Management Indicator Species Report

For

Bald Fire Salvage and Restoration Treatment Project
Lassen National Forest

April, 2015

Steve Kozlowski[1]

4/27/2015

X

Steven Kozlowski
Wildlife Biologist, USDA Forest Service
Signed by: STEVEN KOZLOWSKI

Submitted:

[1] Steve Kozlowski is a journey level wildlife biologist with the USDA Forest Service. His contact information is: USDA Forest Service, TEAMS Enterprise Unit. 2468 Jackson St., Laramie, WY 82070 (phone 559-972-1934, email skozlowski@fs.fed.us).

Table of Contents

1. Introduction 3
1.a Direction Regarding the Analysis of Project-Level Effects on MIS Habitat 3
1.b Direction Regarding Monitoring of MIS Population and Habitat Trends at the Bioregional Scale. 4
2. Selection of Project level MIS 5
3. Bioregional Monitoring Requirements for MIS Selected for Project-Level Analysis 8
3.a MIS Monitoring Requirements 8
3.b How MIS Monitoring Requirements are Being Met 8
4. Description of Proposed Project 9
Considerations Applied to the Action Alternatives 9
Alternative 1 – Proposed Action 9
Alternative 2 – No Action 11
Alternative 3 – Road Hazard Only 11
5. Effects of Proposed Project on the Habitat for the Selected Project-Level MIS. 11
5.a Snags in Green Forest Ecosystem Component (Hairy woodpecker) 12
Project-level Effects Analysis – Snags in Green Forest Ecosystem Component 12
Alternative 1 - Proposed Action 13
Alternative 2 - No Action 15
Alternative 3 - Roadside Hazard Tree 16
Summary of Hairy Woodpecker Status and Trend at the Bioregional Scale 16
5.b Snags in Burned Forest Ecosystem Component (Black-backed woodpecker) 18
Alternative 1 - Proposed Action 19
Alternative 2 - No Action 21
Alternative 3 - Roadside Hazard Tree 21
Summary of Black-backed Woodpecker Status and Trend at the Bioregional Scale 22
6. References Cited 25

1. Introduction

The purpose of this report is to evaluate and disclose the impacts of the Bald Fire Salvage and Restoration Project (Bald Project) on the habitat of the thirteen (13) Management Indicator Species (MIS) identified in the Forest (NF) Land and Resource Management Plan (LRMP) as amended by the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (USDA Forest Service 2007a). This report documents the effects of the proposed action and alternatives on the habitat of selected project-level MIS. Detailed descriptions of the Bald Project alternatives are found in the Bald Project NEPA document.

MIS are animal species identified in the SNF MIS Amendment Record of Decision (ROD) signed December 14, 2007, which was developed under the 1982 National Forest System Land and Resource Management Planning Rule (1982 Planning Rule) (36 CFR 219). Guidance regarding MIS set forth in the Lassen NF's LRMP as amended by the 2007 SNF MIS Amendment ROD directs Forest Service resource managers to (1) at project scale, analyze the effects of proposed projects on the habitat of each MIS affected by such projects, and (2) at the bioregional scale, monitor populations and/or habitat trends of MIS, as identified in the Lassen NF LRMP as amended.

1.a Direction Regarding the Analysis of Project-Level Effects on MIS Habitat

Project-level effects on MIS habitat are analyzed and disclosed as part of environmental analysis under the National Environmental Policy Act (NEPA). This involves examining the impacts of the proposed project alternatives on MIS habitat by discussing how direct, indirect, and cumulative effects will change the habitat in the analysis area.

These project-level impacts to habitat are then related to broader scale (bioregional) population and/or habitat trends. The appropriate approach for relating project-level impacts to broader scale trends depends on the type of monitoring identified for MIS in the LRMP as amended by the SNF MIS Amendment ROD. Hence, where the Lassen NF LRMP as amended by the SNF MIS Amendment ROD identifies distribution population monitoring for an MIS, the project-level habitat effects analysis for that MIS is informed by available distribution population monitoring data, which are gathered at the bioregional scale. The bioregional scale monitoring identified in the Lassen NF LRMP, as amended, for MIS analyzed for the Bald Project is summarized in Section 3 of this report.

Adequately analyzing project effects to MIS involves the following steps:

- Identifying which ecosystem component and associated MIS would be either directly or indirectly affected by the project alternatives to identify a subset of MIS that are potentially affected by the project.
- Analyzing project-level effects to the subset of MIS and their representative ecosystem component.

- Summarizing the bioregional-level monitoring identified in the LRMP, as amended, for this subset of MIS.
- Discussing bioregional scale habitat and/or population trends for this subset of MIS.
- Relating project-level impacts on MIS habitat to habitat and/or population trends at the bioregional scale for this subset of MIS.

These steps are described in detail in the Pacific Southwest Region's draft document "MIS Analysis and Documentation in Project-Level NEPA, R5 Environmental Coordination" (May 25, 2006) (USDA Forest Service 2006a). This Management Indicator Species (MIS) Report documents application of the above steps to select project-level MIS and analyze project effects on MIS habitat for the Bald Project.

1.b Direction Regarding Monitoring of MIS Population and Habitat Trends at the Bioregional Scale.

The bioregional scale monitoring strategy for the Lassen NF's MIS is found in the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (ROD) of 2007 (USDA Forest Service 2007a). Bioregional scale habitat monitoring is identified for all twelve of the terrestrial MIS. In addition, bioregional scale population monitoring, in the form of distribution population monitoring, is identified for all of the terrestrial MIS except for the greater sage-grouse. The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a).

MIS Habitat Status and Trend

All habitat monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a).

Habitats are the vegetation types (for example, early seral coniferous forest) or ecosystem components (for example, snags in green forest) required by an MIS for breeding, cover, and/or feeding. MIS for the Sierra Nevada National Forests represent 10 major habitats and 2 ecosystem components (USDA Forest Service 2007a), as listed in Table 1. These habitats are defined using the California Wildlife Habitat Relationship (CWHR) System (CDFG 2005). The CWHR System provides the most widely used habitat relationship models for California's terrestrial vertebrate species (ibid). It is described in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Habitat status is the current amount of habitat on the Sierra Nevada Forests. Habitat trend is the direction of change in the amount or quality of habitat over time. The methodology for assessing habitat status and trend is described in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

MIS Population Status and Trend.

All population monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a). The information is presented in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Population monitoring strategies for MIS of the Lassen NF are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment ROD (USDA Forest Service 2007a). Population status is the current condition of the MIS related to the population monitoring data required in the 2007 SNF MIS Amendment ROD for that MIS. Population trend is the direction of change in that population measure over time.

There are a myriad of approaches for monitoring populations of MIS, from simply detecting presence to detailed tracking of population structure (USDA Forest Service 2001, Appendix E, page E-19). A distribution population monitoring approach is identified for all of the terrestrial MIS in the 2007 SNF MIS Amendment, except for the greater sage-grouse (USDA Forest Service 2007a). Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time. Presence data are collected using a number of direct and indirect methods, such as surveys (population surveys), bird point counts, tracking number of hunter kills, counts of species sign (such as deer pellets), and so forth. The specifics regarding how these presence data are assessed to track changes in distribution over time vary by species and the type of presence data collected, as described in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

2. Selection of Project level MIS

Management Indicator Species (MIS) for the Lassen NF are listed in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS, as indicated in Table 1. The table discloses the habitat or ecosystem components (1st column), the CWHR type(s) defining each habitat/ecosystem component (2nd column), the associated MIS (3rd column), and whether or not the habitat of the MIS is potentially affected by the Bald Project (4th column).

