Draft Nez Perce–Clearwater National Forests Forest Plan Assessment

5.2 Potential Species of Conservation Concern—Wildlife

March 20, 2014

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5.1 OVERVIEW

In cooperation with the Nez Perce-Clearwater National Forests (Forests) and Idaho Department of Fish and Game (IDFG), the Regional Forester has identified Species of Conservation Concern (SCC) as per the 2012 Planning Rule (USDA Forest Service 2012: 36 CFR 219) and consistent with guidance in Chapter 10, The Assessment, of the Proposed Planning Directives (FSH 1909.12).

Identifying SCC is necessary for the development of Forest Plan components (36 CFR 219.7) that help maintain the diversity of plant and animal communities and the persistence of native species in the Plan area (36 CFR 219.8, Sustainability and 36 CFR 219.9, Diversity of Plant and Animal Communities).

Using best available science, this section discusses the ecological relationship and rationale for the development of Plan components for 13 terrestrial wildlife SCC in the planning area, as identified by the Regional Forester on September 9, 2013.

Additionally, the 2012 Planning Rule recognizes that it may not be possible to maintain a viable population of some at-risk species within the plan area due to circumstances beyond the authority of the Forest Service or due to limitations in the inherent capability of the land. Examples include migratory species whose viability is primarily affected in other locations, or where the Plan area has limited ecological capacity to provide sufficient habitat to sustain the species.

5.2 INTRODUCTION

Terrestrial wildlife species rely upon and utilize a variety of forested and non-forest landscapes at various scales. To help establish the ecological context for the wildlife species identified and selected as SCC across the Forests, an “all lands” approach was used to examine the quantity and distribution of ecological systems for these species. A range of scales was used to assess terrestrial ecosystems that support identified terrestrial SCC wildlife species and their habitats in context at appropriate ecological scales, ranging from the Interior Columbia River Basin to the state of Idaho, and then to the planning area and geographic areas within the planning area. Therefore, the ecosystems and habitats that these species are associated with will be summarized at three landscape scales—broad (basin and regional), mid (state and Forests) and fine (Habitat-type froups and other habitats).

At the broad-scale, information contained in the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (Wisdom et al. 2000) and the Idaho Comprehensive Wildlife Conservation Strategy (CWCS) (IDFG 2005) will be summarized. These two broad-level assessments disclosed wildlife habitat information similarly, but some landscape information differs based on how each assessment was organized. These two broad-level assessments should be referenced for more detailed information.

In 2003, the U.S. Department of Agriculture Forest Service (Regions 1, 4 and 6); U.S. Department of Interior Bureau of Land Management (BLM) (Oregon, Washington, Idaho and Montana); U.S. Department of Interior Fish and Wildlife Service (FWS) (Regions 1 and 6); Environmental Protection Agency (Region 10); and National Marine Fisheries Service (Northwest Region) signed an Interagency Memorandum of Understanding whose purpose was to cooperatively implement *The Interior Columbia Basin Strategy* (Strategy) (USDA Forest Service et al. 2003a).

A specific component of the Strategy is“Terrestrial Source Habitats Maintenance and Restoration” (USDA Forest Service 2003b) This component states the following (USDA Forest Service et al. 2003b, p. 6):

> Management Plans shall address ways to maintain and secure terrestrial habitats that are comparable to those classified by the science findings as “source” habitats (Wisdom et al. 2000) that have declined substantially in geographic extent from the historical to the current period and habitats that have old forest characteristics. Direction should address opportunities to re-pattern these habitats when and where necessary, maintain and guide expansion of the geographic extent and connectivity of source habitats that have declined where they can be sustained.
>
> Individual forest and resource plan analyses will describe how multi-scale analysis, based on the local situation, has been used in the amendment or revision process. Forest and resource plan analyses will also describe the rationale and context for how multi-scale analysis will be used for subsequent project level decisions.

At the mid-scale, assessments of wildlife habitats and/or wildlife SCC have been developed for all or portions of Idaho. These mid-scale assessments included statewide strategies, regional assessments, and subbasin planning documents. Strategies, actions, or practices to address restoration of declining habitats and/or the conservation of species of concern were typically included in these assessments (USDA Forest Service 2010). The relevant state-wide strategies and subbasin planning documents include information and relevant data provided by the Idaho CWCS (IDFG 2005), *Clearwater River Basin (ID) Climate Change Adaptation Plan* (Nez Perce Tribe 2011), and Northwest Power and Conservation Council (NPPC) Clearwater and Salmon sub-basin assessments and plans.

At the Forests portion of the mid-scale, landscapes are actively or passively managed based on whether they are outside or within Wilderness or Idaho Roadless portions of the National Forest. Within these landscapes, a variety of habitat conditions can occur based on climatic, topographic, and geologic conditions with some changes occurring over relatively short distances. Forest-level information was developed from modeling for the Forest Plan revision effort, as well as existing Forest species information.

At the fine-scale, this assessment will reference available habitat management guidance, methods, and opportunities for SCC. The Forsests have developed Habitat-Type Group guidance that directly applies to wildlife habitat management for several wildlife species, including several identified SCC, in vegetation management projects.

Potential Plan components will be based on habitat needs identified in the ICBEMP (Wisdom et al. 2000), the Idaho CWCS (IDFG 2005), and other known best available science. In addition, the “Habitat-Type Group” guidance previously developed by the NPCNF could offer potential Plan components, as identified by the interdisciplinary team involved in that development. The Forest Plan revision team will integrate these potential Plan components into the Revision as desired conditions, standard, or guidelines.

5.2.1 *The Coarse-Filter / Fine-Filter Approach*

Modern designs for conserving biological diversity combine the concepts of managing for broad ecosystem characteristics (coarse-filter approach) with species-specific management (fine-filter approach) (Hunter et al. 1988, Hunter 2005, Noon et al. 2003, Roloff and Haufler 2002, Samson et al. 2003, Scott et al. 2002, Theobald and Hobbs 2002, USDA Forest Service 1996,Wisdom et al. 2000).

Coarse-filter strategies are based on the following:

- Providing a mix of ecological communities across a planning area
- Providing for ecological integrity/biological diversity at an appropriate landscape scale
- Looking at how to maintain or restore the composition, structure, function, diversity, and connectivity of ecosystems
- Providing for a range of species habitat conditions at a variety of spatial scales over the long term, while maintaining biological diversity for the vast majority of species
- Understanding past, current, and projected future conditions

These elements of the coarse-filter concept tie directly to the conservation principle that species well distributed across their range are less susceptible to extinction than species confined to small portions of their range.

Coarse-filter plan components (desired conditions and suitability of lands) can provide for the majority of wildlife species because many species utilize a wide variety of broad ecosystem habitat conditions (pers. comm. Kuennen 2014). Even with a coarse-filter approach in place, a fine-filter approach may also be necessary for species for which ecological conditions needed to maintain populations may not be completely provided for by maintaining ecosystem diversity (Samson et al. 2003, Proulx 2004, Roloff and Haufler 2002). Fine-scale strategies can be focused on the few species whose habitat requirements are not fully captured by coarse-filter attributes (Hunter 2005, Scott et al. 2002, Theobald and Hobbs 2002).

For example, species associated with fine-scale ecosystem components (Hunter 2005, Samson et al. 2003, Scott et al. 2002), or species and/or their habitats that are tangibly influenced by human interference, such as roads (Hollenbeck et al. 2013, Proulx 2004, Wisdom et al. 2000), may not be adequately addressed by a broad-scale assessment of vegetation conditions (Hunter 2005, USDA Forest Serive 1996). Wisdom et al. (2000) stated that because of the scale of the coarse-filter ICBEMP analysis and the fine-scale nature of species-specific habitats, the results of the coarse-filter ICBEMP analysis does not likely reveal the true status of important habitat components for some wildlife species, such as the mountain quail (*Oreortyx pictus*). Proulx (2004) considered the fisher (*Pekania pennanti*) to be a species that is sensitive to forest management and requires an integration of coarse- and fine-filter habitat management.

Therfore, a desired future condition (DFC) or suitability of lands assessment may be too general to describe how to maintain or restore the composition, structure, function, and connectivity of ecosystem characteristics needed by species with more specialized habitat requirements (Hunter 2005, Proulx 2004, Roloff and Haufler 2002).

In these cases, a species-specific approach to the analysis and establishment of Plan components may be necessary. The assessment of individual species is a "fine-filter" approach to conservation (Hunter 2005, Samson et al. 2003). Fine-filter conservation addresses individual species that are assumed to be inadequately protected by coarse-filter conservation measures. Examples include protecting specific raptor nest sites and closing caves and/or mines to protect bat roosts. Coarse- and fine-filter management overlap when conserving a fine-filter species involves conserving entire ecosystems or landscapes that constitute its habitat (Hunter 2005).

The National Environmental Policy Act (NEPA) of 1969 and other regulatory mechanisms require the assessment of impacts to wildlife species. Species-specific plan components may be included as objectives, standards and/or guidelines because these categories are intended to attain or accomplish a goal or specific need at project- or site-specific levels.

5.2.2 *Mesofilter*

Mesofilter conservation is a complementary approach to the coarse- and fine-filter approaches that conceptually lies between a coarse filter and fine filter. The core idea is to conserve critical elements of ecosystems that are important to SCC and other species, especially those overlooked by the coarse- and fine-scale filter approaches (Hunter 2005). These include species that use ecosystem attributes but no specific requirements are known. Mesofilter conservation enables many species to be protected without considering them individually (Hunter 2005). Examples of the mesofilter concept include providing direction to conserve legacy trees, logs and snags, riparian vegetation, vernal pools, seeps and other wetlands, rock outcrops, native grass, and shrub and herb communities.

Mesofilter and fine-filter conservation can overlap when a species that is the target of fine-filter management provides resources needed by other species (Hunter 2005). For example, when a species is concerved that excavates cavities in trees and/or snags that are later used by other species. This example illustrates fine-filter conservation for the cavity producer and mesofilter conservation for the secondary cavity user (Hunter 2005). Mesofilter conservation is compatible with adaptive management on National Forests that are managed for both commodity production and biodiversity.

Mesofilter management for the SCC in this Assessment was identified by examining the best available science for SCC species in conjunction with identifying coarse- and fine-filter habitat requirements. For the selected SCC, potential Plan components will be a mix of coarse-, meso, and fine-filter based elements directed at known habitat requirements; but the Plan components will also benefit other non-SCC.

5.2.3 *Monitoring*

The 2012 Planning Rule states,"Ecosystem plan components would be required for ecological integrity and diversity, along with additional, specices-specific plan components where necessary to provide the ecological conditions to contribute to the recovery of federally-listed threatened and endangered species, conserve proposed and candidate species, and maintain viable populations of species of conservation concern." The 2012 Planning Rule also requires monitoring of select ecological and watershed conditions to assess progress towards meeting diversity and ecological sustainability requirements (Fed. Reg. Vol. 77, No. 68, Rules and Regulations, pg. 21167).

Broad-scale and Forest-level monitoring plans will be developed as part of the Forest Plan. Inherent limitations exist for monitoring coarse-, meso and fine-filter SCC Plan components. Coarse-filter Plan components can only be monitored using Forest Inventory and Assessment (FIA) data to the 5th HUC watershed-level due to data resolution limits. Some meso and fine-filter Plan components (e.g., seeps and springs, bat roosts, bird nest trees) cannot be measured using FIA.

Therefore, while coarse- and some mesofilter Plan components that support SCC can be monitored at the multi-unit and Forest/large watershed-levels using FIA data, other meso and fine-filter components will have to be monitored at smaller 6th HUC watershed and project levels, during and after project implementation. These SCC-related factors would have to be integrated into broad-scale and Forest-level monitoring plans developed for the Forest Plan.

Monitoring plans for coarse-, meso and fine-filter Plan components developed for SCC meet the intent of the 2012 Planning Rule to assess progress towards meeting habitat diversity and sustainability requirements for SCC.

5.2.3.1 Existing Regulatory Mechanisms

This Assessment is consistent with the statutory authority and responsibility for enforcing the following Federal laws, executive orders, and policies and regulations, as applicable, to conserve, restore, and enhance wildlife species and manage wildlife, fish, and plant resources on National Forests and Grasslands:

- Endangered Species Act of 1973 (16 USC 1531-1544, 87 Stat.884)
- National Forest Management Act (NFMA) of 1976 (Pub.L. 94-588)
- National Environmental Policy Act of 1969 (P.L. 91-190) (42 U.S.C. 4321–4347)
- Multiple-Use, Sustained-Yield Act of June 12, 1960 (74 Stat. 215, as amended)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703–712)
- Migratory Bird Treaty Reform Act of 2004 (MBTRA) (Pub. L. 108–447, 118 Stat. 2809, 3071–72)
- Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001 (Federal Register Vol. 66, No. 11, January 17, 2001)
- Revised List of Migratory Birds: Final Rule (50 CFR Parts 10 and 21; Federal Register, Vol. 78, No. 212, Friday, November 1, 2013, U.S. Fish and Wildlife Service, Dept. of the Interior)
- Fish and Wildlife Improvement Act of 1978 (16 U.S.C. 742l)
- Fish and Wildlife Act of 1956 (16 U.S.C. 742a–j)
- Fish and Wildlife Coordination Act (16 U.S.C. 661–666c)
- Sikes Act of September 16, 1960, (16 U.S.C. 670a)
- Forest Service Manual (FSM) 2601.1—Laws and Orders
- Forest Service Manual (FSM) 2601.2—Departmental Regulation 9500-4

- Forest Service Manual (FSM) 2670.12—Departmental Regulation 9500-4

In addition, this Assessment is consistent with the State of Idahos'authority and responsibility to preserve, protect, perpetuate, and manage all wildlife within the state of Idaho as per Idaho Statutes, Title 36-103. In support of Idaho Statute 36-103, the State of Idaho has identified wildlife species and proposed conservation actions for for the species listed in the Idaho CWCS (IDFG 2005).

The Idaho CWCS is considered a key element of the best available science used in this Assessment. Twelve of the 13 identified SCC are considered Species of Greatest Conservation Need (SGCN) in the Idaho CWCS (IDFG 2005).

The Idaho CWCS displays the distribution of these species, as modeled, using data available from the U. S. Geological Survey (USGS) GAP Analysis Program (GAP) (IDFG 2005). GAP modeling was used to represent the predicted distribution of terrestrial species that regularly breed in Idaho. Point locations of species sightings are also depicted on these species accounts maps in the Idaho CWCS (IDFG 2005). These data are displayed in the species range figures from the Idaho CWCS.

5.2.4 *Quantifying Wildlife Habitat*

For 8 SCC, modeling results are used to display and understand patterns of species habitats at a Forest scale. Wildlife habitat in this Assessment is quantified by querying vegetation characteristics desirable to each species. Given the Forest's area of approximately 4.0 million acres, patterns of species habitat are believed to be accurate.

A separate existing condition modeling process was used for the fisher based on a spatial model described by Olsen et al. (2013) since this model is the best available science (USDA Forest Service 2014). For the remaining 7 SCC, vegetation characteristics were described at a coarse-scale that included the following elements:

- Habitat type group (indicative of potential vegetation)
- Cover type(s) that recognize up to four species cohorts on a piece of ground
- Tree size class range (five categories)
- Vertical stand structure (single, two-story, and multi-story)
- Canopy closure (four categories)
- Elevation information for the species (if available)

Existing vegetation conditions were derived several data sources. Cover type, size class, and density were derived from Region 1 Vegetation Mapping Program (VMAP) (Chew et al. 2012). VMAP is derived from satellite imagery and on-the-ground calibration to create a continuous vegetation layer. Vertical structure was assigned to VMAP classes based on on-the-ground knowledge of the forest, and habitat type group was from the PVT layer maintained by Region 1 (Chew et al. 2012).

Projected future and simulated past vegetation conditions were determined with the SIMPPLLE landscape simulation model (Chew et al. 2012). SIMPPLLE accounts for tree growth dynamics and disturbance processes (such as fire and insects) to project possible vegetation conditions. Conditions are projected spatially for a set of pixels that represent the landscape. This exercise used a 150-meter pixel. The same level of vegetation detail is maintained by the SIMPPLLE model so that the habitat queries used for the current condition can be applied to projected conditions.

The following limitations should be considered due to the relatively coarse nature of the data and model parameters, thus increasing the possibility of over-estimation of habitat:

- Wildlife queries do not define a relevant patch size. The queries select all acres of a cover type/size class/canopy closure regardless of patch size, which may result in undesirable, small, isolated patches that contributre to overall habitat amounts.
- Vegetation data may not be sensitive to microhabitat features (e.g., snags or down woody debris) that are important to some species. The relationship between the cover type/size class/canopy closure attributes is used to temper the assumption that other microhabitat attributes are present. However, these microhabitat components may be absent in some areas, and the habitat may not be suitable.
- The acres shown do not account for territorial behavior of certain species when defending their habitat; these behaviors may limit the availability and use of habitat.
- Habitat patches that are too small to support a species based on its life-cycle needs may be included.
- Suitable habitat for a species appear to be present, but the species is at the edge of its range and potential habitat elsewhere has cannot provide permanent occupancy.

Overall, it is important to note that quantifying and mapping potentially available habitat does not mean that habitat is properly functioning and/or contains the conditions needed for species persistence. The resolution of broad-scale data can be resolved at a fine-scale at the watershed and/or project level.

5.3 Species of Conservation Concern

The 2012 Planning Rule states, "Ecosystem plan components would be required for ecosystem integrity and diversity, along with additional, species-specific plan components where necessary to provide the ecological conditions to contribute to the recovery of federally-listed threatened and endangered species, conserve proposed and candidate species, and maintain viable populations of species of conservation concern". The 2012 Planning Rule also requires the monitoring of select ecological and watershed conditions and focal species to assess progress towards meeting diversity and ecological sustainability requirements (Fed. Reg./Vol. 77, No. 66. p. 21167).

The 2012 Planning Rule defines SCC as, "Any species, other than federally-recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates a substantial concern about the species capability tp persist over the long-term in the plan area" (36 CFR 219.9, Directives. Chapter 10, Section 12.52).

The approach used to identify SCC is documented in the project record, and summarized below:

Step 1—Identify species

Step 2—Screen species for further consideration in the planning process

Step 3—Group species where possible and identifying habitat associations

Step 4—Identify potential Plan components for species identified as potential SCC

Step 5—Select SCC based on coarse- and fine-filter needs of the species evaluated

The guidance documents and supporting information used to accomplish the above steps are summarized below:

- The 2012 Planning Rule and Chapter 10, Section 12.52,“Identifying Potential Species of Conservation Concern,” of the proposed Forest Service Directives were used as primary guidance Criteria listed in the proposed directives Chapter 10, Section 12.52 were used to filter species that were clearly common and not at risk.
- The Idaho CWCS, The Idaho Natural Heritage Program (IDNHP), NatureServe Explorer database, and Forest Service database were queried to obtain a list of all possible terrestrial wildlife species (100+) known or expected to occur in any county that contains a portion of the Forests. The majority of the Forests are contained within Clearwater and Idaho counties with smaller portions in Shoshone, Latah, and Benewah counties.
- The global (G) and Idaho state (S) NatureServe conservation rankings for each species (Table **Error! No text of specified style in document.**-1). Species with a state status rank of S1, S2, or S3 were carried forward for consideration as SCC. No species with a global ranking of G1 or G2 are known to occur on the Forests.
- A working group of Regional Office personnel, Forest wildlife biologists, and contractors evaluated information on species ecology, preferred habitat condition, known stressors, and trends to further refine the species lists via onsite and video meetings, conference calls, and individual discussions starting in late 2012
- The working group further refined the species list to determine which species have requirements that could be addressed by coarse-filter attributes versus species that have meso and fine-filter attributes
- By the end of July 2013, the working group examined preliminary habitat modeling information and defined a short list of potential SCC
- After final discussions, 13 SCC (Table **Error! No text of specified style in document.**-2) were selected by the Regional Forester on September 9, 2013

Table Error! No text of specified style in document.**-1. NatureServe global (G) and state (S) rankings**

Global	State	Definition
G1	S1	At high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
G2	S2	At risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state.
G3	S3	Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.
G4	S4	Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining.

Table Error! No text of specified style in document.**-2. Species of Conservation Concern and habitat associations**

Name	ICBEMP Family/ Species Group	Nez Perce-Clearwater Habitat Type Groups	Existing USFS and ID CWCS Status	Notes
White-headed woodpecker	1/1	Dry Mixed Conifer	RFSS SGCN	Limited to lower Salmon River area and associated with low-elevation old ponderosa pine dry forests
Pygmy nuthatch	1/1	Dry/Moist Mixed Conifer	RFSS SGCN	Associated with low-mid elevation old ponderosa pine dry forests
Lewis' woodpecker	1/2	Dry Mixed Conifer	SGCN	Associated with low-elevation old ponderosa pine dry forests
Fisher	2/5	Moist Mixed Conifer	RFSS SGCN MIS	Associated with mid-elevation large diameter, old & complex structure forests
Flammulated owl	2/5	Dry/Moist Mixed Conifer	RFSS SGCN	Associated with low-elevation old ponderosa pine dry forests
Mountain quail	3/17	Dry Mixed Conifer/riparian shrub	RFSS SGCN	Limited to lower Salmon River area and associated with Forest/riparian mosaics
California myotis	-/-	Dry/Moist Mixed Conifer	SGCN	Species not identified in an ICBEMP Family or Group; grouped with other bat species in Family 7. No habitat modeling.
Fringed myotis	7/26	Dry/Moist Mixed Conifer	RFSS SGCN	No habitat modeling
Townsend's big-eared bat	7/27	Dry/Moist Mixed Conifer	RFSS SGCN	No habitat modeling
Boreal owl	2/7	Subalpine mixed conifer	SGCN	Associated with higher elevation forests
American three-toed woodpecker	2/11	Subalpine mixed conifer	SGCN	Associated with higher elevation forests
Coeur d'Alene salamander	none	No Habitat Type Group	RFSS SGCN	Limited distribution; associated with site-specific riparian conditions
Bighorn sheep (Rocky Mountain)	5/22	No Habitat Type Group	RFSS MIS	Discussed separately in the Ecosystem Services section of the Assessment (also as big game)

Note: RFSS = USFS Regional Forester Sensitive Species, MIS = Nez Perce-Clearwater Management Indicator Species, SGCN = Idaho CWCS Species of Greatest Conservation Concern

Broad-scale family groups, as well as meso and fine-scale biophysical settings, habitat type groups, and a non-habitat type group are used for describing SCC habitat associations and conditions based on best available science.

Five of the 13 identified SCC require site-specific plan guidance for conservation : the California myotis, fringed myotis, Townsend's big-eared bat, Coeur d'Alene salamander (*Plethodon idahoensis*), and bighorn sheep (*Ovis canadensis*). However, these species will also benefit from ecosystem-based Plan components developed for the other SCC. The remaining 8 SCC require guidance that is integrated with other forest, nonforested, and other resource management guidance in the Forest Plan. These species are fisher, flammulated owl (*Otus flammeolus*), pygmy nuthatch (*Sitta pygmaea*), white-headed woodpecker (*Picoides albolarvatus*), Lewis's woodpecker (*Melanerpes lewis*), boreal owl (*Aegolius funereus*), American three-toed woodpecker (*Picoides tridactylus*), and mountain quail.

Also, 9 of the 13 SCC are currently Regional Forester designated sensitive species, and 2 are designated as Management Indicator Species (MIS) under the "current" Forest Plans for either or both the Nez Perce and Clearwater National Forests.

The California myotis (*Myotis californicus*) was not identified in the ICBEMP evaluation, but this species was identified at the Idaho CWCS level. It will be discussed with other bat species since it was identified as a Species of Greatest Conservation Need (SGCN) in that State plan. Other wildlife species not selected as SCC are also known to or expected to use these Family/Group habitat associations and habitat type groups.

5.3.1 *Species Accounts*

5.3.1.1 White-headed Woodpecker—*Picoides albolarvatus*

Conservation Status

ESA: No status

USFWS: Bird of Conservation Concern - Idaho

USFS: Sensitive in Regions 1, 4 and 6

BLM: Peripheral (Type 4)

IDFG: Species of Conservation Concern (SGCN)

NatureServe rankings: Rangewide: G4—Apparently Secure

Statewide Idaho: S2—Imperiled, non-game.

ICBEMP Family 1, Group 1

Intermountain West Joint Venture: Priority Bird Species

NPCC Clearwater Subbasin Assessment—Focal species

NPCC Salmon Subbasin Assessment—Species of Concern

Distribution and Abundance

The white-headed woodpecker is found in portions of the Interior Columbia River Basin, and in the Blue Mountains and central Idaho mountains ecological reporting units (ERUs) (Wisdom et al. 2000) (Figure **Error! No text of specified style in document.**-1). White-headed woodpeckers are scarce and occur locally in western Idaho. Suitable habitat for the species is typically fragmented, making accurately estimating range difficult. The species is uncommon or rare in Idaho with an estimated population size of approximately 320 individuals (IDFG 2005).

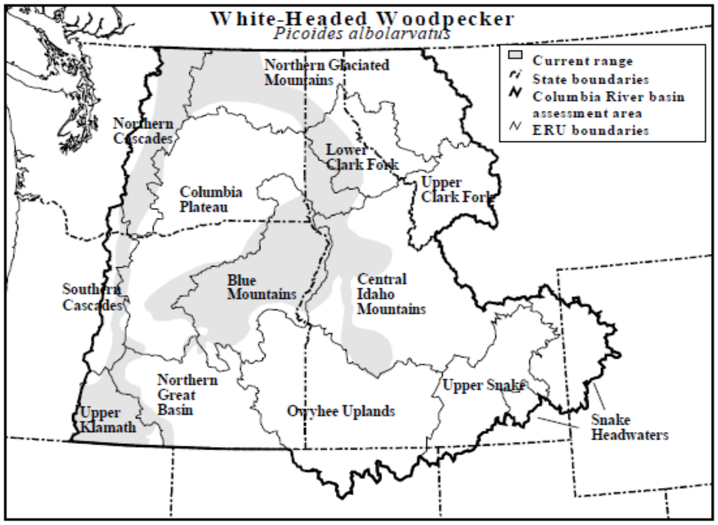

Figure Error! No text of specified style in document.**-1. White-headed woodpecker range in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

The species range in Idaho is limted to westcentral Idaho on the western portions of the Nez Perce-Clearwater, Payette, and Boise National Forests. In Idaho, white-headed woodpeckers have been recorded in Adams, Benewah, Boise, Elmore, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Washington Counties (NatureServe 2013, Blair and Servheen 1995, Dixon 2010). On the Nez Perce-Clearwater National Forests, the species occurs primarily in the lower Salmon River Canyon. Some irregular incidental sightings exist in the lower South Fork Clearwater River area (Figure **Error! No text of specified style in document.**-2).

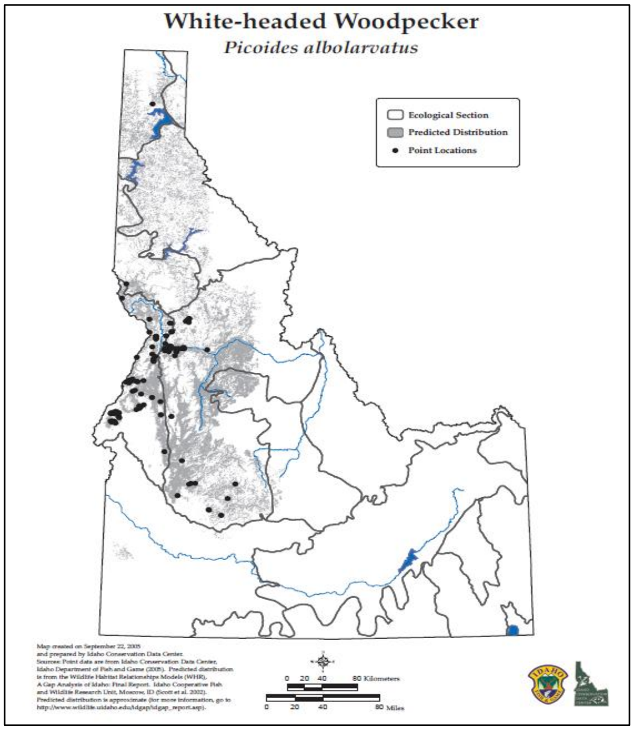

Figure Error! No text of specified style in document.**-2. White-headed woodpecker distribution in Idaho (IDFG 2005)**

Population Trend

No Breeding Bird Survey (BBS) data are available for Idaho for this species. BBS data for the Northern Rockies indicate detection increases for the white-headed woodpecker over the long term (1966–2011) (0.7% per year) and the more recent short term (2001–2011) (0.6% per year) (Sauer et al. 2012). However, these data are in a credibility category that reflects data with a deficiency. In particular, the regional abundance is <1.0 birds/route (low abundance), the sample is based on <14 routes for the long term (small sample size), or the results are so imprecise that a 3% per year change (as indicated by the half-width of the credible intervals) would not be detected over the long term (quite imprecise).

