MOONLIGHT AND WHEELER FIRES RECOVERY AND RESTORATION PROJECT SUPPLEMENTAL WILDLIFE REPORT Affected Environment and Environmental Consequences –MIGRATORY BIRDS

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This report documents the effects of the proposed action (alternative A), No Action (alternative B) and two additional action alternatives (alternatives C and D) on selected Neotropical Migrant Birds, as a result of implementation of the **MOONLIGHT AND WHEELER FIRES RECOVERY AND RESTORATION PROJECT (Moon-Wheeler Project)**. The description of the Moon-Wheeler Project and all alternatives is found in Chapter 2 of the Moonlight and Wheeler Fires Recovery and Restoration Project Environmental Impact Statement. General effects of the proposed action and alternatives has been described in detail in the Moonlight and Wheeler Fires Recovery and Restoration Project BA/BE (USDA 2009a) and Moonlight and Wheeler Fires Recovery and Restoration Project MIS Report (USDA 2009b). This supplemental wildlife report tiers to those documents.

NEOTROPICAL MIGRATORY BIRDS

Background

Migratory birds (MB) are defined as species protected by the Migratory Bird Treaty Act and whose breeding area includes the North American temperate zones and that migrate in many cases south of the continental United States during non-breeding seasons (Hunter et al 1993). The number of MB's found within the Sierra Nevada bioregion is large. They use a broad array of habitat associations (2004 SNFPA SFEIS, Chap. 3, page 172). Under the National Forest Management Act (NFMA), the Forest Service is directed to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives." (P.L. 94-588, Sec 6 (g) (3) (B)). Management direction is not specific to individual bird species, except for those designated as threatened, endangered, or sensitive, and management is generally focused on habitats and overall population trends rather than individuals. The Moon-Wheeler Project was designed with mitigations and silvicultural treatments to maintain and enhance habitat for neotropical-migratory songbirds. Implementation of the project is in accordance with the objectives of Executive Order 13186 and the 2008 MOU between USFS and USFWS, regarding compliance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, which outline responsibilities of federal land management agencies relative to the conservation of migratory birds.

Saab and Rich (1997) found that neotropical migrant bird species with decreasing population trends tend to be those which nest in shrub layers, and species with increasing population trends tend to nest in tree canopies. Within the 1996 RDEIS Managing

California Spotted Owl Habitat in the Sierra Nevada National Forests of California, An Ecosystem Approach, a summary table of Sierran Neotropical Migratory Bird species with measurable population declines based on Breeding Bird Surveys conducted in coordination with the U.S. Fish and Wildlife Service indicates that 32 species showing population declines have some habitat association with grassland/shrubland/open forest and/or riparian.

Selection of which MB species to bring forward in the Moon-Wheeler effects analysis was based on two documents. The 2004 SNFPA SFEIS (chapter 3, page 173) identified forty land bird species (not all neo-tropical migrants) that are of particular concern and are a high priority for monitoring efforts in the Sierra Nevada bioregion. The 2008 MOU between the USFS and USFWS recommends consulting the current USFWS *Birds of Conservation Concern* (BCC) (updated 2002 and available at www.fws.gov/migratorybirds/reports/BCC2002.pdf) when developing a list of species to be considered in the project planning process. Ten BCC species are identified for the Sierra Nevada bird conservation region. Criteria used in selecting the 17 species listed in Table 2 was based on 1) the likelihood of the species present in the analysis area, 2) habitat components would likely be impacted by project activities (snag or hazard tree removal, reforestation), and 3) species associated with forest and/or brush habitats.

The California Wildlife Habitat Relationship (CWHR) System provides species' habitat suitability ratings for feeding, cover, and foraging in varying habitat types and seral stages. These suitability ratings are converted to numeric values and the three values are averaged to calculate overall habitat suitability values for each habitat type and seral stage for each particular species. The CWHR system can be used to predict differences in habitat values between two habitat conditions and can indicate negative or positive trends based on differences in habitat values between two habitat conditions.