The only perennial stream within the project area is Beaver Creek. Flow from the ephemeral headwater channels within the project area lack surface connectivity with any perennial streams. There are no proposed salvage activities or mechanical treatments within the RCA of Beaver Creek. Given the lack of activities and the lack of effects to the habitat factors of analysis for this habitat type, riverine and lacustrine habitats will not be further addressed in the MIS report.

Shrublands and fox sparrow will not be discussed in further detail because the Bald Project alternatives would not change acres of shrub habitat, ground shrub cover class, or shrub size class. The project alternatives focus on the removal of fire-killed trees and reforesting previously forested areas.

Because fire is a regenerative factor for this habitat type, ultimately these shrub habitats will re-sprout and remain as shrub-dominated areas.

Hardwood habitats and mule deer will not be discussed in detail because the Bald Project took consideration of oak and oak-conifer stands in its project design and avoided effects to this cover type. As a result the project would not change acres of oak-associated hardwood or hardwood/conifer habitat, hardwood canopy cover, or hardwood size class.

Riparian and yellow warbler will not be discussed in further detail because the Bald Project alternatives would not change riparian habitat acres, deciduous canopy cover, total canopy cover, or CWHR size class within montane riparian habitats, and a project design feature states that riparian species (aspen, cottonwood, alder, willow, dogwood, etc.) would not be removed by project activities.

This report is specifically written to address terrestrial wildlife MIS species. Wet meadow and Pacific tree frog are addressed in the aquatic MIS report.

Acres of early, mid seral, and late seral open canopy coniferous forest habitat exists within the fire perimeter. However, the Bald Project would not result in changes in acres of the CWHR tree size classes, or their associated understory shrub canopy closure. This project would remove fire-killed trees or fire-damaged trees at the high probability of mortality level, so salvage of such trees from partially burned patches of early and mid-seral coniferous forest would not substantively alter the canopy closure and would not be expected to cause a change in CWHR density classification. Therefore early, mid seral and late seral open canopy coniferous forest habitat will not be further addressed.

California spotted owl, American marten, and northern flying squirrel will not be discussed further in this document. Late Seral Closed Canopy Coniferous Forest, the habitat identified for these species as an MIS, would not be treated and is nearly absent from the project area (both pre-fire and post-fire) shown by the lack of tree sizes 5 and 6 in CWHR cover types ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), and red fir (RFR).

Table 1 - Selection of MIS for the Bald Project.

Habitat or Ecosystem Component	CWHR Type(s) defining the habitat or ecosystem component[2]	Sierra Nevada Forests Management Indicator Species *Scientific Name*	Category for Project Analysis[3]
Riverine & Lacustrine	lacustrine (LAC) and riverine (RIV)	aquatic macroinvertebrates	2
Shrubland (west-slope chaparral types)	montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral (CRC)	fox sparrow *Passerella iliaca*	2
Oak-associated Hardwood & Hardwood/conifer	montane hardwood (MHW), montane hardwood-conifer (MHC)	mule deer *Odocoileus hemionus*	2
Riparian	montane riparian (MRI), valley foothill riparian (VRI)	yellow warbler *Dendroica petechia*	2
Wet Meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific tree (chorus) frog *Pseudacris regilla*	2
Early Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, and 3, all canopy closures	Mountain quail *Oreortyx pictus*	2
Mid Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 4, all canopy closures	Mountain quail *Oreortyx pictus*	2
Late Seral Open Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	Sooty (blue) grouse *Dendragapus obscurus*	2
Late Seral Closed Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6.	California spotted owl *Strix occidentalis occidentalis*	2
		American marten *Martes americana*	
		northern flying squirrel *Glaucomys sabrinus*	
Snags in Green Forest	Medium and large snags in green	hairy woodpecker	3

[2] All CWHR size classes and canopy closures are included unless otherwise specified; **DBH** = diameter at breast height; **Canopy Closure classifications:** S=Sparse Cover (10-24% canopy closure); P= Open cover (25-39% canopy closure); M= Moderate cover (40-59% canopy closure); D= Dense cover (60-100% canopy closure); **Tree size classes:** 1 (Seedling)(<1" DBH); 2 (Sapling)(1"-5.9" DBH); 3 (Pole)(6"-10.9" DBH); 4 (Small tree)(11"-23.9" DBH); 5 (Medium/Large tree)(≥24" DBH); 6 (Multi-layered Tree) [In PPN and SMC] (Mayer and Laudenslayer 1988).

[3] **Category 1:** MIS whose habitat is not in or adjacent to the project area and would not be affected by the project. **Category 2:** MIS whose habitat is in or adjacent to project area, but would not be either directly or indirectly affected by the project. **Category 3:** MIS whose habitat would be either directly or indirectly affected by the project.

Habitat or Ecosystem Component	CWHR Type(s) defining the habitat or ecosystem component[2]	Sierra Nevada Forests Management Indicator Species *Scientific Name*	Category for Project Analysis[3]
	forest	*Picoides villosus*	
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	black-backed woodpecker *Picoides arcticus*	3

The MIS whose habitat would be either directly or indirectly affected by the Bald Project, identified as Category 3 in Table 1, are carried forward in this analysis, which will evaluate the direct, indirect, and cumulative effects of the proposed action and alternatives on the habitat of these MIS. The MIS selected for project-level MIS analysis for the Bald Project are: **hairy woodpecker and black-backed woodpecker.**

3. Bioregional Monitoring Requirements for MIS Selected for Project-Level Analysis

3.a MIS Monitoring Requirements

The Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a) identifies bioregional scale habitat and/or population monitoring for the Management Indicator Species for ten National Forests, including the Lassen NF. The habitat and/or population monitoring requirements for Lassen NF's MIS are described in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a) and are summarized below for the MIS being analyzed for the Bald Project. The applicable habitat and/or population monitoring results are also described in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a) and are summarized in Section 5 below for the MIS being analyzed for the Bald Project.

Habitat monitoring at the bioregional scale is identified for all the habitats and ecosystem components including: shrubland; sagebrush; oak-associated hardwood & hardwood/conifer; riparian; wet meadow; early seral coniferous forest; mid seral coniferous forest; late seral open canopy coniferous forest; late seral closed canopy coniferous forest; snags in green forest; snags in burned forest.

Population monitoring that is occurring at the bioregional scale for hairy woodpecker, and black-backed woodpecker includes: ***Distribution population monitoring.*** Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time (also see USDA Forest Service 2001, Appendix E).

3.b How MIS Monitoring Requirements are Being Met

Habitat and/or distribution population monitoring for all MIS is conducted at the Sierra Nevada scale. Refer to the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a) for details by habitat and MIS.

4. Description of Proposed Project

The purpose of the Bald Project is to immediately reduce numerous safety hazards caused by the Bald Fire, capture the limited remaining forest product economic value, reduce fuel loads, adequately prepare sites for forest regeneration, reduce fuel loadings that create conditions prime for re-burns, and quickly reforest suitable portions of the landscape deforested by the Bald Fire before these sites become fully occupied by competing vegetation. Reforestation would expedite the beneficial re-establishment of a forested landscape capable of producing a variety of wood products, wildlife habitat, and ecological services.