No IDFG trend data exists for Idaho, but the Idaho CWCS estimates the population size is approximately 320 individuals (IDFG 2005). No population estimates exist for the Forests. In general, woodpeckers are not well suited for trend monitoring using BBS protocols (IDFG 2005).

However, systematic occupancy monitoring for white-headed woodpeckers is occuring on adjacent Forests in Regions 4 (Payette National Forest) and 6 (Wallowa-Whitman National Forest) in cooperation with the Rocky Mountain Research Station (pers. com. Mellen-McLean et al. 2013). This effort is also designed to determine the effectiveness of silviculutural and prescribed fire treatments for fuels reduction and to improve dry forest wildlife habitat.

Habitat and Ecology

The white-headed woodpecker uses open-grown stands of large mature and older ponderosa pine and, less frequently, mixed Ponderosa pine and Douglas-fir.

The open grown, large mature and older ponderosa pine ecosystem has declined significantly from historical conditions in the Interior Columbia River basin and Idaho. (IDFG 2005; Mehl and Haufler 2001; Wisdom et al. 2000). Mehl and Haufler (2001) identified over 14,000 acres with a resoration potential; over 12,000 acres of these have a high potential for restoration in the near future in Idaho. An additional 57,000 acres in Idaho is estimated to have a good restoration potential.

Ponderosa pine restoration opportunities are estimated at 15,627 acres on the Nez Perce National Forest portion of the planning area (Mehl and Haufler 2001). Not all of these acres may be suited for this species based on location. Mehl and Haufler (2001) estimate that there may only be a 20-year window to restore the remaining old-growth ponderosa pine to historic conditions.

This species is a primary excavator, creating cavities for itself and other species, and may play a role in seed dispersal by transporting seeds short distances from source trees to anvil sites (Fredrick and Moore 1991, Garrett et al. 1996).

The presence of white-headed woodpeckers generally indicates high-quality ponderosa pine habitat, since ponderosa pine trees are used for all aspects of the species' life cycle (IDFG 2005). White-headed woodpecker densities have been shown to increase relative to the presence of old forest ponderosa pine (Dixon 2010). Live and dead ponderosa pine trees in the largest diameter classes are typically used for nest sites, roost sites, and foraging substrates either for insect gleaning or seed collection from cones (Frederick and Moore 1991, Blair and Servheen 1995, Dixon 2010, and Mellen-McLean et al. 2013).

The white-headed woodpecker is a primary consumer of seeds and a secondary consumer of terrestrial invertebrates (Casey et al. 2007, 2011, 2012; Blair and Seervheen 1995; Fredrick and Moore 1991; Mellen-McLean et al. 2013). They feed mainly on seeds from ponderosa pine, particularly during fall and winter, and forage for insects on tree surfaces (IDFG 2005, Fredrick and Moore 1991). The species forages on insects during spring and summer, gleaning rather than excavating insects from foliage and bark and occasionally feeding in flight (Blair and Servheen 1995).

White-headed woodpeckers forage primarily on large, live trees. In Oregon, 80% of white-headed woodpecker foraging was on live trees with a preference for trees with diameters >25 centimeters (cm) (10 inches) (Mellen-McLean et al. 2013). Larger trees are likely preferred because of the greater surface area and deeper crevices in the bark that could shelter insects. These trees are also the best seed producers (Mellen-McLean et al. 2013). Beginning in late summer and lasting through winter, the large seeds of ponderosa pine are the species' primary food source, seeds comprise 60% of the white-headed woodpecker's diet, unlike most woodpeckers that subsist primarily on insect larvae. Preferred foraging trees are typically >24 inches (61 cm) diameter at breat height (d.b.h.) and, in west-central Idaho, average 27 inches

(70 cm) d.b.h. (Frederick and Moore 1991). In general, smaller size classes have less surface area and cracks/crevices in the bark to support insects and would be expected to produce fewer cones.

Home ranges for white-headed woodpeckers vary significantly according to habitat quality. In central Oregon, the home range for white-headed woodpeckers in contiguous ponderosa pine habitat was 425–924 acres (172–374 hectare [ha]), with a median home range of 523 acres (212 ha). In fragmented mixed coniferous habitat, the home range was 264–1,740 acres (107–704 ha), with a median home range of 845 acres (342 ha) (Dixon 2010).

The species' dispersal movements are not well known, but individuals have been known to travel up to 8 miles (13 kilometers [km]) to preferred foraging areas (Garrett et al. 1996).

A central Oregon study found mean nest and roost tree sizes to be 31 inches (80 cm) d.b.h. and 24 inches (60 cm) d.b.h., respectively, with mean canopy closure as 24% at nest sites and 44% at roosts with most nest and roost trees in ponderosa pine forest types having <57% canopy closure (Dixon 2010). Other studies have documented mean nest tree sizes of 22 inches (56 cm) d.b.h. in west-central Idaho (Dixon 2010, Kozma 2009 and 2011).

Casey et al. (2007, 2011 and 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for white-headed woodpecker: late-successional forest in patches >100 ha (250 ac) with moderately open canopy cover (20%–60%); <40% shrub cover; and >4 snags/ha (1.6 snags/acre) >46 cm (18 inches) d. b. h. with >2.5 snags/ha (1 snag/acre) >71 cm (28 in) d. b. h.

Using the SIMPPLLE process (Chew et al. 2012), a mid-scale habitat model using vegetative parameters capable of being modeled across the entire forest and best fitting the characteristics of habitat described in the best available science has been developed for the Forest (SIMPPLLE SCC models 2013).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Bull et al. 1997, Casey et al. 2011 and 2012, Crist et al. 2009, Blair and Seervheen 1995, Dixon 2010, Fredrick and Moore 1991, Garrett et al. 1996, Hollenbeck et al. 2013, IDFG 2005, IWJV 2013, Nez Perce Tribe 2011, Mehl and Haufler 2001, Mellen-McLean et al. 2013, NPCC 2003, Wisdom et al. 2000):

- Disrupted fire ecology leading to stand replacement fires
- Out-of-balance forest age distribution and structure
- Stand treatments to create open-canopy habitat with dead standing trees and improving nesting habitat potential.
- Restoration of ponderosa pine habitat that retains large trees and snags and creates a more open overstory canopy appears to positively benefit this species
- Essential habitat components such as large-diameter pine trees with prolific seed production, a relatively open canopy, available snags and or nest cavities, and understory/ground cover appropriate for open-grown forests

- Reduction in the amount of old-forests and associated structures (snags, logs, and cavities), particularly within montane and lower montane forests
- Negative effects resulting from higher road densities in source habitats where an increased risk of snag loss associated with firewood collection may be present and higher along open roads.
- Possible unsustainable conditions of existing old forests where large transitions from shade-intolerant to shade-tolerant tree species have occurred. This trend stems from excluding fire from many forested communities, which has resulted in increased susceptibility to stand-replacing fires.

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5.3.1.2 Pygmy Nuthatch—*Sitta pygmaea*

Conservation Status

ESA—No status

USFWS—Bird of Conservation Concern - Idaho

USFS—Sensitive in Regions 1, No status in Region 4

BLM—Watch List (Type 5)

IDFG—Species of Conservation Concern (SGCN)

NatureServe rankings—Rangewide: G5 - Secure

Statewide Idaho: S1— Critically Imperiled, non-game

ICBEMP Family 1, Group 1

NPCC Salmon Subbasin Assessment – Species of Concern

The pygmy nuthatch is primarily associated with ponderosa pine forests and woodlands, but this species may also inhabit other dry forest habitat types such as Douglas-fir.

Distribution and Abundance:

In the Interior Columbia River Basin (Figure **Error! No text of specified style in document.**-3) the pygmy nuthatch is a year-round resident in ponderosa pine and other similar pine habitats. Its range extends from south-central British Columbia to the mountains of the western United States and central Mexico. Throughout this range, the patchy distribution of pine habitat dictates the patchy distribution of the nuthatch. The species is less common in the west-central mountains of Idaho (Figure **Error! No text of specified style in document.**-4) (IDFG 2005).

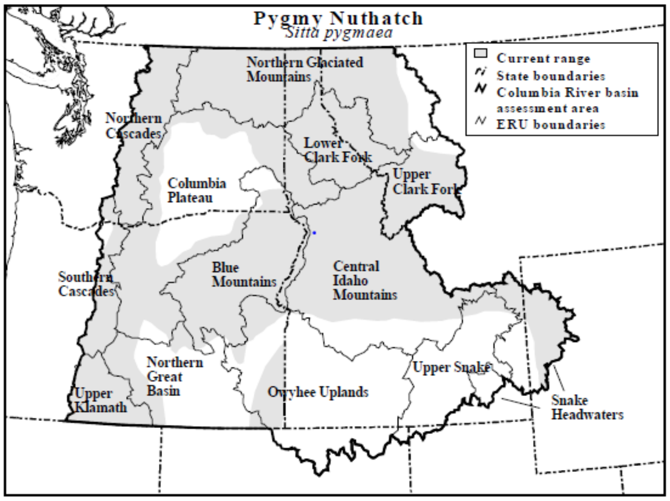

Figure Error! No text of specified style in document.**-3. Species Range of Pygmy nuthatch in the Interior Columbia River Basin (Volume 2 in Wisdom et al. 2000)**

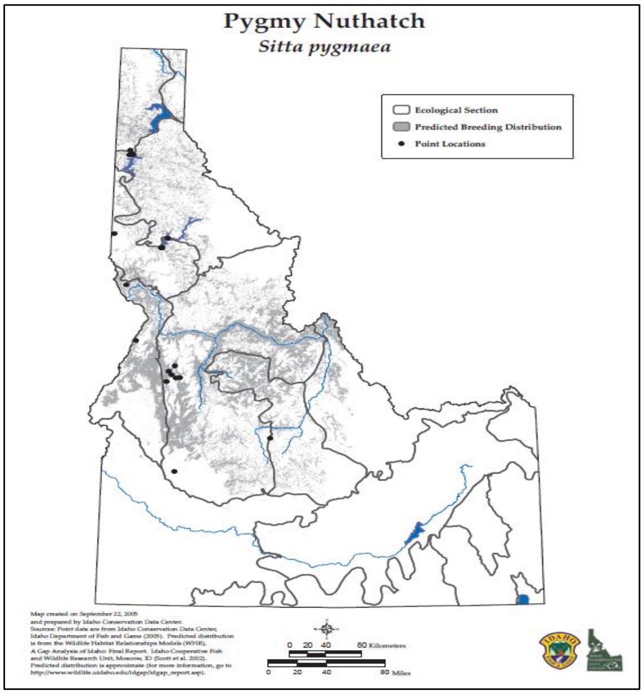

Figure Error! No text of specified style in document.**-4. Pygmy nuthatch distribution in Idaho (IDFG 2005)**

Population Trend

No BBS data are available for Idaho for this species. BBS data for the Northern Rockies indicates detection increases for the pygmy nuthatch during both long term (1966–2011) (3.0% per year) and short term (2001–2011) (6.9 % per year) (Sauer et al. 2014). However, these data are in a credibility category that reflects data with the following deficiencies:

- The regional abundance is <1.0 birds/route (low abundance)
- The sample is based on <14 routes for the long term (small sample size)
- The results are so imprecise that a 3% per year change (as indicated by the half-width of the credible intervals) would not be detected over the long term (quite imprecise)

The Idaho Species of Special Concern State Ranking Review states the pygmy nuthatch population is probably declining due to the loss of mature and old-growth ponderosa pine forests (Wisdom et al. 2000; IDFG 2001). The Idaho CWCS estimates there are approximately 5,300 individuals on a year-round basis in Idaho (IDFG 2005). No population estimates exist for the Forests.

Habitat and Ecology

Pygmy nuthatch show a strong and almost exclusive preference for ponderosa pine habitat, especially older (mid to late seral) stands that are fairly open (<70% canopy coverage). Secondary habitats include interior Douglas fir and aspen (Hutto 1989, IDFG 2001, Johnson and O'Neill 2001, USDA Forest Service 2003c). The species reliance on mature and older ponderosa pine forests and numerous snags indicates the species may be one of the best indicators of health in these forests. The species feed on pine seeds and insects extracted from the bark of trees (IDFG 2005, Ritter 2000).

The open grown, large, mature, and older ponderosa pine ecosystem has declined significantly from historical conditions in the Interior Columbia River Basin and Idaho. (IDFG 2005, Mehl and Haufler 2001, Wisdom et al. 2000). Mehl and Haufler (2001) identified over 14,000 acres with a resoration potential; over 12,000 of these acres have a high potential for restoration in the near future in Idaho. An additional 57,000 acres in Idaho is estimated to have a good restoration potential.

High priority ponderosa pine restoration opportunities are estimated on 15,627 acres on the Nez Perce National Forest portion and 2,075 acres on the Clearwater National Forest portion of the planning area (Mehl and Haufler 2001). Not all of these acres may be suited for this species based on location. Mehl and Haufler (2001) estimated that only a 20-year window my exist to restore the remaining old-growth ponderosa pine to historic conditions.

Pygmy nuthatch abundance correlates directly with snag density and foliage volume but inversely with trunk volume, which indicates the species is dependent on snag and nest cavity availability (Bull et al. 1997, Hutto 1989, IDFG 2001, Ritter 2000, USDA Forest Service 2003c).

Preferred nest trees average 23 inches d.b.h. (range 9–33 inches) with pygmy nuthatches having a stong preference for large diameter (≥19 inches) snags for nesting and foraging (Hutto 1989, IDFG 2001, Ritter 2000, USDA Forest Service 2003c). The pygmy nuthatch prefers mature/old-growth forest where snags and natural cavities are more prevalent, forest structure is relatively consistent, and a relatively open canopy occurs. The species tolerates a wide range of canopy closure and nests in dead trees. Nearly all foraging is in live canopy. Large, hollow ponderosa pine snags are important as winter roost sites; as many as 150 individuals have been reported roosting in a single tree (Casey et al. 2011 and 2012, Crist et al. 2009).

Casey et al. (2011, 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for pygmy nuthatch: moderately open-to-closed canopy (30%–70% canopy cover) in mature or old-growth forest with well-developed live canopies for feeding and >3 snags/ha (1.2 snags/ac) >53 cm (>21 in) d.b.h., including at least one large, hollow pine snag per ha (0.40/ac) for roosting.

Using the SIMPPLLE process (Chew et al. 2012), a mid-scale habitat model using vegetative parameters capable of being modeled across the entire forest and best fitting the characteristics of habitat described in the best available science has been developed for the Forest (Appendix X).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Casey et al. 2011 and 2012, Crist et al. 2009, Hollenbeck et al. 2013, IDFG 2005, IWJV 2013, Mehl and Haufler 2001, Mellen-McLean et al. 2013, Nez Perce Tribe 2011, NPCC 2004a and 2004b, Wisdom et al. 2000):

- Restoration of ponderosa pine habitat that retains large-diameter pine trees with prolific seed production, a relatively open canopy, and available snags large snags appears to positively benefit this species.
- Where stand densties are compatible with fuel loading that allows for low severity fire, fire can benefit this species by creating open-canopy habitat with dead standing trees and improving nesting habitat potential.
- Partially cut stands with moderate-to-heavy stocking of large pine trees, or open forested lands with remnant large-sized pine trees can provide suitable nesting and foraging habitat.
- Reduction in the amount of old-forests and associated structures (snags, logs, and cavities), particularly within montane and lower montane forests may threaten this species.
- Negative effects resulting from higher road densities in source habitats include an increased risk of snag loss associated with firewood collection, especially along open roads.
- Possibly unsustainable conditions of existing old forests where large transitions from shade-intolerant to shade-tolerant tree species have occurred may threaten this species. This trend stems from excluding fire from many forested communities, which has increased susceptibility to stand-replacing fires.

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5.3.1.3 Lewis' Woodpecker—*Melanerpes lewis*

Conservation Status

ESA—No status

USFWS—Bird of Conservation Concern - Idaho

USFS—Sensitive in Regions 1, No status in Region 4

BLM—Watch List (Type 5)

IDFG—Species of Conservation Concern (SGCN)

NatureServe rankings: Rangewide: G5 - Secure

Statewide Idaho: S1— Critically Imperiled

ICBEMP Family 1, Group 2 (Migratory population)

Intermountain West Joint Venture: Priority Bird Species

Lewis's woodpeckers are a somewhat atypical woodpecker in that they flycatch during the breeding season and store mast (e.g., acorns and corn) during the winter (Tobalske 1997). The species is also a primary consumer of seeds and fruits and a secondary consumer of terrestrial invertebrates (Tobalske 1997, Johnson and O'Neil et al. 2001).

Distribution and Abundance

In the Interior Columbia River Basin (Figure **Error! No text of specified style in document.**-5), Lewis' woodpecker occurs primarily in the western United States and is generally associated with open-canopy forests, particularly ponderosa pine but also cottonwood (*Populus* spp.) stands and burned or logged mixed coniferous forests (Tobalske 1997, Abele et al. 2004). Lewis' woodpecker breeds from southern British Columbia, south through Washington into California, and east to Colorado and the Black Hills of South Dakota (Tobalske 1997). In winter, individuals may sporadically wander south of their breeding range into northern Mexico. This species is often classified as a specialist in burned pine forest habitat, although suitability of burned areas as habitat may differ with postfire age, size and intensity of burn, and geographic region (Saab and Dudley 1998).

Their breeding distribution is strongly associated with the distribution of ponderosa pine in western North America (Wisdom et al. 2000). This species is generally considered to be nomadic in the majority of the basin (Figure **Error! No text of specified style in document.**-5) (Wisdom et al. 2000). Lewis' woodpecker breeds throughout Idaho except for portions of southern Idaho (Figure **Error! No text of specified style in document.**-6) (IDFG 2005).

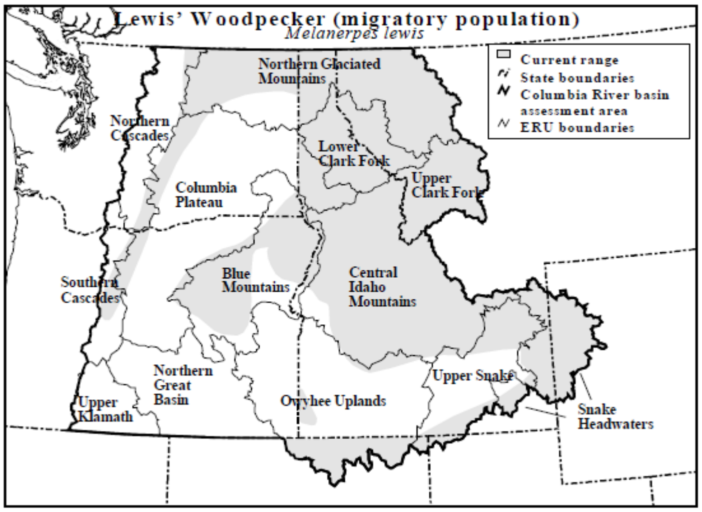

Figure Error! No text of specified style in document.**-5. Species range of Lewis's woodpecker in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

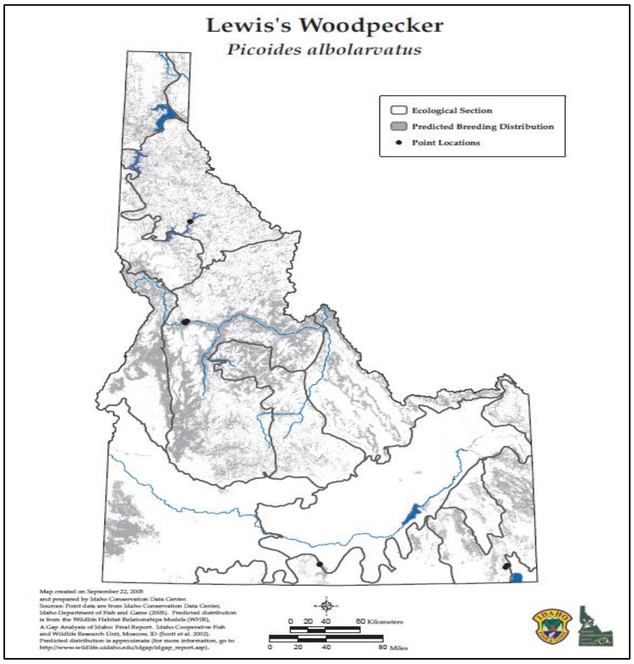

Figure Error! No text of specified style in document.**-6. Lewis's woodpecker distribution in Idaho (IDFG 2005)**

Population Trend

Limited evidence suggests Lewis' woodpeckers are undergoing rangewide population declines, but caution should be used when examining localized data since birds occur sporadically within their range (IDFG 2005, Saab and Rich 1997). The nomadic nature of the Lewis' woodpecker makes estimating populations difficult. The Idaho CWCS (IDFG 2005) reports declines in Idaho that mirror rangewide declining trends but also cautions that the Idaho trend estimates are based on scant data. Low sample size and low relative abundance data for Lewis' woodpecker limit the usefulness of the data (IDFG 2005).

BBS data are available for Idaho for this species. BBS data for Idaho indicate detection decreases and increases for the Lewis's woodpecker during both the long term (1966–2011) (–1.5 % per year) and the more recent short term (2001–2011) (2.1% per year) (Sauer et al. 2014). However, these data are in a credibility category that reflects data with a deficiency:

- The regional abundance is <1.0 birds/route (low abundance)
- The sample is based on <14 routes for the long term (small sample size)
- The results are so imprecise that a 3% per year change (as indicated by the half-width of the credible intervals) would not be detected over the long term (quite imprecise)

Therefore, caution should be used when interpreting trends in these data. Dramatic abundance cycles may be related to local habitat changes and to the nomadic behavior of Lewis' woodpeckers in search of burned forests for nesting habitat. Saab and Rich (1997) indicated that while BBS data are technically sufficient, the ecology and behavior of this species indicate that specialized monitoring will provide more accurate information.

Habitat and Ecology

Habitats of Lewis'woodpecker include old forest, single-storied structural stages of ponderosa pine and multi-storied stages of Douglas-fir, western larch (*Larix occidentalis*), and riparian cottonwood woodlands (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000). Breeding sites generally occur in burned ponderosa pine forests, riparian forests, aspen groves, and oak woodlands (Wisdom et al. 2000).

Lewis' woodpecker is considered a species of high concern under future basin-wide management because of the bird's affinity for declining old-forest stages of ponderosa pine (Casey et al. 2007, 2011, 2012; Saab and Rich 1997; IWJV 2013; Wisdom et al. 2000).

The open grown, large, mature, and older ponderosa pine ecosystem has declined significantly from historical conditions in the Interior Columbia River Basin and Idaho. (IDFG 2005, Mehl and Haufler 2001,Wisdom et al. 2000). Declines of up to 90% of the historic pine forests and deciduous riparian habitats in western states have been estimated (Crist et al. 2009), these being the two major breeding habitats for Lewis's woodpeckers (IDFG 2005). Historically, ponderosa pine forests maintained by frequent nonlethal fire events would have had open overstories, light penetration to the forest floor, and development of understory vegetation capable of supporting diverse insect communities (Crist et al. 2009, Tobalske 1997). In these dry forests, successful fire exclusion and harvesting has allowed dense stands of grand fir (*Abies grandis*), Douglas-fir, and small ponderosa pine to develop (Jain and Graham 2005). While these conditions lead to large-scale wildfire events in the short term, these dense forest conditions are not representative of healthy ponderosa pine forests and thereby reduce the long-term habitat suitability for Lewis' woodpecker.

Mehl and Haufler (2001) identified over 14,000 acres with a resoration potential; over 12,000 of these acres have a high potential for restoration in the near future in Idaho. An additional 57,000 acres in Idaho is estimated to have a good restoration potential. High-priority ponderosa pine restoration opportunities are estimated on 15,627 acres on the Nez Perce National Forest portion and 2,075 acres on the Clearwater National Forest portion of the planning area (Mehl and Haufler 2001). Not all of these acres may be suited for this species based on location. Mehl and Haufler (2001) estimated that only a 20-year window may exist to restore the remaining old-growth ponderosa pine to historic conditions.

The Lewis'woodpecker is an aerial insectivore and requires openings for foraging maneuvers. Burned ponderosa pine forests created by stand-replacing fires seem to be highly productive source habitats compared to unburned pine or cottonwood riparian forest. However, research indicates that openings in partially logged, burned forests likely provide greater opportunities for aerial foraging (Saab and Dudley 1998). Fire suppression has resulted in higher densities of small diameter trees, which are unsuitable for this species (Wisdom et al. 2000). Stand-replacing fires appear to create highly productive source habitats (Tobalske 1997).

The Lewis' woodpecker is closely associated with recent burns and responds favorably to stand-replacing fires (Tobalske 1997), whereas habitat for other Family 1 species is usually maintained by frequent, low-intensity burns that retain large and old forest habitat (Appendix 1, Table 2 in Wisdom et al. 2000).

Lewis' woodpeckers are generally associated with snags and decadent trees >20 inches (51 cm) d.b.h. in forested and shrubland/grassland habitats. They utilize the dead parts of live trees, as well as existing tree cavities (Bull et al. 1997, Johnson and O'Neil et al. 2001). Snags are a special habitat feature for this species (Volume 3, Appendix 1, Table 2 in Wisdom et al. 2000). Lewis'woodpeckers requires large snags in an advanced state of decay or trees with soft sapwood for cavity excavation. Snags and trees used for nesting are generally larger in diameter and more heavily decayed than that expected based on availability of such snags (Saab and Dudley 1998).

In western Idaho, Lewis' woodpeckers select nest sites (n = 208 nests) with higher snag densities compared to random sites, suggesting a preference for snags distributed in clumps rather than those in distributed uniformly (Saab et al. 2002). In western Idaho, Lewis' woodpeckers nested in higher densities in salvage-logged units rather than unlogged units (Saab and Dudley 1998); preferred snags in a clumped distribution (Saab et al. 2002); and selected areas with snags that were >9 inches (23 cm) d.b.h. at higher densities (averaging 24 snags/ac. [59 snags/ha]) , and snag densities for trees >21 inches (53 cm) d.b.h. averaging 6.3 snags/ac. (16 snags/ha) (Saab and Dudley 1998).

This species appears to prefer nesting in large snags in relatively open forests with a well-developed understory (Saab and Vierling 2001). Lewis' woodpeckers are weak excavators and rarely excavate their own cavity. Lewis' woodpeckers require large snags in an advanced stage of decay or trees with sapwood to easily excavate cavities (Saab et al. 2002, Saab et al. 2006, Tobalske 1997). They readily usurp occupied cavities, reuse old cavities created by strong excavators (e.g., hairy and black-backed woodpeckers), or use naturally occurring cavities (Tobalske 1997).

Nest sites are generally associated with an abundance of flying insects, open-canopy forest, or tree clumps, snags, and dense ground cover in the form of shrubs, downed material, and grasses (Saab and Dudley 1998, Tobalske 1997). Average home range size for Lewis' woodpecker is estimated to be 15 acres/pair (6.1 ha/pair) (Tobalske 1997). Nest tree species are typically ponderosa pine, cottonwood, and, less commonly, aspen, lodgepole pine (*Pinus contorta*), juniper, willow, or paper birch (*Betula papyrifera*) (Tobalske 1997). Several habitat characteristics that appear important for nest site selection include snags (soft or in later stages of decay), clumped snag distributions, down woody material, litter, ground cover, and canopy cover. In general, a reduction of large snags in breeding habitats may limit reproduction (Tobalske 1997).

Linder and Anderson (1998) found nest sites have less small down wood (<11.8 inches [<30 cm]); more large down wood (12.2–35.4 inches [31–90 cm]) and >91 cm [>35.8 inches]); more litter (18.7% versus 9%); and a tendency toward less grass and forb cover than random sites. Understory litter, down wood, and grass and forb conditions likely influence insect production (Linder and Anderson 1998).

Casey et al. (2007, 2011, 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for Lewis's woodpecker: open ponderosa pine forest with <30% canopy cover; >50% shrub cover; >3 soft snags/ha (>0.40/soft snags/ac) that are >53 cm (>21 in) d.b.h.and >81 cm (>32 in) d.b.h.

Using the SIMPPLLE process (Chew et al. 2012), a mid-scale habitat model using vegetative parameters capable of being modeled across the entire forest and best fitting the characteristics of habitat described in the best available science has been developed for the Forest (Appendix X).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Bull et al. 1997, Casey et al. 2011 and 2012, Crist et al. 2009, Hollenbeck et al. 2013, Mehl and Haufler 2001, Mellen-McLean et al. 2013, Nez Perce Tribe 2011, Saab et al. 2002, Saab et al. 2006, Wisdom et al. 2000).