Affected Environment

For the Moon-Wheeler Project analysis area (the area encompassing the two fire perimeters – 87,647 acres total, 68,408 Forest Service acres) the representative CWHR vegetation types pre and post fire are listed in Table 1: these CWHR types were derived from VESTRA mapping (2001) and photo interpretation of 2007 post fire infra-red aerial photos (VEG MGT SOLUTIONS). Field analysis and data generated from common stand exam plots provided additional support for adjustments to the vegetative land base. The updated layer produced by this typing is used in this analysis. All vegetation information is displayed using the CWHR vegetation codes and serves as the baseline acres for analysis.

Table 1: Summary of CWHR acres within Moon-Wheeler Analysis Area; from VESTRA 2002, updated with Fire Severity maps and 2007 aerial photography (all acres are approximate and all are National Forest).

CWHR Type*	Pre-fire	Post Fire	CWHR Type	Pre-Fire	Post Fire	CWHR Type	Pre-Fire	Post Fire
SMC1	23	57	RFR3M	5	0	EPN4P	1961	1861
SMC2S	1400	103	RFR4S	2	33	EPN4M	928	325

SMC2P	45	36	RFR4P	51	102	EPN4D	107	42
SMC2M	0	2	RFR4M	136	41	EPN5S	0	59
SMC2D	138	0	RFR4D	6	0	EPN5P	14	29
SMC3S	264	407	RFR5P	18	0	EPN5M	100	42
SMC3P	120	146	RFR5M	38	0	EPN5D	42	
SMC3M	111	31	PPN1	0	23	JPN5M	0	20
SMC3D	151	4	PPN2S	1052	199	LPN3P	0	1
SMC4S	551	3081	PPN2P	90	7	LPN3M	0	6
SMC4P	3469	6416	PPN2M	0	3	LPN3D	0	11
SMC4M	12529	1674	PPN3S	130	140	LPN4S	2	5
SMC4D	1313	149	PPN3P	542	116	LPN4P	0	19
SMC5S	84	187	PPN3M	571	0	LPN4M	0	11
SMC5P	899	403	PPN4S	199	427	LPN4D	8	
SMC5M	10211	296	PPN4P	575	757	LPN5P	0	3
SMC5D	3171	91	PPN4M	1358	176			
WFR2S	104	19	PPN4D	171	5	AGS	221	810
WFR3S	317	146	PPN5S	25	18	ASP	851	472
WFR3P	75	33	PPN5P	163	24	MCP	1338	39023
WFR3M	103	1	PPN5M	77	0	MHC	5	11
WFR3D	53	0	EPN1	33		MHW	1733	1214
WFR4S	799	1204	EPN2S	33	22	MRI	438	532
WFR4P	1967	3785	EPN2P	0	5	PGS	7	339
WFR4M	8775	938	EPN2M	26		SGB	188	132
WFR4D	1325	90	EPN3S	0	21	WTM	690	171
WFR5S	39	4	EPN3P	397	176	ROCK	192	242
WFR5M	4827	147	EPN3M	71		BAR	0	98
WFR5D	537	6	EPN3D	0	5			
RFR3P	50	23	EPN4S	284	1094			
						Total	68408	68408

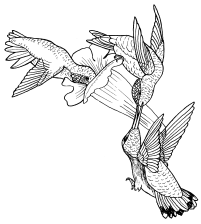
*1 = seedling tree <1" dbh, 2 = Sapling tree 1-6" dbh, 3 = Pole tree 6-11" dbh, 4=small 11-24"dbh, 5=medium/large >24"dbh. D= Dense Canopy Cover > 60%, M= Moderate Canopy 40-59%, SMC=Sierra Mixed Conifer, PPN = Ponderosa Pine, WFR = White Fir, EPN = Eastside Pine, JPN = Jeffrey Pine, MHC = Montane Hardwood Conifer, PGS = Perennial Grassland, MCP = Montane Chaparral, MRI = Montane Riparian, WAT = Water, WTM = Wet Meadow.