Considerations Applied to the Action Alternatives

- Large and medium patches of existing burned forest habitat interspersed throughout the burned area would be left untreated under the proposed action to allow for natural recovery (54% of the project area).
- In a proactive measure to conserve additional black-backed woodpecker habitat, a portion of four proposed harvest units were dropped from the action alternatives. This design change equated to conservation of additional habitat that could support approximately nine black-backed woodpecker pairs according to Tingley Modeling (Tingley et al, 2014). These salvage and fuels treatment units were dropped from the original proposal because they provided large contiguous acreage of quality habitat.
- To provide for snags and down woody debris across the treatment areas, retention islands would be designated in all treatment units except road hazard removal units. Retention islands would consist of small-untreated patches within the boundary of treatment units that range in size commonly between two to five acres, and would comprise 20 percent of the acres within each unit. Retention islands would be distributed across the unit to provide a variety of burned conditions representative of those present in the unit prior to treatment.
- Integrated Design Features (IDFs) will be incorporated as part of the Action Alternatives for the project. They are implementation parameters that would be incorporated into treatments, contracts, or used to guide Forest Service personnel in conducting implementation. The IDFs are described more fully in the Environmental Assessment and would be implemented in addition to standards and guidelines from the Forest Plan, and California Best Management Practices (BMP) regarding Water Quality Management.

Alternative 1 – Proposed Action

To respond to the purpose and need, the Responsible Official has proposed hazard tree removal (along approximately 131 miles of NFS roads (maintenance level (ML) 2 and higher), and approximately 10 miles of the Burlington Northern Santa Fe railway), salvage harvest (approximately 3,632 acres), fuels

treatments outside of salvage units (approximately 5,499 acres), and tree planting (approximately 12,226 acres) in specified treatment areas. Some areas would receive various combinations of treatments. The total footprint of treatments on national forest lands under the proposed action would be approximately 46% (14,363 acres) of the project area. While no new permanent road construction is proposed, temporary roads would be constructed for implementation, and then decommissioned. Existing roads would be repaired and maintained to facilitate the removal of salvage material, fuels treatments, and reforestation activities.

Table 2 - Summary of Activities in Alternative 1 - Proposed Action

Alternative 1	Estimated Acres	Percent of Project Area
Hazard Tree Removal	4,815	15%
Area Salvage	3,632	12%
Area Fuels	5,499	18%
Reforestation Only	417	1%
Total proposed for treatment	14,363	46%
Natural Recovery	16,961	54%

Hazard Tree Removal

Hazard trees within approximately 150 feet along maintenance level (ML) 2 or higher roads within the fire-affected area would be felled and removed. Hazardous trees along the Burlington Northern Santa Fe railroad easement would also be felled. Depending on access, these trees would be removed or left in place. Sub-merchantable trees and non-merchantable hazard trees would be felled and left in place, or piled and the piles burned, depending upon the amount of surface fuel loading present.

Area Salvage Harvesting

Fire-killed and fire-injured trees within the Bald Fire perimeter would be harvested. Merchantable trees would be removed as sawlogs if operations occur before the wood deteriorates. Non-merchantable trees would be removed as biomass, masticated, felled and lopped, machine piled and burned or broadcast burned to meet desired fuel conditions.

Area Fuel Treatments

In areas that burned at moderate and high severity and where timber does not meet merchantability standards, hazard abatement, fuels reduction, and site preparation for reforestation would be accomplished by biomass removal, mastication, felling and lopping, machine piling and burning, or broadcast burning.

Reforestation

Prior to planting, concentrations of activity-generated fuels and sub-merchantable trees would be removed to facilitate reforestation, help protect planted trees once they become established, and reduce the risk of a possible reburn. Site preparation would include a variety of treatment methods that include machine or hand cutting and piling followed by pile burning, mastication of fire killed shrub stems and trees less than 5-inches dbh (diameter breast height), or broadcast burning fire-killed trees. In addition, sprouting shrubs and vegetation may need to be treated adjacent to planted trees to reduce competition for site resources in order to assure establishment. This may be done through manual or mechanical cutting methods such as grubbing, mastication, or use of brush cutters. Ripping may be done prior to planting. Reforestation would need to occur within two years to increase the probability of survival of the planted trees with the competing brush.

Alternative 2 – No Action

Under the No Action alternative, none of the activities proposed under Alternative 1 would be implemented. The No Action alternative would not preclude activities previously approved in this area or activities planned as separate projects. No fuels treatments, site preparation, or reforestation would occur. Current management practices such as road maintenance and fire suppression would continue.

To protect public safety, burned hazard trees along roads may be felled as part of road maintenance. These hazard trees would be felled and left in place.

Alternative 3 – Road Hazard Only

To respond to concerns raised during public scoping, the Responsible Official has proposed an alternative limiting treatment to hazard tree removal along approximately 129 miles of NFS roads and approximately 10 miles of the Burlington Northern Santa Fe railway. Commercial sized hazards would be felled and removed along ML2 and higher roads. Sub-merchantable hazards would be felled and left in place or piled and burned. No other site preparation or reforestation would occur along these roads. No other management activities (besides those previously authorized) would occur. The total footprint of treatments on national forest lands under Alternative 3 would be approximately 15% (4,736 acres). Existing roads used under this alternative would be repaired and maintained.

5. Effects of Proposed Project on the Habitat for the Selected Project-Level MIS.

The following section documents the analysis for the wildlife species selected for further analysis in Table 1 (‘Category 3’ species) which include : ***hairy woodpecker, black-backed woodpecker***. The analysis of the effects of the Bald Project on the MIS habitat for the selected project-level MIS is conducted at the project scale then compared to see how it affects trends at the bioregional scale. Detailed information on the MIS is documented in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Cumulative effects at the bioregional scale are tracked via the SNF MIS Bioregional monitoring, and detailed in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

5.a Snags in Green Forest Ecosystem Component (Hairy woodpecker)

Habitat/Species Relationship

The hairy woodpecker was selected as the MIS for the ecosystem component of snags in green forests. Medium (diameter breast height between 15 to 30 inches) and large (diameter breast height greater than 30 inches) snags are most important. The hairy woodpecker uses stands of large, mature trees and snags of sparse to intermediate density; cover is also provided by tree cavities (CDFG 2005). Mature timber and dead snags or trees of moderate to large size are more important than tree species (Siegel and DeSante 1999).

Project-level Effects Analysis – Snags in Green Forest Ecosystem Component

Habitat Factor(s) for the Analysis: (1) Medium (15-30 inches DBH) snags per acre. (2) large (greater than 30 inches DBH) snags per acre.

Current Condition of the Habitat Factor(s) in the Project Area: The current condition of habitat within the project area was calculated using all pre-fire CWHR forest types with average tree size greater than 11 inches DBH (size class 4s and 5s) and all canopy cover classes in forests that experienced less than 50 percent basal area mortality as a result of the Bald Fire. Habitat defined by these criteria was considered to best represent the approximate amount of habitat containing the "Snags in Green Forest Ecosystem Component."