- Basin-wide decline in old forests of interior ponderosa pine and western larch
- Decline in availability of large snags and trees for foraging and nesting
- Declines in shrub understories of montane and lower montane forests
- Fire suppression in pine forests has promoted high densities of small diameter trees, creating unsuitable conditions since the species relies on relatively open habitats
- Prescribed fire can benefit this species by creating open habitat with dead, standing trees and improving cavity creation as long as fuel loading is reduced to manageable levels

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5.3.1.4 Fisher—*Pekania pennanti*

Conservation Status
ESA: No status, petitioned for listing 2009, 2013
USFS: Sensitive in Regions 1 and 4
BLM: Regional/State imperiled (Type 3)
IDFG: Species of Conservation Concern (SGCN), furbearer—no season
NatureServe rankings: Rangewide: G5—Secure
Statewide Idaho: S1—Critically Imperiled
ICBEMP Family 2, Group 5
NPCC Clearwater Subasin Assessment—Focal Species
NPCC Salmon Subasin Assessment—Species of Concern

The fisher (*Pekania pennanti*) is a forest-dependent, medium-sized mammal native to North America. The fisher is predator, with prey that includes snowshoe hare, squirrels, mice and porcupines (Center for Biological Diversity et al. 2013, NatureServe 2013, USDI 2011 and IDFG 2005).

Distribution and Abundance

The current distribution of fishers in the northern Rocky Mountains is similar to the presumed historical range; actual occurrence data may differ from the range depicted in Figure **Error! No text of specified style in document.**-7 and Figure **Error! No text of specified style in document.**-8 (Wisdom et al. 2000, Lofroth et al. 2011, Raley et al. 2012, and USDI 2011). In the northern Rocky Mountains, fishers are distributed in northwest and westcentral Montana and northern and north-central Idaho with rare detections further south in the state (Figure **Error! No text of specified style in document.**-9) (IDFG 2005, USDI 2011 and 2013, Raley et al. 2012).

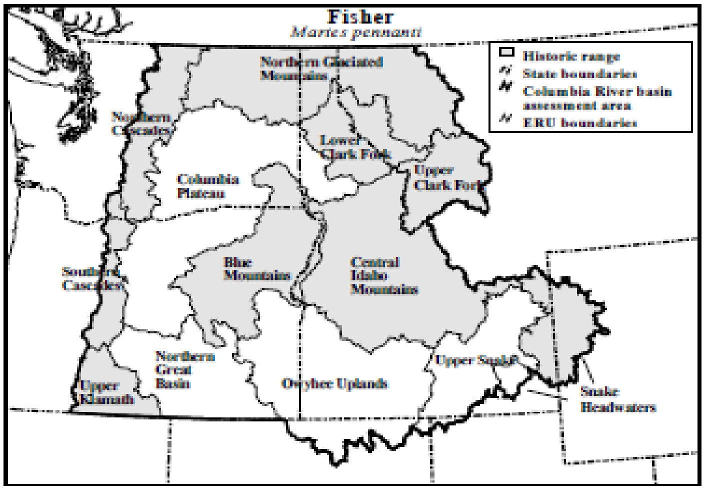

Figure Error! No text of specified style in document.**-7. Species Range of fisher in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

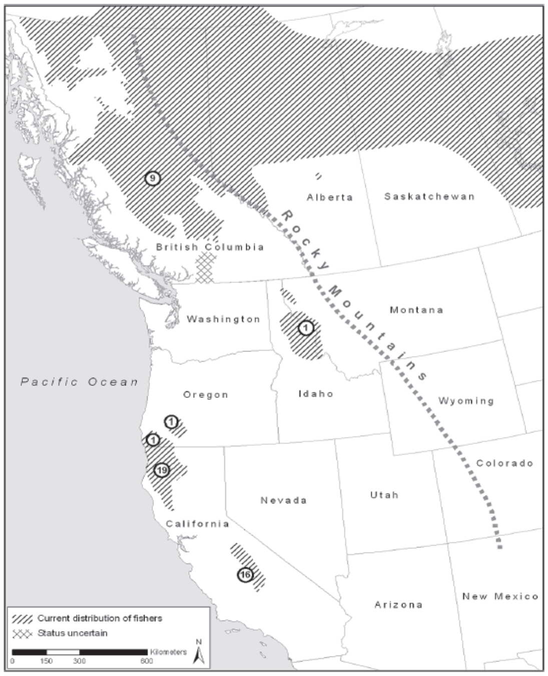

Figure Error! No text of specified style in document.**-8. Current Fisher distribution based on best available science (Raley et al. 2012)**

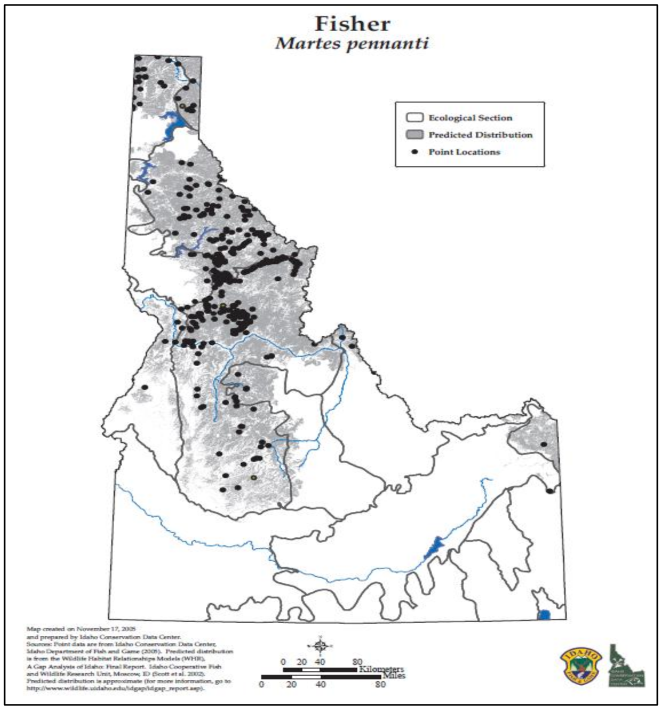

Figure Error! No text of specified style in document.**-9. Fisher distribution in Idaho (IDFG 2005)**

Population Trend

Neither the State of Idaho or recent researchers have specific estimates, either historical or current, on population levels of fisher in Idaho (IDFG 2005; USDI 2011; per. comm. Sauder 2013). There is no estimate of population trend for Idaho (IDFG 2005). None of the recent fisher research in Idaho was designed to determine trends. Therefore, no empirical data exist on the species trend. However, the species has been extensively surveyed for in the planning area since 2004 (per. comm. Lewis 2013, per. comm. Sauder 2013, per. comm. Schwartz 2013). In addition, the state of Idaho (IDFG 2005, State of Idaho 2010) has documented other fisher observations (indirect and direct) at multiple locations across the state and in the planning area (Figure **Error! No text of specified style in document.**-9).

Very generally, fisher researchers have estimated that the overall Northern Rockies fisher population is greater than 500 but less than 1,000 individuals (per. comm. Sauder 2013). In spite of extensive surveys since 2004, the overall number of fisher within the planning unit is undetermined (per. comm. Sauder 2013). However, 50 to 75% of the fisher in Idaho is estimated to occur in the Clearwater Region (IDFG Region 2) and probably on the higher end of that range, with most of those on the Nez-Clearwater National Forest (per. comm. Sauder 2013). The planning area is contained within Idaho Fish and Game Region 2 (Clearwater Region).

Wider distribution of the species may be limited due to these same factors. Drier habitats (ponderosa pine and lodgepole pine) and areas of heavier snowpack conditions likely limit fisher abundance and distribution (Olsen et al. 2013 and USDI 2011). Therefore, unsuited habitat and climatic conditions may inherently limit fisher population abundance and distribution elsewhere in the National Forests of the western USFS Region 1.

Based on the review of the best available science and discussions with key researchers the Nez Perce-Clearwater NFs and southern Idaho Panhandle NFs are the critical areas that support fisher in the Northern Region (Raley et al. 2012, per. comm. Sauder 2013, per. comm. Schwartz 2013). The Lolo, Bitterroot and Kootenai NFs, immediately adjacent to the Idaho/Montana state line, are on the fringes of the key population center of fisher concentrated in Idaho. Habitat issues and management options are described below and elsewhere in this Assessment for the fisher.

Habitat and Ecology

The fisher is a forest-dependent species that evolved in the Northern Rocky Mountains in a complex landscape mosaic shaped by regularly occurring environmental influences to its preferred habitat such as fire, tree disease, and wind-throw. Fishers are associated with areas of high cover and structural complexity in large tracts of mature and old-growth forests (Meyer 2007, Powell and Zielinksi 1994, Sauder and Rachlow 2013, Schwartz et al. 2013). Other site characteristics that can be important include presence of nearby water, slope, elevation, and snow characteristics (Meyer 2007, Olsen et al. 2013, USDI 2011).

Fishers generally avoid early and/or prefer late successional stages, but in some cases they use fairly young forests extensively. In Idaho, the species occurs in a mosaic of mesic conifer forests. Forested riparian habitat is important, and stream courses may be used as travel corridors (IDFG 2005, Sauder and Rachlow 2013). Mature and older forests are used during summer, and young and older forests are used during winter (IDFG 2005, Sauder and Rachlow 2013). Proulx (2004) considered the fisher as a fine-filter species that is sensitive to forest management requiring an intergrattion of coarse and fine-filter habitat needs in landscape planning.

Fishers in north-central Idaho exhibit seasonal shifts in habitat use to forests with younger successional structure plausibly linked to a concurrent seasonal shift in habitat use by their prey species (USDI 2011). In north-central Idaho, the species did not use habitats in proportion to their spatial availability (Jomes and Garton 1994, Lofroth et al. 2011). Predominantly grand fir and subalpine fir (*Abies lasiocarpa*) stands categorized as pole-sapling age or younger were rarely used in summer or winter. In summer, mature forest and older forests were preferred, but in winter young grand-fir forests were preferred (Jones and Garton 1994, Lofroth et al. 2011). Olsen et al. (2013) and Buck et al. (1994) indicate that fisher use dry habitat forests, such as ponderosa pine and lodgepole pine, much less than moist mixed conifer types. In north-central Idaho forests, research has demonstrated the fisher's preference for riparian areas (Jones and Garton 1994, Olsen et al. 2013, Sauder and Rachlow 2013). Summer fisher locations were significantly closer (223 feet) to water than random sites (400 feet) (Jones and Garton 1994, Lofroth et al. 2011). Long-distance movements have been documented for dispersing juveniles and relocated individuals before they establish a home range (NatureServe 2013 and USDI 2011).

Resting and denning habitat are key fine-filter attributes for fisher. Aubry et al. 2013 identified fine-filter attributes that are associated with fisher resting sites. They found that fishers selected for areas on steeper slopes, in cooler microclimates, had dense overhead cover, in stands with greater volume of logs, and a greater number of large trees and snags (Aubrey et al. 2013). Schwartz et al. 2013 found that female fisher consistently selected stands of mature forests with both large and smaller trees, thereby consistent with other evidence (Jones and Garton 1994, Lofroth et al. 2011, 2012) that fishers need cover for hunting efficiency or predator escape purposes.

Naney et al. (2012) indicates that vegetation diversity contributes to habitat for a wide variety of fisher prey species (Lofroth et al. 2011). The reduction in vegetation diversity can decrease the variety of tree species available to provide cavities (for fisher denning and resting habitat), reduce the resilience of forests to insects and diseases, and reduce the diversity of environments capable of supporting fisher prey species. The reduction in vegetation diversity can result from uncharacteristically severe wildfire or vegetation management practices (Naney et al. 2012),

Hahn and Lewis (USDA Forest Service 2014) conducted a GIS query to spatially identify fisher habitat across the Region using the spatial model criteria described in Olsen et al. (2013). The results from the GIS exercise constitutes a broad-scale quatification of habitat using the full set of climatic, topographic and vegetative variables ("Full" model) vs. the "climate only" model also described in Olsen et al. (2013). The "Full model" includes landcover variables, resulting in a predicted distribution more likely to include river and valley bottoms.across the entire forest, and best predicts suitable habitat in older forests with large trees.

The application of the Olsen et al. (2013) is the best available science that quantifies "potential" fisher habitat for the Northern Region (Region 1) and Forests to date. This information is disclosed in the Mid-scale (Forest-level) section of this assessment. Figure Figure **Error! No text of specified style in document.**-55 depicts the distribution of estimated suitable habitat in the planning area, and Figure Figure **Error! No text of specified style in document.**-56 and Figure **Error! No text of specified style in document.**-57 depicts the distribution of the 6,314,511 acres of estimated suitable habitat in the Northern region for the species as modeled (USDA Forest Service 2014). Further refinement of this data is ongoing.

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Aubry et al. 2013, Buck et al. 1994, Hollenbeck et al. 2013, IDFG 2005, Jones and Garton 1994, Lofroth et al. 2011 and 2012, Naney et al. 2012, Nez Perce Tribe 2011, NPCC 2003, NPCC 2004a and 2004b, Olsen et al. 2013, Powell and Zielinksi 1994, Sauder and Rachlow 2013, Schwartz et al. 2013, USDA Forest Service 2014; Wisdom et al. 2000).

- Reduction in the amount of old-forests and associated structures (snags, logs, and cavities), particularly within the montane and lower montane community groups.
- The species use of dry forest conditions is much less than in moist forests.

- Negative effects resulting from higher road densities in source habitats there is increased trapping pressure, and loss of snags and logs associated with firewood collection may be higher along open roads.
- Possible unsustainable conditions of existing old forests where large transitions from shade-intolerant to shade-tolerant tree species have occurred. This stems from the exclusion of fire from many forested communities, which has resulted in increased susceptibility to stand-replacing fires.
- Timber management practices that result in open stands, an abundance of hardwoods, and dry forest conditions over large areas create unsuitable conditions.
- Incidental trapping of fishers may be an important source of mortality, particularly where populations are small and fragmented.

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5.3.1.5 Flammulated owl—*Otus flammeolus*

Conservation Status

ESA—No status

USFWS—Bird of Conservation Concern - Idaho

USFS—Sensitive in Regions 1 and Region 4

BLM—Regional/State inperiled (Type 3)

IDFG—Species of Conservation Concern (SGCN), protected non-game

NatureServe rankings: Rangewide: G4—ApparentlySecure

Statewide Idaho: S3B— Vulnerable breeding

Intermountain West Joint Venture: Priority Bird Species

ICBEMP Family 2, Group 5

NPCC Salmon Subbasin Assessment – Species of Concern

NPCC Clearwater Subbasin Assessment –Focal species

Distribution and Abundance

The flammulated owl breeds in montane forests from southern British Columbia to southern Mexico, generally west of the Rocky Mountains. One of the most highly migratory owls in North America, it winters from central Mexico to Central America. Flammulated owls are broadly distributed throughout the montane forested portions of the state including the Lower Clark Fork, Blue Mountains, and Central Idaho Mountains ERUs (Figure **Error! No text of specified style in document.**-10 and Figure **Error! No text of specified style in document.**-11) (IDFG 2005, Saab and Rich 1997, Wisdom et al. 2000).

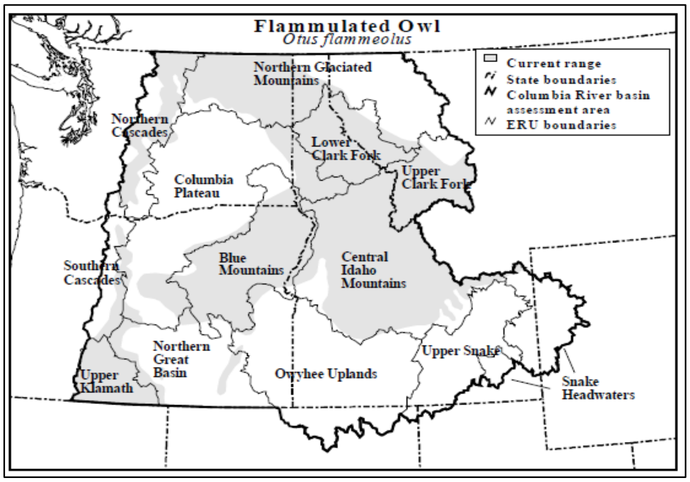

Figure Error! No text of specified style in document.**-10. Species Range of flammulated owl in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

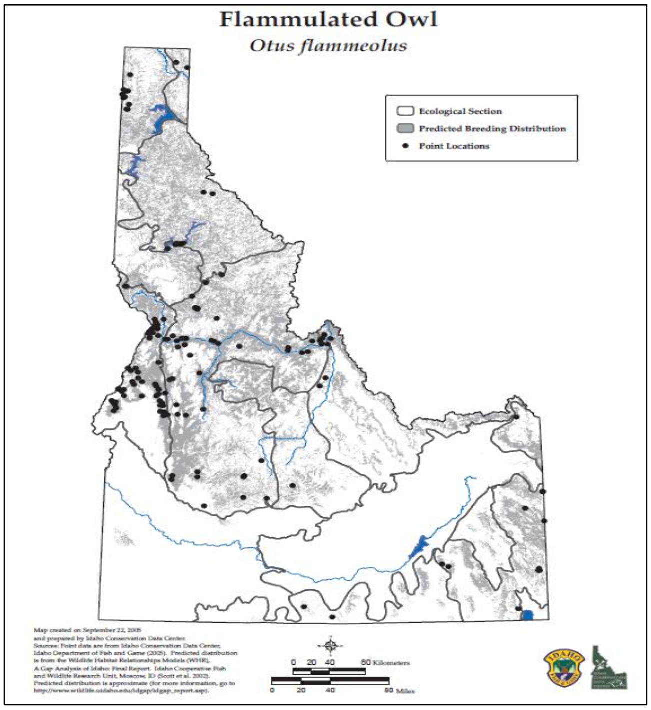

Figure Error! No text of specified style in document.**-11. Flammulated owl distribution in Idaho (IDFG 2005).**

Population Trend

No BBS trend data exists for the species (Sauer et al. 2014). Flammulated owls are almost strictly nocturnal, and BBS data are inadequate to establish trends. Saab and Rich (1997) indicate that BBS data are insufficient for this species. Because of the ecology and natural history of this species it is unlikely that the sample size would increase with more BBS routes. The Nez Perce-Clearwater NF has conducted surveys for the species to determine occupancy information (pers. comm. Bonn 2013).

Habitat and Ecology

In Idaho, flammulated owls occupy mid-elevation old-growth or mature stands of open ponderosa pine, Douglasfir, and stands co-dominated by these two tree species (IDFG 2005). In the northern Rockies, they occupied relatively open, multi-storied Douglas-fir, ponderosa pine, and mixed conifer stands with some mature trees usually present (Wright et al, 1997).

The open grown, large mature and older ponderosa pine ecosystem has declined significantly from historical conditions in the Interior Columbia River basin and Idaho. (IDFG 2005, Mehl and Haufler 2001, Wisdom et al. 2000). Mehl and Haufler (2001) identified over 14,000 acres with a resoration potential with over 12,000 acres of this with high potential for restoration in the near future in Idaho. An additional 57,000 acres in Idaho is estimated to have a good restoration potential. Restoration opportunities exist for this species in the planning area.

High priority ponderosa pine restoration opportunities are estimated at 15,627 acres on the Nez Perce portion and 2,075 acres on the Clearwater portion of the planning area (Mehl and Haufler 2001). Not all of these acres may be suited for this species based on location. Mehl and Haufler (2001) estimated that there may only be a 20-year window to restore the remaining old-growth ponderosa pine to historic conditions.

Flammulated owl habitat combines open, mature montane pine forests for nesting scattered thickets of saplings or shrubs for roosting and calling, and grassland edge habitat for foraging (Crist et al. 2009, IDFG 2005, Saab and Rich 1997). Source habitats for this are species are late seral stages of montane forest communities for this ICBEMP family and group. Unmanaged young forests also are source habitats because late-seral stages that contain sufficient large-diameter snags and logs needed for the various life functions of species, are present (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000). Managed young-forest stages that lack of remnant large trees and snags do not provide source habitat. In these dry forests, successful fire exclusion and harvesting has allowed dense stands of grand fir, Douglas-fir (*Pseudotsuga menziesii),* and small ponderosa pine to develop (Jain and Graham 2005), and thereby reduce habitat suitability for flammulated owl.

Old forests consisting of ponderosa pine and Douglas-fir are a key component of flammulated owl home ranges (Reynolds and Linkhart 1992). Home ranges composed of at least 75 percent old ponderosa pine/Douglas-fir forest were occupied more continuously than home ranges consisting of less than 75 percent in this forest type (Reynolds and Linkhart 1992, Linkhart et al. 1998).

Variability in the structure of these old stands seems important to support life functions of flammulated owls. However, roosting occurs in fairly dense stands or patches within stands. with tree densities immediately surrounding roost trees average 2016 per ha (816 per acre), whereas overall home ranges average 589 trees per ha (238 per acre) (McCallum 1994). In contrast, relatively open stands seem to be selected for foraging, and open, mature stands are selected for nest sites (McCallum 1994). In two Oregon studies, mean d.b.h. of nest trees was 56.3 cm (22.2 in) and 72.0 cm (28.4 in) (Bull et al. 1990).

Casey et al. (2007, 2011 and 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for flammulated owl: Relatively open (20-50% canopy cover) mature forests with >3 snags/ ha (>1.2 snags/ac) >46 cm (18 in) d. b. h., small patches of dense saplings and/or young trees for roosting or calling, 10-30% shrub layer cover substrate for production of insect prey, and small grassy openings < 2 ha (4.9 ac) or adjacent to similar larger grasslands for foraging.

Using the SIMPPLLE process (Chew et al. 2012), a mid-scale habitat model using vegetative parameters capable of being modeled across the entire forest and best fitting the characteristics of habitat described in the best available science has been developed for the Forest (Appendix X).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Casey et al. 2007, 2011 and 2012, Crist et al. 2009, Hollenbeck et al. 2013, IDFG 2005, IWJV 2013, Mehl and Haulfer 2001, Nez Perce Tribe 2011, NPCC 2003, 2004a and 2004b, Wisdom et al. 2000).

- One of the primary restoration and management activities for ponderosa pine habitat is thinning the degraded, dense, mixed-conifer forests that were historically ponderosa pine to the historic canopy and understory conditions with which the species evolved.
- The fire ecology of ponderosa pine and dry interior Douglas-fir ecosystems is disrupted.
- Reduction in the amount of old-forests and associated structures (snags, logs, and cavities), particularly within the montane and lower montane community groups.
- Negative effects resulting from higher road densities in source habitats there is increased trapping pressure, and loss of snags and logs associated with firewood collection may be higher along open roads.
- Possible unsustainable conditions of existing old forests where large transitions from shade-intolerant to shade-tolerant tree species have occurred. This stems from the exclusion of fire from many forested communities, which has resulted in increased susceptibility to stand-replacing fires.

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5.3.1.6 Boreal Owl—*Aegolius funereus* (New information on this sepcies may preclude it from being carried forward as a Species of Conservation Concern)

Conservation Status
ESA—No status
USFS—Sensitive in Region 4
BLM—Watch List (Type 5)
IDFG—Species of Conservation Concern (SGCN)
NatureServe rankings: Rangewide: G5—Secure
Statewide Idaho: S2—Imperiled
ICBEMP Family 2, Group 7
NPCC Salmon Subbasin Assessment – Species of Concern

Boreal owls are consumers of small terrestrial vertebrates, and are secondary cavity users. Snags and downed wood, for nest sites and prey habitat, are special habitat features for the boreal owl.

Distribution and Abundance

Boreal owls are circumpolar, occurring in boreal and montane forests across northern Eurasia and in Canada and Alaska, southward through the Cascade, Blue, and Rocky Mountain Ranges of the western United States into Colorado and New Mexico (IDFG 2005).

Within the basin, the boreal owl is a year-round resident in forested portions of eastern Washington, northern and central Idaho, western Montana, and the Blue Mountains and Cascade Range of Oregon (Figure **Error! No text of specified style in document.**-12) (Volume 2, Figure 21 in Wisdom et al. 2000). Boreal owls are year-round residents within their home ranges but are known to make periodic, food-induced irruptions southward in winter (Hayward and Hayward 1993, Hayward 1994).

In Idaho, boreal owls occupy high-elevation mixed conifer forests in the north, central, and southeast portions of the state (IDFG 2005). Extensive surveys in Idaho and Montana did not find boreal owls below 1,292 m (4,239 feet), and 75% of locations were found above 1,584 m (5,197 feet) (Hayward et al. 1987).

Boreal owls are documented on the Forest (Figure **Error! No text of specified style in document.**-13) (IDFG 2005). Boreal owl occurrences are known from the following Idaho counties: Adams, Bear Lake, Blaine, Bonner, Boundary, Caribou, Cassia, Clark, Clearwater, Fremont, Idaho, Lemhi, Shoshone, Teton, and Valley (NatureServe 2013). There are no estimates of abundance for boreal owls in Idaho. However, the Idaho CWCS (IDFG 2005) estimates abundance of boreal owls in Idaho as 1,000–3,000 individuals based on the extent of spruce-fir habitat.

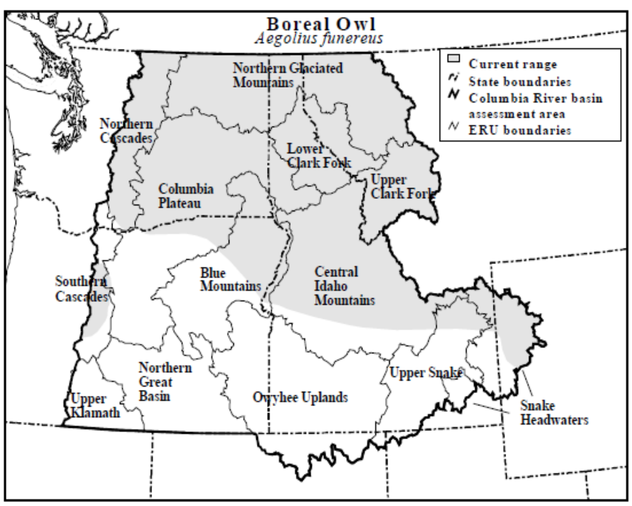

Figure Error! No text of specified style in document.**-12. Species Range of boreal owl in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

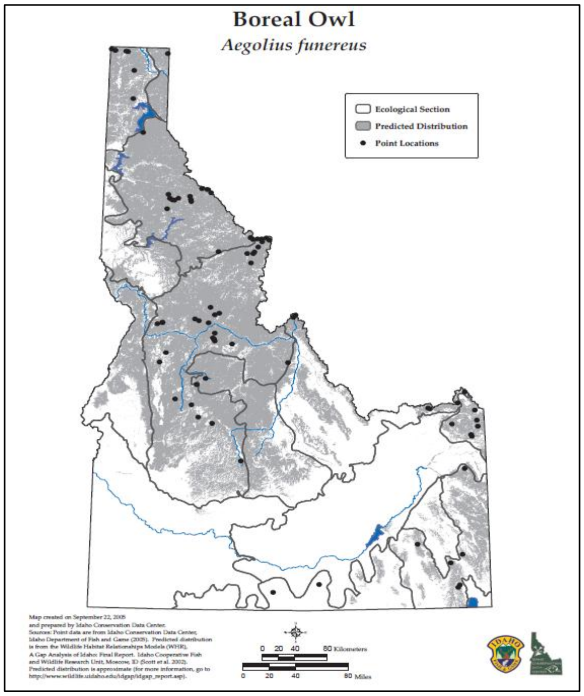

Figure Error! No text of specified style in document.**-13. Boreal owl distribution in Idaho (IDFG 2005).**

Population Trend

No reliable estimates of boreal owl population trends in North America have been established (Hayward 1994). Long-term population trends are hard to establish due to the difficulty of surveying for the species and its nomadic/irruptive behavior (IDFG 2005). No BBS survey trend data is available for the species (Sauer et al. 2014). The few boreal owl studies conducted in the United States and Canada have tended to be short term and habitat focused. The "Idaho Partners in Flight Idaho Bird Conservation Plan" (Ritter 2000) does designate the boreal owl as a Moderate Priority Breeding Bird for high-elevation mixed conifer forest and aspen habitats in Idaho but does not address population size or trend.

Habitat and Ecology

Source habitats for boreal owls include old-forest and unmanaged young-forest stages of subalpine and montane forests and riparian woodlands (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000).

Specific cover types and structural stages that provide source habitat are the old-forest multi-story stages of Engelmann spruce (*Picea engelmannii*)-subalpine fir, Pacific silver fir (*Abies amabilis*)-mountain hemlock (*Tsuga mertensiana*), and aspen, and the old forest single- and multi-forest stages of interior Douglas-fir, western larch, and lodgepole pine. Unmanaged young-forest stages of all these cover types and of grand fir-white fir also serve as source habitats if suitable large-diameter snags are present (Hayward 1994).