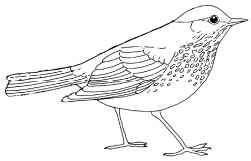
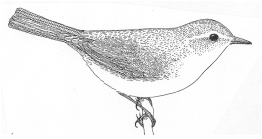
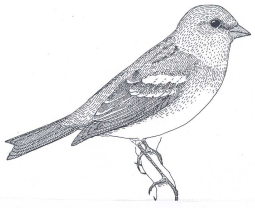
Table 1 indicates the following: 1) As a result of the wildfire, within the analysis area, 97 percent of the late seral closed canopy habitat (CWHR 5M, 5D) was consumed by wildfire (19,003 acres reduced to 602 acres); 2) a large majority of CWHR 4 and 5 stands were converted to non-forested vegetation types that are expected to be dominated by brush; 3) 519 acres of wet meadow were either converted to dry meadow (expressed as PGS) or some other CWHR type as a result of more precise mapping of this particular type; 4) losses in aspen habitat actually resulted from more precise mapping of this particular type; no aspen loss is anticipated as a result of wildfire or project actions.

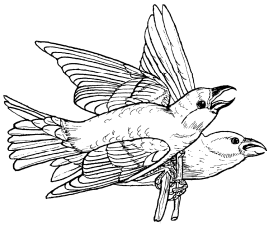
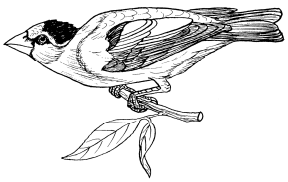
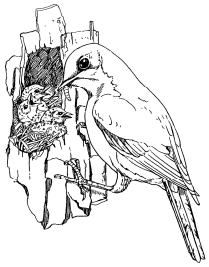
Table 2 provides a list of selected MB species that occur within the Moon-Wheeler Project analysis area. Habitat suitability ratings for the selected Sierra Mixed Conifer CWHR seral stages that were present prior to the Antelope Complex and Moonlight Wildfires within the Project area are provided for these bird species. In addition, habitat

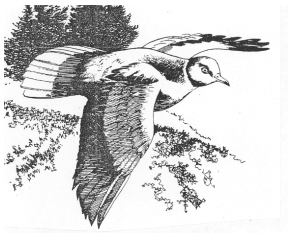
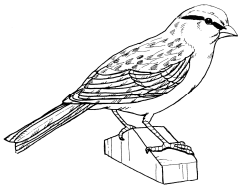
suitability ratings are provided for CWHR type Montane Chaparral (MCP) in seedling and young shrub stages (1 & 2), the type of habitat projected to dominate the analysis area 1-5+ years post fire. In addition the average suitability rating for MCP for all stages is displayed to reflect longer term habitat suitability as shrubs mature and dominate the site. For each species habitat suitability rating listed in this report, the rating is the sum of all high, moderate and low quality habitat, using the composite index for reproduction, foraging, and cover habitat combined. Habitat suitability ratings are presented to compare apparent trends in suitability from pre and post fire conditions.

Table 2. –Selected High Priority migratory birds within Moon-Wheeler Project Analysis Area

HABITAT GROUP	SPECIES	KEY HABITAT FEATURES	CWHR Suitability Rating*	
	Flammulated Owl	Requires open habitats with scattered trees and snags with cavities. Cover provided by cavities and foliage of trees and shrubs. Suitable habitat includes open, deciduous and conifer habitats with brushy understory, and scattered snags and live trees for nesting and perching. Uses logged and burned areas. Prefers oaks and acorns in winter.	Avg. SMC = **0.61 (Moderate suitability)**	Avg. MCP = **0.16 (Low suitability**
	Rufous Hummingbird	Found in a wide variety of habitats that provide nectar-producing flowers. Trees and shrubs in many habitats provide cover, including lowland riparian, open woodlands, scrub, and chaparral.	Avg. SMC = **1.00 (High suitability)**	Avg. MCP = 0.33 **(Low suitability**
	Lewis' Woodpecker	Occurring in open oak savannahs, broken deciduous and coniferous habitats. Requires open habitats with scattered trees and snags with cavities. Cover provided by cavities and foliage of trees and shrubs.	Avg. SMC = **0.61 (Moderate suitability)**	Avg. MCP = 0.16 **(Low suitability**
	Williamson's Sapsucker	Preferred nesting habitat is lodgepole pine, but also nests in aspens adjacent to stands of red fir, Jeffrey pine, and eastside pine habitats. Requires snags or live trees with rotted heartwood in which to excavate nesting and roosting cavities.	Avg. SMC = **0.36 (Moderate suitability)**	No value for MCP

