesting, roosting, and foraging behavior. Downgraded NRF habitat has enough tree cover to support spotted owl dispersal. Downgrade is defined when the canopy cover in a NRF stand drops to 40-60 percent at the stand level, and when conditions are altered such that an owl would be unlikely to continue to use that stand for nesting, roosting and foraging. Downgraded NRF continues to provide habitat for dispersal.

**Remove NRF** alters known spotted owl NRF so the habitat no longer functions as nesting, roosting, foraging or dispersal. Removal generally drops canopy cover to less than 40 percent,

alters the structural diversity and dead wood in the stand or otherwise changes the stand so it no longer supports owls for nesting, roosting, foraging, or dispersal.

## 2. PROPOSED ACTION

All projects in this BA occur in the matrix land use allocation. Matrix lands are Federal lands outside of reserves and special management areas that are available for timber harvest at varying levels (USDI BLM1995, 107). Matrix includes north and south General Forest Management Areas (NGFMA and SGFMA). Green tree retention ranges from 6 to 25 trees per acre following regeneration harvest in Matrix lands (USDI BLM 1995, 38-39).

The projects are scattered across several Section 7 watersheds (Table 4) within two spotted owl physiographic provinces: Klamath Mountains and Western Cascades. Section 7 watersheds were developed by the Level 1 team shortly after the spotted owl was listed as a logical area for evaluation when multiple projects are proposed (USDI BLM 2004). They are similar, but not identical, to HUC 5 watersheds.

We expect the projects to be implemented soon after the BO is received and National Environmental Policy Act (NEPA) compliance is completed. Projects would be implemented in FY 2011, 2012, 2013, or 2014. BLM defines implementation of timber sales as the date a project is sold. Harvest activities could take up to five years to complete. Project completion includes stand treatments for slash and reforestation. Once a sale is sold, purchasers usually have three years to complete the harvest, but contracts can be extended if seasonal clearances or other reasons delay their harvest. Purchasers have the option to log the entire sale in one season or they may log portions of the sale in different years. The Medford BLM anticipates the projects analyzed in this BA will be completed within a 10-year timeframe from the date of the BO. This timeline may be less if significant new science, litigation, or changes in effects, as determined through the Level 1/Level 2 team process, triggers reinitiation.

All projects are evaluated and analyzed with information current as of the date of this BA. Timber sales are administered by an Authorized Officer and Contract Administrator. All other contracts are administered at the local level by Contracting Officer Representatives (CORs) and Project Inspectors (PI) throughout implementation until the project work is completed, or implemented by BLM staff. Timber sales also have a contract clause (E-4) that authorizes stop work when Threatened and Endangered species are found on the timber sale or to comply with court orders. When (and if) a spotted owl or other listed species is found in the project area they are authorized to stop the work until the issue is evaluated further. If a spotted owl is found, biologists will review PDCs and the BO (or LOC) to confirm both NEPA and ESA analysis remain valid.

If the owl (or other listed species) was not analyzed in the BA, if the project area changes from what was originally analyzed in the BA, if a site has moved, or other information is inconsistent with what is authorized, the District coordinates with project proponents, contractors, managers, local biologists and the Level 1 team to ensure the project impacts remain consistent with the BA

and the responding LOC/BO. If not, the project will remain stopped until we implement one or more of the following:

- Modify the proposed action to ensure that impacts remain as described in the consultation documents;
- Impose seasonal protection (if necessary);
- Reinitiate consultation.

## 2.1 Description of the Action Area

The Action Area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). For this consultation, the Action Area is described in three section 7 watersheds. Section 7 watersheds are similar to HUC 5 watersheds and were delineated by the Level 1 team after owls were listed as an analysis scale for BAs analyzing many projects over a large distance and across several Resource Areas.

## 2.2 Description of the Projects

### *Actions common to all timber sales*

The projects in this BA were reviewed by the Level 1 team through meetings. The Level 1 team includes the Rogue River-Siskiyou National Forest Biologist, the Medford BLM District Biologist, and the Roseburg Fish and Wildlife Office Biologist. These projects were presented to the Level 1 team during the 3/29/11 Level 1 team meeting.

Large standing and down wood would be retained in all project areas to meet RMP (USDI BLM1995) standards and guides or better. Trees with bird nests, wildlife cavities, wide forks with flat nesting spots, or loose bark (bat roosts) would be retained. Large hardwoods would be retained.

All units will receive post-harvest fuels treatments to reduce potential increases in fuel hazard as needed. Post- harvest fuels treatments include selective slashing/hand pile burning, and under-burning within the first two years of harvest. Follow-up maintenance under-burns may occur 4-10 years post-harvest within the Wildland Urban Interface (WUI) to maintain a Fire Regime Condition Class (FRCC) of one or two.

**Project Design Criteria**

Project Design Criteria (PDC) are conservation measures developed to reduce disturbance impacts to listed species (Appendix A). Disturbance of listed wildlife species occurs when noise, smoke, vibration, or visual stimuli cause impairment of normal behavior. Mandatory PDC are measures applied to project activities designed to avoid the potential adverse disturbance effects to nesting birds and their young. Mandatory PDC will be incorporated into all activities as integral to the Proposed Action. PDC involving seasonal restrictions will be implemented unless

surveys, following approved protocols, indicate either non-occupancy or non-nesting of target species. Recommended PDC will be incorporated during project implementation when practical. If recommended PDC cannot be incorporated, the project will still be in compliance with this BA.

**Conservation Measures** were implemented to reduce impacts to spotted owls or critical habitat.

- Spotted owl habitat assessments were used to reduce impacts to NRF
- Protection of red tree vole, mollusk, great gray owl sites found during protocol surveys
- Protection of sensitive plants that occur in the treatment areas
- Project design that incorporated historic owl survey data assessments
- Protection of fragile soils
- None of the projects in this BA are located within CHU (USDI FISH AND WILDLIFE SERVICE 2008)
- None of the projects occur in Late Successional Reserves (USDA and USDI 1994b)
- RA 32 evaluations will have been conducted in all four projects prior to NEPA, according to the RA 32 evaluation criteria (USDA, USDI 2010). No harvest activities will occur in RA 32 stands, although yarding corridors or skid roads may occur if they would ensure the RA 32 characteristics would be maintained following treatment.
- No projects occur with Known Spotted Owl Activity Centers (KSOAC). KSOAC are the best 100 acres around northern spotted owl activity centers that were documented as of January 1, 1994 on Matrix and AMA lands, and are managed as Late Successional Reserves (LSR). The criteria for mapping these areas are identified on pages C-10 and C-11 of the Northwest Forest Plan Standards and Guidelines (USDA USDI 1994b).
- No spotted owl known site nest patches will be treated. Treatments will occur within two generated spotted owl sties, but if surveys locate owls, treatments in nest patches will either be dropped, or the proposed activity will be brought forward to Level 1 to evaluate if the activity requires reinitiation of consultation.
- If treatments are proposed in the core or home range of previously unknown owl sites that are found during surveys, the treatment will be modified or dropped, or will be brought forward to Level 1 to evaluate if the activity requires reinitiation of consultation.

**Table 2. Ashpass Proposed Action Summary**

| Project | Resource Area | Physiographic Province | Total Project Acres* (In BA) | LUA | Treatment type | Road building miles | RA 32 Treat |
|---|---|---|---|---|---|---|---|
| **Rogue Middle Section Seven Watershed** | | | | | | | |
| **Jumpin Bean** | Grants Pass | Klamath Mountains | 1880** | Matrix SGFMA and NGFMA | T | up to 0.2 miles | Possible yarding |

| Table 2. Ashpass Proposed Action Summary | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | **Resource Area** | **Physiographic Province** | **Total Project Acres* (In BA)** | **LUA** | **Treatment type** | **Road building miles** | **RA 32 Treat** |
| **Little Butte Section Seven Watershed** | | | | | | | |
| **Rio Climax** | Ashland | Cascades West | 948 | Matrix SGFMA | T | 2.65 in 6 segments | A |
| **Applegate Section Seven Watershed** | | | | | | | |
| **Bobar Thin** | Ashland | Klamath Mountains | 22 | AMA | T | None | NA |
| **Bear Section Seven Watershed** | | | | | | | |
| **Robertson Salvage** | Ashland | Klamath Mountains | 31 | Matrix SGFMA | T | None | NA |

A=Avoid TBD To be determined. All roads would comply with effects determinations and descriptions in this BA.
NA=Not applicable. No RA 32 stands occur in this project
*GIS acres rounded to nearest full acre
*Acres from 5/11/11 GIS calculation of E Baseline (Assali). All GIS acres are rounded to the nearest integer. Slivers less than 0.5 acres are deleted.
** Includes 221 acres of non-habitat treatment

## Bobar

Treatments within the three small units in this thinning project are designed to meet of 80 square feet per acre basal area to improve the health and vigor of residual trees and reduce the risks of losses due to wildfire. The sale is low elevation near homes. Homeowners in the area requested fuels reduction on BLM lands adjacent to their properties. All units are adjacent to existing roads. Unit sizes were determined by yarding distances. Heavy concentrations of logging slash would be hand piled and burned.

## Jumpin Bean

### Conservation measures specific to Jumpin Bean

- Approximately 1,200 acres of proposed harvest in suitable NRF habitat have been dropped from the original project footprint for reasons described in the Conservation Measures Common to All Alternatives section.
- Dry forest restoration (Johnson and Franklin, 2009) would reduce stand density, retain old trees (> 150 years), favor drought tolerant species, provide structural complexity (un-

thinned patches and small openings), and increase average stand diameter. These characteristics would increase stand resiliency to environmental disturbances (i.e. fire, insects, disease, and climate change).

- Project development and stand treatments revolved around trying to avoid adversely affecting spotted owls. Careful attention was focused toward avoiding the downgrade and removal of habitat within the home ranges of occupied owl sites.
- Owl surveys are being conducted to learn the occupancy status of areas that had little or no survey history. If owls are found during surveys, the associated units would be dropped or modified and brought to the Level 1 team to be consistent with the BA analysis as a result of the proposed action.

### *Timber*

**Variable Density Thinning (Douglas-fir Series)**: Retain overall stand basal area to within a range based on plant association and site productivity. Generally, average stand basal area would range between 80 and 120 square foot/acre (some sites may require slightly lower or higher retention based on productivity e.g., 60 or 140 square foot). Release old trees, hardwoods, ponderosa and sugar pines, and incense cedars. Leave a portion (± 15 percent) of the stand untreated to protect and/or provide ecologically significant features, habitat, hiding cover, and structure. Create gaps ranging in size from 0.25 to 1 acre (± 15 percent of stand, limiting 1 acre openings to every 6 or 7 acres) to stimulate regeneration of fire and drought tolerant tree species (retain structure within gaps such as large conifers and hardwoods. The prescription will be modified to retain additional canopy cover in treat and maintain units within the home range of known owl sites.