There were approximately 6,624 forested acres of tree size class 4s and 5s of all density categories within the Bald Project area. The Bald Fire caused greater than 50 percent mortality in about 5,637 acres (85%) of this total. Approximately 987 acres (15%) burned at less than 50 percent mortality. These 987 acres will be considered the acreage that provides snags in green forest habitat on USFS lands within the Bald Fire perimeter.

Table 3 - Acres of Hairy Woodpecker Habitat within Bald Project Area[4].

CWHR Forested Cover Type	Burn Severity	Acres
EPN4M	none	1
JPN4M	none	1
JUN4M	none	0
PPN4D	none	2
PPN4M	none	3
SMC4D	none	0
SMC4M	none	1

[4] Values less than 0.5 acres are reported as zero.

EPN4M	0-25%	13
JPN4D	0-25%	1
JPN4M	0-25%	2
JUN4M	0-25%	9
MHC4D	0-25%	0
MHC4M	0-25%	0
PPN4D	0-25%	26
PPN4M	0-25%	38
SMC4D	0-25%	4
SMC4M	0-25%	21
EPN4M	25-50%	131
JPN4D	25-50%	8
JPN4M	25-50%	70
JUN4M	25-50%	7
MHC4D	25-50%	7
MHC4M	25-50%	13
MHW4M	25-50%	1
PPN4D	25-50%	127
PPN4M	25-50%	359
SMC4D	25-50%	39
SMC4M	25-50%	103
Snags in Green Forest Ecosystem Component	Total Acres	987

Alternative 1 - Proposed Action

Direct and Indirect Effects to Habitat

Of the estimated 987 acres of this habitat on USFS lands, about 350 acres (35%) are included within proposed treatment units. The largest patch of habitat within treatment units is 45 acres, but most are much smaller, with an average size of about two acres.

The green snags within treatment areas are located within fuels treatments (201 acres), roadside hazard treatments (108 acres), and lastly salvage treatments (41 acres). Therefore, the remaining 637 acres (65%) of green tree snag habitat would remain untreated. All of these proposed treatments could result in some or all of the snags being removed from the remnant patches of this habitat type unless they happen to fall within a wildlife retention island.

Wildlife retention islands will be located within salvage and fuels units and are designed to be generally from two to five acres in size and distributed across the unit to maintain diversity. Approximately 242 acres of snags in green forest ecosystem component type occur within salvage and fuels treatment units (and outside of roadside hazard treatment units). Retention areas are designed to be located within representative growing sites. The 20% leave patches were designed primarily to retain burned forest habitat, and will inevitably include some of these remnant patches of green forest. The two

to five acre size of leave patches would capture the average size of this habitat type that survived the fire. Effects of these treatments on snag abundance within these green forest areas would depend on the inclusion or lack of inclusion of the green forest area within the 20% leave patches. If fully included in retention areas, there would be no snag reduction. If fully excluded, there would be a substantive reduction in green forest snags. Therefore, snag reduction would be expected to occur in a subset of these 242 acres, but likely not all of them.

Cumulative Effects to Habitat in the Analysis Area

The cumulative effects analysis area was expanded from USFS lands within the Bald Fire to include the entire Bald Fire footprint, which is approximately 8,200 additional acres, made up of approximately 7,000 acres of BLM, 500 acres State, and 700 acres private. Most of these lands are drier and made up of smaller trees and more shrublands than is present on USFS lands. Thus large expanses of suitable hairy woodpecker habitat are not present. On-going projects to be considered within the cumulative effects area include 450 acres of additional salvage and reforest operations on BLM, an assumption that State and private lands would salvage and reforest their burned forests, and fuelwood harvest on USFS lands.

The Bald Fire burned a total of 31,324 acres on USFS lands, which is 79% of the total burned acres (the remaining acreage being BLM, State, and private ownership as described above). The CWHR dataset is incomplete on non-USFS lands. However, available data estimates that a total of 175 acres of mature forest with less than 50% burn severity is on BLM lands. BLM is proposing only a small amount of salvage (6% of their ownership) and thus, it is estimated that they would retain most of the available habitat for hairy woodpeckers that exists on their lands. It is assumed that State and private lands would salvage log all of their available habitat which amounts to approximately 100 acres of mature forest with less than 50% burn severity.

Personal fuelwood harvest would occur within the Bald footprint on USFS lands. The Lassen NF has one of the most active fuelwood programs in the region, selling over 16,000 cord permits in 2011. This program allows the felling of snags by woodcutters, with upper diameter limits set at 20 inches DBH for snags of commercial species of conifers, and with no diameter restrictions on lodgepole pine snags. Siegel et al (2013) in their monitoring of black-backed woodpeckers in the Peterson and Wheeler fires on the Lassen and Plumas NFs, noted woodcutting to be pervasive along roads within both fires. Since Siegel et al (2013) indicated the main woodcutting activity in the fires they monitored was along roads, and alternative one includes hazard tree removal and salvage along open roads, then most habitats vulnerable to woodcutters would have been already removed. Most of the 637 acres (65%) of green forest snag habitat that is untreated would remain intact because of its inaccessibility. Woodcutting is not expected to be a substantive cumulative effect in terms of snag reduction within this habitat type.

Effects Conclusion:

After the Bald Fire, approximately 987 acres of medium and large diameter snags in green forest ecosystem component existed within the Bald Project area. Additional similar habitat exists on other ownership within the fire footprint, but since most of these lands are drier and with smaller trees and more shrublands than is present on USFS lands, large expanses of suitable hairy woodpecker habitat are not present there. Given the analysis documented previously, cumulatively there may be reduction in snags and/or downed logs on approximately 35% of the available habitat (350 acres) because of the proposed treatments on USFS lands. A small but unknown additional amount would be removed because of harvest on state, private and to a lesser extent BLM lands, as well as a small amount of fuelwood cutting on USFS lands. These additional habitat removals are expected to be minimal because of drier site conditions on other ownership indicates habitat does not predominate there. Habitat along USFS roads is susceptible to fuelwood cutters, but has already been harvested during hazard tree removal so remaining habitat is largely inaccessible. In summary, approximately 65% of green tree snags available for hairy woodpeckers would remain present across the landscape.

Alternative 2 - No Action

Direct, Indirect and Cumulative Effects to Habitat.

Under the No Action alternative, none of the activities proposed under Alternative 1 would be implemented. No salvage harvest, fuels reduction, site preparation, or reforestation would occur. Current management practices such as road maintenance and fire suppression would continue. There may be some losses of burned forest habitat on USFS lands as a result of hazard tree felling along road corridors conducted as part of road maintenance. Logs would be left in place and only trees that provide direct safety hazards would be felled. A number of smaller diameter trees within these corridors that do not represent hazards would remain. In addition, personal fuelwood harvest would take place along roads and is a cumulative effect considered. Fuelwood harvest is most prevalent along roads and in this alternative, a larger number of burned trees and adjacent habitat may be taken as firewood since they would not be harvested prior.

The green forest snag habitat located along road corridors amounts to 108 acres. These trees may or may not be removed as part of road maintenance related to safety. However, it is likely that over a moderate amount of time, many of the trees would be removed in combination between road maintenance or firewood collection on USFS lands. Therefore, it can be assumed that most of the 108 acres of this habitat type along roads would be lost. This amounts to an 11% reduction (108 of 987 acres).