	White-headed Woodpecker	A resident of montane coniferous forests up to lodgepole pine and red fir habitats. Frequents montane pine and fir forest habitats with large trees and snags, and tree/shrub, and tree/herbaceous ecotones.	Avg. SMC = **0.64 (Moderate suitability)**	No value for MCP
	Swainson's Thrush	Rare in Sierras; prefers large tree (≥24" dbh), moderate to dense (≥40% canopy closure) stands; nest is an open cup in willow or alder, 2-20 feet above ground; eats mostly insects and spiders in litter under shrubs or on forest floor; gleans from shrubs; rarely flycatches[1]	Avg. SMC = **0.28 (Low suitability)**	Avg. MCP = 0.14 **(Low suitability)**
	Warbling Vireo	Prefers small to large tree (≥6" dbh), sparse to moderately dense (<70% canopy closure) stands; frequents wooded areas with tall trees, open to intermediate canopy, and a substantial shrub understory; nest usually 4-12 feet above ground; gleans insects and spiders from foliage; sometimes eats aerial insects[1], thus can be considered an aerial insectivore.	Avg. SMC = **0.60 (Moderate Suitability)**	No Value for MCP
	White-crowned Sparrow	Breeds in montane meadows and along stream courses with shrubs or conifers; seed-eater; nest on ground or at base of shrub or on limb, usually within 1.3 feet of ground; winters in open areas near shrubs or other cover; eats primarily seeds; also eats insects; feeds on ground[1]	Avg. SMC = **0.07 (Low suitability)**	Avg. MCP = **0.11 (Low suitability)**
	Common Poorwill	Inhabits all stages of shrub areas, preferring clearings and open stages for foraging; insects for prey; nest is a scrape on the ground; feeds on insects caught in the air (aerial insectivore), also some on insects on the ground[1]	Avg. SMC = **0.22 (Low suitability)**	Avg. MCP = **0.46 (Moderate Suitability)**
	Lazuli Bunting	Occupies open brush lands and thickets of willows, other shrubs or trees, tall weeds, or vines; eats insects and seeds taken from foliage or ground; sometimes takes aerial insects; nest usually 1.5-4 feet above ground[1]	Avg. SMC = **0.12 (Low suitability)**	Avg. MCP = **0.46 (Moderate Suitability)**
	Olive-sided Flycatcher	Prefers large tree (≥24" dbh) stands; most numerous in montane conifer	Avg. SMC = **0.69 (High**	No value for MCP