Habitat for boreal owls requires a juxtaposition of late-seral and young unmanaged forested habitats as well as variation in forest communities within individual territories to provide for nesting, roosting, and foraging (Wisdom et al. 2000). At the home range scale, boreal owls are adapted to patchy landscapes and use several cover types and structural stages across their home range to meet different life history requirements (Hayward 1994). Landscapes that contain various old-forest cover types may support the greatest abundance of boreal owls (Hayward et al. 1993).

Snags and downed wood, for nest sites and prey habitat, are special habitat features for the boreal owl. Boreal owls use live trees and snags (sizes ranging from 10 to 14 inches (25.4 to 35.6 cm) d.b.h. to >30 inches (>76.2 cm) d.b.h. and nest in cavities. They will readily use supplemental nest boxes, artificial structures, and platforms.

Preferred habitats typically support abundant lichens and fungal sporocarps, which provide important foods for southern red-backed voles, the principal prey of boreal owls (Hayward 1994c). Voles are the preferred prey of boreal owls and may make up as much as 75% of the boreal owl’s diet (Hayward et al. 1993). In Idaho, red-backed voles were found to be up to nine times more abundant in mature spruce-fir forests than other forest habitats (Hayward 1997). Both voles, and lichens and fungi are associated with coarse woody debris. Prey availability may regulate owl abundance in portions of its range and influence seasonal movements and fluctuations in reproductive success (Hayward and Hayward 1993).

Nest sites for boreal owls are characterized by the availability of large trees and large snags with cavities excavated by primary cavity nesters (Hayward 1994, Volume 3, Appendix 1, Table 2 in Wisdom et al. 2000). A lack of large cavities can eliminate areas available for nesting habitat, though the forest stands may be capable of providing roosting and/or foraging habitat instead. In an Idaho study, Hayward et al. (1993) found that spruce-fir forests had few cavities for nesting but abundant prey resources, while mixed conifer forests had an abundance of cavities but few prey.

Cavities excavated by pileated woodpeckers and northern flickers are the most common nest sites (Hayward and Hayward 1993. Tree and snag diameters used for nesting are generally large. For example, in Idaho, diameters of nest trees ranged from 10 to 24 inches (26 to 61 cm) with an average of 16 inches (41 cm). Of 19 nests, 10 were in snags, nine were in live trees (Hayward et al. 1993).

Boreal owls are sensitive to heat stress and utilize roost sites with high canopy cover and a high basal area for thermoregulation (Hayward 1997). In Idaho, spruce-fir stands—and occasionally pine—have been documented as preferred roosting habitat because these trees provided thermal and hiding cover (Hayward 1994).Canopy closures of roost sites ranged from 58%–63% in Idaho (Hayward et al. 1993).

Hayward et al. (1993) described the best foraging habitat as being in older spruce-fir stands, which provided an open forest structure that facilitated hunting and had 2–10 times greater prey populations than other sites.

Seasonality of home range use affects size of the territory, with winter home ranges typically larger than summer (Hayward et al. 1987). In central Idaho, year-round (minimum) home ranges averaged 2,048 ha ±818 ha (5061 acres ±2021 acres) (Hayward et al. 1993). Extensive overlap in home ranges is documented for boreal owls (up to 50% overlap, increasing up to 98% overlap following nesting) (Hayward et al. 1987). However, within a home range, only nest sites are defended (NatureServe 2013).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Bull et al. 1997, Hayward 1994 and 1997, IDFG 2005, , NPCC 2004a and 2004b, Wisdom et al. 2000).

- Altered fire regimes, resulting from fire suppression, have led to declines in large aspen trees and other forest types.
- Balancing the habitat needs of species dependent on late-seral conditions with those dependent on early- and late-seral conditions.
- Loss of historical landscape patterns. Fragmented distribution of source habitats resulting from harvest and/or large-scale wilfire may negatively affect population structure and persistence of boreal owls.
- Loss of large-diameter snags (>18 inches (45 cm) d.b.h.
- Loss of preferred microenvironments for small mammal prey. Changes in forest structure and composition (i.e., loss of snags, downed wood, and fungi) could negatively affect prey populations.
- Declines in late-seral forests of subalpine and montane forests and their associated attributes such as large trees, large snags, large down logs, lichen, and fungi.

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5.3.1.7 American Three-toed Woodpecker—*Picoides tridactylus* (New information on this sepcies may preclude it from being carried forward as a Species of Conservation Concern)

Conservation Status

ESA—No status

USFS—Sensitive in Region 4

BLM—Regional/State inperiled (Type 3)

IDFG—Species of Conservation Concern (SGCN), protected non-game

NatureServe rankings: Rangewide: G4—ApparentlySecure

Statewide Idaho: S3B—Vulnerable breeding

ICBEMP Family 2, Group 7

NPCC Salmon Subbasin Assessment—Species of Concern

The American three-toed woodpecker is a relatively specialized species, feeding primarily on beetles within decaying and dead trees and occurring in low densities throughout their range at higher elevations.

Distribution and Abundance

American three-toed woodpecker have a wide distribution throughout the boreal forests of North America closely matching the distribution of spruce species (USDA Forest Service 2004). The distribution becomes patchy further south in the western United States, and the species reaches its southern limits in northern Arizona and central New Mexico (Johnson and O'Neill 2001, USDA Forest Service 2004).

Within the western U.S., American three-toed woodpeckers occur in: (1) the Cascade and Blue Mountains of Washington, (2) the Cascade, Blue, and Wallowa Mountains of Oregon, (3) the northern and central portions of Idaho, and (4) the Rocky Mountains of western Montana (Figure **Error! No text of specified style in document.**-14 and Figure **Error! No text of specified style in document.**-15) (IDFG 2005, Leonard 2001, Wisdom et al. 2000).).

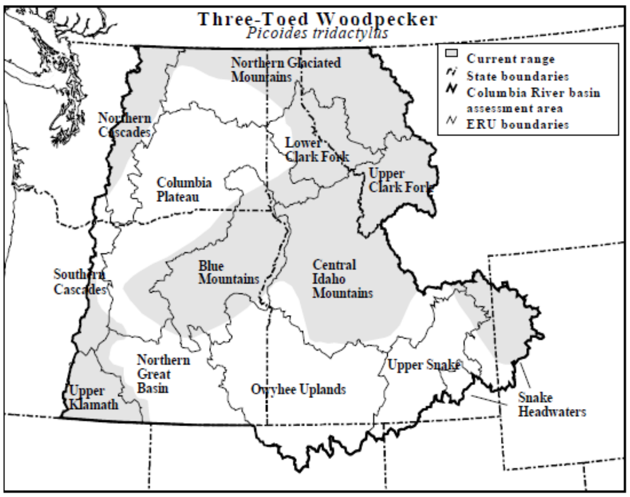

Figure Error! No text of specified style in document.**-14. Species Range of American three-toed woodpecker in the Interior Columbia River Basin (Wisdom et al. 200, Volume 2)**

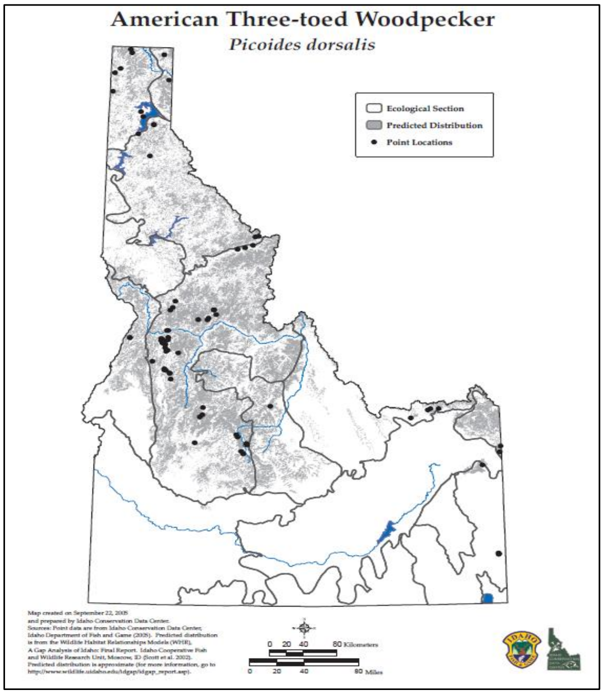

Figure Error! No text of specified style in document.**-15. American three-toed woodpecker distribution in Idaho (IDFG 2005)**

Population Trend

Unknown population trend in Idaho (IDFG 2005). In general, it is difficult to ascertain population abundance and trends since this species is highly irruptive and colonizes disturbed forests across the landscape (IDFG 2005, Leonard 2001).

Populations may increase significantly in areas where fires have recently burned, or where other natural disturbances have caused widespread die-off within conifer stands. These disturbances typically lead to, or are preceded by, infestations of beetles, and woodpeckers may remain in these areas for up to three years.

No Breeding Bird Survery (BBS) data exists for the state of Idaho (Sauer et al. 2014). BBS data are available for this species for the northern Rocky Mountains. Sauer et al. (2014) note a 4.1 % increase between 1966-2011, and a 6.3 % increase between 2001-2011. However, trend data are based on extremely small sample sizes and are not statistically significant because the number of detections are so low as to lend low credibility to the trends assigned for this species (Sauer et al. 2014). The BBS data for this species reflects data with an important deficiency. In particular:

- The regional abundance is less than 0.1 birds/route (very low abundance),
- The sample is based on less than 5 routes for the long term (very small samples), or

- The results are so imprecise that a 5%/year change (as indicated by the half-width of the credible intervals) would not be detected over the long-term (very imprecise).

Users should be aware that a variety of circumstances may lead to imprecise results. Imprecise results are sometimes a consequence of a failure of the models to converge in those local areas, even though the model performs adequately in larger regions (USGS 2014).

Habitat and Ecology

American three-toed woodpeckers are generally associated with high-elevation spruce-subalpine fir forests, although their occurrence in other types of coniferous forest varies geographically (Goggans et al.1989, Leonard 2001, Wisdom et al. 2000). Kotliar et al. (2008) found that three-toed woodpeckers responded to a variety of burned forest conditions. Breeding in mixed-severity areas with both lightly and severely burned trees showed the importance of mixed-severity regimes to such fire-dependent species, and the need for fire management to include a range of fire behaviors. This indicated the importance of integrating wildlife needs with prescribed burning and post-wildfire management to meet mutiliple objectives.

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Goggans et al. 1989, Wisdom et al. 2000, IDFG 2005, , NPCC 2004a and 2004b, USDA Forest Service 2004, Rich et al. 2004):

- Managememnt activities should avoid even-aged stand structure since suitable habitat for this species might be a matrix of old growth forests mixed with forests undergoing disturbances (i.e., fire) to benefit this woodpecker.
- Management activities that retain large patches of dead and decaying trees for nesting and foraging are necessary for this species.

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5.3.1.8 Mountain Quail—*Oreortyx pictus*

Conservation Status

ESA—No status, petitioned for listing 3/15/2000.

USFS—Sensitive in Regions 1 and Region 4

BLM—Regional/State inperiled (Type 3)

IDFG—Species of Conservation Concern (SGCN), protected non-game

NatureServe rankings: Rangewide: G4—ApparentlySecure

Statewide Idaho: S3B— Vulnerable breeding

Intermountain West Joint Venture: Priority Bird Species

ICBEMP Family 3, Group 17

NPCC Salmon Subbasin Assessment – Species of Concern

Mountain quail are the largest of six North American quail, and are easily distinguished by the two long, thin head plumes and by the chestnut-colored sides boldly barred with white. Mountain quail are secretive birds that inhabit a diverse range of habitats, but typically occupy dense brushy slopes in foothills and mixed conifer forests. Water can be a serious limiting factor for mountain quail in eastern Oregon and western Idaho, as these populations tend to focus around riparian areas (USFWS 2003 and 2014).

Distribution and Abundance

This species resides in southwestern British Columbia (on Vancouver Island), western and southern Washington, and central Idaho, south through Oregon to the mountains of California and northern and western Nevada to northern Baja California, Mexico (Gutiérrez and Delehanty 1999, NatureServe 2014).

Within the basin, mountain quail historically were widely distributed across the eastern two-thirds of Oregon, extreme southern Washington, and western Idaho (Figure **Error! No text of specified style in document.**-16) (Wisdom et al. 2000). Currently, the species is widely distributed in central Oregon, but only small, isolated, remnant populations occur within northeastern Oregon, central and southeastern Washington, and western Idaho (Wisdom et al. 2000).

Today, mountain quail in Idaho occur at the extreme northeastern edge of their range-wide distribution (Figure **Error! No text of specified style in document.**-17) (IDFG 2005, Wisdom et al. 2000, USFWS 2003). General information regarding the native distribution of mountain quail in Idaho is ambiguous, some evidence suggests mountain quail were present prior to European settlement (Vogel and Reese 2002, USFWS 2003). Mountain quail were successfully translocated into the state beginning in the late 1800s (USFWS 2003). Mountain quail are currently restricted to areas of west-central Idaho, with remnant populations in the Riggins area (IDFG 2005). The hunting season for mountain quail in Idaho was closed in 1984 (USFWS 2003).

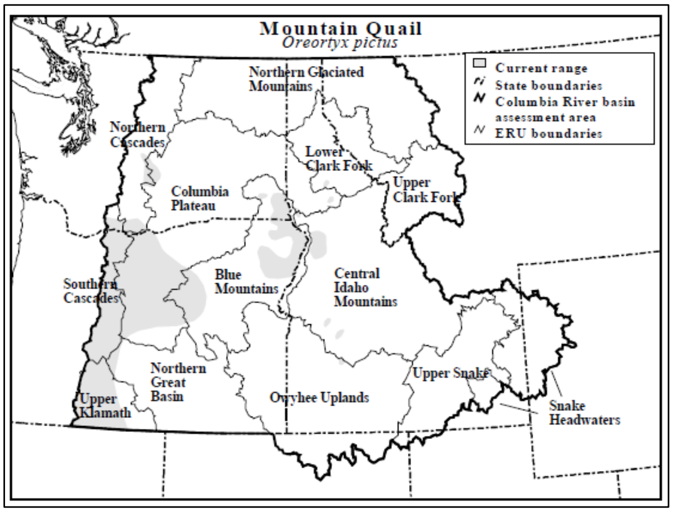

Figure Error! No text of specified style in document.**-16. Species Range of Mountain quail in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

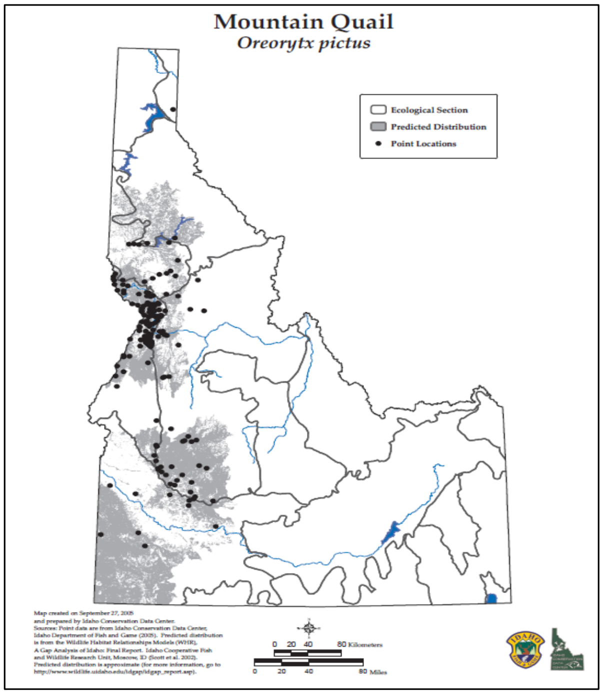

Figure Error! No text of specified style in document.**-17. Mountain quail distribution in Idaho (IDFG 2005)**

Population Trend

No known population trends exist for mountain quail in Idaho other than the species has experienced a significant decline for the last 70 years (IDFG 2005, USDA Forest Service 2010). No population estimates exist for the NPCNFs.

No Breeding Bird Survery (BBS) data exists for the state of Idaho (Sauer et al. 2014). BBS data are available for this species for the northern Rocky Mountains. Sauer et al. (2014) note a -5.5 % decrease between 1966-2011, and a -5.4 % decrease between 2001-2011. However, trend data are based on extremely small sample sizes and are not statistically significant because the number of detections are so low as to lend low credibility to the trends assigned for this species (USGS 2014). The BBS data for this species reflects data with an important deficiency. In particular:

- The regional abundance is less than 0.1 birds/route (very low abundance),
- The sample is based on less than 5 routes for the long term (very small samples), or
- The results are so imprecise that a 5%/year change (as indicated by the half-width of the credible intervals) would not be detected over the long-term (very imprecise).

Users should be aware that a variety of circumstances may lead to imprecise results. Imprecise results are sometimes a consequence of a failure of the models to converge in those local areas, even though the model performs adequately in larger regions (USGS 2014).

During the mid-20th century, the distribution and abundance of mountain quail east of the Cascade Range in Oregon showed significant declines. During the 1980s, populations in west central and southwestern Idaho steadily declined (USFWS 2003), Remaining populations occur in the lower Salmon River and Snake River drainages and the foothill and mountain areas of the Boise River drainage (IDFG 2005). A greater than 95% decline has occurred in occupied habitat in Idaho from 1938 to 1989 with remnant population strongholds occurring in the Riggins area (USFWS 2003, Vogel and Reese 2002).

In general, mountain quail are not well suited for trend monitoring using BBS protocols because mountain quail inhabit dense habitats and rugged terrain, populations can vary annually. Population surveys are difficult to conduct, and long-term population size and density studies are lacking (USFWS 2003).

Habitat and Ecology

Mountain quail are typically associated with forested habitats and shrub/grassland habitats (Wisdom et al. 2000, Johnson and O'Neil et al. 2001). Preferred habitat conditions contain shrub and herbaceous layers, often in interfaces between upland and riparian environments, including seeps and springs. Medium and large shrubs 0.61– 5.03 m (2–16.5 feet) with dense cover generally associated with this species' habitat. Forbs and shrubs provide habitat for invertebrate prey species and produce seeds, fruits, bulbs, and tubers that are important food sources, fire can stimulate growth and development of these conditions, benefitting this species (USDA Forest Service 2010).

Source habitats for mountain quail include all structural stages, except stem exclusion, of interior Douglas-fir, interior ponderosa pine, and chokecherry–serviceberry–rose (Gutiérrez and Delehanty1999, Wisdom et al. 2000). Source habitat is characterized by brushy slopes and shrub-dominated communities ranging in elevation from 701 to over 3,002 m (2,300 to over 9,850 feet). Mountain quail are most often associated with steep slopes or rugged terrain, but these characteristics are not always present in occupied habitat (Wisdom et al. 2000). Shrub dominated habitats are important for protective cover when foraging, as well as for escape habitat, nesting habitat, and for roosting and loafing (Gutiérrez and Delehanty1999).

Mountain quail are known for their seasonal movements between breeding and wintering areas. The quail typically breed at high elevations during spring and summer and avoid snow cover by migrating to lower elevations in groups called coveys (Resse et al. 2005). High-elevation aspen stands surrounded by sagebrush and shrubby riparian habitats associated with forests are also used (Wisdom et al. 2000). Fires can negatively affect source habitat in the short term but can promote growth and development of shrub habitats in the long term (Gutiérrez and Delehanty1999, Wisdom et al. 2000).

In Idaho, mountain quail distribution appears to be closely associated with riparian shrub habitats (Vogel and Reese 1995a, 1995b and 2002). These areas, which may or may not have an associated forest canopy, typically occur along waterways and secondary drainages within a few hundred meters of water (Vogel and Reese 1995a, 1995b and 2002). Habitat on south-facing slopes are arid and dominated by grasses, such as bluebunch wheatgrass and Idaho fescue, together with several species of forbs. In draws or on north facing slopes, serviceberry, hawthorn, ninebark, snowberry, and wild rose are common. Moist sites have elderberry, alder (*Alnus* spp.), red-osier dogwood (*Cornus sericea*), and cottonwood, and higher elevation sites contain ponderosa pine and Douglas-fir (Vogel and Reese 1995a, 1995b and 2002).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Gutiérrez and Delehanty1999, Wisdom et al. 2000, IDFG 2005, NatureServe 2014, NPCC 2004a and 2004b, Reese et al. 2005, Rich et al. 2004, USDA Forest Service 2010, Vogel and Reese 1995a, 1995b and 2002):

- The competitive exclusion by introduced game birds or food overlap between their young may be affecting the species.
- Riparian habitat degradation due to grazing, road construction, and development in low-elevation habitats.
- Irrigation withdrawls.
- The establishment and spread of noxious weeds and invasive exotic plants in the Salmon subbasin.
- Reduction of intact riparian habitat with well- developed vegetation, usually with multiple canopy layers including overstoty trees.
- Conversion of native habitats to agricultural use and subdivisions.

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5.3.1.9 Fringed Myotis—*Myotis thysanodes*

Conservation Status

ESA—No status

USFS—Sensitive in Regions 1 and Region 4

BLM—Regional/State inperiled (Type 3)

IDFG—Species of Conservation Concern (SGCN), protected non-game

NatureServe rankings: Rangewide: G4—ApparentlySecure

Statewide Idaho: S3B— Vulnerable breeding

ICBEMP Family 3, Group 26

NPCC Salmon Subbasin Assessment – Species of Concern

NPCC Clearwater Subbasin Assessment –Focal species

The fringed myotis is a moderately sized bat. Foraging behavior is highly specialized, gleaning insects from foliage. Prey species include beetles, harvestmen, crickets, spiders, and moths. This species may travel relatively long distances between roosting and foraging sites (Miller et al. 2005)

Distribution and Abundance

The fringed myotis occurs in western North America from south-central British Columbia south to Chiapas, Mexico and east to the Black Hills of South Dakota (IDFG 2005). The fringed myotis occurs in the western half of the basin and in the Blue Mountains ERU (Figure **Error! No text of specified style in document.**-18) (Wisdom et al. 2000). Populations in Idaho occur in scattered localities in the northern and western parts of the state (Figure **Error! No text of specified style in document.**-19) (IDFG 2005).

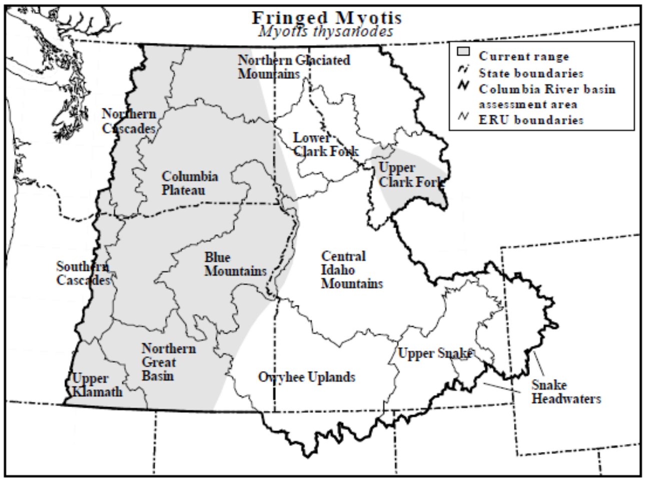

Figure Error! No text of specified style in document.**-18. Species Range of Fringed myotis in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

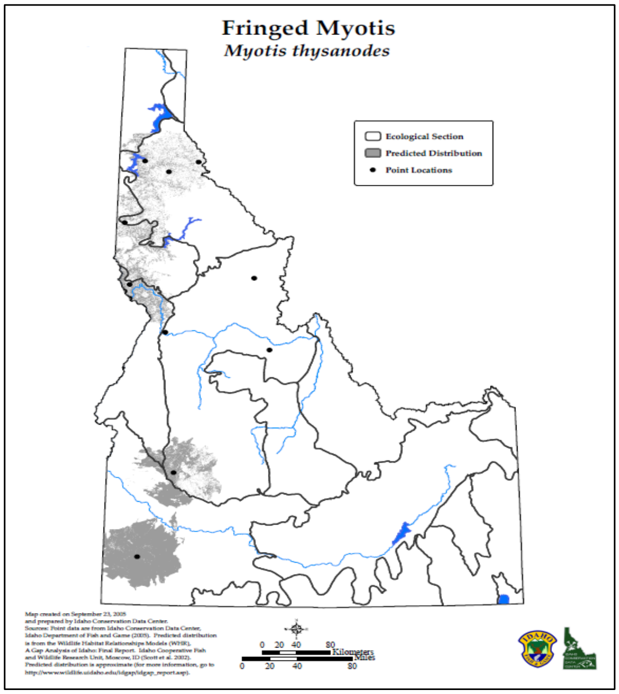

Figure Error! No text of specified style in document.**-19. Fringed myotis distribution in Idaho (IDFG 2005)**

Population Trend

The current population trend in Idaho is unknown (IDFG 2005).

Habitat and Ecology

In Idaho, the fringed myotis is associated with grasslands, xeric shrublands, ponderosa pine forests, Douglas-fir forests, mixed xeric forests, Utah juniper (*Juniperus osteosperma*), western juniper (*Juniperus grandis*), and pinyon-juniper forests. Xeric habitats seem to be inhabited by the fringed myotis, including grasslands, deserts, chaparral, desert scrub, woodland habitats, ponderosa pine and pinyon-juniper habitats (Miller et al. 2005).

Roost trees tend to be large diameter snags in early to medium stages of decay. Within the roost, individuals select open sites (O'Farrell 1999). Roosts may be abandoned in response to human disturbance. Maternity colonies, day roosts, and night roosts are found in caves, buildings, underground mines, rock crevices, tree hollows, and bridges. Conversely, hibernacula have only been located in buildings and underground mines (Miller et al. 2005) .Fringed myotis selection of large snags that occur in older interior forests (NPCC 2003).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Bull et al. 1997, IDFG 2005, Miller et al. 2005, NPCC 2003 and 2004a, Perry 2013, Spanjer and Fenton 2005, Wisdom et. al. 2000):

- The destruction of roosting structure, closure of mines and caves for safety reasons, and snag loss.
- The disturbance of roosting bats, primarily by recreational activities in or near caves but also from mining, road construction, and any other activities near roosts.
- Potential introduction of White-Nosed Syndrome disease to hibernacula.
- The purposeful killing of roosting bats.
- Reduction in the bat prey base (insect) through excessive use of insecticides.
- Loss of preferred microenvironments for the bat prey base. Changes in forest structure, composition and function could negatively affect prey (insect) populations.

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5.3.1.10 Townsend's Big-eared Bat—*Corynorhinus townsendii townsendii* and *Corynorhinus townsendii pallescens*

Conservation Status
ESA: No status
USFS: Sensitive in Regions 1 and Region 4
BLM: Regional/State inperiled (Type 3)
IDFG: Species of Conservation Concern (SGCN), protected non-game
NatureServe rankings: Rangewide: G4 - ApparentlySecure
Statewide Idaho: S3B— Vulnerable breeding
ICBEMP Family 3, Group 27
NPCC Clearwater Subbasin Assessment –Focal species
NPCC Salmon Subbasin Assessment – Species of Concern

Townsend's big-eared bat is a lepidopteran specialist, with a-diet consisting of >90% moths. In addition to lepidopterans, small quantities of other insects have been detected in studies of C. townsendii's diet. Townsend's big-eared batis a slow-flying (2.9-5.5 m/sec), highly maneuverable bat that has been observed gleaning insects from vegetation and foraging within tree canopies (IDFG 2005, Pierson et al. 1999). Townsend's big-eared batis a late flyer, emerging from the roost primarily after dark (Pierson et al. 1999).

Distribution and Abundance

Townsend's big-eared bat occurs throughout the interior northwest (Figure **Error! No text of specified style in document.**-20) and is distributed from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the central and eastern United States (IDFG 2005, Pierson et al. 1999, Wisdom et al. 2000).

Most of the state of Idaho is a zone of intergradation between *C. t. townsendii* and *C. t. pallescens* (Pierson et al. 1999) (Figure **Error! No text of specified style in document.**-21). Two subspecies reportedly occur in Idaho. The subspecies *P. townsendii pallescens* occurs in the eastern part of the state. The subspecies *P. townsendii townsendii* is expected to occur in the western part of the state, although range limits for this subspecies are not well understood (Figure **Error! No text of specified style in document.**-21) (IDFG 2005).