A small but unknown additional amount of habitat would be removed because of harvest on state, private and to a lesser extent BLM lands. These additional habitat removals are expected to be minimal because the drier site conditions, smaller trees, and more shrublands on other ownership indicates habitat does not predominate there. BLM is the predominant non-USFS landowner (7,000 acres) and they are only harvesting 450 acres.

Effects Conclusion – Alternative 2

After the Bald Fire, approximately 987 acres of medium and large diameter snags in green forest ecosystem component existed within the USFS portion. As discussed above, most of the 108 acres of this habitat type along roads may be lost due to the combined activities of road maintenance and public firewood gathering. This loss amounts to an 11% reduction (108 of 987 acres) with most of the remaining 89% of available habitat left intact because it is inaccessible and no treatments are proposed. Additional habitat removals expected on BLM, state and private lands would be minimal.

Alternative 3 - Roadside Hazard Tree

Direct, Indirect and Cumulative Effects to Habitat.

In this alternative, there would be no substantive reductions in burned forest habitat on USFS lands as a result of salvage or fuels treatment activities. However, hazard trees removal would occur on approximately 15% (4,736 acres) of the project area along USFS roads. Similar to the No Action alternative, 11% of green tree snag habitat (108 out of 987 acres) would be removed as a result of hazard tree removal along these roads. Alternatives 2 and 3 are much the same in regards to effects to hairy woodpeckers and green forest snags except that commercial removal of sawtimber-sized trees in this alternative is likely to result in more thorough removal of snags.

An unknown additional amount of habitat would be removed because of harvest on state, private and to a lesser extent BLM lands. These additional habitat removals are expected to be minimal because of drier site conditions on other ownership indicates habitat does not predominate there, and because BLM is the predominant non-USFS landowner (7,000 acres) and they are only harvesting 450 acres.

Effects Conclusion – Alternative 3

After the Bald Fire, approximately 987 acres of large diameter snags in green forest ecosystem component existed within the USFS portion. As discussed above, most of the 108 acres of this habitat type along roads would be lost due to the commercial hazard tree removal, felling sub-merchantable hazard trees, and public firewood gathering. This loss amounts to an 11% reduction (108 of 987 acres) with most of the remaining 89% of available habitat left intact because it is inaccessible and no additional treatments are proposed. Habitat removals expected on BLM, state and private lands would be minimal.

Summary of Hairy Woodpecker Status and Trend at the Bioregional Scale

The Lassen NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the hairy woodpecker; hence, the snag effects analysis for the Bald Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the hairy woodpecker. This information is drawn from the detailed information on habitat and distribution population trends in

the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Ecosystem Component Status and Trend

The current average number of medium-sized and large-sized snags (≥ 15" DBH, all decay classes) per acre across major coniferous and hardwood forest types (westside mixed conifer, ponderosa pine, white fir, productive hardwoods, red fir, eastside pine) in the Sierra Nevada ranges from 1.5 per acre in eastside pine to 9.1 per acre in white fir. In 2008, snags in these types ranged from 1.4 per acre in eastside pine to 8.3 per acre in white fir (USDA Forest Service 2008).

Data from the early-to-mid 2000s were compared with the current data to calculate the trend in total snags per acre by Regional forest type for the 10 Sierra Nevada national forests and indicate that, during this period, snags per acre increased within westside mixed conifer (+0.76), white fir (+2.66), productive hardwoods (+0.35), and red fir (+1.25) and decreased within ponderosa pine (-0.16) and eastside pine (-0.14) Detailed information by forest type, snag size, and snag decay class can be found in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Population Status and Trend

Monitoring of the hairy woodpecker across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quail, fox sparrow, and yellow warbler (USDA Forest Service 2010a, http://data.prbo.org/partners/usfs/snmis/). Hairy woodpeckers were detected on 15.1% of 1659 point counts (and 25.2% of 424 playback points) in 2009 and 16.7% of 2266 point counts (and 25.6% of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.116 in 2009 and 0.107 in 2010. These data indicate that hairy woodpeckers continue to be distributed across the 10 Sierra Nevada National Forests. In addition, the hairy woodpeckers continue to be monitored and surveyed in the Sierra Nevada at various sample locations by avian point count and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008).Current data at the range wide, California, and Sierra Nevada scales indicate that the distribution of hairy woodpecker populations in the Sierra Nevada is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Hairy Woodpecker Trend

As a result of the action alternatives, there would be a small expected change in “Green Forest Snags Ecosystem Component”. This change amounts a 35% reduction of that habitat type (350 of 987 acres) within the Bald Project area. Given the ubiquity of this ecosystem component across the bioregion, this small change at the project level would not alter the stable bioregional trend in the ecosystem component, nor would it lead to a change in the distribution of hairy woodpecker across the Sierra Nevada bioregion.

5.b Snags in Burned Forest Ecosystem Component (Black-backed woodpecker)

Habitat/Species Relationship

The black-backed woodpecker was selected as the MIS for the ecosystem component of snags in burned forests. Recent data indicate that black-backed woodpeckers are dependent on snags created by stand-replacement fires (Hutto 1995, Kotliar et al. 2002, Smucker et al. 2005). The abundant snags associated with severely burned forests provide both prey (by providing food for the specialized beetle larvae that serve as prey) and nesting sites (Hutto and Gallo 2006).

Project-level Effects Analysis – Snags in Burned Forest Ecosystem Component

Habitat Factor(s) for the Analysis: (1) Medium (15-30 inches DBH) snags per acre within burned forest created by stand-replacing fire. (2) Large (greater than 30 inches DBH) snags per acre within burned forest created by stand-replacing fire. (3) Snags 6-15 inches DBH per acre within burned forest created by stand-replacing fire (which includes the size category of snags used as nest trees for Black-backed Woodpeckers).

Current Condition of the Habitat Factor(s) in the Project Area: The following parameters were used to estimate the amount of snags in burned forest ecosystem component:

• Pre-fire medium to large average tree size (average DBH >6"; CWHR size classes 3, 4, 5, and 6) which contained moderate to dense canopy cover (canopy cover >=40%; CWHR canopy classes M or D) of all forest types within the fire perimeter.

• Basal area mortality (burn severity) greater than or equal to 50%.

In the CWHR classification system, average tree size classes are broken out at the following DBH intervals: less than 1inch (size class 1), 1 to 6 inches (size class 2), 6 to 11 inches (size class 3), 11 to 24 inches (size class 4), and >24 inches (size class 5 and 6). Size class 6 represents multi-layered canopy stands. Size class 3 was used for the minimum tree size class in this analysis because areas with this classification would contain potential nest trees at the lower end of the nest tree size. This analysis focused on areas which burned at greater than or equal to 50 percent basal area mortality as indicative of snags in burned forest habitat.

Based on the methodology above, CWHR data shows that approximately 5,769 of acres of "Snags in Burned Forest Ecosystem Component", which represents moderate to high quality snag habitat for black-backed woodpeckers, was created on USFS lands by the Bald Fire.

Alternative 1 - Proposed Action

Direct and Indirect Effects to Habitat.

Table 4 - Proposed Action Comparison to CWHR Modeled Black-backed Woodpecker Habitat.