		forest where tall trees overlook canyons, meadows, lakes, or other open terrain; nests 5-70 feet above ground; feeds on aerial insects, especially honey bees[1]. Has been shown to be strongly associated with burned forest (Kotliar et al 2002, USDA, PSW, 2006), especially early post-fire conditions (Hutto 1995). Relies on standing dead trees as perch sites from which to launch into open air space for prey (aerial insectivore).	**Suitability)**	(No suitability index provided but associated with early post-fire conditions and standing snags)
	Western Wood-peewee	Prefers medium to large tree (≥12" dbh) stands; most numerous in woodlands or forests, with sparse to moderate canopy cover, which border on meadows, streams, lakes, and other moist, open areas; nest usually 13-80 feet above ground; feeds mostly on flying insects (aerial insectivore); occasionally gleans insects from foliage[1]. Typically abundant in burns. (Koltiar et al, 2002).	Avg. SMC = **0.79 (High Suitability)**	No value for MCP (No suitability index provided but associated with burn habitats)
	Red Crossbill	Prefers large tree (≥24" dbh), open to moderate (20-69% canopy closure) stands; availability of mature conifer seeds more important than kind of conifer; in Sierra Nevada, most numerous where conifer canopy with open to moderate canopy border meadows, lakes, or streams; nests 5-80 feet above ground, usually high up[1]	Avg. SMC = **0.33 (Low Suitability)**	No value for MCP
	Evening Grosbeak	Prefers medium to large tree (≥12" dbh), moderate to dense (≥40% canopy closure) stands; usually nests in forests dominated by firs; most important foods are seeds of fir, pine, and other conifers, and buds of hardwoods such as oak, willow, and maple; usually nests more than 35 feet above ground, but can nest 7-100 feet above ground[1]	Avg. SMC = **0.51 (Moderate Suitability)**	Avg. MCP = **0.10 (Low suitability)**
	Western Bluebird	Prefers medium to large tree (≥12" dbh), open (<40% canopy closure) stands; usually nests in old woodpecker cavity in snag, tree, or stump (secondary cavity nester); availability of snags frequently limits population density; captures insects on ground or foliage; occasionally eats aerial insects[1] (aerial insectivore).	Avg. SMC = **0.27 (Low suitability)**	Avg. MCP = **0.05 (Low suitability)**
	Band-tailed Pigeon	Prefers medium to large tree (≥12" dbh) stands; prefers multi-layered forests	Avg. SMC = **0.60 (Moderate**	Avg. MCP = **0.14 (Low suitability)**

		with a light understory; dense thickets often used for breeding; feeds on acorns and fruits of several species[1]	**Suitability)**	
	Chipping Sparrow	Prefers open (<40% canopy closure) stands; frequents woodlands with sparse herbaceous cover and few shrubs, if any, for breeding; often forages in open shrub or grassland habitat nearby; gleans insects and seeds from ground and foliage; usually nests 1-6 feet above ground[1]. More abundant in slightly older burns (10-40 years after fire) than in early post-fire conditions (Hutto 1995).	Avg. SMC = **0.64 (Moderate Suitability)**	Avg. MCP = **0.09 (Low suitability)**

*CWHR Suitability rating: 1.0 = high suitability, optimal for species occurrence, 0.66 = moderate suitability, suitable for species occurrence, can support moderate population densities; 0.33 = low suitability, marginal for species occurrence, can support low population densities; 0.00 = unsuitable for species occurrence.
[1]California Department of Fish and Game 2005, and CWHR Version 8.1
[2]Thomas *et al.* 1979.

Impacts to Neotropical Migrant Habitat

For the species listed in Table 2 a comparison of the Habitat Suitability Index (HSI) was used to indicate potential short term trends in suitability (conversion of site to montane chaparral, or MCP1/MCP 2 due to wildfire) as well as longer trends (comparing the average HSI for Sierra Mixed Conifer (SMC) with the HSI for MCP). A change in habitat value resulted in a change in habitat ratings class (such as a change from High suitability (0.67) to Moderate (0.66), Low (0.33, or unsuitable (0.0), as indicated in footnote below Table 2).

1. Post Fire: Several recent studies provide evidence than many species of birds tolerate or capitalize on the ecological changes resulting from severe fire (Hutto 1995, 2006; Kotliar et al 2002, 2007). Severe fires create forest structures and ecological elements and processes that cannot be readily created by management actions (Hutto 1995, Kotliar 2002). Smucker (2005) reports that 12 bird species were significantly more abundant after fire and seven species were significantly less abundant after fire at one or more fire severities, and that at least 4 additional species were likely to have responded positively to at least one level of severity.