**Variable Density Thinning (Pine Series):** Retain low overall stand basal. Average stand basal area would range between 60 and 80 square foot/acre (retain 40 square foot where the goal is to restore an open stand with pine and oak dominance). Retain all old and healthy pines removing fuels and competing vegetation for two times the dripline of the crown radius. Provide clumps (± 15 percent) of stand untreated to protect and/or provide ecologically significant features, habitat, hiding cover, and structure. Retain up to 6 trees per acre of old trees and large healthy dominant Douglas-fir. The prescription will be modified to retain additional canopy cover in treat and maintain units within the home range of known owl sites.

### *Fuels Reduction*

**Biomass Removal**: Biomass is any dead or living vegetation in a fuels unit that is ≤ 8 inches dbh for conifers and ≤ 12 inches dbh for hardwoods. For slopes < 35 percent, mechanized low ground pressure machinery would cut, skid, haul or chip biomass. On slopes > 35 percent, biomass would be cable yarded.

**Selective Slashing -** Understory vegetation density would be reduced by cutting and spacing of conifers <8 inches dbh and hardwoods <12 inches dbh. Retained vegetation would be spaced 14-45 feet apart. Approximately 15 – 20 percent of the project area will be left untreated.

**Hand Piling and Burning** is typically used when underburning is not possible due to heavy fuel loads. All slash less than 7 inches diameter and longer than 2 feet would be piled by hand.

**Understory Burning (underburning)** is used where the objective is to maintain ≥80 percent of the overstory. Typically, burning occurs between fall and spring outside of project design criteria.

## Rio Climax

**Selective Thinning (ST**): **Designed to maintain northern spotted owl NRF**. Forest stands that are currently providing for northern spotted owl nesting, roosting, and foraging habitat would be thinned to maintain and in some cases promote NRF habitat function. Complex forest structure that forms NRF habitat consists of dead down wood, snags, dense canopy, multi-storied stands, or mid-canopy habitat. Southwest Oregon NRF habitat varies greatly and one or more of these habitat components might be lacking or even absent. Vegetative features of NRF habitat in southwest Oregon are typified by mixed-conifer habitat, recurrent fire history, and patchy habitat components.

Selective thinning in NRF habitat is designed to accelerate the growth of large trees while maintaining a minimum of 60 percent canopy cover at the stand level. Canopy cover is the proportion of the forest floor covered by the vertical projection of tree crowns. Canopy cover is usually estimated with devices like the moose horn, aerial photography, or remote imagery. Spacing of the residual (leave) trees would involve crown spacing off the healthiest dominant and co-dominant trees to achieve an average crown spacing range of 1-6 ft. (dripline to dripline) at the stand level. Trees targeted for removal should include those with crown ratios less than 30 percent, exhibit crown decline, narrow crown widths, and contribute least to the canopy layer. Trees that demonstrate these characteristics will be individually selected for removal, unless it compromises the required minimum canopy cover of 60 percent. Spacing of the residual trees would use the crown widths of the healthiest dominant and co-dominant trees to achieve an average relative density range of 0.35 to 0.55 (35 to 55 percent).

**Selective Thinning (ST): Maintain northern spotted owl dispersal habitat (DSP)**
Forest stands defined as northern spotted owl dispersal habitat would be thinned to ensure that the stand would retain dispersal characteristics post-treatment. Dispersal habitat is defined as forested habitat greater than 40 years old with an average tree diameter of 11 inches, a canopy cover of about 40 percent or more, and flying space for owls in the understory.

Spacing of the residual (leave) trees would involve crown spacing off the healthiest dominant and co-dominant trees to achieve an average crown spacing range of 3-15 foot (dripline to dripline) at the stand level. Trees targeted for removal would include those with crown ratios less than 30 percent, exhibit crown decline, narrow crown widths, and contribute least to the canopy layer. Trees that demonstrate these characteristics will be individually selected for removal to meet the required minimum canopy cover of 40 percent. Spacing of the residual trees would use the crown widths of the healthiest dominant and co-dominant trees to achieve an average relative density range of 0.25 to 0.45 (25 to 45 percent).

**Thinning in Non-Habitat or Outside of the 1.2 Mile Home Range Radius of NSO Sites**
Rio Climax occurs in the Western Cascades physiographic province. The average home range radius of owls in the Western Cascades physiographic is 1.2 from the northern spotted owl activity center (or nest site, if known). Treatments within the home range are limited to non-suitable habitat classified as non-habitat or capable habitat within the home range. Treatments outside home range boundaries would follow density management prescriptions in NRF or dispersal habitat. The primary objective of thinning is to improve tree vigor and growth for long-term forest production and to reduce the impacts of forest disease. Silvicultural prescriptions are based on site conditions that dictate forest types such as pine site, dry Douglas-fir, and mixed conifer using principles of density management.

Density management is typically prescribed for uneven-aged stands to widen the spacing of residual trees to promote the growth and structural development of the remaining trees. The current condition of these stands resulted from fire, insects, or harvest disturbance and has several layers containing multiple species. The healthiest dominant and co-dominant trees would be retained to meet an average relative density of 0.25 to 0.45 (25 to 45 percent) basal area. Basal area is the cross sectional area of all stems (measured at diameter breast height) per unit of measure.

**Pine site thinning**: These stands may have developed a substantial component of Douglas-fir as a result of fire exclusion. Stands have become overstocked and Douglas-fir mortality is common. Pines are best adapted to areas with southerly or easterly aspects and shallow soils. Pine stands are typically small in size and found on dry ridges and low elevations. The goal on these sites is the retention of existing large ponderosa pine and the release of understory pines. The treatments would leave the best, healthiest pine and remove the majority of Douglas-fir trees to allow pine to once again dominate the site.

- Leave 60-100 square foot basal area per acre of the largest healthiest species.
- Reduce competing vegetation from around healthy pines, oak, and incense cedar to ensure their survival.
- Protect exceptional hardwoods, defined as (oak trees 10 inches dbh and larger and madrone trees 16 inches dbh and larger having full live crown ratios of 30 percent or greater).
- Leave all codominant and dominant pine, cedar, and oak. Suppressed individuals can be cut.

**Dry Douglas-fir thinning**: Dry Douglas-fir stands are typically found on west, southwest, east, and southeast aspects in Douglas-fir plant associations. Douglas-fir is the predominant conifer species and ponderosa pine is often present in the stands. Treatments proposed for these sites would be thinned to a basal area range of 80 to 120 square foot (average 100) per acre. The larger healthier trees would be favored as leave trees. On dry ridges and sites in the “Douglas-fir - Poison oak” plant association, especially where manzanita is found, trees would be thinned to retain no more than 80 square foot basal area per acre.

**Mixed conifer thinning**: These stands are comprised of a mix of tree species including Douglas fir, ponderosa pine, sugar pine, incense cedar, and white fir. Thinning objectives for mixed conifer stands are to improve tree vigor and growth, maintain a larger proportion of Douglas-fir species while maintaining the highest diversity of mixed conifer species for the stand. Treatments proposed for these sites would be thinned to a basal area range of 100 to140 square foot (average 120) per acre. Species composition of the forest must be considered as well as individual tree physiology. Selection of treatment trees would be based on 1) species; 2) tree dominance; 3) age class or diameter; and 4) individual tree characteristics to meet a goal of 20 percent early seral species maintained in the mixed conifer forest stands (Franklin and Dyrness 1973).. Suitable sugar pine, Douglas-fir, incense cedar, and ponderosa pine (disease free, non-chlorotic, sugar pine, Douglas-fir, incense cedar, and ponderosa pine with crown ratios ≥ 30 percent) would be favored for retention over white fir.

**General guidance applicable to all silvicultural prescriptions**
Strive to create diverse vertical and horizontal stand structure by leaving trees of all crown classes with crown ratios of greater than 30 percent. Strive for stand diversity in regard to diameter classes, species composition, tree heights (crown classes), trees per acre, and the vigor of individual trees. Some diseased, forked-top trees, and dying and dead trees should remain.

Sugar pine, ponderosa pine, incense cedar, Douglas-fir, and white fir would be favored for retention, respectively to encourage the maintenance and establishment of fire resilient species.

### Robertson Salvage

This sale, originally analyzed in the 2010 NLAA BA (USDI BLM2010) as Robertson Salvage, didn't sell for economic reasons. The sale has been redesigned to add a second 11 acre density management unit that triggers reinitiation as an LAA proposal. All treatments occur in dispersal habitat. Treatments are designed to release the pine in the units because the stand is overly dense and trees are dead or dying. Units would be treated to meet 60 to 100 basal area, using individual tree mark methods.

# 3. ENVIRONMENTAL BASELINE

## 3.1 Status of Owls Range-wide

ESA regulations (50 CFR 402.02) states *the environmental baseline includes the past and present impacts of all Federal, state, or private actions and other human activities in the Action Area. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress. Such actions include, but are not limited to, previous timber harvests and other land management activities*.

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

Lint et al 1994, identified 14 sample demographic study areas to represent owl status across the range of the northern spotted owl. Three of these have been dropped and 11 demography areas remain (Forsman et al 2011 in press). Owl sites and productivity are annually monitored within these areas to:

- *Assess changes in population trend and demographic performance of spotted owls on federally administered forest lands within the range of the owl and .*

- *Assess changes in the amount and distribution of nesting, roosting, and foraging habitat and dispersal habitat for spotted owls on federally administered forest lands*

Medford shares one demographic study area, the Klamath, with Roseburg BLM and the Rogue River Siskiyou National Forest. The Southern Cascades demographic study area is the other nearby demographic area.

Metadata analysis evaluates population statistics of the owls in the demographic study areas. The last metadata analysis was completed in 2004, and a later metadata is available in draft (Forsman et al in press). Expected publication is July, 2011.

*Results of the data analyses from the demographic study areas were reported by Anthony et al. (2004). The objectives of the population status and trend analyses were to:*

- *Estimate age-specific survival probabilities and fecundity rates, and their sampling variances, for individual study areas.*
- *Determine if any trends in adult female survival and fecundity exist across study areas.*
- *Estimate annual rates of population change (λRJS)* (also known as lamda*) and their sampling variances for individual study areas and across study areas.*
- *Examine the demographic performance of spotted owl populations on the eight areas that are the basis of the monitoring plan on federal lands (Lint et al. 1999).*

*Estimates of the annual finite rate of population change (λ) were below 1.0 for all study areas, and there was strong evidence that populations on 7 of the 11 study areas declined during the study. For four study areas, the 95% confidence intervals for λ overlapped 1.0, so we could not conclude that those populations were declining*. (Forsman et al in press 2011) Two of those four study areas are the Klamath and Southern Cascades study area, indicating that finite rate of population change remains statistically stable, but that relationship is weaker than Anthony et al reported in 2006. Although the statistics have many assumptions, and the data on owls is complex, basic lambda can be interpreted as follows.