Treatment	Acreage Proposed	Acres of modeled Snags in Burned Forest Ecosystem Component Overlapping this Treatment Category	Percentage of Burned Forest Ecosystem Component
No Treatment/Natural Recovery	16,961	2,121	37% (not affected)
Fuels Treatment	5,499	1,523	26%
Salvage	3,632	1,903	33%
Roadside Hazard Only	4,815	222	4%

Table 4 compares the proposed activities to the acres of burned forest that meet the criteria modeled as quality black-backed woodpecker habitat. As indicated, salvage harvest would potentially remove 33% (1,903 acres), fuels treatments remove 26% (1,523 acres) and roadside hazard treatments remove 4% (222 acres) of modeled black-backed woodpecker habitat. No treatment would occur on 37% (2,121 acres) of the modeled habitat.

To provide for snags and down woody debris within treatment areas, retention islands would be designated in all treatment units except road hazard removal units. Retention islands would consist of small-untreated patches within the boundary of treatment units that range in size commonly between two to five acres, and would comprise 20 percent of the acres within each unit. Retention islands would be distributed across the unit to provide a variety of burned conditions representative of those present in the unit prior to treatment. This equates to an additional 686 acres of black-backed woodpecker habitat within treatment units that could remain in its existing condition relative to snag densities and continue to provide available habitat. These retention areas are smaller patches and may be discontinuous, so their effectiveness as habitat is unknown. However, it should be noted that they will likely provide some additional available habitat.

Cumulative Effects to Habitat in the Analysis Area

The cumulative effects analysis area was expanded from USFS lands within the Bald Fire to include the entire Bald Fire footprint, which is approximately 8,200 additional acres, made up of approximately 7,000 acres of BLM, 500 acres State, and 700 acres private. Most of these lands are drier than is present on USFS lands, thus large expanses of suitable hairy woodpecker habitat are not present. On-going projects to be considered within the cumulative effects area include 450 acres of additional salvage and

reforest operations on BLM, an assumption that State and private lands would salvage and reforest their burned forests, and firewood harvest would occur on USFS lands.

The Bald Fire burned a total of 31,324 acres on USFS lands, which is 79% of the total burned acres (the remaining acreage being BLM, State, and private ownership as described above). The CWHR dataset is incomplete on these adjacent lands. However, it is estimated from available data that a total of 23 acres of mature forest with 50% or greater burn severity occurred, which is negligible in terms of large snags representing black-backed woodpecker habitat. Thus, it can be expected that that the small amount of this available habitat type could be lost by BLM, state, or private salvage, but the available habitat is so small and isolated that the overall cumulative effects are negligible.

Personal fuelwood harvest would occur within the Bald Fire footprint on USFS lands. The Lassen NF has one of the most active fuelwood programs in the region, selling over 16,000 cord permits in 2011. This program allows the felling of snags by woodcutters, with upper diameter limits set at 20 inches DBH for snags of commercial species of conifers, and with no diameter restrictions on lodgepole pine snags. Siegel et al (2013) in their monitoring of black-backed woodpeckers in the Peterson and Wheeler fires on the Lassen and Plumas NFs, noted woodcutting to be pervasive along roads within both fires. Fuelwood harvest would primarily be immediately along roads, as well as in relatively flat areas that allow off-road travel. Since Siegel et al (2013) indicated the main woodcutting activity in the fires they monitored was along roads, and alternative one includes hazard tree removal and salvage along open roads, then most habitat vulnerable to woodcutters (222 acres, 4% of available habitat) would have been already removed. Approximately 37% (2,121 acres) of total habitat is untreated on USFS lands and would remain intact because of its inaccessibility. Woodcutting is not expected to be a substantive cumulative effect in terms of snag reduction within this habitat type.

Effects Conclusion - Alternative 1:

After the Bald Fire, approximately 5,769 acres of medium and large diameter burned snags ecosystem component existed within the USFS portion of the fire. A small amount of similar habitat is present on other ownership within the fire footprint, but since most of these lands are drier, smaller tree size and more shrublands than is present on USFS lands, large expanses of suitable black-backed woodpecker habitat are not present there. Given the analysis documented above, cumulatively there may be reduction in snags on approximately 63% (3,646 acres) of the available habitat because of the proposed treatments on USFS lands. A negligible amount would be removed because of harvest on state, private and to a lesser extent BLM lands, as well as a small amount of fuelwood cutting on USFS lands. These additional habitat removals are expected to be minimal because of drier site conditions and shrublands on other ownership indicates habitat does not predominate there. Habitat along USFS roads is susceptible to fuelwood cutters, but has already been harvested during hazard tree removal so remaining habitat is largely inaccessible. In summary, approximately 37% (2,121 acres) of medium and large diameter burned snags ecosystem component available to black-backed woodpeckers would remain present across the landscape.

Alternative 2 - No Action

Direct and Indirect and Cumulative Effects to Habitat

Under the No Action alternative, none of the activities proposed under Alternative 1 would be implemented. No salvage harvest, fuels reduction treatments, site preparation, or reforestation would occur. Current management practices such as road maintenance and fire suppression would continue. There may be some losses of burned forest habitat on USFS lands as a result of hazard tree felling along road corridors conducted as part of road maintenance. Logs would be left in place and only trees that provide direct safety hazards would be felled. A number of smaller diameter trees within these corridors that do not represent hazards would remain. In addition, personal fuelwood harvest would take place along roads and is a cumulative effect considered. Fuelwood harvest is most prevalent along roads and in this alternative, a larger number of burned trees may be taken as firewood since they would not be harvested prior.

The burned snags ecosystem component located along road corridors amounts to 222 acres. These trees may or may not be removed as part of road maintenance related to safety. However, it is likely that over a moderate amount of time, many of the trees would be removed in combination between road maintenance or firewood collection on USFS lands. Therefore, it can be assumed that most of the 222 acres of this habitat type along roads may be lost. This amounts to a 4% reduction (222 of 5,769 acres).

A negligible amount of habitat would be removed because of harvest on state, private and to a lesser extent BLM lands. These additional habitat removals are expected to be minimal because drier site conditions, smaller trees, and more shrublands indicates habitat does not predominate there.

Effects Conclusion - Alternative 2:

After the Bald Fire, approximately 5,769 acres of “Snags in Burned Forest Ecosystem Component” existed within the USFS portion of the fire. As discussed above, most of the 222 acres of this habitat type along roads may be lost due to the combined activities of road maintenance and public firewood gathering. This loss amounts to a 4% reduction (222 of 5,769 acres) with most of the remaining 96% of available habitat left intact because it is inaccessible and no treatments are proposed. Negligible habitat removals are expected on BLM, state and private lands because drier site, smaller trees, and more shrublands indicate habitat does not predominate there.

Alternative 3 - Roadside Hazard Tree

Direct, Indirect and Cumulative Effects to Habitat

In this alternative, there would be no reductions in “Snags in Burned Forest Ecosystem Component” on USFS lands as a result of salvage or fuels treatment activities. However, hazard trees removal would

occur on approximately 15% (4,736 acres) of the project area along USFS roads. Similar to the No Action alternative, 4% of "Snags in Burned Forest Ecosystem Component" (222 out of 5,769 acres) would be removed as a result of hazard tree removal along these roads. Alternatives 2 and 3 are much the same in regards to effects to black-backed woodpeckers and burned forest ecosystem component except that commercial removal of sawtimber-sized trees along roads in this alternative is likely to result in more thorough removal of snags.