It appears the habitat conversion that occurred as a result of the Antelope Complex and Moonlight wildfires resulted in an overall decrease in habitat suitability for the listed MB species in Table 2. Stand replacing fire within the Sierra Mixed Conifer (SMC) that resulted in early seral shrub habitat (MCP) created habitat conditions that increased habitat suitability for only two species (Common Poorwill and Lazuli Bunting), had no change for three species (Swainsons thrush, white-crowned sparrow, western bluebird)

and decreased habitat suitability for 14 species. Smucker et al (2005) found that Lazuli Bunting increased in relative abundance at burned sites in each of the first three years after fire; Swainson's thrush decreased in relative abundance after high severity fire but did not show much difference from before to after fire at moderate and low severity fire sites compared to unburned sites. The olive-sided flycatcher has been associated with early post-fire conditions, increasing in relative abundance in burned sites (Smucker et al, 2005), especially in regards to using standing dead trees as foraging perches in open areas (Hutto, 1995) and using edges of mature live trees and open burned forest (Kotliar et al, 2002). Thus some short term increase in habitat suitability could be realized for this species, although burned habitat is not identified as a habitat component required for this species (Zeiner et al, 1990; CDFG, 2005).

2. Post Dead Tree Removal

Most of the bird species associated with moderate to dense mature forests and dense forests of all ages would not use forests modified by stand-replacing wildfire in the short term, while some bird species would use areas created by stand replacing fire. Post-fire management can alter species' responses to burns. Most cavity-nesting species do not use severely salvaged burns (defined by Kotliar et al 2002, as clearcut, or removal of most medium and large snags), whereas some cavity-nesters persist in partially salvaged burns. In a Montana study, Hutto and Gallo (2006) reported 18 cavity nesting birds nesting in uncut burned plots, but only 8 nested in the salvage-logged areas. Nest density and species abundance was also higher in the unlogged plots. Reduced woodpecker densities were more related to a reduction in food (wood boring beetle larvae) than nest-site availability, whereas loss of nest sites was more of a constraint for secondary cavity nesters (western bluebird) in the salvage-logged areas. Early post-fire specialists (wood drillers and aerial insectivores) appear to prefer unsalvaged burns, responding primarily to the changes in structural characteristics (increased availability of snags, decrease in canopy cover, increases or changes in insect prey) brought about by burning (Kotliar et al 2002). Allowing succession to proceed naturally in unsalvaged burns may benefit the most species (Ibid).

On the other hand these same researchers provide evidence that partial salvage of a burn, that is leaving portions unharvested, can result in no net loss in the number of cavity nesting species (Kotliar 2002). Hutto (1995) stated that it may be an appropriate strategy to take trees from one part of the burn and leave another part of the burned area untouched, but the amount to leave is an unknown (Hutto 2006). He concludes that "it may be difficult to retain the ecological integrity of a burned forest in the face of most kinds of postfire salvage logging" (Hutto & Gallo, 2006).

Direct/Indirect/Cumulative Effects - Action Alternatives (A, C, D, E): All action alternatives leave more area unharvested than harvested within the analysis area. Table 3 shows the cumulative amount of dead or hazard tree removal (i.e. combined acres of proposed or current treatments from salvage or roadside hazard tree removal) within the 87,647 acre analysis area), on all lands (public and private) within the analysis area and on just Forest Service lands.

Table 3. Cumulative salvage or roadside hazard treatments acres in the Moonlight-Wheeler analysis area.

	Alternative A	Alternative C	Alternative D	Alternative E	Alt B (no action)
Public/Private	30,243 (35%)	24,024 (27%)	21,144 (24%)	19,877 (23%)	15,488 (18%)
FS Lands only	18,526 (27%)	12,307 (18%)	9,427 (14%)	8,160 (12%)	3,771 (6%)

Thus, from 49,882 to 60,248 acres (Alt A and Alt E, respectively) of the 68,408 acre fire land base located on Forest Service land would not be treated for dead tree removal. Hutto (2006) recommends as a management priority retention of some burned forest 0-5 years after a fire because that is the narrow window of time during which the biologically unique early postfire conditions become established and persist. Leaving the majority of the burn within the project area in an unharvested condition maintains an important component of biological diversity identified by Hutto (2006): "all the unique plants and animals that depend on those first few years of natural (postfire) succession".

Treatments in all action alternatives include snag retention areas and snag recruitment within RHCAs, both of which retain snags that would serve as recruitment for large woody debris. Within RHCAs, generally four of the largest snags per acre would be retained, preferably within falling distance of the channel where available, to provide for large down woody debris recruitment to best meet riparian management objectives.