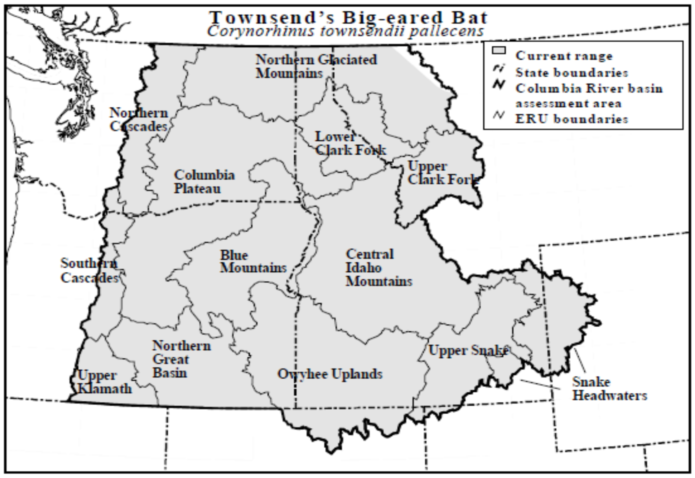

Figure Error! No text of specified style in document.**-20. Species Range of Townsend's big-eared bat in the Interior Columbia River Basin (Wisdom et al. 2000, Volume 2)**

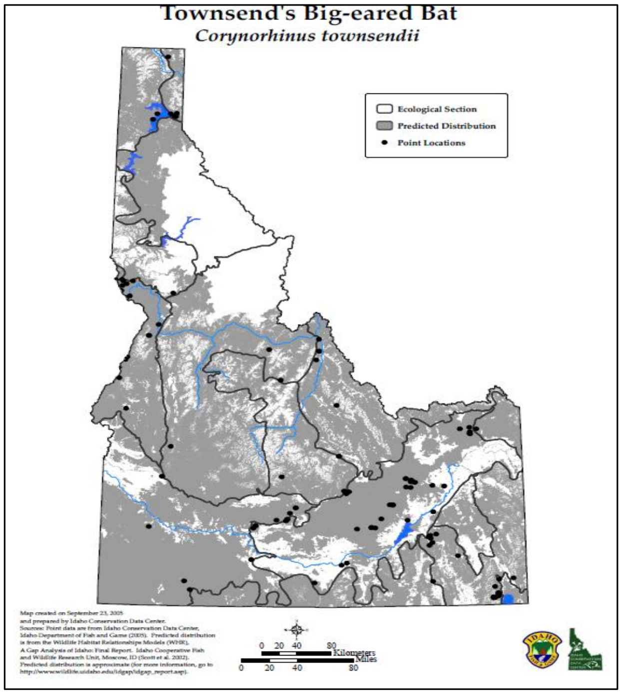

Figure Error! No text of specified style in document.**-21. Townsend's big-eared bat distribution in Idaho (IDFG 2005)**

Population Trend

Populations in the State appear to be declining (IDFG 2005).

Habitat and Ecology

Habitat associations include: coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types (Wisdom et al. 2000). Radio-tracking studies have found Townsend's big-eared bat foraging in a variety of habitats. This ranged from edge habitats (along intermittent streams) and open areas (pastures, crops, native grass) near wooded habitat to within forested habitat, and along heavily vegetated stream corridors (IDFG 2005, Pierson et al. 1999).

Source habitats were widespread across the basin historically. Watersheds with increasing trends include the Blue Mountains, and Central Idaho Mountains ERUs (Wisdom et al. 2000).

Although the species occurs in a wide variety of habitats, its distribution tends to be geomorphically determined and is strongly correlated with the availability of caves or cave-like roosting habitat (e.g., old mines). Population concentrations occur in areas with substantial surface exposures of cavity-forming rock (e.g., limestone, sandstone, gypsum, or volcanic), and in old mining districts (IDFG 2005, Pierson et al. 1999). In Idaho, the largest known populations are associated with lava flows in the southwestern part of the state (IDFG 2005).

Big-eared bats do not roost in crevices like many other bat species but rather restrict their roosting sites to the ceilings of cavelike structures (caves, mines, and buildings), where they aggre- gate in large colonies (Wisdom et al. 2000). In some areas, particularly along the Pacific coast, it has been found in old, mostly abandoned, buildings with cave-like attics and other man-made structures (e.g., water diversion tunnels and bridges). Townsend's big-eared batis a relatively sedentary species for which no long-distance migrations have been reported (Pierson et al. 1999).

The seasonal and daily roosting patterns of Townsend's big-eared bat follow those observed for many other temperate zone bat species. The most significant roosts (i.e., those having the largest aggregations and those most critical to the survival of populations) are the winter hibernacula (both sexes) and the summer maternity roosts (entirely adult females and their young). Additionally, there are other summer roosts: those used in the day time by males and non-reproductive females (usually containing no more than a few animals per roost), night roosts (generally at a different site than the day roost) used by both sexes as a place to rest and digest food during the night, and interim roosts (sites used in the spring before the young are born and in the fall before moving to hibernating sites) (Pierson et al. 1999).

This species has a high degree of site fidelity for this species with data noting that the bats remained at or returned to the same banding site in subsequent winters. Pearson et al. (1999) noted that 73-77% of the adult females returned to the same maternity roost each year. It also appears, however, that a number of colonies use multiple roosts. They may shift roosts as the season progresses, either to different localities within one structure or to different structures.

Townsend's big-eared bat is a colonial species with relatively restrictive roost requirements (Pierson et al. 1999). Unlike many species that seek refuge in crevices, Townsend's big-eared batforms highly visible clusters on open surfaces (e.g., domed areas of caves, or ceilings of old barns), making them extremely vulnerable to disturbance (Pierson et al. 1999). Maternity roosts in the eastern U.S. occur exclusively in caves, while those in the west are found in caves, and a variety of human-made structures such as mines and old buildings (Pierson et al. 1999).

Hibernating Townsend's big-eared bat individuals have been found mainly in caves and mines. Populations are known in lava-tube caves in Idaho. Winter roosting behavior for hibernating Townsend's big-eared bat varies throughout its distribution. Large aggregations have also been found in colder areas of the western U.S., e.g., 460 in a cave in northern California (Pierson et al. 1999), 1,000 in a cave in South Dakota, >300 at 2 sites in Oregon, 400 in a lave-tube cave in southern Idaho (Pierson et al. 1999).

Studies in the western U.S. have shown that Townsend's big-eared bat selects roosts with stable, cold temperatures and moderate airflow. Individuals roost on walls or ceilings, often near entrances. If undisturbed, individuals will frequently roost <3 m off the ground, and have been found in air pockets under boulders on cave floors (Pierson et al. 1999). Temperature appears to be a limiting factor in roost selection. Individuals appear to be sensitive to changes in temperature and humidity. Recorded temperatures in hibernacula range from -2.0-13.0°C, with temperatures below 10°C being preferred (Pierson et al. 1999).

Because the distribution of Townsend's big-eared bats is dependent on specialized roosting require- ments, alterations and disturbances of any structures used for day roosts, nursery colonies, or hibernacula (caves, mines, old buildings) could affect the persistence of individual colonies (IDFG 2005, Pierson et al. 1999, Wisdom et al. 2000).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (IDFG 2005, NPCC 2003 and 2004, Perry 2013, Pierson et al. 1999, Spanjer and Fenton 2005, Wisdom et al. 2000):

- The destruction of roosting structure, removal of old buildings or closure of mines and caves for safety reasons.
- The disturbance of roosting bats, primarily by recreational activities in or near caves but also from mining, road construction, and any other activities near roosts.
- Poential introduction of White-nosed Syndrome disease to hibernacula.
- The purposeful killing of roosting bats.
- Reduction in the bat prey base (moths) through excessive use of insecticides.
- Loss of preferred microenvironments for the bat prey base. Changes in forest structure, composition and function could negatively affect prey (moths) populations.

Key References

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5.3.1.11 California Myotis—*Myotis californicus*

Conservation Status

ESA: No status

USFS: No status

BLM: Regional/State inperiled (Type 3)

IDFG: Species of Conservation Concern (SGCN), protected non-game

NatureServe rankings: Rangewide: G4 - ApparentlySecure

Statewide Idaho: S3B— Vulnerable breeding

ICBEMP Family 3, Group 17

NPCC Salmon Subbasin Assessment – Species of Concern

California myotis is the smallest *Myotis* species in America. The species uses a variety of habitats for foraging and roosting, and often forage in forested areas near water (Miller et al. 2005).

Distribution and Abundance

This bat occurs in western North America from British Columbia south to Guatemala (Figure **Error! No text of specified style in document.**-22). The Idaho distribution is scattered and incompletely understood (Figure **Error! No text of specified style in document.**-23) (IDFG 2005, Miller et al. 2005). Most authorities consider the species to occur in the northern and extreme western parts of the state, but scattered records suggest that the species may occur statewide (IDFG 2005).

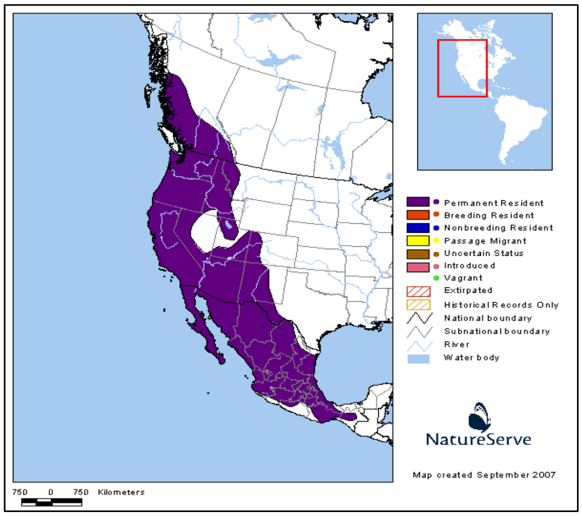

Figure Error! No text of specified style in document.**-22. Species Range of California myotis in the Interior Columbia River Basin (NatureServe 2014).**

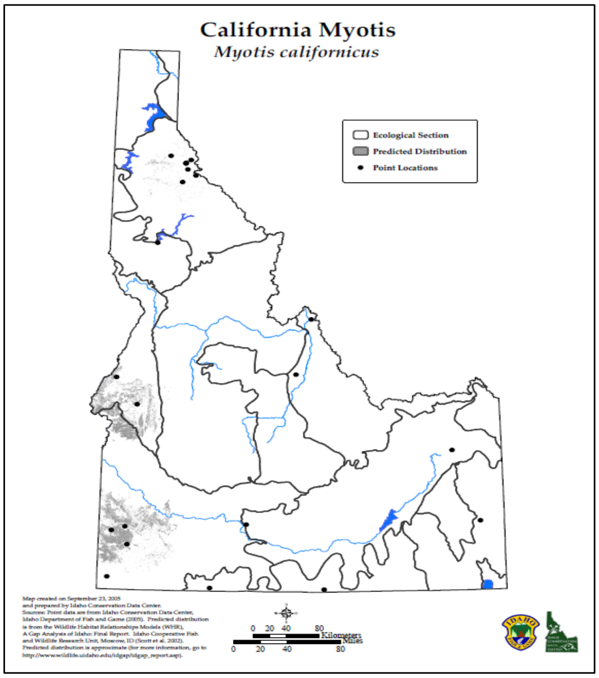

Figure Error! No text of specified style in document.**-23. California myotis distribution in Idaho (IDFG 2005)**

Population Trend

Population trend is unknown (IDFG 2005).

Habitat and Ecology

The California myotis is found in a variety of habitats in Idaho, including grasslands, juniper forests, forested riparian areas, and exposed rock/barren land cover types. Roost sites include caves, mines, rocky hillsides, sloughing tree bark, and buildings (Miller et al. 2005). Also, buildings and bridges are major roost types, and individuals are also found under loose tree bark (IDFG 2005).

When foraging this species is active within the first 2 hours of nightfall and often forage near water. Its foraging strategy consists of locating and feeding in concentrations of insects where its slow maneuverable flight allows it to capture several insects in quick succession over a short distance (Miller et al. 2005).

Maternity colonies form in the spring and a single pup is born in June or July, becoming volant after 1 month. A maternity colonies have been reported in a large diameter, intermediate stage snags (Miller et al. 2005). In the winter, small clusters of individuals have been found roosting in caves, mines, and buildings. However, this bat is active in the winter, even at temperatures well below freezing (Miller et al. 2005).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources. (Bull et al. 1997, IDFG 2005, Miller et al. 2005, NPCC 2004a, Perry 2013, Spanjer and Fenton 2005, Wisdom et. al. 2000):

- The destruction of roosting structure, closure of mines and caves for safety reasons.
- Mine reclamation is a threat to roosting habitat.
- Timber harvest practices that remove large diameter snags could be detrimental to maternity colonies and local populations.
- The disturbance of roosting bats, primarily by recreational activities in or near caves but also from mining, road construction, and any other activities near roosts.
- Introduction of White-nosed Syndrome disease to hibernacula.
- The purposeful killing of roosting bats.
- Reduction in the bat prey base (insect) through excessive use of insecticides.
- Loss of preferred microenvironments for the bat prey base. Changes in forest structure, composition and function could negatively affect prey (insect) populations.

Key References

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Spanjer G.R. & Fenton M.B. (2005) Behavioral responses of bats to gates at caves and mines. Wildlife Society Bulletin, Vol. 33, Issue 3, pages 1101-1112. September 2005.

Wisdom, Michael J., Holthausen, Richard S., Wales, Barbara C., Hargis, Christina D., Saab, Victoria A., Lee, Danny C., Hann, Wendel J., Rich, Terrell D., Rowland, Mary M., Murphy, Wally J., Eames, Michelle R. 2000. Source habitats for terrestrial vertebrates of focus in the interior Columbia basin: broad- scale trends and management implications. Gen. Tech. Rep. PNW-GTR-485. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 3 vol. (Quigley, Thomas M., tech. ed., Interior Columbia Basin Ecosystem Management Project: scientific assessment).

5.3.1.12 Coeur d'Alene salamander—*Plethodon idahoensis*

Conservation Status
ESA: No status
USFS: Sensitive in Region 1
BLM: Regional/State inperiled (Type 3)
IDFG: Species of Conservation Concern (SGCN), protected non-game
NatureServe rankings: Rangewide: G4 - ApparentlySecure
Statewide Idaho: S3B— Vulnerable breeding
ICBEMP Family 3, Group 17
NPCC Clearwater Subbasin Assessment – Focal Species

The Coeur d'Alene salamander is an amphibian inhabiting northern ldaho, northwestern Montana, and south-eastern British Columbia. It is the sole lungless salamander (*Plcthodontidae*) of the northcm Rocky Mountains (Wilson and Larsen 1998).

The primary reason that this species is an SCC is the clear risk posed by human-related disturbances to specific sites. In addition, no habitat parameters could be used to develop a model; therefore, the amount and distribution of predicted habitat has been not modeled using the SIMPPLLE process. Best available science has documemted the management risks and strategies to manage for this species.

Distribution and Abundance

The Coeur d'Alene salamander occurs in forested, mountainous regions on either side of the Idaho-Montana border from just north of the Canadian boundary south through the Selway River drainage (Figure **Error! No text of specified style in document.**-24). In Idaho, it is most readily encountered in the drainages of the St. Joe and North Fork of the Clearwater Rivers (Figure **Error! No text of specified style in document.**-25) (Wilson 1990).

The North Fork Clearwater drainage is the core distribution area for Coeur d'Alene salamanders in the Clearwater subbasin, and the Selway drainage is the southern limit of their known range (Figure **Error! No text of specified style in document.**-25) (IDFG 2005). Many populations are small isolated communities with little genetic influx from other populations, and high temperatures and lack of moisture likely limit the species distribution (NPCC 2003).

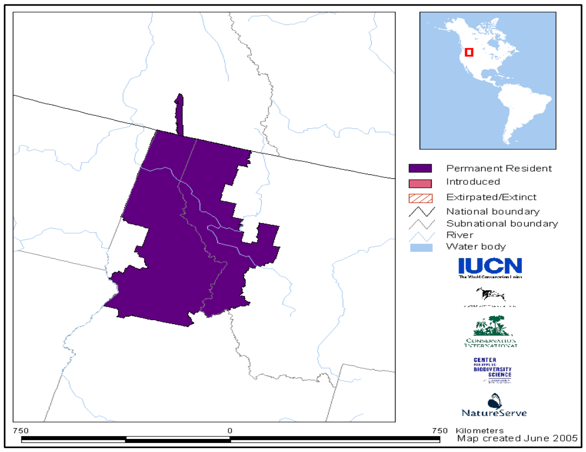

Figure Error! No text of specified style in document.**-24. Species Range of Coeur d'Alene salamander in the Interior Columbia River Basin (NatureServe 2014)**

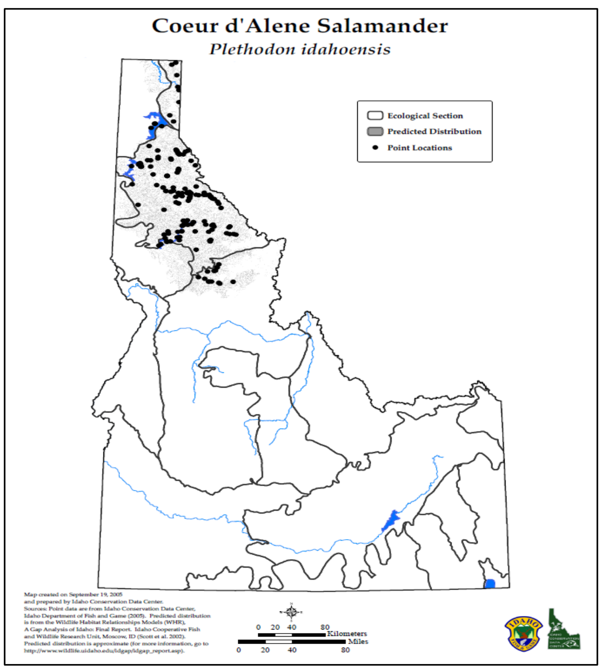

Figure Error! No text of specified style in document.**-25. Coeur d'Alene salamander distribution in Idaho (IDFG 2005)**

Population Trend

Uncertain population trend and habitat threats (IDFG 2005). Populations occur in small patches of suitable habitat and thus metapopulation dynamics may be important for maintaining population viability. However, population dynamics and dispersal patterns are poorly understood (IDFG 2005).

Habitat and Ecology

The Coeur d'Alene salamander is usually associated with riparian corridors along streams and seepages, splash zones and streamsides near talus, but may also be found in talus away from water if the site is located on a protected north-facing slope. The Coeur d'Alene salamander occurs in harsher and colder climates than other related salamanders because of their close association with spring water. Seeps offer a stable habitat temperature and a high local humidity that allows Coeur d'Alene salamanders to extended foraging opportunities during cold or dry weather. The salamanders can also be found under forest litter, bark or logs (Cassirer et al. 1994, IDFG 2005, NPCC 2003)

The main prey species of the Coeur d'Alene salamander are aquatic insects such as Diptera (larvae and adults), and Collembola. These benthic insects are probably caught at the waters edge when they move onto dry land to molt (Wilson and Larson 1988).

Management Issues

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Cassirer et al. 1994, IDFG 2005, Nez Perce tribe 2011, NPCC 2003, Wilson and Larson 1988):

- Chemical pollution from mining, pesticide application, or road maintenance (e.g. application of substances used for dust control or road surfacing).
- Flow alteration caused by water diversion or impoundment.
- Sedimentation arising from timber harvest, mining, road maintenance and improvements, trail construction, and recreational activities.
- Direct impacts from road maintenance and improvements at occupied sites adjacent to roads.
- Introduction of non–native predators or competitors

Key References

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5.4 HABITAT CHARACTERIZATIONS

5.4.1 *Broad-scale (Basin Level): Interior Columbia River Basin Ecosystem Management Project*

The ICBEMP was chartered, in part, to develop an overall assessment of ecosystems within the interior Columbia River basin (Figure **Error! No text of specified style in document.**-26), to determine their status and trend, and to describe the ecological risks and opportunities associated with federal management activities. The Forests are contained within the east-central ICBEMP area in north-central Idaho (Figure **Error! No text of specified style in document.**-26).

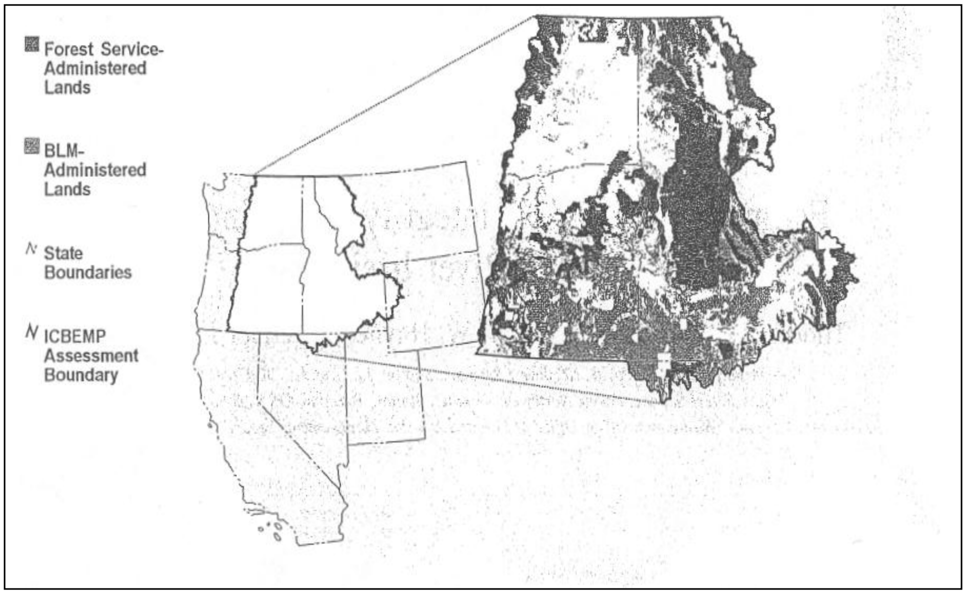

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Figure Error! No text of specified style in document.**-26. Interior Columbia Basin Ecosystem Management Project Area**

Wisdom et al. (2000) identified a variety of wildlife species closely associated with habitat conditions affected by land management. Wisdom et al. (2000) identified species associated with broad-scale terrestrial vegetation community types which were grouped into Families, and to assessed changes in those habitats from historical to current periods. Several of these species/habitat "Families" are present in the planning area of the NPCNF. However, some of the wildlife species associated with some habitat conditions overlap with each other better at a finer scale than the ICBEMP assessment.

5.4.1.1 Ecological Reporting Units and Trends

Wisdom et al. (2000) used and identified 13 ERUs as smaller units of measurement within the Interior Columbia River Basin (Figure **Error! No text of specified style in document.**-27).

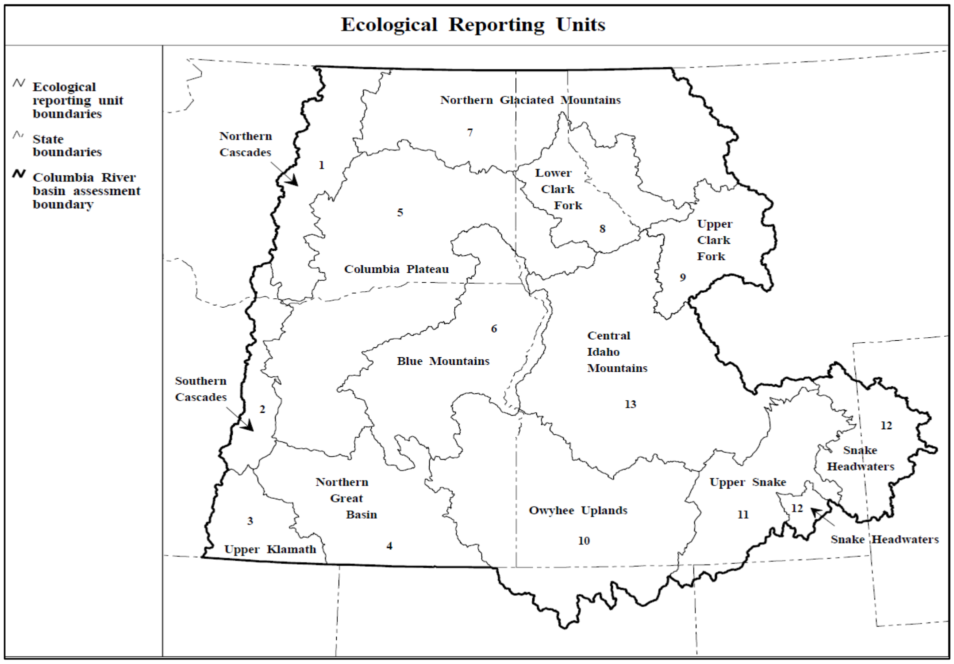


Figure Error! No text of specified style in document.**-27. Ecological Reporting Units (ERUs)**

For each of the 12 families, The ICBEMP summarized the change in percentage of area of source habitats from historical to current periods for each ERU. Each watershed was assigned to one of three trends: increasing, decreasing, or neutral. Dominant trends were summarized by family and ERU based on the percentage for each family. Table **Error! No text of specified style in document.**-3 shows the trends for the four ERUs covering all or portions of the planning area

The majority of the planning area is contained within the Central Idaho ERU 13 and Lower Clark Fork ERU 8 (Idaho portion). However, portions of the Forests are located in two other ERUs. The eastern-most extent of the Blue Mountains (ERU 6) occurs in the southwestern portion of the Forests in the lower Salmon River Canyon area. The Palouse Ranger District portion of the Forests is located within the eastern-most portion of the Columbia Plateau (ERU 5).

Table Error! No text of specified style in document.**-3. Percentage of Watersheds (5th Hydrologic Unit Code [HUC]) in Three Trend Categories by relevant Terrestrial Habitat Family. (Wisdom et al. 2000)**

Ecological Reporting Unit		Terrestrial Habitat Family		Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Family	Related SCC Species	Decreasing	Neutral	Increasing	
5	Columia Plateau	1	White headed woodpecker Pygmy nuthatch Lewis' woodpecker	51	19	31	Decreasing
		2	Fisher Flammulated owl Boreal owl American three-toed woodpecker	44	10	46	Neutral
		7	California myotis Fringed myotis Townsend's big-eared bat	47	29	24	Neutral
6	Blue Mountains	1	White-headed woodpecker Pygmy nuthatch Lewis' woodpecker	67	20	13	Decreasing
		2	Fisher Flammulated owl Boreal owl American three-toed woodpecker	47	17	36	Neutral
		3	Mountain quail	7	15	78	Increasing
		5	Bighorn sheep	34	48	17	Neutral
		7	California myotis Fringed myotis Townsend's big-eared bat	23	46	31	Neutral
8	Lower Clark Fork	1	Pygmy nuthatch	95	4	1	Decreasing
		2	Fisher Flammulated owl Boreal owl American three-toed woodpecker	89	8	3	Decreasing
		7	California myotis Fringed myotis Townsend's big-eared bat	55	37	8	Decreasing
13	Central Idaho Mountains	1	White-headed woodpecker Pygmy nuthatch Lewis' woodpecker	57	33	10	Decreasing
		2	Fisher Flammulated owl Boreal owl	43	22	35	Neutral

Ecological Reporting Unit		Terrestrial Habitat Family		Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Family	Related SCC Species	Decreasing	Neutral	Increasing	
			American three-toed woodpecker				
		3	Mountain quail	21	48	31	Neutral
		5	Bighorn sheep	18	52	30	Neutral
		7	California myotis Fringed myotis Townsend's big-eared bat	34	36	30	Neutral

Note: Percentages may not add up to 100% due to rounding.
[a] ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See "Forming Families of Groups to Summarize Results Among Multiple Groups" in "Methods" section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.

A) Broad-scale Wildlife Habitat Families

Wisdom et al. (2000) used and identified families of species groups to complete a hierarchical system evaluating the similarities of groups of species into clusters comprising 12 families using generalized vegetative themes. Table **Error! No text of specified style in document.**-4 displays this clustering of broad-scale species groups into 12 vegetative families. Table **Error! No text of specified style in document.**-4 also discloses the Nez Perce-Clearwater NFs SCC species representation in an ICBEMP Family.