A negligible amount of habitat would be removed because of harvest on state, private and to a lesser extent BLM lands. These additional habitat removals are expected to be minimal because of drier site conditions, smaller trees, and more shrublands on these other ownerships.

Effects Conclusion - Alternative 3:

After the Bald Fire, approximately 5,769 acres of "Snags in Burned Forest Ecosystem Component" existed within the USFS portion of the fire. As discussed above, most of the 222 acres of this habitat type along roads would be lost due to the combined activities of hazard tree removal and public firewood gathering. This loss amounts to a 4% reduction (222 of 5,769 acres) with most of the remaining 96% of available habitat left intact because it is inaccessible and no treatments are proposed. Negligible habitat removals are expected on BLM, state and private lands because drier site, smaller trees, and more shrublands indicate habitat does not predominate there.

Summary of Black-backed Woodpecker Status and Trend at the Bioregional Scale

The Lassen NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the black-backed woodpecker; hence, the snags effects analysis for the Bald Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the black-backed woodpecker. This information is drawn from the detailed information on habitat and distribution population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Ecosystem Component Status and Trend

The current average number of medium-sized and large-sized snags ($\geq$ 15" DBH, all decay classes) per acre across major coniferous and hardwood forest types (westside mixed conifer, ponderosa pine, white fir, productive hardwoods, red fir, eastside pine) in the Sierra Nevada ranges from 1.5 per acre in eastside pine to 9.1 per acre in white fir. In 2008, snags in these forest types ranged from 1.4 per acre in eastside pine to 8.3 per acre in white fir (USDA Forest Service 2008).

Data from the early-to-mid 2000s were compared with the current data to calculate the trend in total snags per acre by Regional forest type for the 10 Sierra Nevada national forests and indicate that, during this period, snags per acre increased within westside mixed conifer (+0.76), white fir (+2.66), productive

hardwoods (+0.35), and red fir (+1.25) and decreased within ponderosa pine (-0.16) and eastside pine (-0.14).

Detailed information by forest type, snag size, and snag decay class can be found in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

In the spring of 2014 a regional analysis was conducted to estimate the amount of burned forest habitat on forested lands that burned from 2006-2013 in the range of BBWO in California. Included were burned timber removal activities that occurred in 2006-2013, as well as burned timber removal activity proposed to occur in 2014 within areas that burned previously. The analysis showed that during this time frame, wildfires on USFS lands resulted in approximately 180,823 acres of black-backed woodpecker habitat. Of these acres, 21% (37,727 acres) had been, or were proposed to be, treated with post-fire timber removal. The estimates for all lands (regardless of landowner) showed that wildfires resulted in about 243,251 acres of black-backed woodpecker habitat, of which 31% (74,490 acres) had been, or were proposed to be, treated with post-fire timber removal. Combined, an estimated 168,761 acres of untreated burned forest habitat suitable for black-backed woodpeckers was created by wildfires that burned from 2006 to 2013. The regional office is in the process of updating this analysis to include fires that burned in 2014.

This amount of treated acres on all lands is likely an overestimate because it includes the assumption that all "other lands" (non-FS and non-NPS) are harvested following a fire. The amount of treated acres on FS lands may be an overestimate because it was assumed that if an area is marked as a roadside hazard treatment salvage area, that the entire polygon was treated; however, sometimes only a portion of the polygon may be treated on the ground. Moreover, the percent of treated lands is likely missing fires that occurred exclusively on National Park Service (NPS) land due to lack of access to data on fires that occurred exclusively on NPS lands. An increase in documented fires on NPS lands would likely increase the amount of habitat available to woodpeckers and lead to an overall decrease in the percent treated on all lands.

Population Status and Trend

Monitoring of the Black-backed Woodpecker across the 10 National Forests in the Sierra Nevada has been conducted in partnership with The Institute for Bird Populations (IBP) (Forest Service 2010a, http://www.birdpop.org/pages/blackBackedWoodpecker.php). The project began with a pilot study in 2008, (Siegel et al. 2008) and has subsequently been implemented fully in 2009-2014 (Siegel et al. 2010, 2011, 2012, 2014a, 2014b and *in preparation*). Surveys of randomly selected fire areas 1-10 years post-fire have generally yielded Black-backed Woodpecker detections at around half (min = 47% in 2013; max = 75% in 2012) of the fires surveyed, and around 20% of the individual survey points surveyed (Table 1).

During the years of full survey implementation (2009-2013), Black-backed Woodpeckers were detected in fire areas on all ten National Forest units surveyed in 2011 through 2013, and on all National Forest units surveyed except for Sierra National Forest in 2009 and 2010. These data indicate a stable population distribution in the Sierra Nevada in which black-backed woodpeckers continue to be distributed across the 10 National Forests in the study area (ranging from the Modoc National Forest in the north to the Sequoia National Forest to the south). A recent report (Siegel et al. 2014) summarizes the MIS monitoring of Black-backed Woodpeckers from 2009-2013 across the ten Sierra Nevada national forests and found that (page 2) "At this time there is no evidence of a temporal trend in occupancy rates during the five years (2009-2013) we have been monitoring Black-backed woodpeckers on National Forests in California, or of a broad scale change in the species' distribution in California. Although the distribution of the species appears to change slightly from year to year, Black-backed Woodpeckers remain present across their historic range in California." Data for 2014 are still being analyzed.

Table 5 - Number of fires surveyed (each with a transect of 10-20 survey points), fires with Black-backed Woodpecker detections, points surveyed, and points with Black-backed Woodpecker detections during each year of MIS surveys for Black-backed Woodpecker.

Year	No. of Fires Surveyed	No. (Percent) of Fires with Black-backed Woodpecker Detections	No. of Points Surveyed	No. (Percent) of Points with Black-backed Woodpecker Detections
2008[1]	19	10 (53%)	371	68 (18%)
2009	51	28 (55%)	899	169 (19%)
2010	49	29 (59%)	860	132 (15%)
2011	50	24 (48%)	895	148 (17%)
2012	52	39 (75%)	953	207 (22%)
2013	53	25 (47%?)	1008	217 (22%)

[1]Pilot study in which methods differed slightly from methods in subsequent years.

Additionally, mean occupancy probability for stations surveyed during 2009 was 0.253 (95% credible interval: 0.222 – 0.289); applying this probability across the 10 national forests yields an estimate that approximately 81,814 ha (25.3%) (range of 71,921 – 93,610 ha) the 323,358 ha of burned forest (burned between 1999 and 2008) on the ten national forest units within monitoring area was occupied by black-backed woodpeckers in 2009.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Black-Backed Woodpecker Trend.

The proposed action of the Bald Fire Salvage and Restoration project would result in a loss of approximately 63% (3,646 acres) of the 5,769 acres of "Snags in Burned Forest Ecosystem Component" created by the Bald Fire. Approximately 37% (2,121 acres) would be retained in untreated areas. In

addition to these estimated to be lost, approximately 23 acres would be lost from actions on adjacent BLM, state and private sands, which are drier, have smaller tree sizes, and more shrublands than USFS ownership and thus function minimally as habitat. Given that from 2006 to 2013 wildfires created an estimated 168,761 acres of burned forest black-backed woodpecker habitat, the combined reductions of nearly 3,700 acres of "Snags in Burned Forest Ecosystem Component" would not alter the stable trend of this of ecosystem component, nor would it lead to a change in the distribution of black-backed woodpecker across the Sierra Nevada bioregion.