Cumulatively, approximately 68 percent of FS land in the analysis area classified as moderately-high to high severity burn (50 percent or greater basal area mortality) would not be salvage or roadside hazard logged with alternative A. The other action alternatives would leave the same severity burn areas untreated at 81 % (Alt C), 87% (Alt D), and 90% (Alt E).

Within the helicopter and skyline units under Alternative A where dead tree removal would occur, all dead trees <16 inches dbh would be retained across the treatment units. Thus some small and medium snags would be left across each of these units (up to 47 snags/acre <16" dbh). Thus this would not be considered "severe salvage" as defined by Kotliar et al (2002) but more in lines with partial salvage, although it is acknowledged that most dead trees >16 inches would be removed. The retention of these small to medium dead trees allow for dead tree connectivity across the treated landscape; the treatments are not "clearcuts".

Tractor units proposed for dead or hazard tree removal (8,536 acres under alternatives A and C, 5,656 acres under alternative D, 4,389 acres under alternative E) would remove merchantable trees greater than 14 inches dbh as well as trees less than 14 inches dbh for biomass product. Areas within these units which would still have snags include snag retention areas (left untreated), RHCA snag recruitment areas (4 of the largest snags per acre), and roadside hazard removal areas (estimated 2 snags/acre greater than 15" and 4 snags/acre under 15").

Migratory bird species that would utilize dead trees for some habitat use, such as perches for territorial singing, hawking/foraging, and nesting, within the early seral MCP habitat created by fire, such as the olive-sided flycatcher, would have a potential decline in habitat suitability on the acres treated for dead tree removal. Under Alternative A, cumulatively, approximately 73 percent of FS land within the analysis area would not be treated for dead tree removal, leaving within these untreated areas approximately 16.4 snags/acre greater than 15 inch dbh. The other action alternatives would leave the following percentage of FS lands untreated: Alternative C - 82 percent, Alternative D - 86 percent, and Alternative E - 88 percent - with an estimated snag density of 16.4 snags/acre greater than 15 inch dbh.

With the **No action alternative** (Alternative B), there would be no decline in dead trees, thus no decline from existing condition in habitat suitability for those species utilizing dead trees in early seral habitat. The average snag density (greater than 15 inches dbh) remaining across the analysis area under this alternative is estimated at 16.8 snags/acre.

3. Reforestation

Direct/Indirect/Cumulative Effects: Cumulatively, alternative A proposes to reforest approximately 36% of FS lands. Alternatives D and E propose to reforest the same amount. Alternative C proposes to reforest approximately 27%. Converting MCP to SMC1 and eventually SMC 2 through reforestation, has apparent short term increases in habitat suitability for four species (olive-sided flycatcher, western wood peewee, western bluebird, chipping sparrow) and long term increases in habitat suitability (as plantations grow into forested habitat) for these species as well as an additional 10 species listed in Table 2. Two species (common poorwill, lazuli bunting) would benefit from MCP remaining on site. While reforestation activities would enhance the re-establishment of open canopy forested conditions, it is reasonably expected that these plantations would continue to have substantial shrub components, particularly in the first twenty to thirty years of growth.

If reforestation efforts remove shrubs and plantations are managed to minimize shrub regeneration through maintenance activities, it would be expected that the benefits of a shrub community would be minimized over time and that there would be a decline in shrub nesting species (USDA, PSW, 2006).

Neotropical migrants favoring forest interior habitat (Williamson's sapsucker, white-headed woodpecker, Swainson's thrush, western wood-peewee, evening grosbeak, red crossbill, and band-tailed pigeon) would benefit in the long term from reforestation within the treatment areas.

With No Action (Alternative B): The short and long term increases in habitat suitability for forest species described above would not occur. The long term availability of MCP seems to benefit habitat suitability for common poorwill and lazuli bunting. Allowing areas to naturally regenerate would ensure that shrub habitat would remain on the landscape longer than with intensive regeneration efforts.

With all five alternatives (the no action and four action alternatives), because of the presence of eleven range allotments, there is some risk that brood parasitism could increase above existing levels within the analysis area as cowbirds respond to increased open habitat and edges.