- $\lambda = 1$, the size of the population will not change
- $\lambda > 1$ , the population will grow
- l $< 1$, the population will decline

Fecundity, the number of females born to females known to have bred, is declining in the Klamath and Southern Cascades demographic study areas. *We concluded that fecundity, apparent survival, and/or populations were declining on most study areas, and that increasing numbers of Barred Owls and loss of habitat were partly responsible for these declines. However, fecundity and survival showed considerable annual variation at all study areas, little of which was explained by the covariates that we used.* Forsman et al (in press 2011) supports the combined conservation strategies of the NWFP and the 2008 Recovery Plan.

Causes of these patterns is difficult to ascertain given the methods used in the demographic studies and the number of influences known to affect spotted owls in certain areas: prey, weather, diurnal breeding patterns, amount of suitable habitat, age of birds, differences in numbers of birds from year to year, lag-effect and the presence of barred owls among other things. These parameters were evaluated as associations of the population parameters, but the associations were not consistent in all areas (Forsman et al 2011 in press).

## 3.2 Barred Owls

The 2011Revised Recovery Plan for the Northern Spotted Owl identifies competition from the barred owl as a threat to the spotted owl (USDI FWS 2011). Barred owls (Strix varia) are native to eastern North America, but have moved west into spotted owl habitat. Since barred owls are less selective about the habitat they use and the prey they feed on, they may be out-competing northern spotted owls for habitat and food. The effects of the barred owl on spotted owl survival and reproduction is unknown. Barred owls are detected opportunistically since we haven't conducted protocol surveys across the District. There is a trend of increasing numbers of barred owls across the range and also within the Medford District.

Incidental observations across the District and information from the demographic study area indicate that barred owls are increasing here as well as other places, but they may currently be at lower densities than other areas. Populations of barred owls are likely to increase over time. Impacts to spotted owls cannot be statistically evaluated to date, but observational data suggests direct competition with and aggressive displacement of spotted owls from prime nesting habitat.

Prior to May 2011, there had been only one single adult visual observation of a barred owl (in 2002) within the Jumpin Bean project area. In May, 2011, a barred owl was observed paired with a sparred owl (spotted owl/barred owl hybrid). Both spotted owl and great gray owl surveys will be done within the project area in the next several years. Based on our barred owl detections in the rest of the Grants Pass Resource Area, it is highly likely more barred owls will be observed within the Jumpin Bean project area.

Few recent surveys have occurred in or near the Ashland project areas: Bobar, Rio Climax, and Robertson Salvage. To date, no barred owls have been located in those areas, but that could be an artifact of limited surveys.

Forsman et al 2011 in press (pg. 99) reinforces the conservation concepts of the NWFP and the additional protections mentioned in the 2008/2010 Recovery Plans.

> *Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern Spotted Owls. In view of the continued decline of Spotted Owls in most study areas, it would be wise to preserve as much high quality habitat in late-successional forests for Spotted Owls as possible, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl (USDI Fish and Wildlife Service 2008), but we believe that a more inclusive definition of high quality habitat is needed than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of "old-growth" as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls.*
>
> *Second, we believe more information on competitive interactions between Spotted Owls and Barred Owls is needed.*

Projects in this BA were designed to comply with those concepts to the extent possible while trying to meet other legal mandates to provide forest products.

## 3.3 Status of Northern Spotted Owl Habitat in the Action Area

The environmental baseline for owls on the Medford BLM administered lands for the Action Area is current as of May, 2011. The environmental baseline was developed using existing information, field assessments by experienced wildlife biologists, Interagency Vegetation Mapping Project (IVMP) imagery from 1996 (as corrected through 2003), and several additional steps of refinements during project lay-out and evaluation. IVMP data is the source for information for non-BLM lands. Much of the forested habitat in the Medford BLM is mixed-age, mixed-conifer habitat, which makes it difficult to delineate listed species habitat using traditional photo or satellite imagery or by depending solely on data from the Forest Operations Inventory (FOI) BLM timber classification system or Microstorms, the silviculture data system. The environmental baseline used information from photos, field information, and FOI data to update the IVMP environmental baseline update. Field verified information was used for effects determinations for each project and for geographic information system (GIS) shapefile attributes. The environmental baseline was corrected to match the field-evaluated habitat used for project shapefiles when necessary. Modifications were incorporated in this BA as a result of field verifications during the planning process and corrections in the database unit boundaries.

The proposed projects are within two physiographic provinces, the Cascade West and Klamath Mountains. Harvest history and wildfire have influenced habitat conditions in both physiographic provinces and has played an important role in influencing successional processes

and creating diverse forest conditions. Atzet and Wheeler (1982) discuss fire as a key natural disturbance in the Klamath Province in southwestern Oregon. Within the Western Cascades Province, historical fire frequencies that are low or moderate in the northern part of the province are higher in the south (Moeur et al. 2005).

Spotted owl habitat patterns in these drier portions of its range are not continuous, but occurred naturally in a mosaic pattern (USDI Fish And Wildlife Service 2008). Agee (1993, 2003) and Hessburg and Agee (2003) characterized the historical wildfire regime as low- to mixed-severity with fire return intervals of less than 10 to 50 or more years, depending on local conditions.

Tables 3 and 4 summarize Federal and private ownership, as well as spotted owl habitat for the affected watersheds.

**Table 3. Environmental Baseline by Section 7 Watershed by Acre***

| SECTION 7 Watershed Acres | | | | | |
|---|---|---|---|---|---|
| | **Applegate** | **Bear** | **Little Butte** | **Rogue Middle** | **Total** |
| **BLM** | 148,407 | 26,750 | 54,868 | 214,227 | 444,252 |
| **Non BLM** | 344,478 | 204,341 | 183,722 | 386,096 | 1,118,637 |
| **Total Acres** | **492,885** | **231,091** | **238,590** | **600,323** | **1,562,889** |
| **BLM Habitat** | | | | | |
| **Habitat Category** | **Applegate** | **Bear** | **Little Butte** | **Rogue Middle** | **Total** |
| **Capable** | 51,308 | 4,155 | 17,943 | 60,527 | **133,933** |
| **Dispersal** | 22,164 | 2,000 | 6,186 | 43,400 | **73,750** |
| **Non-Habitat** | 12,171 | 9,314 | 14,148 | 10,117 | **45,750** |
| **NRF** | 62,660 | 10,892 | 16,187 | 100,183 | **189,922** |
| **Total** | **148,303** | **26,361** | **54,464** | **214,227** | **443,355** |

* Habitat estimated from IVMP data (USDI 2008) and is not entirely compatible with Environmental baseline acres used by BLM. Minor field-verified corrections occurred in Grants Pass in preparation for this BA. All acres rounded to nearest integer. Non-NRF could not be accurately delineated from IVM data. Non-NRF is likely to be a combination of second growth forest too young/ open to qualify as NRF, and some could be non-habitat (water, rock, meadow). BLM does not track non BLM habitat.

**Table 4. Non BLM Lands by Section 7 Watershed in Acres***

| **Habitat Type** | **Non-BLM Ownership** | **Applegate** | **Bear** | **Little Butte** | **Rogue-Middle** | **Total** |
|---|---|---|---|---|---|---|
| **NRF** | Other Federal | 84,308 | 10,780 | 23,271 | 15,191 | **133,550** |
| | Private | 29,657 | 11,776 | 3,057 | 66,232 | **110,722** |
| | State | 380 | 256 | | 2,213 | **2,849** |
| **Total** | | **114,345** | **22,812** | **26,328** | **83,636** | **247,121** |

Other Federal US Forest Service, Corps of Engineers
State State-not classified, Oregon Department of Forestry

Spotted owl sites used in this BA are based on historic information, protocol surveys, incidental observations, or computer generated sites as discussed in the Methodology for Estimating the Number of Northern Spotted Owls Affected by Proposed Federal Actions (OEM) (USDI *et al.* 2008). The numbers of spotted owl sites (documented and generated) that are associated with the Action Area are summarized in Table 5 by Section 7 watershed.

**Table 5. Spotted Owl Sites by Section Seven Watershed**

| **Watershed** / **Type of site** | **Number of owl sites (centers) within watershed boundary *** |
|---|---|
| **Applegate** | SOC by watershed |
| Primary | 84** |
| Alternate | 0 |
| **Bear** | |
| Primary | 25 |
| Alternate | 4 |
| **Little Butte** | |
| Primary | 28*** |
| Alternate | 6 |
| **Rogue Middle** | |
| Primary | 145 |
| Alternate | 5 |
| **Total Sites in Analysis Area** | **184** |

*Primary sites are those identified by biologists as most likely to be used by owls during the project implementation. Generally these are the most recent site where reproductive activity was noted. Alternate sites are locations of owls that met site definitions historically according to spotted owl survey protocols in place at the time of the survey. Often birds at historic sites moved to alternate sites after harvest activities near the original site. Although not all owls were banded, alternate status was assigned if site-specific evaluation led biologists to determine that one or more owls had moved from or used another nearby site. The lack of alternates does not necessarily indicate an alternate location wasn't used by owls in years BLM did not survey. Rather it may be an artifact of incomplete historic survey data. Alternate documentation may be an under-representation of the number of alternative site locations.
** This number represents BLM sites and Forest Service Sites adjacent to BLM land within the Section 7 Watershed. There are likely more owl sites on FS lands in the interior of this watershed that aren't included.
***Little Butte includes new site: 35630.

Most of these sites have not been surveyed recently. The proposed projects are located in the Klamath Mountains Province except for approximately 110 acres located in the Western Cascades Province.

# 4. EFFECTS OF THE PROPOSED ACTION

## 4.1 Effects Analyzed By Owl Sites

Project design criteria (Appendix A) will be applied to all sites within or adjacent to project units to reduce or eliminate the impacts from potentially disturbing noise or activity near owl sites. Harvest activities within owl sites would occur outside the critical nesting period (Appendix A, Table A) to avoid adverse impacts to nesting birds due to noise and activity. Once young have fledged, both adults and young are able to move to a different portion of their home range if those activities bother them. See section 3: Actions common to all timber sales.

The proposed action may adversely impact northern spotted owls by downgrading NRF habitat to dispersal. Owl sites are analyzed at the nest patch, core area, and provincial home range scales. Northern spotted owl site occupancy is defined as locations with evidence of continued use by spotted owls, including breeding, repeated location of a pair or single birds during a single season or over several years, presence of young before dispersal, or some other strong indication of continued occupation. Documented spotted owl sites are tracked in the BLM northern spotted owl database. A spotted owl site may include one or more alternate nest sites. Historic site activity has been evaluated in the design of projects and in this BA analysis, but not all habitat has been surveyed to protocol.