Table Error! No text of specified style in document.**-4. Interior Columbia Basin Ecosystem Management Project Families, and SCC species representation.**

Family	Terrestrial Family name	Nez Perce-Clearwater SCC species
1	Low-elevation old forest	3 species
2	Broad-elevation old forest	4 species
3	Forest mosaic	1 species
4	Early-seral montane and lower montane	No species
5	Forest and range mosaic	1 species
6	Forests, woodlands, and montane shrubs	No species
7	Forests, woodlands, and sagebrush	3 species[a]
8	Rangeland and early- and late-seral forest	No species
9	Woodland	No species
10	Range mosaic	No species
11	Sagebrush	No species
12	Grassland and open-canopy sagebrush	No species

[a] California myotis not listed in ICBEMP but added to be part of Family 7 which contains all bats.
Note: No ICBEMP representation for Coeur d'Alene salamander

At the broad-scale Wisdom et al. (2000) defined the Family Groups, the causes of habitat change, and the issues and strategies for conservation. The findings for Familys 1–3, 5, and 7 relevant to the Nez Perce-Clearwater NFs, are summarized below,

Family 1

All species in Family 1 are associated with late-seral, lower-montane multi- and single-story forests as source habitats as defined by Wisdom et al. (2000). Some Family 1 species also use large and old forest cover types in the upper montane, riparian woodlands, and upland woodlands community groups. Species of Family 1 are primarily restricted to lower elevation interior Douglas-fir and ponderosa pine forests.All species in this habitat category utilize large diameter (>53 cm [21 inches] d.b.h.) snags or trees with cavities for nesting, foraging, or both (Wisdom et al. 2000).

Historically, source habitats for Family 1 occurred in all 13 ERUs in the Interior Columbia Basin (e.g.basin). However, these habitats typically composed <25 percent of most watersheds. Declines in Family 1 source habitats are among the most widespread and strongest of any declines observed for any set of species analyzed by Wisdom et al. (2000). Today, source habitats for Family 1 still occur in all 13 ERUs but are particularly scarce within six ERUs, including the Lower Clark Fork ERU within the planning area (Table **Error! No text of specified style in document.**-5).

Table Error! No text of specified style in document.**-5. Percentage of Watersheds (5th Hydrologic Unit Code [HUC]) in Three Trend Categories for Family 1, by Ecological Reporting Unit (Wisdom et al. 2000)**

Ecological Reporting Unit		Number of Watersheds	Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Total	Decreasing	Neutral	Increasing	
5	Columbia Plateau	437	51	19	31	Decreasing
6	Blue Mountains	252	67	20	13	Decreasing
8	Lower Clark Fork	119	95	4	1	Decreasing
13	Central Idaho Mountains	372	57	33	10	Decreasing

Note: Percentages may not add up to 100% due to rounding.
[a] ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See "Forming Families of Groups to Summarize Results Among Multiple Groups" in "Methods" section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.

The importance of habitat restoration for Family 1 species is highlighted by the magnitude of the declines. basin-wide, the current extent of late-seral single-storied lower montane forests represents an 81% decline from the historical areal extent, and the extent of multistoried forests represents a 35% decline (Hann et al. 1997 in Wisdom et al. 2000). In the planning area these declines were particularly pronounced in the Lower Clark Fork ERU, where nearly 100% of these community types have been lost (Hann et al. 1997 in Wisdom et al. 2000). The Blue Mountains, Central Idaho Mountains and Columbia Plateau ERUs also had decreasing trends, with each of these ERUs had a substantial percentage of watersheds with declining trends: 67% in the Blue Mountains, 57% in the Central Idaho Mountains, and 51% in the Columbia Plateau (Table **Error! No text of specified style in document.**-5).

Wisdom et al. (2000) identified the following management Issues and conservation strategies that apply to the species in this family. This includes the white-headed-woodpecker, Lewis's woodpecker and pygmy nuthatch identified as SCC.

Management Issues (Wisdom et al. 2000)

- Basin-wide decline, or loss, of late-seral ponderosa pine and large (>53 cm [21 in] overstory trees and snags.

- Declines in shrub and herb understories of montane and lower montane forests in response to increased density of small trees and downed wood, litter, and duff.
- Fragmentation of lower-elevation landscape patterns.
- Exclusion of light surface or underburn fires that occurred frequently and extensively.
- Broad-scale shift of Family 1 habitats to environments with warmer average temperatures.

Conservation Strategies (Wisdom et al. 2000)

- Retain stands of ponderosa pine where old-forest conditions are present, and manage to promote their long-term sustainability through the use of prescribed burning and understory thinning.
- Identify mid-seral stands that could be brought into old-forest conditions in the near future and use appropriate silvicultural activities to encourage this development.
- As a short-term strategy retain all large-diameter (>53 cm [21 in] d.b.h.) ponderosa pine, cottonwood, Douglas-fir, and western larch snags, preferably in clumps, and provide opportunities for snag recruitment throughout the montane and lower montane communities.
- Rejuvenate and enhance shrub and herb understory of lower montane community groups (old-forest ponderosa pine) in the Lower Clark Fork and Blue Mountains ERUs. Minimize mechanized harvest and site-preparation activities that increase susceptibility to exotic and noxious weed invasion, soil erosion, or high densities of tree regeneration.
- Close and restore excess roads to reduce fragmentation of landscapes by roads. Use thinning to repattern landscapes to a more native condition. Where natural process areas occur, prioritize road closures and restoration in adjacent watersheds to increase the interior core of habitats with native patterns.
- Continue a strategy of wildfire suppression of stand-replacing fires except where such fires would benefit habitat for Lewis'woodpecker. Use prescribed fire, timber harvest, and thinning to change forest composition and structure to reduce risk of stand-replacing wildfires and shift to maintenance with prescribed underburn fires.

Family 2

All species in Family 2 are associated with late-seral, lower-montane multi- and single-story forests as source habitats as defined by Wisdom et al. (2000). Some Family 2 species also use late-seral stages of the subalpine, lower montane, or both community groups. All identified species in this habitat category utilize large diameter snags, down logs and hollow logs for nesting, denning, and/or foraging to meeting life-cycle needs. Downed logs, lichens, and fungi of late-seral forests provide habitat for many prey species of these species. High elevation stand-replacing wildfires and other beetle-infested stands provide high concentrations of prey (wood-boring beetles) for three-toed woodpeckers (Wisdom et al. 2000).

Source habitats for Family 2 overlap those of Family 1 but encompass a broader array of cover types and elevations (Wisdom et al. 2000).

In Family 2, 15 species depend on snags for nesting or foraging, 4 of these species also use down logs to meet life requisites and 4 species also use large, hollow trees (Wisdom et. al. 2000). Down logs, lichens, and fungi of late-seral forests provide habitat for prey species of flammulated owl, boreal owl, and fisher (Reynolds et al. 1992, Hayward 1994). Stand-replacing, large burns and beetle-infested stands provide high concentrations of prey (wood-boring beetles) for three-toed woodpeckers (USDA 2004). The juxtaposition of early- and late-seral stages is needed to meet all aspects of life functions for bats and owlsl, identified as contrast species (Wisdom et al. 2000). Late-seral source habitats used by fisher, and boreal owl, however, may be negatively affected by increased fragmentation brought about by juxtaposing their need for late-seral habitats with early-seral habitats (Jones and Garton1994, Hayward and Verner 1994). The negative response of fisher and boreal owl to juxtaposition of their source habitats with forest openings versus the positive response of bat and other species to these same conditions must be considered when managing the spatial arrangement of early and late-seral habitats for Family 2 species.

Source habitats for Family 2 declined in most watersheds.Basin-wide, 59% of watersheds exhibited declining trends, 28% increased, and the remaining 13% were neutral (Table **Error! No text of specified style in document.**-6). Watersheds with declining trends were concentrated in the northern part of the basin and the Snake River drainage, those with increasing trends were mostly in the south-central and southwestern areas of the basin.

In relation to the planning area the Lower Clark Fork ERUs had declining trends in >50% of the watersheds (Table **Error! No text of specified style in document.**-6). The Blue Mountains, Central Idaho Mountains and Columbia Plateau ERUs had predominantly neutral trends, but nevertheless, each of these ERUs had a substantial percentage of watersheds with declining trends: 47% in the Blue Mountains, 43% in the Central Idaho Mountains, and 44% in the Columbia Plateau (Table **Error! No text of specified style in document.**-6).

Although source habitats for Family 2 declined in most watersheds, not all species-level trends for members of Family 2 exhibited a declining trend. One exception is the three-toed woodpecker (Wisdom et al. 2000). Source habitats for the three-toed woodpecker exhibited positive trends primarily due to increased wildfire activity because past fire suppression altered historical fire activity (Wisdom et al. 2000, Nez Perce Tribe 2011).

Table Error! No text of specified style in document.**-6. Percentage of Watersheds (5th Hydrologic Unit Code [HUC]) in Three Trend Categories for Family 2, by Ecological Reporting Unit (Wisdom et al. 2000)**

Ecological Reporting Unit		Number of Watersheds	Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Total	Decreasing	Neutral	Increasing	
5	Columbia Plateau	437	44	10	46	Neutral
6	Blue Mountains	252	47	17	36	Neutral
8	Lower Clark Fork	119	89	8	3	Decreasing
13	Central Idaho Mountains	372	43	22	35	Neutral

Note: Percentages may not add up to 100% due to rounding.
[a] ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See “Forming Families of Groups to Summarize Results Among Multiple Groups” in “Methods” section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this family,

Management Issues (Wisdom et al. 2000)

- Declines in late-seral forests of subalpine, montane, and lower montane communities and associated attributes such as large trees, snag, and down logs..
- Tradeoffs between source habitats for species in Family 2 and habitats for species in Family 1.
- Balancing the fragmentation of late-seral habitats for fisher and boreal owl versus the juxtaposition of early- and late-seral habitats for other species.
- Broad-scale departures from historical landscape patterns.
- Reduction in the extent of frequent, light underburning and light surface fires.

Conservation Strategies (Wisdom et al. 2000)

- Retain stands of late-seral forests in the subalpine, montane, and lower montane communities, actively manage to promote their long-term sustainability, and manage young stands to develop late-seral characteristics. Note: In the Lower Clark Fork ERU it may be necessary to identify mid-seral forests in the lower montane community that could be brought to late-seral conditions because late-seral lower montane forests that can have been eliminated in these areas.
- In the short-term integrate the conservation of Family 2 habitat with the conservation of Family 1 habitat through mid-scale (forest) stragegies. Develop a long-term strategy to repattern watersheds to a sustainable mosaic of Family 1 and Family 2 habitats.
- Increase connectivity of disjunct habitat patches and prevent further reduction of large blocks of contiguous habitat. Provide large contiguous areas of forested habitat so large contiguous areas with small forest openings would also benefit the species with contrasting habitat needs.

- For boreal owls identify areas that are highest priority for retention and restoration of habitat in the Lower Clark Fork ERU, where reduction in the extent of source habitats has increased the isolation of remaining habitat patches.
- Develop an integrated long-term strategy to repattern forest and forest-range landscape mosaics at the watershed scale through mid-scale (forest) stragegies. Develop patterns that consider historical patterns as well as the biophysical succession-disturbance regimes.
- Minimize or avoid road construction within late-seral forests. Obliterate or restrict use of roads after timber harvests and other management activities.
- Continue a strategy of wildfire suppression in most managed forests while allowing stand-replacing wildfires to burn in wilderness areas.
- In managed areas, use prescribed fire, timber harvest and thinning to change forest composition and structure to reduce risk of stand replacement wildfires and loss of large emergent trees and overstory trees to benefit other species in Family 2. Shift fire regimes to mixed fire behavior underburns and creeping-irregular disturbance events through use of prescribed fire.

Family 3

The mountain quail is the only species in this family for the plnning area. All species in Family 3 tend to be habitat generalists in montane forests, lower montane forests, or riparian woodlands as source habitats as defined by Wisdom et al. (2000). The mountain quail utilizes upland shrublands, and forested habitats that generally include all structural stages. Special habitat features for the mountain quail are the shrub-herb understory in forest communities and shrub-herb riparian vegetation (Wisdom et al. 2000). Areas with abundant shrubs in the understory are used for cover as well as forage. Riparian areas appear to be preferred, because mountain quail are primarilyfound within 328 to 656 feet of a water source (Brennan 1989 in Wisdom et al. 2000).

In the planning area habitat declines were pronounced in the Blue Mountains, Central Idaho Mountains and Columbia Plateau ERUs also had decreasing trends, with each of these ERUs had a substantial percentage of watersheds with declining trends: 67% in the Blue Mountains, 57% in the Central Idaho Mountains, and 51% in the Columbia Plateau (Table **Error! No text of specified style in document.**-7). (Hann et al. 1997 in Wisdom et al. 2000).

Although the overall extent of Family 3 source habitats changed little since the historical period, notable changes occurred in the extent of tree size classes and canopy cover classes that compose source habitat. Within the lower montane community, ecologically significant declines were projected basin-wide for early- and late-seral stages, but these declines were partially offset by ecologically significant increases in mid-seral lower montane forests (Hann et al. 1997 in Wisdom et al. 2000).

Table Error! No text of specified style in document.**-7. Percentage of Watersheds (5th Hydrologic Unit Code [HUC]) in 3 Trend Categories for Family 3, by Ecological Reporting Unit (Wisdom et al. 2000)**

Ecological Reporting Unit		Number of Watersheds	Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Total	Decreasing	Neutral	Increasing	
5	Columbia Plateau	437	23	25	52	Increasing
6	Blue Mountains	252	7	15	78	Increasing
8	Lower Clark Fork	119	47	40	13	Neutral
13	Central Idaho Mountains	372	21	48	31	Neutral

Note: Percentages may not add up to 100% due to rounding.
[a] ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See "Forming Families of Groups to Summarize Results Among Multiple Groups" in "Methods" section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.

Regardless of the ERU trends in Table **Error! No text of specified style in document.**-7 the mountain quail has declined precipitously in Idaho (Vogel and Resse 1995a and 1995b, Western Quail Management Plan 2008).

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this family. This includes the mountain quail identified as an SCC.

Management Issues (Wisdom et al. 2000)

- Loss of riparian shrubland for mountain quail at finer scales than this broad-scale assessment.
- Changes in landscape pattern and simplification of forests across subbasins, within subbasins and watersheds, and within terrestrial communities.

Conservation Strategies (Wisdom et al. 2000)

- Maintain and restore riparian shrublands through restoration of historical hydrologic regimes where feasible, through control of livestock grazing, and through better management of roads and recreation.
- Develop a mid-scale (forest) assessment of the landscape departure patterns of succession-disturbance regimes. Focus short-term restoration of watersheds on those that depart greatly from succession-disturbance regimes, that do not contain susceptible populations of species of high conservation concern, and that are at high risk of loss of biophysical capability. In such watersheds, continue suppression of stand-replacing, high-severity wildfires, and initiate prescribed fire appropriate to the biophysical succession-disturbance regime and timed to protect biophysical capability.

Family 5

The Rocky Mountain bighorn is the only species in this family for the plnning area. Species in family 5 use a broad range of forest, woodlands, and rangelands as source habitats as defined by Wisdom et al. (2000). Source habitats include all terrestrial community groups except for exotics and agriculture. Habitat conditions for bighorn sheep has been altered over the last century because of changes in historical fire regimes. Fire suppression has resulted in an increase in the density of trees in formerly open stands, reducing forage quantity, forage quality and openness, decreasing habitat suitability for bighorn sheep. Fire-suppressed stands have created barriers between historical winter and summer range, thereby preventing occupancy of the total range even though each isolated range is currently suitable (Wisdom et al. 2000). Riparian vegetation has declined in extent because of disruption of hydrologic regimes from water diversions, road construction, grazing and increased recreational use along stream courses (Wisdom et al. 2000) Loss of riparian vegetation has degraded important foraging areas for bighorn sheep.

Bighorn sheep are highly susceptible to pneumonia after exposure to bacteria (*Pasteurella* spp.), viruses (*Parainfluenza* type-3), lungworm, and stress agents. Major reductions or total extirpation of bighorn herds from pneumonia outbreaks are well-documented. Evidence exists that domestic and exotic sheep are the source of nonendemic bacteria and viruses predisposing bighorn sheep to pneumonia. Disease transmission from domestic animals is currently the most significant factor affecting bighorn sheep conservation .

In the planning area habitat trends were particularly pronounced in the Columbia Plateau ERU, where 59% of these community types having decreased (Hann et al. 1997 in Wisdom et al. 2000). The Blue Mountains, Central Idaho Mountains and Lower Clark Fork ERUs had neutral trends: 48% in the Blue Mountains, 52% in the Central Idaho Mountains, and 43% in the Lower Clark Fork (Table **Error! No text of specified style in document.**-8).

Table Error! No text of specified style in document.**-8. Percentage of Watersheds (5th Hydrologic Unit Code [HUC]) in 3 Trend Categories for Family 5, by Ecological Reporting Unit (Wisdom et al. 2000)**

Ecological Reporting Unit		Number of Watersheds	Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Total	Decreasing	Neutral	Increasing	
5	Columbia Plateau	437	59	39	2	Decreasing
6	Blue Mountains	252	34	48	17	Neutral
8	Lower Clark Fork	119	48	43	9	Neutral
13	Central Idaho Mountains	372	18	52	30	Neutral

Note: Percentages may not add up to 100% due to rounding.
a ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See "Forming Families of Groups to Summarize Results Among Multiple Groups" in "Methods" section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this family. This includes the bighorn sheep identified as an SCC.

Management Issues (Wisdom et al. 2000)

- Degradation and loss of native upland shrublands, upland grasslands, riparian shrublands, and riparian woodlands.
- Changes in landscape patterns of source habitats and reduction in forage quantity and quality for bighorn sheep because of changes in fire regimes.
- Disease transmission potential between domestic sheep and bighorn sheep.

Conservation Strategies (Wisdom et al. 2000)

- Reduce human activities near important seasonal foraging areas and around known and lambing and kidding areas of bighorn sheep.
- Maintain and restore native upland shrublands upland grasslands, riparian shrublands and woodlands through restoration of hydrologic flows, vegetation restoration, road management, and control grazing and recreational activities.
- Restore habitat links between summer and winter range and access to escape cover that have been lost because of changes in historical fire regimes. Restore quality and quantity of forage where succession has caused substantial reductions.
- Implement use of prescribed fire to reestablish inherent fire regime-vegetation patterns.
- Actively control the potential for disease transmission between bighorns and domestic livestock.

Family 7

Wisdom et al. (2000) identified 9 broad-scale focal species in Family 7, two of whose ranges extend onto the Forest:

- Fringed myotis
- Townsend's big-eared bat

The fringed myotis and Townsend's big-eared bat are the only species in this family for the planning area. The California myotis was not identified by Wisdom et al. (2000) but will be included as part of Family 7 because of similar habitat needs and use.

Family 7 members use a complex pattern and broad range of forest, woodlands, and sagebrush cover types as defined by Wisdom et al. 2000, but also have special requirements for nesting or roosting (Wisdom et al. 2000). Some species use cliffs, caves, mines, and buildings for day roosts and hibernacula. For example, the fringed myotis uses large diameter (>53 cm [21 in]) trees and snags with exfoliating bark or large cavities. Species use declines when snag decomposition changes no long provides these these attributes. Although shrub/herb riparian areas are not considered a requirement for these bat species, all use riparian areas for foraging because of high insect density (Wisdom et al. 2000).

In the planning area 55% of these community types having decreased in the Lower Clark Fork ERU (Hann et al. 1997 in Wisdom et al. 2000). The Blue Mountains, Central Idaho Mountains and Columbia Plateau ERUs had neutral trends: 46% in the Blue Mountains, 36% in the Central Idaho Mountains, and 29% in the Columbia Plateau (Table **Error! No text of specified style in document.**-9).

Table Error! No text of specified style in document.**-9. Percentage of Watersheds (5th Hydrologic Unit Code [HUC]) in 3 Trend Categories for Family 7, by Ecological Reporting Unit (Wisdom et al. 2000)**

Ecological Reporting Unit		Number of Watersheds	Percent of 5th HUC Watersheds Within Trend Category (%)			Dominant Trend[a]
#	Name	Total	Decreasing	Neutral	Increasing	
5	Columbia Plateau	437	47	29	24	Neutral
6	Blue Mountains	252	23	46	31	Neutral
8	Lower Clark Fork	119	55	37	8	Decreasing
13	Central Idaho Mountains	372	34	36	30	Neutral

Note: Percentages may not add up to 100% due to rounding.
[a] ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See "Forming Families of Groups to Summarize Results Among Multiple Groups" in "Methods" section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this family. This includes the fringed myotis, Townsend's big-eared bat, and California myotis identified as an SCC.

Management Issues (Wisdom et al. 2000)

- Loss of potential roost sites because of mine closures, destruction of abandoned buildings, snag removal, deliberate fumigation of buildings, and levels of human activity that cause roost abandonment
- Excessive disturbance of roosting bats because of human activities and roads as a facilitator of such activities
- Degradation and loss of native riparian vegetation

Conservation Strategies (Wisdom et al. 2000)

- Protect all known roost sites (nurseries, day roosts, and hibernacula) and restore useability of historical roosts where feasible.
- Actively manage for the retention and recruitment of large-diameter (>53 cm [21 in] snags in all forest cover types and structural stages.
- Reduce levels of human activities around known bat roosts through road management, signs, public education, and bat gates.
- Maintain and improve the condition of riparian vegetation for bat foraging areas.

B) Species Groups

Wisdom et al. (2000) developed species groups to contain increasingly detailed results that support and complement results in the broad-scale Family discussed in Volume 1 of Wisdom et al. (2000). Groups are composed of one or more species that share common source habitats, as defined by vegetation cover types and structural stages.

Broad-scale Species Group Relationships

With Table **Error! No text of specified style in document.**-10 indicating watershed trends by ERUs, SCC species within these Familys are categorized in Groups in Table **Error! No text of specified style in document.**-4 and Table **Error! No text of specified style in document.**-11. These species groups may have different trends based on their individual habitat associations and habitat changes. While the California myotis is not addressed in the ICBEMP it is included with the other two bat species in Family 7. Based on Forest-level information the California myotis appears to have similar habitat requirements as fringed, long-legged and long-eared myotis discussed in Group 26 by Wisdom et al. (2000). Therefore, California myotis will be included in Group 26 with fringed myotis

Table Error! No text of specified style in document.**-10. Interior Columbia Basin Ecosystem Management Project Families, and SCC species representation.**

Species group	Related Terrestrial Family	Nez Perce-Clearwater SCC species
1	1 - Low-elevation old forest	2 species
2	1 - Low-elevation old forest	1 species
5	2 - Broad-elevation old forest	2 species
7	2 - Broad-elevation old forest	1 species
11	2 - Broad-elevation old forest	1 species
17	3 - Forest mosaic	1 species
22	5 - Forest and Range mosaic	1 species
26	7- Forest, Woodlaand and Sagebrush	2 species[a]
27	7- Forest, Woodlaand and Sagebrush	1 species

[a] California myotis not listed in ICBEMP but added to be part of Family 7 which contains all bats.
Note: No ICBEMP representation for Coeur d'Alene salamander.

Table Error! No text of specified style in document.**-11. Source habitat trends at the group level. (Wisdom et al. 2000)**

Species Group	Related SCC Species	ERU	Historical and current percentage of area, and relative change in (%) for watersheds			Dominant Trend[a]
			Historical	Current	Relative change	
1	White-headed woodpecker [b] Pygmy nuthatch	Columbia Plateau	14.19	8.82	-37.59	Decreasing
		Blue Mountains	24.48	9.42	-61.50	Decreasing
		Lower Clark Fork	17.18	1.02	-94.04	Decreasing
		Central Idaho Mountains	11.08	6.39	-42.38	Decreasing
2	Lewis' woodpecker	Columbia Plateau	11.55	0.31	-97.32	Decreasing
		Blue Mountains	22.29	6.21	-72.17	Decreasing
		Lower Clark Fork	14.63	0.60	-95.89	Decreasing
		Central Idaho Mountains	8.55	3.15	-63.17	Decreasing
5	Fisher Flammulated owl	Columbia Plateau	16.18	7.74	-12.31	Decreasing
		Blue Mountains	18.81	16.49	-12.31	Decreasing
		Lower Clark Fork	19.52	1.43	-92.68	Decreasing
		Central Idaho Mountains	12.50	11.54	-7.71	Decreasing
7	Boreal owl	Columbia Plateau[c]	6.62	2.32	-64.99	Decreasing
		Blue Mountains	8.96	8.66	-3.25	Decreasing
		Lower Clark Fork	9.20	0.83	-91.01	Decreasing
		Central Idaho Mountains	10.24	10.36	-1.18	Increasing
11	American three-toed woodpecker	Columbia Plateau	3.19	4.87	+52.65	Increasing
		Blue Mountains	3.83	13.69	+>100	Increasing
		Lower Clark Fork	3.97	1.15	-71.05	Decreasing
		Central Idaho Mountains	6.60	12.64	+91.62	Increasing
17	Mountain quail[d]	Columbia Plateau[e]	-	-	-	-
		Blue Mountains	31.00	30.68	-1.04	Decreasing
		Lower Clark Fork	-	-	-	-
		Central Idaho Mountains	27.20	17.27	-36.52	Decreasing
22	Bighorn sheep	Columbia Plateau[f]	-	-	-	-
		Blue Mountains	36.29	20.60	-43.23	Decreasing
		Lower Clark Fork[f]	-	-	-	-
		Central Idaho Mountains	36.71	28.40	-22.62	Decreasing

Species Group	Related SCC Species	ERU	Historical and current percentage of area, and relative change in (%) for watersheds			Dominant Trend[a]
			Historical	Current	Relative change	
26	California myotis Fringed myotis	Columbia Plateau	38.00	36.12	-7.58	Decreasing
		Blue Mountains	52.60	55.15	4.86	Increasing
		Lower Clark Fork	80.93	78.23	-3.34	Decreasing
		Central Idaho Mountains	55.47	54.04	-2.57	Decreasing
27	Townsend's big-eared bat	Columbia Plateau	59.12	44.72	-24.37	Decreasing
		Blue Mountains	40.21	49.82	+23.89	Increasing
		Lower Clark Fork	30.30	23.76	-21.58	Decreasing
		Central Idaho Mountains	25.80	32.38	+25.49	Increasing

[a] ERUs were classified as increasing or decreasing if >50% of the watersheds had positive or negative trends, respectively. ERUs not classified as increasing or decreasing were classified as neutral. See "Forming Families of Groups to Summarize Results Among Multiple Groups" in "Methods" section (Wisdom et al. 2000, Volume 1) for details about assigning trends to watersheds.
[b] The primary ERU for this species are the Blue Mountains. The species may be incidental in the western-most portions of the Central Idaho ERU, and the Palouse portion of the Columbia Plateau ERU.
[c] Species habitat in the Palouse Prairie portion of the planning area is likely limited.
[d] Summer forested habitat only in the Blue Mountains and western fringe of the Central Idaho Mountains ERUs. The lower Salmon River Canyon portion of these ERUs is the last stronghold for the species in the planning area.
[e] Historically the species has far north as the Palouse Prairie.
[f] The species is not present in these ERUS in the planning area. ICBEMP trend information for this species does not apply to these ERUs.

The Coeur d'Alene salamander is not addressed by Wisdom et al. (2000). This species will be addressed using other best-available science and in the Idaho CWCS discussions.

5.4.1.2 Broad-scale changes in Habitat

Species Group 1

Source habitats for Group 1 are found in old lower-elevation forests of mixed-conifer and ponderosa pine cover types. A special habitat feature for Group 1 is large-diameter snags for nesting and foraging (Volume 3, Appendix 1, Table 2 in Wisdom et al. 2000). The Pygmy nuthatch is secondary cavity nester and can use various nesting structures. White-headed woodpeckers typically nest in snags and leaning logs, and occasionally nest in the dead tops of live trees. However, the white-headed woodpecker is a primary cavity excavator of soft snags and is therefore more limited by the degree of wood decay suitable for cavity excavation (Wisdom et al. 2000). Suitable nest sites for both species are usually found within the larger diameter classes of trees and snags, and both species forage primarily in live trees (Wisdom et al. 2000).

Within the basin broad-scale changes have occurred in the habitat of Species Group 1 (White-headed woodpecker and pygmy nuthatch). For this species group dramatic increases have occurred in mid-seral, shade-tolerant forests throughout the basin. These increases are likely due to both fire suppression and the conversion of late-seral forests to early- and mid-seral stages (Wisdom et al. 2000). Interior ponderosa pine old forests were reduced and commonly transitioned into mid-seral stands of interior Douglas fir and grand fir–white fir (Wisdom et al. 2000).