REFERENCES

CDFG (Calif. Dept. 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

Hunter, W.C., M.E. Cartes, D.N. Pashley, and K.Barker. 1993. "The Partners In Flight Species Prioritization Scheme." In Status and Management of Neotropical Migratory Birds, edited by D.M Finch and P.W. Stangel. Proceedings of Estes Park Workshop, Sep 21-25. USDA Forest Service, Rocky Mountain Forest & Range Experimental Station, Ft. Collins, CO (GTR RM-229)

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. 2006. Toward Meaningful Snag-Management Guidelines for Postfire Salvage Logging in North American Conifer Forests. Conservation Biology, Volume 20, page 984, August 2006.

Hutto, R. L., S.M. Gallo. 2006. The Effects of Postfire Salvage Logging on Cavity-Nesting Birds. The Condor, 108: 817-831, The Cooper Ornithological Society 2006.

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.

Kotliar, N.B., P.L. Kennedy, K. Ferree. 2007. Avifaunal Responses to Fire in Southwestern Montane Forests along a Burn Severity Gradient. Ecological Applications, 17(2), pp. 491-507, Ecological Society of America, 2007.

PNF (Plumas National Forest). 2002. Wildlife species database.

Saab, V.A., and Dudley, Jonathan, 1997. Bird responses to stand-replacement fire and salvage logging in ponderosa pine/Douglas fir forests of Southwestern Idaho. Progress Report 94-96, US Forest Service, Boise, Idaho.

Sherry, E.W. and R.T. Homes. 1993. "Are Populations of Neotropical Migrant Birds Limited in Summer or Winter? Implications for Management." ." In Status and Management of Neotropical Migratory Birds, edited by D.M Finch and P.W. Stangel. Proceedings of Estes Park Workshop, Sep 21-25. USDA Forest Service, Rocky Mountain Forest & Range Experimental Station, Ft. Collins, CO (GTR RM-229)

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.

SNFPA, USDA Forest Service 2001. Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement (FEIS) and Record of Decision (ROD). January 2001.

SNFPA, USDA Forest Service 2004. Sierra Nevada Forest Plan Amendment (SNFPA) Final Supplemental Environmental Impact Statement (FEIS) and Record of Decision (ROD). January 2004.

Terborgh, J. 1992. "Perspectives on the Conservation of Neotropical Migrant Landbirds." In Ecology and Conservation of Neotropical Migrant Landbirds edited by J.M. Hagan III and D.W. Johnston. Proceedings of a Symposium on Ecology and Conservation of Neotropical Migrant Landbirds, Dec 6-9, 1989, Woods Hole, MA. Smithsonian Press, Washington D.C.

Thomas, J.W. 1979. Wildlife Habitats in Managed Forests, the Blue Mountains of Oregon and Washington, USDA, USFS, Agriculture Handbook No. 553.

USDA Forest Service, Plumas National Forest. 1988. Land and Resource Management Plan.

USDA Forest Service. 1996. Land bird monitoring implementation plan. USDA Forest Service Pacific Southwest Region, Vallejo, CA. 13pp., unpublished.

USDA Forest Service, 1999. Lassen, Plumas, Tahoe National Forests. Herger-Feinstein Quincy Library Group Forest Recovery Act Final Environmental Impact Statement (HFQLG EIS), August 1999.

USDA Forest Service. Pacific Southwest Research Station (PSW). Plumas Lassen Study 2005 Annual Report, March 2006.

USDA Forest Service, 2009a. Moonlight and Wheeler Fires Recovery and Restoration Project Biological Assessment/Biological Evaluation, May, 2009.

USDA Forest Service, 2009b. Management Indicator Species Report Moonlight and Wheeler Fires Recovery and Restoration Project, May, 2009.

Zeiner, D.C., Laudenslayer, Jr., W.F., Mayer, K.E. and White, M. California's Wildlife, Volume II Birds, California Statewide Wildlife Habitat Relationships System, State of California, The Resource Agency Department of Fish & Game, Sacramento, CA, Nov. 1990.