This BA uses the interagency Northern Spotted Owl Estimation Methodology for Incidental Take (USDI et al 2008) to estimate if habitat outside of known/historic sites could support additional spotted owl activity centers. The methodology relies upon known spotted owl locations derived from surveys as the foundation for a “northern spotted owl occupancy” map (NSOOM. Generated sites are based on the amount and distribution of suitable owl habitat (on Federal and non-Federal land) and best available information on known owl locations and spacing patterns for that area. The NSOOM is liberal in determining “suitable” habitat. Field evaluations indicate that some of the “suitable” habitat used to generate a site is very low quality NRF, or may better meet dispersal definitions.

**Provincial Home Range** is defined, for analysis purposes in this document, by a circle located around an activity center and represents the area owls are assumed to use for nesting and foraging in any given year. Provincial home range radii (provincial radius) vary based on the physiographic province in which they are located: Klamath Mountains Province = 1.3 miles (3,396 acres), and Western Cascades Province = 1.2 miles (2,893 acres). The provincial home ranges of several owl pairs may overlap.

**Core Area** is a 0.5-mile radius circle (approximately 500 acres) from the nest or center of activity to delineate the area most heavily used by spotted owls during the nesting season; it is included in the provincial home range circle. Core areas represent the areas that are defended by territorial owls and generally do not overlap the core areas of other owl pairs (USDI et al. 2008).

**Nest Patch** is the 300-meter radius (70 acres) around a known or likely nest site. Nest patch is included in the core and home range area (USDI et al. 2008).

### 4.1.1 Site Descriptions for Effects to Individual Owl Sites and NRF Habitat

**Table 6. Owl NRF Analysis by Sale**

| Project | Nest PRE Percent | Nest Post Percent | Core PRE Percent | Core Post Percent | Home Range Percent | Home Range Post Percent |
|---|---|---|---|---|---|---|
| ***Threshold*** | ***Any downgrade/removal*** | | ***50 percent*** | | ***40 percent*** | |
| **Bobar** | | | | | | |
| 136 G | 47 | 47 | 57 | 57 | 46 | 45 |
| **Rio Climax** | | | | | | |
| 0967O | 45 | 45 | 42 | 42 | 18 | 18 |
| 0968O | 71 | 71 | 41 | 41 | 32 | 32 |
| *1944O* | 47 | 47 | 32 | 32 | *20* | *19* |
| *1956O* | 13 | 13 | *24* | *24* | *13* | *12* |
| 2075O | 57 | 57 | 39 | 39 | 30 | 30 |
| 2262O | 54 | 54 | 24 | 24 | 10 | 10 |
| *2393O* | 43 | 43 | 36 | 36 | *24* | *20* |
| 2405O | 33 | 33 | 27 | 27 | 14 | 14 |
| 3563O | 14 | 14 | 5 | 5 | 19 | 19 |
| 4464O | 22 | 22 | 30 | 30 | 17 | 17 |
| **Jumpin Bean** | | | | | | |
| 0886O | 46 | 46 | 36 | 36 | 30 | 30 |
| 2230O | 27 | 27 | 24 | 24 | 30 | 30 |
| 2258O | 48 | 48 | 48 | 48 | 35 | 35 |
| 2628A | 36 | 36 | 55 | 55 | 47 | 47 |
| 2658O | 64 | 64 | 57 | 57 | 37 | 37 |
| 3289O | 66 | 66 | 74 | 74 | 51 | 51 |
| 3291A | 47 | 47 | 63 | 63 | 22 | 22 |
| 38G | 67 | 67 | 67 | 67 | 48 | 48 |
| 4042O | 70 | 70 | 68 | 68 | 44 | 44 |
| *42G* | 61 | 61 | *46* | *34* | *28* | *26* |
| 4383O | 61 | 61 | 56 | 56 | 43 | 43 |
| *45G* | *43* | *11* | *27* | *22* | *36* | *32* |
| *46G* | *65* | *18* | 77 | 65 | 52 | 46 |
| 47G | 36 | 36 | 39 | 39 | 28 | 28 |

*Italics indicate sites that drop below thresholds due to project treatment downgrade. Capable and non-habitat treatments are not shown.*

All percentages are rounded to nearest decimal place
Assali OEM 2011 LAA BA HR Analysis.xlsx
Assali OEM 2011 LAA BA Core Analysis.xlsx
Assali OEM 2011 LAA BA NP Analysis.xlsx

**Bobar:** One generated site, 136G, occurs within the boundaries of this project. Treatments would downgrade NRF from the home range scale (Table 6), but post-treatment acres remain at 45 percent.

**Jumpin Bean: Sites # 42G, 45G, and 46G**

Jumpin Bean is within the home ranges of 9 historic owl sites five generated sites based on the NSOOM (for a total of 14 sites). NRF thresholds (USDI 2008) at the home range and core scale would be affected at only two generated sites: 42G and 45G in unsurveyed habitat (Table 6). Pre-treatment NRF acres on federal lands are already below the OEM thresholds at these two sites. Proposed treatments at a third generated site, 46G, would reduce NRF at all scales, but would not drop below the OEM threshold at the core and home range scales. Approximately 56 acres of NRF downgrading would occur in the nest patch of sites 45G and 46G.

Generated points are based on a computer simulation that may not reflect actual spotted owl locations on the landscape (USDI 2008). Protocol surveys, using the most recent protocol (USDI FWS 2010) will be initiated in 2011 for all NRF within 1.3 miles of the affected units within all three generated owl sites to determine occupancy status of these areas. Surveys will continue over the next two to five years, depending on the harvest schedule. BLM does not anticipate that surveys will find the three generated sites to support owls close proximity to known owl sites and the likely overestimate of NRF habitat on the baseline GIS layer compared to what would be identified from field verification in areas outside of proposed units. If owls are found during surveys, the associated units would be dropped or modified and brought to the Level 1 team to be consistent with the BA analysis as a result of the proposed action.

**Jumpin Bean: Historic Sites**

Treatments in the 9 historic sites would maintain habitat at the home range and core scales. No treatments would occur in these nest patches. Two of these sites also have alternate sites (0886O and 3291A), but the more accurate locations are used in Table 6 and are based on historic survey information and knowledge of the habitat. The habitat affecting the alternate sites is being surveyed as part of the general site surveys. If owls are located during those surveys, the units would be dropped or modified to avoid harm to the generated sites. These modifications which would avoid harm for the generated sites, would also avoid harm for these alternate sites.

**Jumpin Bean Surveys in unsurveyed suitable habitat**

BLM proposes approximately 128 acres of NRF downgrade outside of known or generated spotted owl home ranges. It is unlikely there is enough habitat to support spotted owls because the units are in a relatively isolated NRF stand and are surrounded by non-habitat Jeffery Pine stands, and young stands (capable) on private lands. In the spring of 2011, a great gray owl pair was found in this NRF stand, but no nest has been found to date (July, 2011). BLM will survey for spotted owls in NRF habitat in this area if it’s determined that great gray owls are not occupying the stand. If we find a great gray owl nest in this stand, BLM will consider this area occupied by great gray owls and we will discontinue spotted owl surveys. Additional acres would be dropped from the proposed action to mitigate effects to the great gray owls.

**Rio Climax:** Rio Climax intersects the home ranges of nine historic owl sites. No alternate locations are known to occur, but survey data hasn't been consistent, so alternative nest site data should be considered incomplete. Most treatments would maintain habitat by thinning heavily-stocked stands to more sustainable levels. Rio Climax proposes to downgrade NRF from the home range of three sites: 1944O, 1956O, and 2393O. No NRF downgrade would occur in the core or nest patch of any of these sites. Of the three sites, Site 2393O is the only site with treat and maintain proposed within the core (29 acres in NRF habitat and 6 acres in Dispersal habitat). Surveys are not planned in this area. Appendix D shows the site history of owl sites affected by Rio Climax.

**Robertson Salvage:** This sale, which has two small units adjacent to existing roads doesn't intersect any known or generated owl sites. It is located near Talent, Oregon and surrounding private lands are largely rural agriculture, orchards and vineyards, and pasturelands. The lack of habitat on private and the low amount of habitat on federal land in the vicinity of Robertson Salvage may be responsible for the lack of historic spotted owls in the area. The NSOOM did not generate any sites in or near Robertson Salvage.

## 4.2 Effects analyzed by Habitat

We describe potential effects of habitat change as compared to the current environmental baseline. The effects to NRF and dispersal habitat are summarized in Tables 7, 8, and 9.

The proposed projects listed in this BA are still in planning. It's likely that the effects to habitat described in the following tables would be reduced at the time of the NEPA Decision Record or Timber Sale because it's anticipated that acres will be dropped for various reasons including the identification of RA32 habitat or logging feasibility issues.

**Table 7. Effects of NRF Downgrade by Section 7 Watershed (BLM Ownership)**

| | Pre-Project | Downgraded | Post-Project | % Changed |
|---|---|---|---|---|
| **Applegate Section 7 Watershed** | | | | |
| Bobar Thin | 177,005 | 22 | 176,983 | - < 0.01% |
| **Rogue Middle 7 Watershed** | | | | |
| Jumpin Bean | 183,819 | 423 | 183,396 | -0.2% |
| **Little Butte Section 7 Watershed** | | | | |
| Rio Climax | 42,515 | 148 | 42367 | - 0.3% |

**The BLM has determined the downgrading of 593 acres of NRF habitat associated with these projects is likely to adversely affect (LAA) northern spotted owls because:**

- Thinning that downgrades suitable NRF habitat to dispersal habitat would remove key habitat elements (high percent of canopy cover, multiple canopy layers, and hunting perches.

- The removal of these key habitat features would reduce the nesting, roosting, and foraging opportunities for owls within the Action Area, and may lead to increased predation risk by exposing owls to other raptors.

- Downgrading of NRF to dispersal would reduce the amount of existing NRF slightly in three of the Section 7 Watersheds (Applegate < 0.01% reduction, Rogue Middle 0.2% reduction and Little Butte 0.3% reduction).

Thinned stands are expected to return to NRF habitat much more rapidly in comparison to stands treated with a regeneration harvest prescription because more of the key habitat features are retained after a typical thinning operation (Zabel *et al*. 1992, Davis *et al.* 2007

This small loss would not preclude owls from nesting within these watersheds in the future because the proposed treatments are relatively small and are dispersed throughout three watersheds. The proposed actions were designed to avoid NRF habitat removal in nest patches and core areas of all historic sites within the Action Area. Between 99.9 and 100 percent of the existing BLM managed NRF habitat within each watershed would still be available post-harvest and would continue to provide nesting habitat for spotted owls.