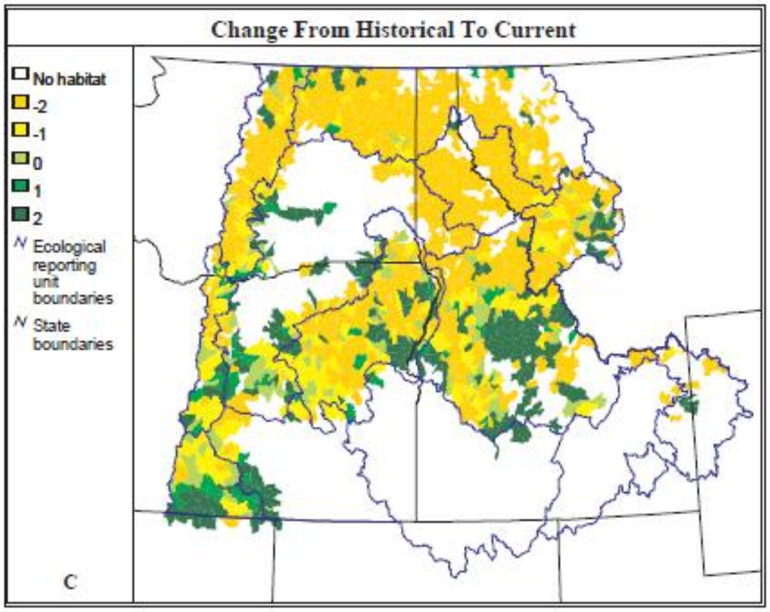
Large-diameter ponderosa pine snags are a special habitat feature for group 1. In roaded areas with a history of timber sales, large-diameter snags >53 cm (21 in) have been reduced basin-wide. Thus nesting and foraging substrates for Group 1 species have tbeen reduced. Roads indirectly affect Group 1 because roaded areas in the basin have fewer snags than unroaded areas (Hollenbeck et al. 2013, Wisdom et al. 2000). Historically, source habitats likely occurred throughout the forested portions of the planning area (Volume 2, Figure 7a in Wisdom et al. 2000). Currently, the distribution of source habitats in the planning area has become decidedly more disjunct (Volume 2, Figure 7b in Wisdom et al. 2000).

White-headed woodpecker source habitat has declined >62% basin-wide. Pygmy nuthatch source habitat has declines >67% basin-wide (Volume 1, Table 7 in Wisdom et al. 2005). Downward trends were predominantly in the northern basin while the central and southwestern basin showed mixed trends (Wisdom et al. 2000).

Ecologically significant declines were observed in source habitat including the Lower Clark Fork (–94%), Blue Mountains (–61.5%) and Central Idaho Mountains (–42%) ERUs (Volume 2, Figure 4 in Wisdom et al. 2000). The current amount of source habitat is significantly reduced from historical levels in >50% of the watersheds in the basin. This basin-wide trend was mirrored within six ERUs that also had strong negative declines in more than 50 percent of the watersheds including the Lower Clark Fork ERU in the planning area. Historically, the extent of source habitat in the Lower Clark Fork ERU accounting for 17 percent of the total area of this ERU, however current estimate is 1%. (Volume 3, Appendix 1, Table 3 in Wisdom et al. 2000).

The Central Idaho Mountains ERU currently provides the most contiguous habitats in the planning area (Volume 2, Figure 4c in Wisdom et al. 2000), yet the amount of source habitat in this ERU comprise <11 percent of most watersheds with a current estimate of >6% (Volume 3, Appendix 1, Table 3 in Wisdom et al. 2000). With two small watersheds being the exception both the Blue Mountains and Columbia Plateau portions of the planning area show declines of ≥60% (Volume 2, Figure 4c in Wisdom et al. 2000).

The change from historical to current conditions for Group 1 habitats is displayed in Figure **Error! No text of specified style in document.**-28.



Note: Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-28. Percentage of area identified as source habitats, and the relative change in percentage of area of source habitats from historical to current periods for Group 1. Wisdom et al. 2000 (Vol. 2, Figure 4: Group 1)**

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to white-headed woodpecker and pygmy nuthatch in this group.

Management Issues (Wisdom et al. 2000)

- Basin-wide decline in late-seral interior and ponderosa pine
- Basin-wide loss of large-diameter snags (>53 cm [21 in])
- High risk of additional loss of ponderosa pine habitat through stand-replacing fires

Potential Conservation Strategies—The following potential strategies could be used to maintain habitat (Wisdom et al. 2000):

- Retain stands of interior ponderosa pine where old-forest conditions are present, and actively manage to promote their long-term sustainability. The white-headed woodpecker has the most restricted distribution of all Group 1 species. Therefore the retention of existing old forests is particularly important within the range of this species where declines in old forests have been most pronounced: watersheds such as the Upper Clark Fork and Blue Mountains ERUs.

- Restore dominance of ponderosa pine to sites where transition to other cover types has occurred.
- Accelerate development of late-seral conditions, including snag recruitment, within stands that are currently in mid-seral stages.
- Include provisions for snag retention and snag recruitment where needed in all management plans involving forests used as source habitats for Group 1.
- Reduce risk of stand-replacing fires in late-seral ponderosa pine.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Blair et al. 1995, Wisdom et al. 2000):

- Use understory thinning and prescribed burns to enhance development of ponderosa pine old forests and to reduce fuel loads. Refer to Blair et al. (1995) for specific recommendations about live tree densities for the old-forest structural stage.
- Retain existing snags, particularly if >53 cm (21 in), and provide mea- sures for snag replacement.
- Reduce road densities in managed forests where ponderosa pine snags are currently in low abundance. Close roads after tim- ber harvests and other management activities, and minimize the period when such roads are open, to minimize removal of snags along roads. In addi- tion, or as an alternative to road management, actively enforce fuel wood regulations to minimize removal of large snags.
- Restrict fuel wood permits to disallow snag cutting where ponderosa pine snags are in low abundance, and particularly where existing roads cannot be closed

The amount and distribution of predicted habitat has been modeled using the SIMPPLLE process. This will be discussed at the mid-level Forest scale in this assessment.

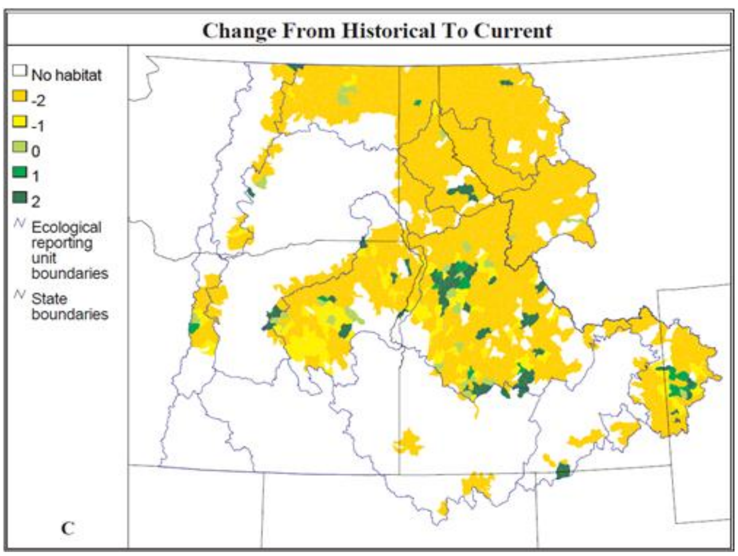
Species Group 2

Within the basin broad-scale changes have occurred in the habitat of Species Group 2 (Lewis's woodpecker). The Lewis's woodpecker is the only SCC in Group 2. Changes in vegetation structure from old-forest single stratum to mid-seral structures as well as large snag removal, increases in closed-canopy, multi-storied forests have reduced understory shrubs and presumably reduced the foraging on, and abundance of arthropods reduced forest patch openings that Lewis'woodpecker feed (Wisdom et al. 2000).

The relative change in extent of source habitats for the Lewis'woodpecker was the greatest (most negative) of any species analyzed in the Wisdom et al. (2000) report (Volume 1, Table 7 in Wisdom et al. 2000). The current amount of source habitat is significantly reduced from historical levels in all 11 ERUs that provide source habitat (Volume 2, Figure 7b in Wisdom et al. 2000). The Central Idaho Mountains ERU currently provide the most contiguous habitats, yet the amount of source habitat in this ERU comprise <25 percent of most watersheds (Volume 2. Figure 7b in Wisdom et al.2000). Strong negative trends were particularly evident in the northern watersheds of the basin, including the Lower Clark Fork ERU, where more than 95 percent of the watersheds experienced declines (Volume 2. Figure 8 in Wisdom et al. 2000). The abundance of large (>53 cm [21 in]), heavily decayed snags for nesting has been reduced basin-wide because of changes in vegetation structure from old-forest single stratum to mid-seral structures as well as snag removal (Wisdom et al. 2000). Historically, source habitats likely occurred throughout the forested portions of the planning area (Volume 2, Figure 7a in Wisdom et al. 2000). Currently, the distribution of source habitats in the planning area has become decidedly more disjunct (Volume 2, Figure 7b in Wisdom et al. 2000).

Ecologically significant declines were observed in source habitat including the Lower Clark Fork (-97%), Blue Mountains (-92%) and Central Idaho Mountains (-85%) ERUs (Volume 2, Figure 8 in Wisdom et al. 2000). These changes from historical to current are most apparent in the planning area with the majority of watersheds indicating declines ≥ 20% to over 80% in all except two watersheds with one on the Clearwater portion with an increase of ≥60%, and one in the Elk City area having either an increase or decrease of 20% (Volume 2, Figure 8 in Wisdom et al. 2000). All of the watersheds in the Columbia Plateau and Blue Mountains ERUs show moderate or strong declines in source habitats in the planning area. The majority of watersheds in the planning area portion of the Central Idaho Mountains ERUs showed moderate or strong declines in source habitats (Volume 2, Figure 8 in Wisdom et al. 2000).

The change from historical to current conditions for Group 2 habitats is displayed in Figure **Error! No text of specified style in document.**-29.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-29. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 2. Wisdom et al. 2000 (Vol. 2, Figure 7: Group 2)**

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this group.

Management Issues (Wisdom et al. 2000)

- Declines in shrub understories of montane and lower montane forests.
- Basin-wide decline in old forests of interior and ponderosa pine and interior western larch.
- Basin-wide decline in old forests of cottonwood woodlands.
- Decline in availability of large snags and trees for foraging and nesting.

Potential Conservation Strategies—The following potential strategies were suggested for the long-term persistence of Lewis'woodpecker (Blair et al. 1995, Wisdom et al. 2000):

- Rejuvenate and enhance shrub understory of lower montane community groups (old-forest ponderosa pine) and montane community groups that include interior Douglas-fir and western larch.
- Restore degraded stands and maintain high-quality existing stands of old- forest interior and ponderosa pine, interior Douglas-fir, western larch, and cottonwood-willow. Accelerate the development of old forests within stands that are currently mid-seral structural stages. The protection and restoration of existing old forests is especially important where declines in old forests have been most pronounced. This includes the Blue Mountains, Lower Clark Fork and Central Idaho Mountains ERUs.
- Maintain existing old f cottonwood-willow stands, and identify younger stands for eventual development of old-forest structural conditions. Return natural hydrologic regimes to riparian areas where large cottonwood woodlands still remain.
- Retain all large-diameter (>53 cm d.b.h. [21 in]) ponderosa pine, cotton- wood, Douglas-fir, and western larch snags within the basin, preferably in clumps, and provide opportunities for snag recruitment.
- Reduce exposure to pesticides and insecticides during the nesting season.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Wisdom et al. 2000):

- Use prescribed burns and understory thinning of small- diameter trees (<25 cm d.b.h. [10 in]) to maintain existing old-forest ponderosa pine stands and to accelerate development of mid-successional stages to old-forest conditions. These practices also can be used to enhance and develop shrub understories (>13 percent shrub canopy) to attract arthropod prey.
- Allow stand-replacing wildfires to burn in lower montane wilderness and other lands managed with a reserve emphasis (for example, designated wilderness, research natural areas, and areas of critical envi- ronmental concern). Such opportunities can be found particularly in the Central Idaho Mountains and Blue Mountains ERUs.

- Develop measures for snag recruitment in unburned forests. Management for snag recruitment (particularly broken-topped snags) in unburned forests with high risks of stand-replacing fires will provide nest trees during the first few years after wildfire when other trees are not easily excavated.
- In salvage-logged, postfire ponderosa pine forests, retain snags in clumps rather than evenly spaced, leaving both hard and soft decay classes to lengthen the time that those stands are suitable for nesting by Lewis' woodpeckers.
- Minimize the density of roads open to motorized vehicles. Close roads after timber harvests and other management activi- ties, and maintain short periods during which such roads are open to minimize removal of snags along roads. In addition or as an alternative to road man- agement, actively enforce fuel wood regulations to minimize removal of large snags.
- Restrict fuel wood permits to disallow snag cutting where ponderosa pine snags are in low abundance, and particularly where existing roads cannot be closed.
- Avoid use of toxic chlorinated agricultural insecticides near Lewis'woodpecker nest sites.

The amount and distribution of predicted habitat has been modeled using the SIMPPLLE process. This will be discussed at the mid-level Forest scale in this assessment.

Species Group 5

The flammulated owl and fisher are the only SCC in Group 5. Changes in old forest habitat availability, the abundance of snags, forest composition and structure can affect both flammulated owl and fisher populations in the respective cover types they prefer. (Wisdom et al. 2000).

The geographic distribution of source habitats has shifted away from the north and towards the southwestern portion of the basin. Densities of large-diameter snags (>53 cm [21 in] d.b.h.) declined basin-wide from historical to current levels. Trends in snag abundance ultimately affect the availability of large down logs and cavities (Wisdom et al. 2000). Additionally, the distribution of source habitats in the northern and central basin has become decidedly more disjunct (Volume 2, Figure 16a and 16b in Wisdom et al. 2000). Historically, source habitats likely occurred throughout the forested portions of the basin, with some of the greatest concentrations in the western, central, and northern portions of the basin (Volume 2, Figure 16a in Wisdom et al. 2000).

Approximately 68% of the watersheds in the basin showed moderate or strong declines in source habitats (Figure 17 in Wisdom et al. 2000). These declines were reported in all of the ERUs (Blue Mountains and Central Idaho Mountains ERUs) in the planning area, especially the Lower Clark Fork and Columbia Plateau ERUs (Figure 17 in Wisdom et al. 2000).

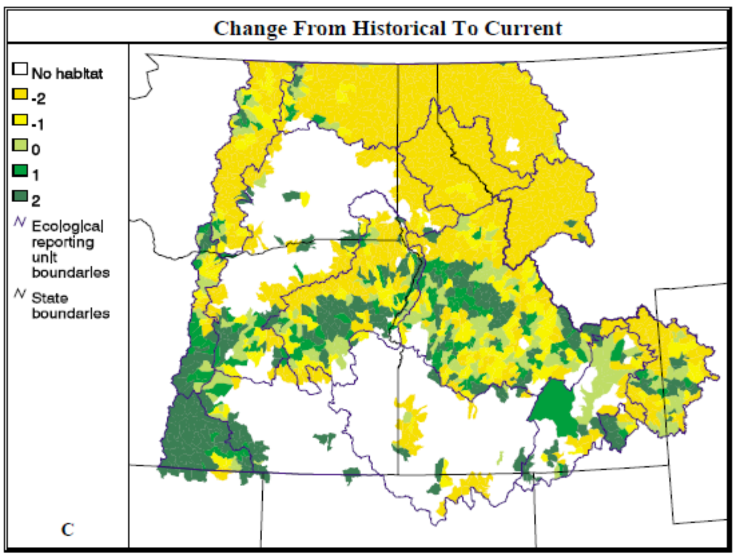
For flammulated owl, ecologically significant declines were observed in late-seral ponderosa pine forests including the Lower Clark Fork (-100%), Blue Mountains (-96%) and Central Idaho Mountains (-88%) ERUs (Volume 3, Appendix 1, Table 4 in Wisdom et al. 2000).

However for fisher, late-seral multi-story grand fir/red cedar forests have increased significantly in the Lower Clark Fork (>100%), Columbia Plateau (+76.5%), Blue Mountains (>100%) and Central Idaho Mountains ERUs (>100%).

These changes from historical to current are most apparent in the planning area with the majority of watersheds indicating declines >20% to over 80% in all but two watersheds with two other either having an increase or decrease of 20% in the planning area. All of the watersheds in the Columbia Plateau ERU showed moderate or strong declines in source habitats in the planning area. Approximately56% of the watersheds in the Blue Mountains ERU showed moderate or strong declines in source habitats. Approximately 50% of the watersheds in the Central Idaho Mountains ERUs showed moderate or strong declines in source habitats (Figures 16c, Volume 2 in Wisdom et al. 2000).

The change from historical to current conditions for Group 5 habitats is displayed in

Figure Error! No text of specified style in document.-**30**.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure **Error! No text of specified style in document.**-30. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 5. Wisdom et al. 2000 (Vol. 2, Figure 16: Group 5)

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this group.

<u>Management Issues (Wisdom et al. 2000)</u>

- Reduction in the amount of old-forests and associated structures (snags, logs, and cavities), particularly within the montane and lower montane community groups.
- Fragmentation of habitat.
- Low population numbers of fisher.
- Negative effects resulting from higher road densi- ties in source habitats.
- Possibly unsustainable conditions of old forests where there have been large transitions from shade-intolerant to shade-tolerant tree species. This last issue stems from the exclusion of fire from many forested communities, which has resulted in increased susceptibility to stand-replacing fires.

Potential Conservation Strategies—The following potential strategies could be used to maintain habitat for flammulated owl and fisher (Wisdom et al. 2000):

- Increase the representation of late-seral forests in all cover types used as source habitats, particularly in the northern half of the basin (Lower Clark Fork ERU).
- Increase connectivity of disjunct habitat patches and prevent further reduction of large blocks of contiguous habitat.
- Identify potential species strongholds for long-term management of fisher.
- Reduce human disturbances in source habitats.
- Reduce the risk of loss of habitat by focusing old-forest retention and restoration efforts on areas where fire regimes are either nonlethal or mixed. Where old-forest habitat has remained stable or increased from historical conditions, efforts could be focused on retaining existing habitat in areas with lower fire and insect risk while managing other areas to reduce risks of catastrophic loss of habitat.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Wisdom et al. 2000):

- In the northern basin, identify representative stands of old forests for retention and mid-successional stages for development into old-forest conditions. Priority should be given to large blocks having high interior-to-edge ratios and few large openings.
- Actively recruit snags and logs from Green et al. (2011) trees to increase the representation of old-forest structures (snags and logs) in mid-seral stands and in old forests where snags and logs are in low density or absent.
- Retain slash piles and decks of cull logs to substitute for down logs over the short term.
- Where possible, use selection harvest rather than clearcutting. If clearcuts are used, aggregate cuts so that large blocks of unharvested forest are retained.
- Adjust activities, including timber harvests, to provide links among currently isolated patches of source habitats.

- Identify existing areas with the following desired conditions, or manage selected areas to create the following desired conditions for strongholds: existing populations of fisher, large, contiguous blocks of forest cover with a high percentage of late-seral stages, abundant snags and large logs, low road densities and overall low human disturbance, and potential connectivity to currently unoccupied source habitats.
- Minimize new construction of secondary roads and close unneeded roads after timber harvest.
- Manage risks of catastrophic loss by using prescribed fire and thinning to reduce fuel loading and to encourage the development of forest openings, shrub openings, and shade-intolerant and fire-, insect-, and disease- resistant tree species.

The amount and distribution of predicted habitat has been modeled using the Olsen et al. (2013) model for fisher (USDA Forest Service 2014), and using the SIMPPLLE process for flammulated owl. This will be discussed at the mid-level Forest scale in this assessment.

Species Group 7

The boreal owl is the only SCC in Group 7. Changes in cavity availability and abundance of coarse woody debris, snags, lichens, and fungi as a result of declining older forest structural stages can affect nesting opportunities and reproductive success of boreal owl populations (Wisdom et al. 2000).

The geographic distribution of source habitats has shifted from the northern ERUs towards the central portions of the basin. The trend in forest structure has been an increase in mid-seral stages at the expense of both early- and late-seral stages (Wisdom et al. 2000). Large-diameter snags and trees >53.3 cm (>21 inches) d.b.h. have decreased basin-wide (Wisdom et al. 2000). Additionally, the distribution of source habitats in the northern basin has become decidedly more disjunct (Volume 2, Figure 22 in Wisdom et al. 2000). Historically, the most concentrated areas of source habitat for boreal owls were in the Northern Cascades, Northern Glaciated Mountains, and Snake Headwaters ERUs (Volume 2, Figure 22a in Wisdom et al. 2000).

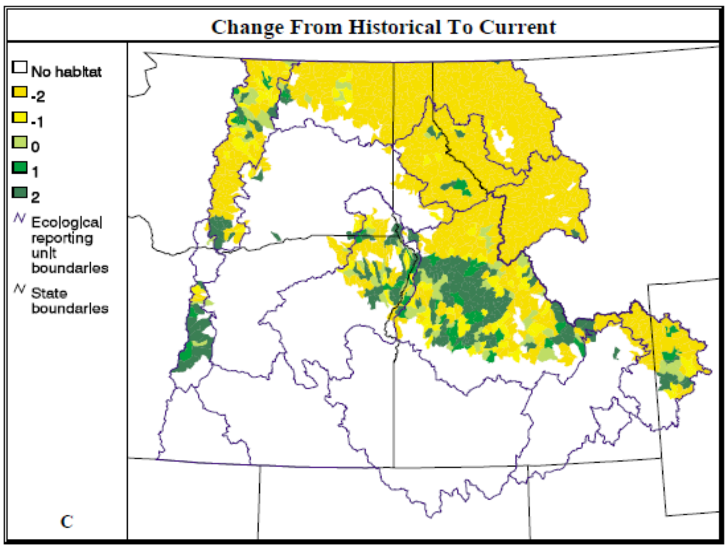
Approximately 80% of the watersheds in the basin showed moderate or strong declines in source habitats (Figure 23 in Wisdom et al. 2000). These declines were reported in >50% of the watersheds in the northern and eastern portions of the ICB, including the Lower Clark Fork and Central Idaho Mountains ERUs (Figure 23 in Wisdom et al. 2000). Trends in the Blue Mountains ERU were mixed (Volume 2, Figure 23 in Wisdom et al. 2000).

In the northern basin, ecologically significant declines were observed in late-seral subalpine multi-story forests which includes the Columbia Plateau (–97.3%) Lower Clark Fork (–94.7%) ERU (Volume 3, Appendix 1, Table 4 in Wisdom et al. 2000). Late-seral subalpine multi-story forests also increased significantly in the Blue Mountains (88%) and Central Idaho Mountains (+41%) ERUs (Volume 3, Appendix 1, Table 4 in Wisdom et al. 2000).

However, while late-seral subalpine multi-story forests have increased significantly in the Blue Mountains and Central Idaho Mountains ERUs the majority of this increase appears to have occurred outside the planning area. Declines were reported in >50% of the watersheds in the northern and eastern portions of the basin, including the Lower Clark Fork and Central Idaho Mountains ERUs that occur in the planning area (Figure 22 in Wisdom et al. 2000).

Approximately 55% of the watersheds in the Central Idaho Mountains ERUs showed moderate or strong declines in source habitats (Figures 22 and 23 in Wisdom et al. 2000) with apparently a significant majority of the watersheds in the planning area showing declines from 20% to greater than 60%. A small number of watersheds show moderate or strong increases in the Lower Clark Fork ERU but these are surrounded by watersheds showing declines of 20% to greater than 60% in the planning area (Volume 2, Figure 22 in Wisdom et al. 2000). Trends in the Blue Mountains ERU were mixed but indicating increases (Volume 2, Figures 22 and 23 in Wisdom et al. 2000).

The change from historical to current conditions for Group 7 habitats is displayed in Figure Error! No text of specified style in document.-**31**.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure **Error! No text of specified style in document.**-31. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 7. Wisdom et al. 2000 (Vol. 2, Figure 22: Group 7)

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this group.

Management Issues (Wisdom et al. 2000)

- Declines in late-seral subalpine and montane forests, particularly in the
- Lower Clark Fork ERU.
- Declines in large aspen trees and forests primarily because of fire suppression.
- Loss of large-diameter snags >18 in. d.b.h.

- Loss of microenvironments for small-mammal prey. Changes in forest structure and composition such as the loss of snags and logs.

Potential Conservation Strategies—The following potential strategies could be used to maintain habitat (Wisdom et al. 2000):

- Accelerate development of old-forest conditions in montane and subalpine forests within areas currently dominated by mid-seral stages.
- Restore aspen forests where they have been reduced.
- Identify areas that are highest priority for retention and restoration of habitat, especially in the Lower Clark Fork ERUs, where reduction in the extent of source habitats has increased the isolation of habitat patches.
- Retain large-diameter snags and provide for snag replacement over time.
- Include boreal owl conservation within a larger, ecosystem context that addresses the management of primary cavity nesters, small mammals, and forest structural components.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Wisdom et al. 2000):

- Avoid extensive use of clearcuts, which may reduce habitat quality
- For 100 to 200 years. Small patch cuts implemented on long rotations may be compatible with maintenance of habitat quality for boreal owls. Thinning from below may provide for development of nest structures.
- Use clearcutting to regenerate aspen, focusing on the maintenance of large aspen that provide nesting habitat for boreal owls. Where aspen regeneration is inhibited by domestic or wild ungulate browsing use exclosures to protect regenerating
- stands and modify management to reduce browsing pressure.
- Provide measures for snag protection and recruitment in all timber harvest plans.

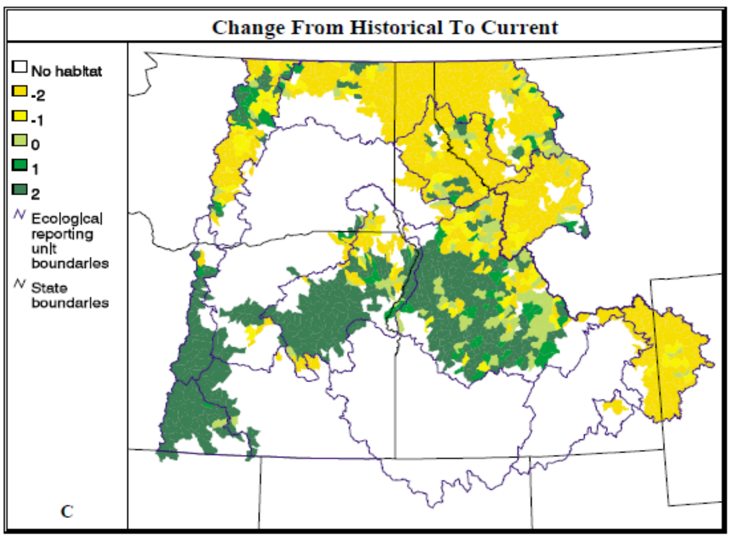
The amount and distribution of predicted habitat has been modeled using the SIMPPLLE process. This will be discussed at the mid-level Forest scale in this assessment.

Species Group 11

The American three-toed woodpecker is the only SCC in Group 11. The species occurs at the higher elevations of this broad-elevation Family, and at these upper elevations throughout the basin. Source habitats are old forests of lodgepole pine, grand fir-white fir, and Engelmann spruce-subalpine fir. The trend in forest structure has been an increase in mid-seral stages at the expense of both early- and late-seral stages (Hann et al. 1997). Large-diameter snags and trees >53.3 cm (>21 inches) d.b.h. have decreased basin-wide (Hann et al. 1997 in Wisdom et al. 2000).

Historically, source habitats likely were distributed throughout most of the mountainous regions of the basin but generally occupied <25 percent of any given watershed (Volume 2, Figure 34A in Wisdom et al. 2000). Current source habitats seem to have roughly the same geographic distribution, but the amount of habitat in the northern portion of the ranges of the species generally declined, whereas habitat in the south increased (Volume 2, Figure 34B in Wisdom et al. 2000).

The ERUs that support significant amounts of habitat for the group and had moderately or strongly increasing trends in more than 50 percent of watersheds include the Blue Mountains, and Central Idaho Mountains. The Lower Clark Fork ERU contains moderate or strong declines were projected in more than 50 percent of the watersheds (Volume 2, Figure 35 in Wisdom et al. 2000). The Columbis Plateau ERU has near similar percentages of watersheds that either have increased or declined. Figure **Error! No text of specified style in document.**-32 shows the relative changes for watersheds within the basin and ERUs within the planning area.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-32. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 11. (Wisdom et al. 2000 (Volume 2, Figure 34: Group 11)**

The relative change of habitat conditions for this species has increased primarily in the portions of the planning area within the Blue Mountain ERU and in the southern half of the planning area within the Central Idaho Mountains ERU (Volume 2, Figure 34C in Wisdom et al. 2000) due to the increased amount of forest succession with subsequent disease and insect mortalty. However, Declines were reported in >70% of the watersheds in the Lower Clark Fork and >40% of the Columbia Plateau ERU. The majority of the watersheds in the Columbia Plateau that occur in or adjacent to the planning area have declined btween 20% to >60% (Figure 34 in Wisdom et al. 2000). A small number of watersheds show moderate or strong increases in the Lower Clark Fork ERU but these are surrounded by watersheds showing declines of 20% to greater than

60% in the planning area. Watersheds in the northern portion of the Central Idaho Mountains ERU show a mix of increases and declines with the majority indicating declines (Volume 2, Figure 34 in Wisdom et al. 2000).