6. References Cited

CDFG (California Department of Fish and Game). 2005. California Department of Fish and Game and California Interagency Wildlife Task Group. California Wildlife Habitat Relationships (CWHR) version 8.1. personal computer program. Sacramento, California. On-Line version. http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.asp. (Accessed: January 3, 2008).

Hutto, R.L. 1995. Composition of bird communities following stand-replacement fires in Northern Rocky Mountain (U.S.A.) conifer forests. Conservation Biology 9(5):1041-1058.

Hutto, R.L., and S.M. Gallo. 2006. The effects of postfire salvage logging on cavity-nesting birds. The Condor 108:817-831.

Kotliar, N.B., S.J. Hejl, R.L. Hutto, V.A. Saab, C.P. Melcher, and M.E. McFadzen. 2002. Effects of fire and post-fire salvage logging on avian communities in conifer-dominated forests of the western United States. Studies in Avian Biology No.25:49-64.

Sauer, J. R., J. E. Hines, and J. Fallon. 2007. *The North American Breeding Bird Survey, Results and Analysis 1966 - 2006. Version 10.13.2007.* USGS Patuxent Wildlife Research Center, *Laurel, MD.*

Siegel, R.B., M.W. Tingley, and R.L. Wilkerson. 2014a. Black-backed Woodpecker MIS Surveys on Sierra Nevada National Forests: 2013 Annual Report. Report to USFS Pacific Southwest Region. The Institute for Bird Populations, Point Reyes Station, CA. **PDF**

Siegel, R. B., M. W. Tingley, and R. L. Wilkerson. 2014b. Black-backed Woodpecker MIS surveys on Sierra Nevada National Forests: 2012 annual report. The Institute for Bird Populations, Point Reyes Station, California. **PDF**

Siegel, R. B., M. W. Tingley, R. L. Wilkerson, M. L. Bond, and C. A. Howell. 2013. Assessing home range size and habitat needs of Black-backed woodpeckers in California: Report for the 2011 and 2012 field seasons. Report to USFS Pacific Southwest Region. The Institute for Bird Populations, Point Reyes Station, CA.

Siegel, R.B., M.W. Tingley, and R.L. Wilkerson. 2012. Black-backed Woodpecker MIS surveys on Sierra Nevada National Forests: 2011 Annual Report. Report to USFS Pacific Southwest Region. The Institute for Bird Populations, Point Reyes Station, CA. **PDF**

Siegel, R.B., M.W. Tingley, and R.L. Wilkerson. 2011. Black-backed Woodpecker MIS surveys on Sierra Nevada National Forests: 2010 Annual Report. Report to USFS Pacific Southwest Region. The Institute for Bird Populations, Point Reyes Station, CA. **PDF**

Siegel, R.B., J.F. Saracco, and R.L. Wilkerson. 2010. Management indicator species (MIS) surveys on Sierra Nevada national forests: Black-backed Woodpecker. 2009 annual report. Report to USFS Pacific Southwest Region. The Institute for Bird Populations, Point Reyes Station, CA. **PDF**

Siegel, R.B., R.L. Wilkerson, and D.L. Mauer. 2008. Black-backed Woodpecker (Picoides arcticus) surveys on Sierra Nevada National Forests: 2008 Pilot Study. Report to Region 5 of the USDA Forest Service. The Institute for Bird Populations, Point Reyes Station, CA. **PDF**

Siegel, R.B. and D.F. DeSante. 1999. Version 1.0. The draft avian conservation plan for the Sierra Nevada Bioregion: conservation priorities and strategies for safeguarding Sierra bird populations. Institute for Bird Populations report to California Partners in Flight. Available on-line: http://www.prbo.org/calpif/htmldocs/sierra.html.

Sierra Nevada Research Center. 2007. Plumas Lassen Study 2006 Annual Report. USDA Forest Service, Pacific Southwest Research Station, Sierra Nevada Research Center, Davis, California. 182pp.

Sierra Nevada Research Center. 2008. Plumas Lassen Study 2007 Annual Report. USDA Forest Service, Pacific Southwest Research Station, Sierra Nevada Research Center, Davis, California. 310pp. http://www.fs.fed.us/psw/programs/snrc/forest_health/plas_annual_report_2007.pdf

Sierra Nevada Research Center. 2009. Plumas Lassen Study 2008 Annual Report. USDA Forest Service, Pacific Southwest Research Station, Sierra Nevada Research Center, Davis, California. 223pp. http://www.fs.fed.us/psw/programs/snrc/forest_health/plas_annual_report_2008.pdf

Sierra Nevada Research Center. 2010. Plumas Lassen Study 2009 Annual Report. USDA Forest Service, Pacific Southwest Research Station, Sierra Nevada Research Center, Davis, California. 184pp. http://www.fs.fed.us/psw/programs/snrc/forest_health/plas_annual_report_2009.pdf

Smucker, K.M., R.L. Hutto, B.M. Steele. 2005. Changes in bird abundance after wildfire: importance of fire severity and time since fire. Ecological applications 15(5):1535-1549.

Tingley, M. W, R. L. Wilkerson, and R. B. Siegel. 2014b. Modeling expected density of black-backed woodpeckers at the Rim fire, California: a decision-support tool for post-fire management. The Institute for Bird Populations, Point Reyes Station, California.

USDA Forest Service. 2001. Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement. Forest Service, Pacific Southwest Region. January 2001. http://www.fs.fed.us/r5/snfpa/library/archives/feis/index.htm

USDA Forest Service. 2007a. Record of Decision, Sierra Nevada Forests Management Indicator Species Amendment. U.S. Forest Service, Pacific Southwest Region. December, 2007. 18pp.

USDA Forest Service. 2008. Sierra Nevada Forests Bioregional Management Indicator Species (MIS) Report: Life history and analysis of Management Indicator Species of the 10 Sierra Nevada National Forests: Eldorado, Inyo, Lassen, Modoc, Plumas, Sequoia, Sierra, Stanislaus, and Tahoe National Forests and the Lake Tahoe Basin Management Unit. Pacific Southwest Region, Vallejo, CA. January 2008. http://www.fs.fed.us/r5/snfmisa/pdfs/2008_Sierra_Nevada_Forests_MIS_Report_January_2008.pdf

USDA Forest Service. 2009. Sierra Nevada forest plan accomplishment monitoring report for 2007. USDA Forest Service, Pacific Southwest Region. On-line version. http://www.fs.fed.us/r5/snfpa/monitoringreport2007/

USDA Forest Service. 2010a. Sierra Nevada Forests Bioregional Management Indicator Species (MIS) Report: Life history and analysis of Management Indicator Species of the 10 Sierra Nevada National Forests: Eldorado, Inyo, Lassen, Modoc, Plumas, Sequoia, Sierra, Stanislaus, and Tahoe National Forests and the Lake Tahoe Basin Management Unit. Pacific Southwest Region, Vallejo, CA. December 2010. 132pp.

USDA Forest Service. 2010b. Sierra Nevada forest plan accomplishment monitoring report for 2008. USDA Forest Service, Pacific Southwest Region. On-line version. http://www.fs.fed.us/r5/snfpa/monitoringreport2008/