Stands identified for thinning will have smaller, less vigorous trees harvested. Thinning will reduce the number of trees to levels that the site has water and nutrients to sustain. Thinning increases average stem diameter, crown width, and tree growth rate, and enhances overall tree vigor (Hann 2003). Thinning and prescribed fire can reduce surface fuels, reduce crown density, and manage surface fuels to increase the likelihood that the stand can withstand a wildfire (Agee and Skinner 2005).

**Table 8. Effects to NRF from Treat and Maintain Treatment by Section 7 Watershed (BLM Ownership)**

| Project | Pre-Project | Treated and Maintained | % Treated |
|---|---|---|---|
| **Little Butte Section 7 Watershed** | | | |
| Rio Climax | 42,515 | 287 | 0.7% |
| **Rogue Middle Section 7 Watershed** | | | |
| Jumpin Bean | 183,819 | 449 | 0.2% |

**The BLM has determined the maintenance of 736 acres of NRF habitat associated with these projects is not likely to adversely affect (NLAA) northern spotted owls because:**

- The conditions that characterize a stand as NRF would be retained following treatment.

- Removal of suppressed and dying trees and providing additional space to residual trees will aid their diameter and height, which should make the stand conditions better for owls as the stand recovers, vs. the overly dense pre-treatment condition.
- Treated stands would be more suited to the water and light available to the site.
- Components important to owls such as large standing and down wood and large hardwoods would be retained. The percent of NRF treated in the action area is low.

**Table 9. Effects of Removal or Maintenance Treatments to Dispersal by Section 7 Watershed (BLM Ownership)**

| Project | Dispersal | | | | | |
|---|---|---|---|---|---|---|
| | Pre-Project | Removed | Maintained | Added* | Post-Project | % Changed |
| **Applegate Section 7 Watershed** | | | | | | |
| Bobar Thin | 22,164 | 0 | 0 | 22 | 22,186 | + < .1% |
| **Bear Section 7 Watershed** | | | | | | |
| Robertson Salvage | 2,000 | 31 | 0 | 0 | 1,969 | - 1.55% |
| **Little Butte Section 7** | | | | | | |
| Rio Climax | 6,186 | 0 | 280 | 148 | 6,334 | +2.4% |
| **Rogue Middle Section 7 Watershed** | | | | | | |
| Jumpin Bean | 43,400 | 19 | 768 | 423 | 43,804 | +0.9% |
| **Total Dispersal Effects** | | **50** | **1,048** | **593** | | |

* NRF downgrade increases dispersal-only acres.

**The BLM has determined that the maintenance of 1,048 acres of dispersal habitat associated with these projects may affect, but is not likely to adversely affect (NLAA), northern spotted owls because:**

- Canopy cover in treated stands will be maintained at 40 percent and would continue to function as dispersal habitat.
- These treatment acres would be expected to continue to provide dispersal opportunities post-treatment and may improve the flying space of the post-treatment dispersal.
- The proposed treatments will be dispersed throughout the watersheds to minimize the potential for adversely affecting spotted owl dispersal.
- Maintenance activities within dispersal would not remove the large standing and down wood and large hardwood components important to the dispersal of owls, and would make the residual habitat healthier and more ecologically sustainable over time.

**The BLM has determined that the removal of 50 acres of dispersal habitat associated with these projects may affect, but is not likely to adversely affect (NLAA) northern spotted owls because:**

- Variable Density Thinning harvest in Jumpin Bean that does not maintain 40% canopy cover would remove the existing multi-canopy, uneven age tree structure.
- The removal of 31 acres in Robertson Salvage would remove dead and decadent fir, protect existing pine more suited to the site and release additional understory pine.
- Removal of dispersal habitat will occur outside of any home range, core, or nest patch scale.
- The removal of dispersal habitat would be less than one percent in the Rogue Middle Section 7 watersheds and less than two percent in the Bear Section 7 Watershed. The stands selected for dispersal removal would be expected to re-gain dispersal characteristics within 15-20 years, at which time the stand would be healthier, more suited to ecological site conditions and have less standing mortality.
- The proposed treatments will be dispersed throughout the watersheds to minimize the potential for adversely affecting spotted owl dispersal.
- There would be a gain of between 0.1 and 2.4 percent of dispersal-only habitat in the watersheds because NRF downgrade retains dispersal qualities.
- Since dispersal habitat is widely distributed and abundant throughout the Action Area, the Medford BLM determines that changes to dispersal habitat outside CHU would avoid adverse effects.

## 4.3 Effects to Spotted Owl Prey

The northern flying squirrel, red tree vole, dusky-footed woodrat, and bushy-tailed woodrat are important prey of the northern spotted owl in this action area. Spotted owl prey relationships are complex and prey-switching may be important (Courtney et al 2004). Timber harvest and fuels reduction projects may impact foraging by changing habitat conditions for different species of prey. The Jumpin Bean Variable Density Thinning harvest and Rio Climax NRF downgrade units that don’t maintain 40% canopy cover, would reduce habitat quality for arboreal prey species (flying squirrels and red tree voles), but may improve habitat for ground and tree-nesting species (woodrats), and non-arboreal species (western red backed voles and deer mice) (Courtney et al 2004, Section 7-2 Thinning).

The results of treatment on owl habitat depends on the current stand condition (and how close it approximates old-growth characteristics considered important to owls), how many trees are removed, the residual overstory, the aerial extent of the treatment, the residual decadence of standing and down wood, the canopy complexity, the time of year the treatment occurs, and the type of tree removal. PDC and normal operating procedures applied by the Medford BLM reduce the impacts to the extent possible, while still facilitating tree harvest and other projects. Opening a stand through tree harvest can also provide more light to the ground and increase understory trees and shrubs.

Treatment sizes are relatively small (less than 40 acres, many less than 20), will retain untreated patches for special status species, riparian vegetation, and other constraints. None of the

treatments completely remove habitat. We anticipate that overall impacts of the proposed action on prey will not adversely affect spotted owls in the area. Flying squirrel habitat may be reduced in quality in some places, but those same places are likely to maintain or improve woodrats and other small mammals (Courtney et al 2004). BLM maintains large standing and down wood in all treatments, which is important to flying squirrels (Carey et al 1999), and maintains hardwoods and multi-layered canopies as a design feature in projects. Maintaining a multi-layered canopy will somewhat ameliorate the adverse effects of thinning flying squirrel habitat (Carey et al 1999).

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

Some information suggests that there may be negative impacts of thinning on flying squirrels in young stands and highly thinned stands, although few studies looked at the type of thinning in mixed conifer habitats analyzed in this BA (Holloway and Smith 2011). Flying squirrel densities are correlated with high cavity density, large amounts of hypogenus fungi, and crown class differentiation (Carey et al 1999, Carey et al 2000). Gomez et al. (2005) noted that commercial thinning in young stands of Coastal Oregon Douglas-fir (35 to 45 years old) did not have a measurable short-term effect on density, survival, or body mass of northern flying squirrels. Similarly, Waters and Zabel (1995) compared squirrel densities and body mass in shelterwoods and in old and young stands in the northern Sierras (old = 3.29/Ha, shelterwood = 0.31/ha, young = 2.28/Ha) and found no difference in body mass or recapture rates between young and old stands in northern more mesic forest habitats, although they concluded that heavy logging and site preparation (burning) in the shelterwoods negatively affected flying squirrels. Ritchie et al (2009) found negative landscape effects on flying squirrels when harvested areas opened the stand to create open conditions.

Based on this research, we predict the treat and maintain projects in this BA would retain cover that would be used by flying squirrels. Some of the downgrade treatments may reduce flying squirrel densities. While flying squirrels may inhabit some of the young stands in the Action Area, it is not likely that they will be significantly affected by the proposed actions because large dead wood would be retained, some canopy diversity will be maintained, and treatment areas make up a small proportion of available habitat. The trees retained in NRF maintained stands will be close enough for them to safely move through the canopy.

A dispersal stand that resulted from the downgrade of NRF habitat would begin to develop the pretreatment habitat within 25 to 40 years, depending on treatment type, plant association, and location. Residual trees, snags, and down wood that are retained in the thinned stands will provide some cover for prey species over time, and will help minimize harvest impacts to some

prey species. Lemkuhl *et al*. (2006) found that fuels projects in eastern Washington could have impacts on bushy-tailed woodrats, but confirmed the importance of maintaining snags, down wood, and mistletoe. Martin and McComb (2002) noted that small mammal diversity in the Coast Range matched the intermediate disturbance hypothesis (IDH): a combination of both early- and late-successional conditions produced highest small mammal diversity. The proposed treatments in this BA would result in similar habitat conditions at the landscape scale.

Residual trees, snags, and down wood that are retained in the thinned stands will provide some cover for prey species over time, and will help minimize harvest impacts to some prey species. The retained trees may respond favorably to more light and resources and gain height and canopy over time. Prey animals may be more exposed in the disturbed area or may move away from the disturbed area for the short-term. Some minor changes in prey availability may occur as cover is disturbed and animals move around in the understory. They may become more vulnerable and exposed. The disturbance might attract other predators such as hawks, other owls, and mammalian predators. This may increase competition for owls in the treatment area, but the exposure of prey may also improve prey availability for northern spotted owls.

Some disturbance of habitat may improve forage conditions, provided that understory structure and cover are retained. Removal of some tree canopy, provided it is not too extreme, will bring more light and resources into the stand, stimulating forbs, shrubs and other prey food. Once the initial impact of disturbance recovers (6 months to 2 years), the understory habitat conditions for prey food would increase over the next few years, until shrubs and residual trees respond and once again close in the stand.

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

Bingham and Noon (1997) reported that a spotted owl core area is the area that provides the important habitat elements of nest sites, roost sites, and access to prey, benefiting spotted owl survival and reproduction. Rosenberg and McKelvey (1999) reported that spotted owls are “central place” animals with the core area (the area closest to the nest) being the focal area. Several studies (Wagner and Anthony 1998, Dugger *et al*. 2005, Zabel *et al*. 2003, Bingham and Noon 1997) indicate the core area size for the Klamath and Western Cascades provinces is 0.5 miles (or 500 acres) of the nest site. Therefore, effects to prey species are most critical at the nest patch and core areas. Effects to spotted owl sites at the nest patch and core areas are analyzed in Section 4.3 above and the indirect effects to prey species can be derived from this data. For all projects, treatment implementation would be spread out temporally and spatially within the Action Area, which would provide areas for spotted owl foraging during project implementation and reduce the impact of these short-term effects at the project level.

## 4.4 Effects of Disturbance to Northern Spotted Owls

Mandatory PDC will be incorporated into all proposed action activities (Appendix A). Applying the Mandatory PDC should avoid noise or activity adversely affecting nesting owls and their young, but may not reduce the adverse effects of habitat changes. Nesting owls are confined to an area close to the nest, but once the young fledge, they can move away from noise and activities that might cause them harm. All projects will follow mandatory PDCs that restrict activities to outside of the breeding season and/or occur beyond recommended disturbance distance thresholds (Appendix A).

## 4.5 Interrelated and Interdependent Effects

Interrelated actions are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that might occur independently of the larger action, but have no independent utility apart from the action under consideration. Interdependent actions depend on the Federal action and would make no sense without it.

All proposed timber harvest projects in this BA have interrelated and interdependent effects. such as noise, road construction or timber hauling on existing system roads, and post harvest brush disposal. Brush disposal activities vary according to conditions post-treatment, fuels management objectives, requirements for retention of down woody material, and other resource management goals. Post project fuels reduction includes biomass removal, pile burning; underburning; and rearranging fuels by crushing, mulching, and lopping and scattering.

## 4.6 Cumulative Effects

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

The Action Area has a checkerboard pattern of ownership of private land interspersed with BLM and US Forest Service lands. Management practices occurring on private lands range from residential home site development to intensive industrial timber management.

The majority of state and private forests in Washington, Oregon, and Northern California are managed for timber production. Non-Federal lands are not expected to provide demographic support for spotted owls across and between physiographic provinces (Thomas *et al*. 1990; USDA and USDI 1994a). Historically, non-Federal landowners practiced even-aged management (clear-cutting) of timber over extensive acreages. Private industrial forestlands are managed for timber production and will typically be harvested between 40 and 60 years of age, in accordance with State Forest Practices Act standards.

In 2008, during the development of the DA BA FH (USDI BLM2008), data from Oregon Department of Forestry and the Pacific Northwest Inventory and Analysis team was used to estimate harvest rates in the past decade on private lands within the Medford District. Records indicate private harvest rates in Jackson and Josephine Counties have never exceeded 1.08

percent of the total private lands per year since 1998. These records did not provide information of pre-treatment habitat conditions. We anticipate some loss of owl habitat on private lands, but cannot predict the rate of loss, or the specific location of harvest. BLM does not track private land harvest activity.

The Medford BLM assumes past management practices will continue and reduce the amount of NRF habitat for spotted owl on non-Federal lands over time. Harvest activities on state and private lands can be expected to impact spotted owls located within adjacent Federal lands by removing and fragmenting habitat and through disturbance activities adjacent to occupied sites during sensitive periods. The Oregon Forest Practice Rules (629-665-0210), protects spotted owl nest sites (70-acre core areas) for at least three years after the last year of occupation.

## 5. BIOLOGICAL ASSESSMENT CONCLUSIONS

The proposed actions "may affect and are likely to adversely affect" (LAA) spotted owls because of NRF habitat downgrade. Treatment is proposed in the nest patch of two sites estimated by the NSOOM, but surveys will determine if the site is active, and the proposed treatment would be dropped or evaluated by the Level 1 team to assess if effects determinations remain correct.

Within these treatment areas, there are some activities that may affect, but are not likely to adversely affect spotted owls for the reasons explained in this BA (NLAA): NRF maintained, Dispersal maintained and dispersal removed. All activities are in compliance with the NWFP, the Medford RMP, the land use plan in place at the time the Record of Decisions are signed

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## Appendix A: Project Design Criteria (PDC)

Project design criteria (PDC) are measures applied to project activities designed to minimize potential detrimental effects to proposed or listed species. PDC usually include seasonal restrictions and may also include clumping of retention trees around nest trees, establishment of buffers, dropping the unit(s)/portions, or dropping the entire project. Use of project design criteria may result in a determination of no effect for a project that would have otherwise been not likely to adversely affect. In other cases, project design criteria have resulted in a determination of not likely to adversely affect for a project that might have otherwise been determined to be likely to adversely affect. The goal of project design criteria is to reduce adverse effects to listed or proposed threatened or endangered species.

Physical impacts to habitat and disturbances to spotted owls will be reduced or avoided with PDC. Listed are project design criteria designed for the programmatic impacts discussed in the *Effects of the Action* section.

Medford BLM retains discretion to halt and modify all projects, anywhere in the process, should new information regarding proposed and listed threatened or endangered species arise. Minimization of impacts will then, at the least, include an appropriate seasonal restriction; and could include clumping of retention trees around the nest trees, establishment of buffers, dropping the unit(s)/portions, or dropping the entire project.

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

PDC for disturbance are intended to reduce disturbance to nesting spotted owls. For this consultation, potential disturbance could occur near either documented owl sites or projected owl sites. To estimate likely occupied habitat outside of known home ranges, nearest-neighbor distances and known spotted owl density estimates were utilized to “place” potential spotted owl occupied sites in suitable habitat

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

### Mandatory Project Design Criteria

A. Activities (such as tree felling, yarding, road construction, hauling on roads not generally used by the public, prescribed fire, muffled blasting) that produce loud noises above ambient levels will not occur within specified distances (Appendix A-1) of any documented or projected owl site between March 1 and June 30 (or until two weeks after the fledging period) – unless protocol

surveys have determined the activity center is non-nesting or failed in their nesting attempt. The distances may be shortened if significant topographical breaks or blast blankets (or other devices) muffle sound traveling between the work location and nest sites.

B. The action agency has the option to extend the restricted season until September 30 during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt) if project would cause a nesting spotted owl to flush. (See disturbance distance).

C. Burning will not take place within 0.25 miles of spotted owl sites (documented or projected) between 1 March and 30 June (or until two weeks after the fledging period) unless substantial smoke will not drift into the nest stand.

D. To minimize the number of potential spotted owl nest trees used for instream structures, only the following sources will be used:

(I) Trees already on the ground in areas where large woody material is adequate;

(II) Trees that lack structural conditions (snags, cavities) suitable for spotted owls.

Appendix A-1. Mandatory Restriction Distances to Avoid Disturbance to Spotted Owl Sites

| **Activity** | **Buffer Distance Around Owl Site** |
|---|---|
| Heavy Equipment (including non-blasting quarry operations) | 105 feet |
| Chain saws | 195 feet |
| Impact pile driver, jackhammer, rock drill | 195 feet |
| Small helicopter or plane | 360 feet* |
| Type 1 or Type 2 helicopter | 0.25 mile* |
| Blasting; 2 lbs. of explosive or less | 360 feet |
| Blasting; more than 2 lbs. of explosives | 1 mile |

***** If below 1,500 feet above ground level

Above-ambient noises further than these Table B-1 distances from spotted owls are expected to have either negligible effects or no effect to spotted owls. The types of reactions that spotted owls could have to noise that the Service considers to have a negligible impact, include flapping of wings, the turning of a head toward the noise, hiding, assuming a defensive stance, etc. (SERVICE 2003).

## Recommended PDC

**A.** No NRF habitat removal will occur within 0.25 miles of any documented or generated owl site from March 1 through September 30, or until two (2) weeks after the fledging period, unless protocol surveys have determined owls are not present, are non-nesting, or nesting has failed.

**B.** Minimize the use of fire line explosives within one (1) air mile of occupied stands from March 1 through June 30, or until two (2) weeks after the fledging period, unless protocol surveys have determined owls are not present, are non-nesting, or nesting has failed.

## Appendix B: Proposed Action Maps without NRF Displayed

**Map 1: Bobar Thin and Robertson Salvage**

**Map 2: Jumpin Bean**

**Map 3: Rio Climax**

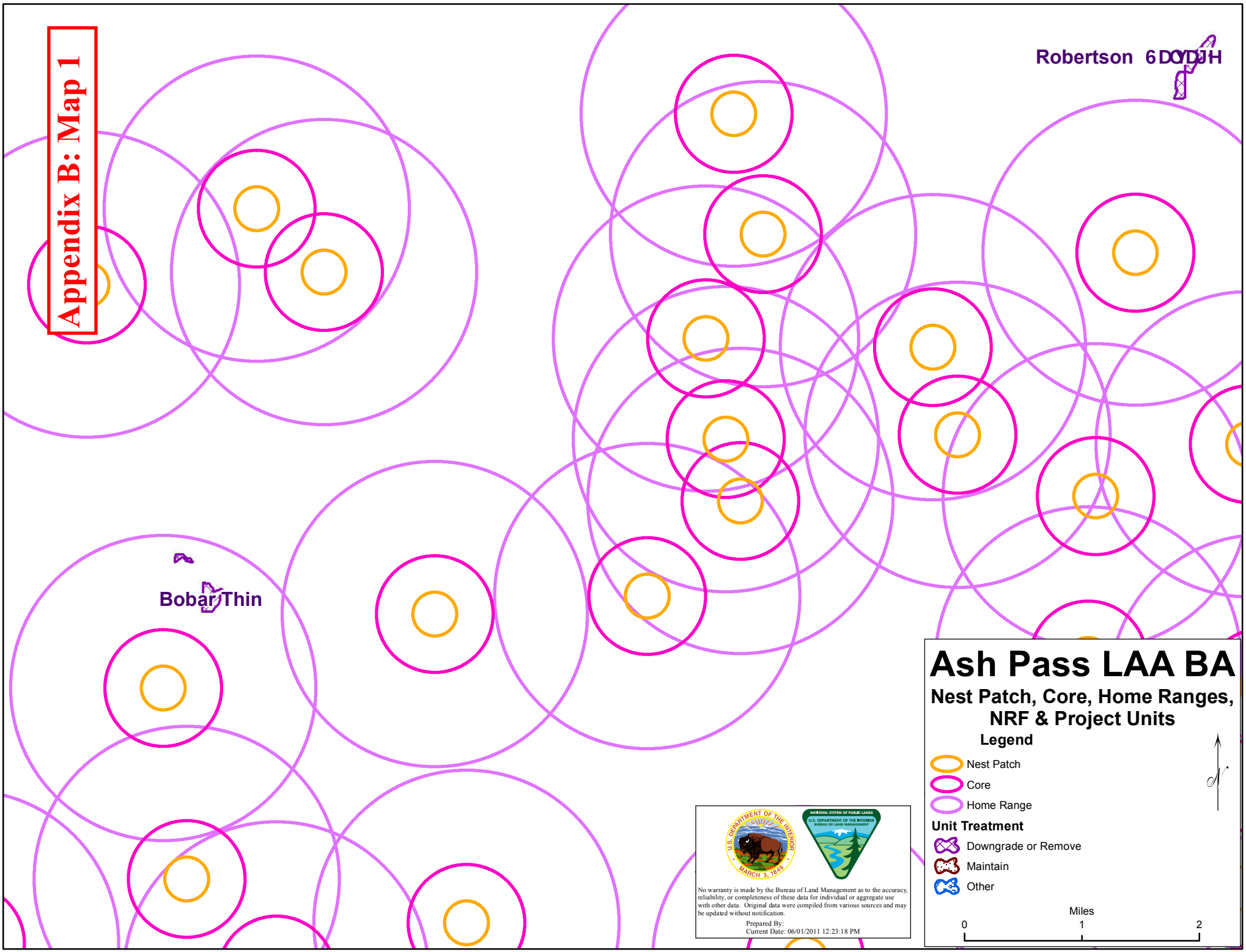
## Appendix C: Proposed Action Maps with NRF Displayed

**Map 1: Bobar Thin and Robertson Salvage**

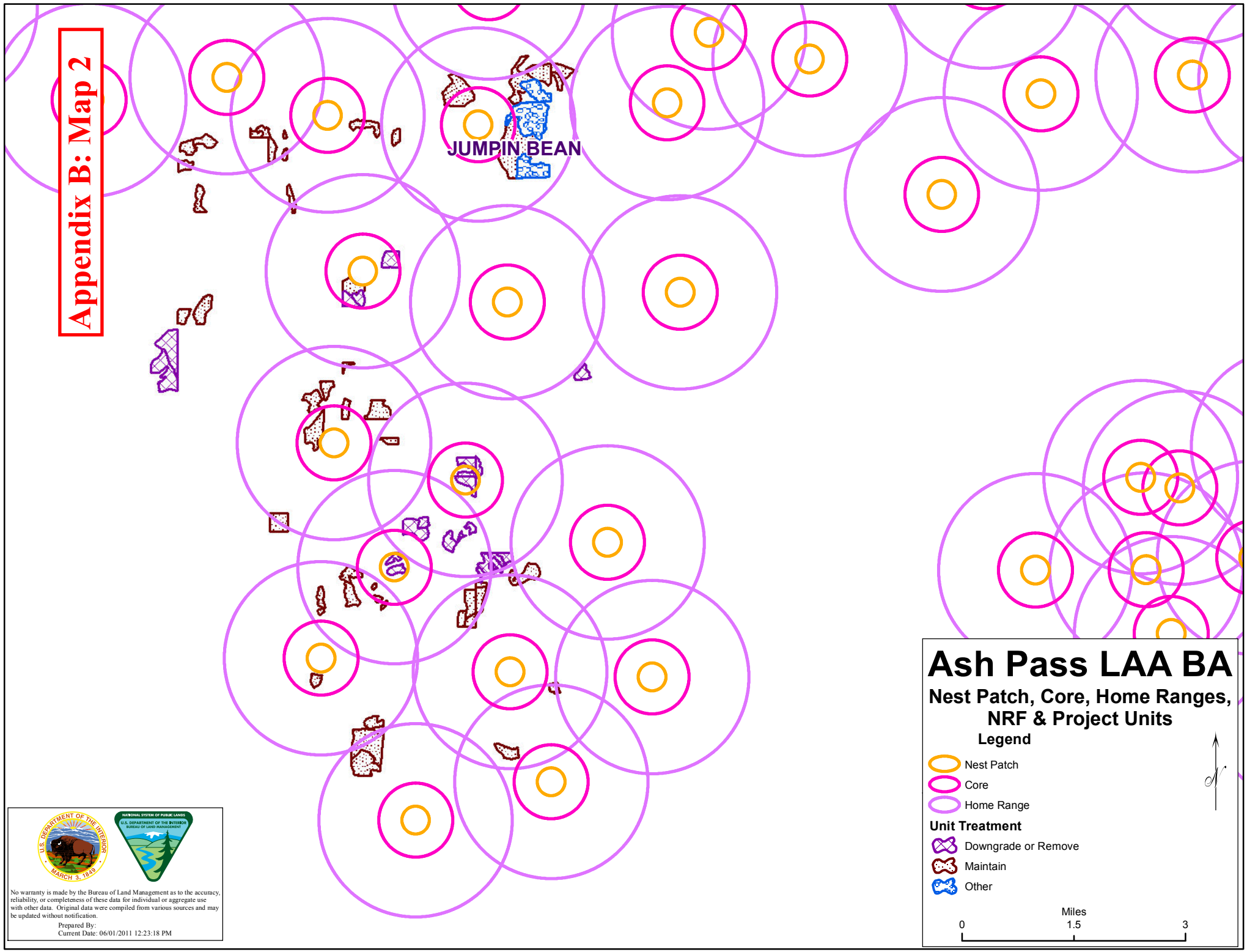
**Map 2: Jumpin Bean**

**Map 3: Rio Climax**

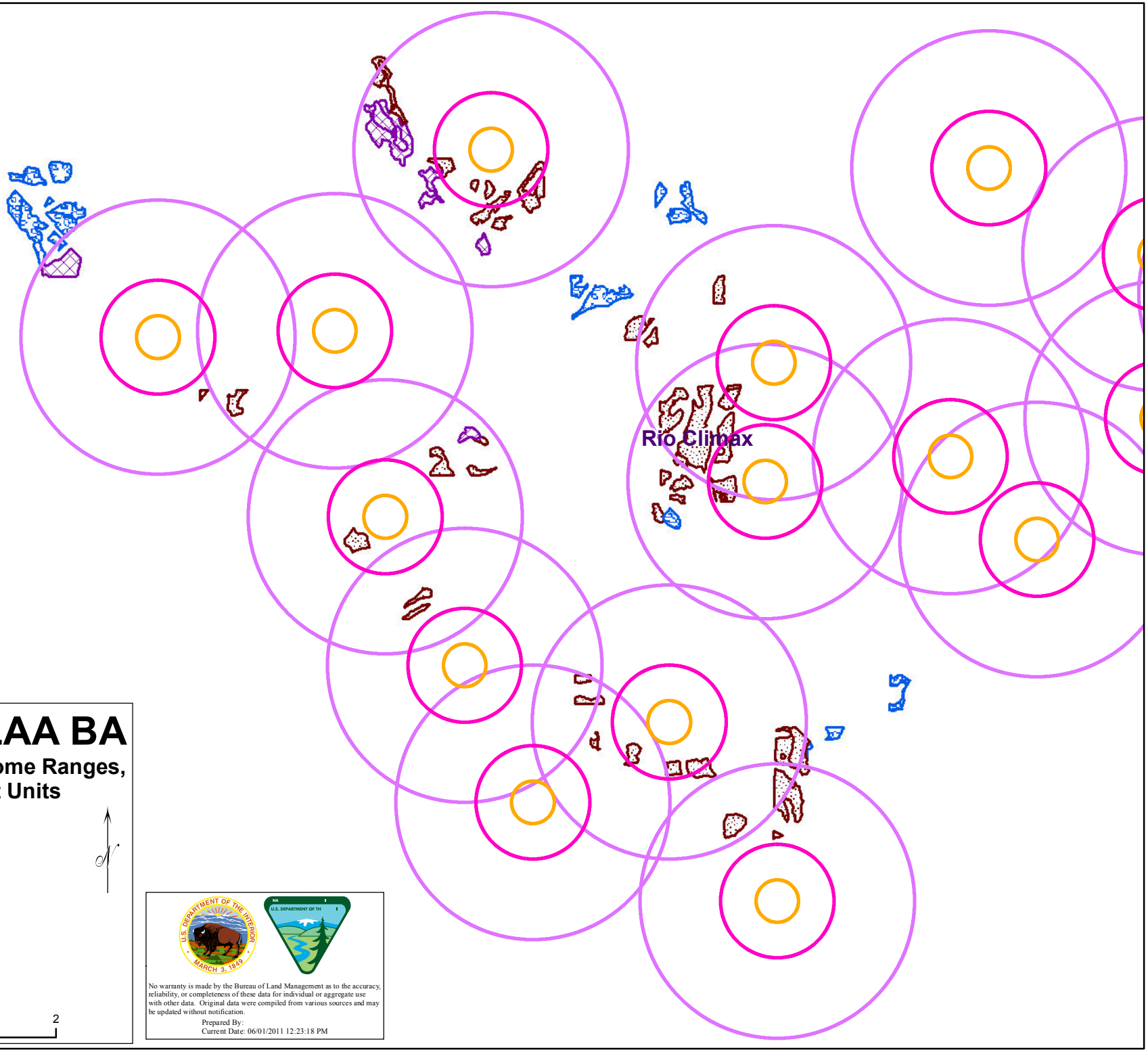
# Appendix B: Map 1



# Appendix B: Map 2



# Appendix B: Map 3




## Ash Pass LAA BA

### Nest Patch, Core, Home Ranges, NRF & Project Units

**Legend**

- Nest Patch
- Core
- Home Range

**Unit Treatment**

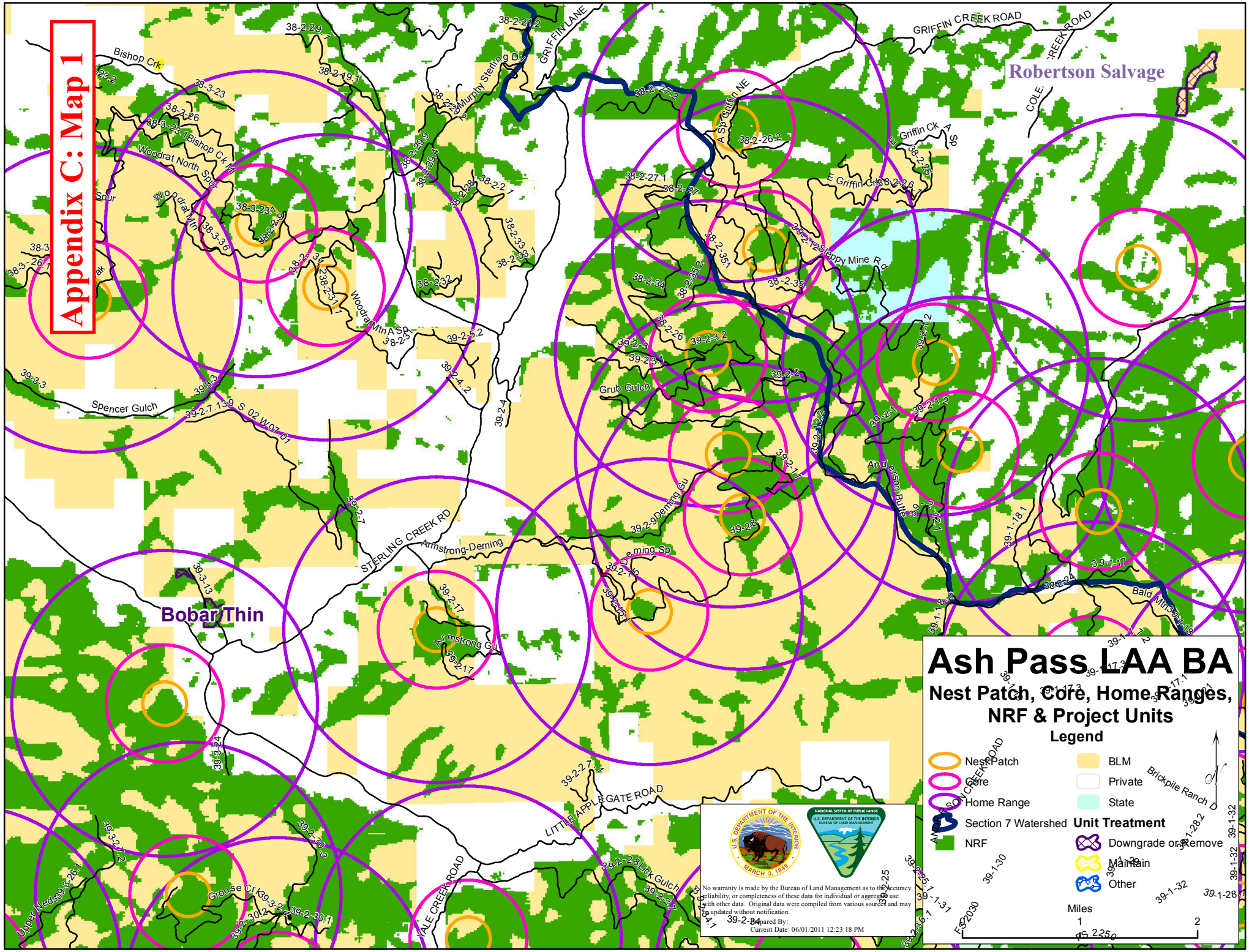
- Downgrade or Remove
- Maintain
- Other

Miles

0 1 2

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Prepared By:
Current Date: 06/01/2011 12:23:18 PM


Appendix C: Map 1
Ash Pass LAA BA
Nest Patch, Core, Home Ranges, NRF & Project Units
Legend
Nest Patch
Core
Home Range
Section 7 Watershed
NRF
BLM
Private
State
Unit Treatment
Downgrade or Remove
Maintain
Other
Miles
1
2
Robertson Salvage
Bobar Thin
Bishop Crk
Woodrat North Spur
Spencer Gulch
Grub Gulch
Murphy Sterling Div
GRIFFIN LANE
GRIFFIN CREEK ROAD
E Griffin Ck
Sleppy Mine Rd
Anderson Butte
STERLING CREEK RD
Armstrong-Deming
Deming Sp
Armstrong Gu
LITTLE APPLEGATE ROAD
VALE CREEK ROAD
Lirk Gulch
Grouse Crk
Upper Neds
Bald Mtn
Brickpile Ranch
Woodrat Mtn A Sp
Woodrat Mtn
Bishop Crk N
Deming Gu
Murphy Sterling Div
A Sp Griffin NE
E Griffin Ck A Sp
COLE
S 02 W 07-01
39-2-84
U.S. DEPARTMENT OF THE INTERIOR
MARCH 3, 1849
NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
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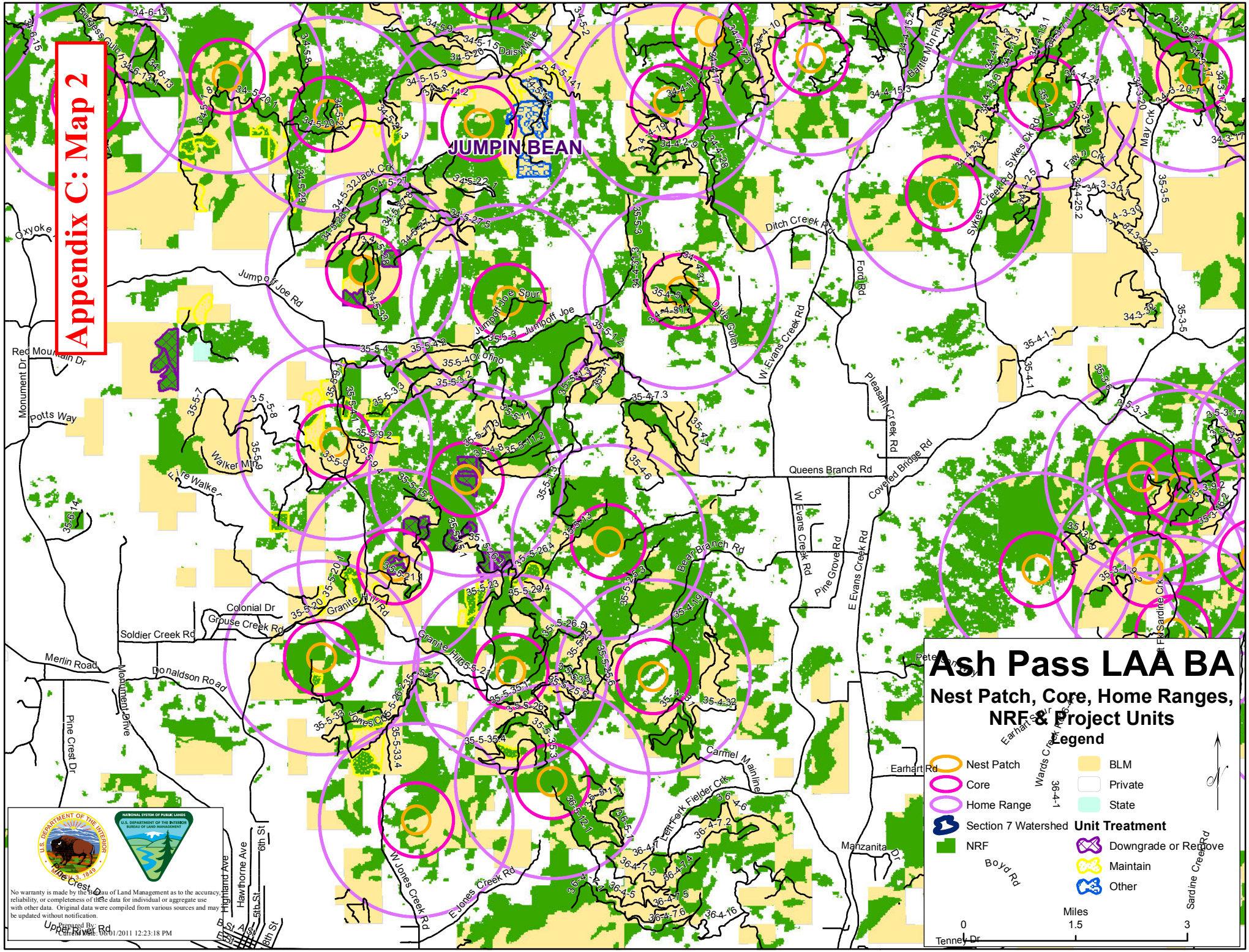
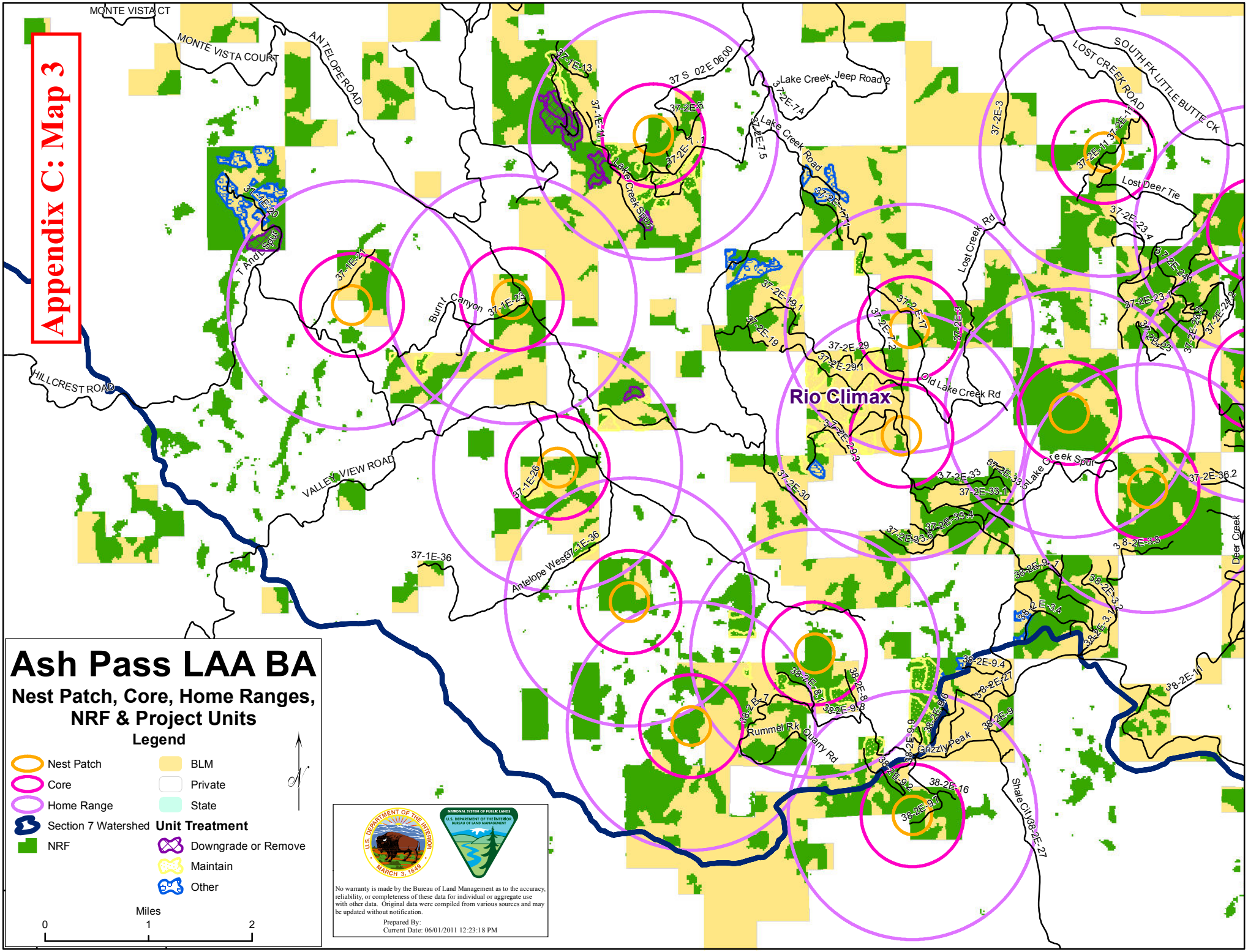
Prepared By:
Current Date: 06/01/2011 12:23:18 PM

# Appendix C: Map 2



# Appendix C: Map 3



## Appendix D: Rio Climax Owl History

Most recent spotted owl occupancy at these three sites is as follows:

| MSNO | Year last surveyed | Most recent year owl detected | Most recent year pair detected | Most recent year reproduction confirmed |
|---|---|---|---|---|
| **1944O** | 1999 | 1999 | 1998 | 1996 |
| **1956O** | 1994 | 1993 | 1993 | No record of reproduction |
| **2393O** | 2004 | 2002 | 2002 | 2001 |