While these source habitats occur at upper elevations they may typically not be as abundant within the suited timber base as mid and low elevation habitats for other species groups. In general, while increased amount of habitat in many waatersheds have a positive trend for this species, decreases in others indicate conservation measures are still warrented.

Wisdom et al. (2000) identified the following management issues and conservation strategies that apply to the species in this group.

Management Issues (Wisdom et al. 2000)

- Decline in late-seral subalpine and montane forests. Cover types with basin-wide decline are western larch and whitebark pine (*Pinus albicaulis*). Declines of Engelmann spruce-subalpine fir are most notable in northern portions of the basin.
- Potential decline in key components of the shifting food and nesting resource, which is characterized by large areas of conifer trees infected with bark beetles, disease, or heart rot, or in the early stages of decay.

Potential Conservation Strategies—The following potential strategies could be used to maintain habitat (Wisdom et al. 2000):

- Maintain remaining old forests of western larch and whitebark pine, and actively manage to promote their long-term sustainability.
- Accelerate development of old-forest conditions in montane and subalpine forests within areas currently dominated by mid-seral stages.
- Maintain stands that have experienced beetle outbreaks and stand-replacing burns.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Wisdom et al. 2000):

- Use under-story thinning and prescribed burns, or both, to enhance development and sustainability of western larch and whitebark pine old forests.
- Maintain some large (>528 acres) forest patches with bark beetle outbreaks for at least 5 years, until beetle occupancy diminishes.
- Where suitable nesting and foraging trees are underrepresented, retain mature and old trees susceptible to bark beetle infestations, disease, and heart rot, or in the early
- stages of decay.
- Allow wildfires to burn in some forests with high fire risk to produce stand-replacing conditions, and avoid postfire salvage logging in portions of large burned forests
- to maintain contiguous burned stands of at least 528 acres for about 5 years postfire.

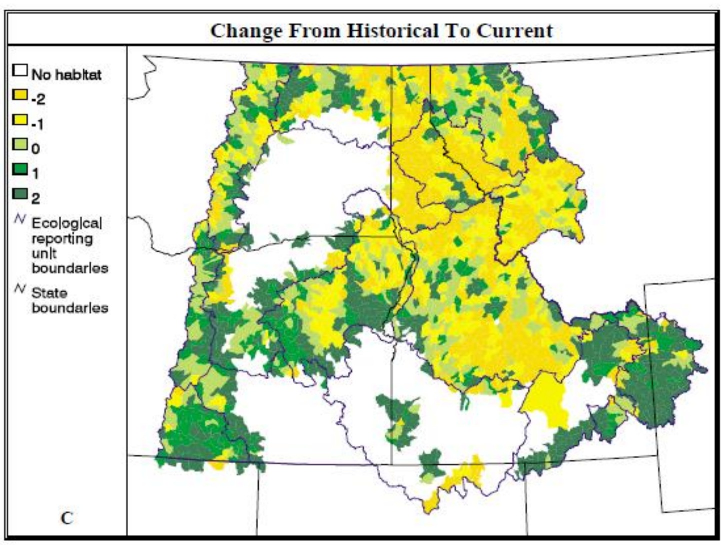
The amount and distribution of predicted habitat has been modeled using the SIMPPLLE process. This will be discussed aat the mid-level Forest scale in this assessment.

9Species Group 17

The mountain quail is the only SCC in Group 17. Group 17 represents summer habitat for mountain quail according to Wisdom et al. (2000). Wisdom et al. (2000) only addressed summer habitat for this species. The species uses the mid to upper elevations of montane and lower montane forests. Source habitats for group 17 include all structural stages except stem exclusion of interior Douglas-fir and interior ponderosa pine (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000). Specific habitats used by the mountain quail is riparian shrub (Volume 3, Appendix 1, Table 2 in Wisdom et al. 2000). Mountain quail within the basin primarily are found within 100 to 200 m (328 to 656 feet) of a water source (Vogel and Reese 1995a and 1995b).

The overall basin trend in source habitats since historical times has been neutral, including the Blue Mountains ERU. The ERUs with decreasing trends includes the Central Idaho Mountains ERU. The species occurs in the easternmost and westernmost portions of thses ERUs in the planning area (Figure 53 in Wisdom et al. 2000).

Approximately 46% of the watersheds in the basin showed moderate or strong declines in source habitats (Figure 53 in Wisdom et al. 2000). Declines were reported in >40% of the watersheds in the eastern Blue Mountains and western Central Idaho Mountains ERUs that are part of the lower Salmon River Canyon where this species occurs (Figures 52A, 52B, and 53 in Wisdom et al. 2000). Source habitats reportedly showed increases in ~26% of watersheds in the Blue Mountains and Central Idaho Mountains ERUs (Figure 53 in Wisdom et al. 2000). Figure **Error! No text of specified style in document.**-33 shows the relative changes for watersheds within the basin and ERUs within the planning area.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-33. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 17. Wisdom et al. 2000 (Vol. 2, Figure 52: Group 17)**

Basin-wide analysis of riparian vegetation found significant changes, including widespread declines in riparian shrublands. Because of the scale of the coarse-filter ICBEMP analysis and the fine-scale nature of riparian shrubland habitats, likely the results of the ICBEMP analysis do not reveal the true loss in this important habitat component for mountain quail. Remaining habitat in the basin is fragmented, and populations exist often in islands of habitat connected by narrow corridors of vegetation (Vogel and Reese 1995a and 1995b).

Some mountain quail populations migrate to lower elevations to winter (Vogel and Reese 1995a and 1995b). Winter habitat availability may be more limited than summer habitat because of severe winter weather in some mountainous areas. Low-elevation riparian shrub habitat is especially important during severe winters (Vogel and Reese 1995a and 1995b, Vogel and Reese 2002).

Mountain quail most often are found in areas with a high abundance of shrubs. Management activities such as salvage logging and planting in postfire habitats also may shorten the duration of these early-seral, shrub- dominated sites (Wisdom et al. 2000).

On the Forest, the watersheds that contain the species preferred habitat conditions may vary due to the establishment and spread of invasive plants, higher stand densities in the dry mixed-conifer forest mosaic and wildfire activity in the watersheds of the Lower Salmon River drainage. However, off-Forest lower-elevation habitat conditions or human influences could also be limiting factor for this species or its habitat. It is possible the synergistic interaction of these factors on remnant quail populations make species persistence difficult despite the amount of source habitat on the Forest (USDA Forest Service 2010, Vogel and Reese 1995a and 1995b).

Management Issues (Wisdom et al. 2000)

- Decline in late- and early-seral source habitats, particularly in the northeastern part of the basin.
- Changes in vegetation composition and structure of understory shrub habitat.
- Loss of riparian shrubs.
- Increased interaction with humans.
- Isolated and disjunct populations of mountain quail vulnerable to extinction by stochastic events (that is, demographic, environmental, or genetic stochasticity).

Potential Conservation Strategies—The following potential strategies could be used to maintain habitat (Wisdom et al. 2000):

- Maintain and restore late-seral montane and lower montane forests.
- Increase the representation of shrub-dominated early seral forests.
- Restore fire as an ecological process in the montane and lower montane community groups.

- Maintain and restore riparian shrubland habitats, including protecting existing areas from the encroachment of exotics.
- Reduce habitat degrada- tion by livestock grazing in areas currently occu- pied by mountain quail.
- Restrict human access in areas of known nesting use by blue grouse and mountain quail.
- Expand the current range of mountain quail within their historical range.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Wisdom et al. 2000):

- Maintain existing old forests until mid-seral forests have developed into old forests at a level that is within the range of historical variability.
- Leave some postfire areas unaltered to regenerate naturally.
- Use prescribed fire to enhance growth and regeneration of understory or mountain shrub development. Avoid burning dur- ing the nesting season, as fires can cause direct mortality to mountain quail.
- Reduce exotic weed invasions by plantings of native shrub and herba- ceous vegetation in riparian shrubland habitats.
- Remove or explicitly control the timing and intensity of grazing to discourage weed invasions and to minimize losses and allow for restoration of native riparian and mountain shrubs.
- Reduce road densities and timing of management activities to reduce human interactions with these species, especially during the nesting and brooding season. In addition or as an alternative to reductions in road density, implement seasonal road closures during nesting and brooding periods.
- Reintroduce and augment populations of mountain quail after habi- tat enhancement.

The amount and distribution of predicted habitat has been modeled using the SIMPPLLE process. This will be discussed aat the mid-level Forest scale in this assessment.

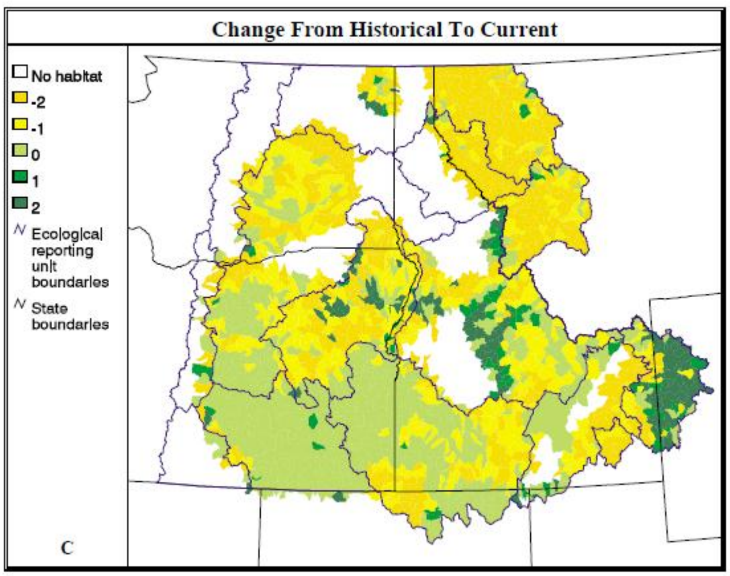
Species Group 22

The bighorn sheep is the only SCC in Group 22. Rocky Mountain bighorns historically occurred in northeastern Oregon, central Idaho, Montana and Wyoming, and northeastern Nevada. After a severe population decline in the early 1900s, bighorns remained in only a few isolated areas of their former habitat (Wisdom et al. 2000). The current range represents an increase in occupied habitat since that time, because of a combination of reintroductions and protection of remnant populations. Much of the historical range, however, is still unoccupied both in the basin and Idaho (IDFG 2005, Wisdom et al. 2000).

Source habitats for both subspecies are primarily in the alpine, subalpine, upland shrubland, and upland herbland community groups. Old-forest and stand- initiation stages of whitebark pine are source habitat, but only the stand-initiation stage of other forest cover types is used (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000). Bighorn sheep prefer open habitats with short vegetation, both for high-quality forage (Wisdom et al. 2000) and to maintain high visibility for predator avoidance

Special habitat features identified for these two sub- species include cliffs, talus, and seasonal wetlands (Volume 3, Appendix 1, Table 2 in Wisdom et al. 2000). The location of cliff s and talus ultimately defines the distribution of bighorn sheep because such features are essential for escape cover and the secure rearing of young (Wisdom et al. 2000). Cover types listed as source habitats (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000) generally are not available to bighorns unless they are near cliffs.

Habitats declined in 57 % of the watersheds throughout the basin and between 0 and >60% in most watersheds in the two ERUs where bighorn sheep occur: the Blue Mountains and Central Idaho Mountains (Figure 68 in Wisdom et al. 2000). Figure **Error! No text of specified style in document.**-34 shows the relative changes for watersheds within the basin and ERUs within the planning area.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-34. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 22. Wisdom et al. 2000 (Vol. 2, Figure 4: Group 22)**

The primary reason the bighorn sheep is an SCC is the species are highly susceptible to pneumonia after exposure to bacteria (Pasteurella spp.), viruses (Parainfluenza type-3), lungworm, and stress agents. Major reductions or total extirpation of bighorn herds because of pneumonia outbreaks are well documented (Wisdom et al. 2000, USDA 2010).

The amount and distribution of predicted habitat has been not modeled using the SIMPPLLE process. The bighorn sheep will be further discussed as a big game species in this assessment regarding the development of plan components.

Management Issues - (Wisdom et al. 2000)

- Incompatibility with domestic sheep and possibly domestic goats because of the potential for disease transmission and competition for forage.

Potential Conservation Strategies - The following potential strategies could be used to maintain habitat (Wisdom et al. 2000).

- Actively control the potential for disease transmission and forage competiion between bighorns and domestic livestock.

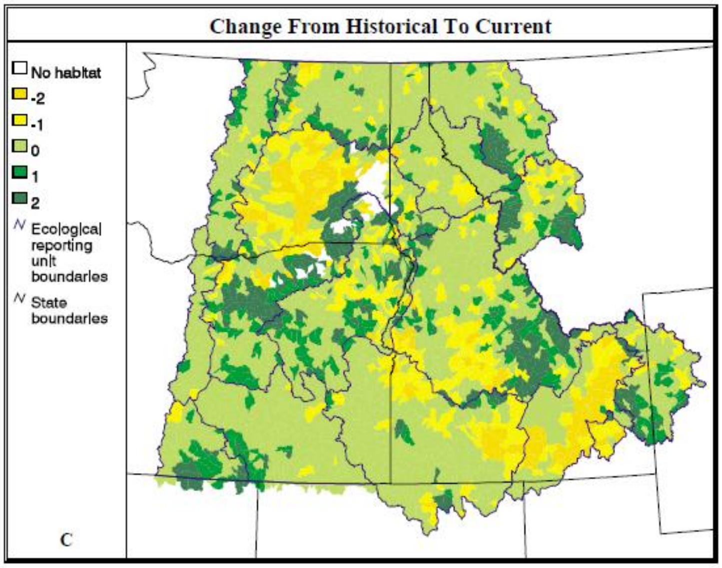
Practices that support potential strategies - The following practices would be effective in implementing the potential strategies (Wisdom et al. 2000).

- Avoid direct contact between bighorn sheep and domestic sheep and goats.
- Reduce forage competition with livestock by factoring bighorn sheep consumption into total forage utilization.

Species Group 26

The California myotis and fringed myotis are year-round residents and generally use a wide-variety of forested conditions albeit on the drier emd of the forest spectrum. While Wisdom et al. (2000) did not identify the California myotis as part of Group 26 the two species are similar in their use of a broad range of forest and woodland habitats for foraging. Therefore information for fringed myotis will be considered applicable to California myotis.

Source habitats shared by these species are all cover types in the montane, lower montane, riparian woodland, and upland woodland community groups, and the mountain hemlock cover type in the subalpine community group (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000). The need for suitable roost sites is the primary factor for all bat species. When the need for suitable roost sites is ignored, few changes have occurred in the extent of source habitats between historical and current periods (Figures. 79A and 79B in Wisdom et al. 2000). Neutral trends predominated in all 13 ERUs (Figure 80 in Wisdom et al. 2000) and increasing trends in a few watersheds of the Central Idaho Mountains ERUs. Figure **Error! No text of specified style in document.**-35 shows the relative changes for watersheds within the basin and ERUs within the planning area.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-35. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 26. Wisdom et al. 2000 (Vol. 2, Figure 79c: Group 26)**

The California myotis and fringed myotis forage primarily by hover-gleaning insects off of foliage. The prey species are insects with the fringed myotis consuming mostly beetles (Millar et al. 2005.

Several special habitat features were identified for Group 26 (Volume 3, Appendix 1, Table 2 in Wisdom et al. 2000). Large-diameter (>53 cm [21 in]) snags with exfoliating bark provide maternity roosts for the California myotis and the fringed myotis (Miller et al. 2005). Caves, mines, and buildings provide maternity roosts and hibernacula for the fringed myotis and California myotis. Various structures are used for day and night roosts, including exfoliating bark, rock crevices, mines, caves, and buildings (Miller et al. 2005, Wisdom et al. 2000). Snag-roosting bats may require higher densities of snags than cavity- nesting birds, because the stage at which snags are suitable for bat roosts (exfoliating bark) is extremely short lived, requiring the use of several snags over the course of a lifetime of a bat. Bats frequently shift maternity roosts, possibly to find snags with better thermal conditions when the bark on the previous roost is no longer suitable (Miller et al. 2005). Both species have a strong association with water and riparian vegetation for foarging (Miller et al. 2005).

Aside from the clear need to provide for and protect roost sites the threat of White-Noded Syndrome (WNS) to spread to and become established in the western United States emphasizes the need to protect hibernacula from human disturbance. Alos, the need to maintain and restore overall forested habitat conditions for bats is needed in the event WNS does spread to the west. Providing quality foraging and roosting habitat may be key to maintaining bat populations.

Management Issues (Miller et al. 2005, Wisdom et al. 2000)

- Loss of large-diameter snags (>53 cm [21 inches]) for maternity roosts and day roosts.
- Potential introduction of White-Nosed Syndrome disease to hibernacula.
- Destruction of roosts, disturbance of roosting bats, or both.
- Degradation and loss of native riparian vegetation.
- Impacts of pesticides on bats and their prey.
- Lack of information on hibernacula, including locations, special features, and numbers of bats associated with them.
- Lack of population trend data

Potential Conservation Strategies—The following potential strategies could be used to maintain habitat (Wisdom et al. 2000):

- Actively manage for the retention and recruitment of large-diameter snags in all forest cover types and structural stages.
- Protect all roosts and reduce human disturbances near roosts.
- Maintain and improve the condition of riparian and wetland vegetation for bat foraging areas.
- Alleviate impacts of pesticides on bat populations.
- In cooperation with other state, Federal, and tribal agencies, establish a coordinated approach to search for hibernacula, and to protect these sites.

Practices that support potential strategies—The following practices would be effective in implementing the potential strategies (Miller et al. 2005, Wisdom et al. 2000):

- Retain existing snags, particularly if >53 cm (21 in) and provide meas ures for snag replacement. Review existing snag guidelines or develop guidelines that reflect local ecological conditions and address snag numbers, diameter, height, decay class, species, and distribution. Retain snags in clusters to provide adjacent roosts for maternity colonies. Maintain snags at higher than historical levels to restore loss in previously harvested area.
- Emphasize retention of snags that provide best solar exposure to bark or cavity roost sites.
- Reduce road densities in managed forests where snags are currently in low abundance. Close roads after timber harvests and other management activities, and minimize the period when such roads are open to minimize removal of snags along roads. In addition or as an alternative to road management, actively enforce fuel wood regulations to minimize removal of snags.

- Restrict fuel wood permits to disallow snag cutting where snags are in low abundance, and particularly where existing roads cannot be closed. Recommend that public fuel wood harvest should be limited to trees <38 cm (15 in) d.b.h.
- Monitor known roosts for potential human disturbances, and initi- ate closures of recreational or construction activity near roost sites.
- If possible, stabilize old structures that are important for maternity roosts and hibernacula.
- Survey caves, mines, and abandoned buildings before removal or closure, and protect roosting bats from human presence and disturbance. During closures, use specialized gates designed to allow continued use of mines and caves by bats.
- Assure that construction of roads and rights-of-way are not going to cause siltation, slumping, or water run-off to enter cave habitats or alter other roosting structure.
- Identify areas of existing riparian and wetland habitats that are important bat foraging areas, and design conser- vation measures to protect and enhance foraging opportunities for bats.
- Modify grazing practices to improve condition of degraded riparian areas for bat foraging and roosting.
- Restore degraded areas by appropriate mechanical treatments and with seedings of appropriate native species.
- Avoid pesticide use in areas of high bat foraging activity or near nursery colonies.
- Use existing intera- gency cooperative agreements, or develop agree- ments where needed to conduct surveys for hibernacula.
- Use individual project planning (such as timber sales, road construction, mineral extraction, or recreational devel- opment) as opportunities for conducting surveys for new roost sites and to assess population status of known roosts.

The primary reason that these two species are SCC is the clear risk posed by disturbances to key roost sites, and that these species are typically habitat generalists. In addition, there is no agreement on the proper habitat parameters that could be used to develop a model. Therefore the amount and distribution of predicted habitat has been not modeled using the SIMPPLLE process. However, best-available science has documemted habitat components that can be retained and managed for these species.

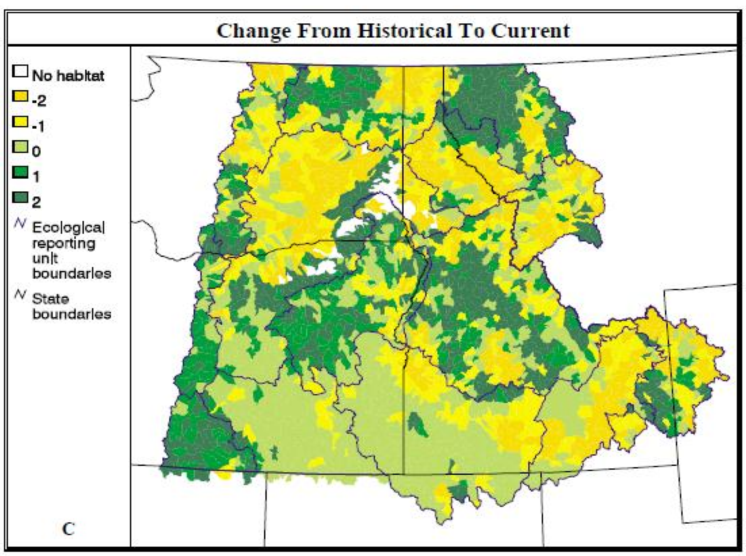
Species Group 27

The Townsend's big-eared bat is the only SCC in this group. The species is a forest generalists within the subalpine, montane, upland woodland, and riparian wood-land community groups. It generally uses a wide-variety of forested cover types, albeit on the moister emd of the forest spectrum, in all structural stages except the stem-exclusion and stand-initiation stage. Source habitats for the Townsend's big-eared bat also include several cover types within the upland shrubland, upland herbland, and riparian shrubland community groups (Volume 3, Appendix 1, Table 1 in Wisdom et al. 2000).

The current extent of habitat is similar to the historical distribution (Volume 2, Figure 82b in Wisdom et al. 2000), although the abundance of habitat has changed in some areas. Overall, basin-wide, there is a neutral trend in watershed change. In the planning area watersheds with increasing trends were in the Blue Mountains and Central Idaho Mountains, however there are mixed trends in the northern portion of the Central Idaho Moutains ERU, and declining trends in the Lower Clark Fork and Columbia Plateau ERUs in the northern part of the planning area (Volume 2, Figures 82C and 83 in Wisdom et al. 2000).

Mixed trends in habitat extent reflect the association of the species in Group 27 with several cover types and nearly all structural stages of forests as source habitats. The basin has experienced dramatic declines in old-forest structural stages of all forest cover types (Volume 3, Appendix 1, Table 4 in Wisdom et al. 2000), but these losses have been offset by increases in mid-seral stages that also serve as source habitats. In the Blue Mountains, Northern Glaciated and Central Idaho Mountains, increasing trends were largely due to increases in the areal extent of grand fir-white fir. The Engelmann spruce-subalpine fir cover type has also increased in the Central Idaho Mountains (Wisdom et al. 2000, Volume 3, Appendix 1, Table 4 in Wisdom et al. 2000).

Figure **Error! No text of specified style in document.**-36 shows the relative changes for watersheds within the basin and ERUs within the planning area.



Relative change for each watershed is shown as one of five trend categories, where -2 = a decrease of >60 percent, -1 = a decrease of >20 percent but <60 percent, 0 = an increase or decrease of <20 percent, 1 = an increase of >20 percent but <60 percent, and 2 = an increase of >60 percent.

Figure Error! No text of specified style in document.**-36. Percentage of area identified as source habitats and the relative change, in percentage of area, of source habitats from historical to current periods for Group 27. Wisdom et al. 2000 (Vol. 2, Figure 82c: Group 27)**

The Townsend's big-eared bat is colonial in its use of caves and cavelike structures for nursery colonies, day roosts, and hibernacula (Miller et al. 2005). Big-eared bats do not roost in crevices like many other bat species but rather restrict their roosting sites to the ceilings of cavelike structures (caves, mines, and buildings), where they aggre- gate in large colonies. A stable, cold temperature and moderate airflow may be important criteria for hiber- nation (Miller et al. 2005). The distribution of big-eared bats is patchy across the basin because of their restrictive roosting requirements (Wisdom et al. 2000). The big-eared bat is a moth specialist (Miller et al. 2005).

Mines and caves are special habitat features for this species (Wisdom et al. 2000). The number of caves likely has stayed the same from historical to present periods, but human disturbance from recre- ation has increased, thereby causing some caves to be abandoned by big-eared bats (Miller et al. 1995). Because the distribution of Townsend's big-eared bats is dependent on specialized roosting requirements, alterations and disturbances of any structures used for day roosts, nursery colonies, or hibernacula (caves, mines, old buildings) could affect the persistence of individual colonies (Wisdom et al. 2000).

The big-eared bat is negatively affected by the presence of roads. Increased road networks have made caves more accessible and have increased the amount of human visitation and potential harassment. Because the big-eared bat is insectivorous, use of insecticides in foraging areas has the potential to impact bat species, primarily by reducing the prey base (Wisdom et al. 2000).

<u>Management Issues (Miller et al. 2005, Wisdom et al. 2000)</u>

- Direct loss of big-eared bat roosts because of cave and mine closures and destruction of abandoned buildings
- Excessive disturbance of roosting bats because of human activities
- High mortality of roosting bats or total loss of colonies because of vandalism and shooting
- Reduction in bat prey base (moths) through exces- sive use of insecticides

<u>Potential Conservation Strategies</u>—The following potential strategies could be used to maintain habitat (Wisdom et al. 2000):

- Protect all known roost sites (nursery, day roosts, and hibernacula) of big-eared bats and restore historical roosts where feasible.
- Reduce levels of human activities around known bat roosts.
- Reduce vandal-related mortalities of roosting bats
- Reduce impacts of insecti- cide use on principal prey of big-eared bats.

<u>Practices that support potential strategies</u>—The following practices would be effective in implementing the potential strategies (Miller et al. 2005, Wisdom et al. 2000):

- Survey all mines and caves scheduled for public closure for big-eared bats before closure. If roosting colonies are found, or if the structure has potential as a roosting colony, carry out the closure with gates that allow bats to enter and exit the structure. Unless superseded by other designs, use approved bat gate designs. If possible, stabilize old structures that are important for maternity and hibernacula sites.

- Initiate seasonal public closures of caves used as big-eared bat roosts during critical time periods, by using signs, road closures, and bat gates.
- Reduce surveys to the minimum needed for assessing colony health and population status. Coordinate research efforts to minimize entry of roosts for data collection.
- Increase public education and awareness of bat ecology and the current conservation status of big-eared bats.
- Reduce human access to bat roosting structures by closing roads that facilitate access to such habitat.
- Avoid or minimize application of pesticides near bat roosts. Utilize "no-spray" buffer zones around roost sites . Reduce the amount of area sprayed around known roosts

The primary reason that these two species are SCC is the clear risk posed by disturbances to key roost sites, and that these species are typically habitat generalists. In addition, there is no agreement on the proper habitat parameters that could be used to develop a model. Therefore the amount and distribution of predicted habitat has been not modeled using the SIMPPLLE process. However, best-available science has documemted habitat components that can be retained and managed for these species.

5.5 Interior Columbia Basin Ecosystem Management Project Key Findings and Implications

A) Habitat Families: Wisdom et al. (2000) described the following major findings and Implicatiuons for the Families relevant to the Forests.

1. Source habitats for most species declined strongly from historical to current periods across large areas of the basin. Strongest declines were for species dependent on low-elevation, old-forest habitats (Family 1). Widespread but less severe declines also occurred for most species dependent on old-forest habitats present in several elevation zones (family 2). Source habitats for the above-named families have become increasingly fragmented, simplified in structure, and infringed on or dominated by exotic plants.

2. Primary causes for decline in old-forest habitats (Families 1 and 2) are intensive timber harvest and large-scale fire exclusion. Note: Wisdom et al. (2000) also stated that low-elevation,old-forest habitats have also declined on lands adjacent to NFS lands due to the conversion of land to agriculture and to residential or urban development.

3. Wisdom et al. (2000) also noted thataltered fire regimes also are responsible for decline in native grassland and shrubland habitats.

Wisdom et al. (2000) noted that implications of the broad-scale analysis include,

1. Managing old-forest structural stages include the potential to conserve old-forest habitats in subbasins and watersheds where decline has been strongest,

2. Manipulate mid-seral forests to accelerate development of late seral stages where such manipulations can be done without further reduction in early- or late-seral forests, and

3. Restore fire and other disturbance regimes in all forested structural stages to hasten development and improvement in the amount, quality, and distribution of old-forest stages.

Wisdom et al. (2000) noted that many of the practices designed to restore old-forest habitats also can be designed to restore early-seral habitats. For example, long-term restoration of more natural fire regimes will hasten development of both early- and late-seral structural conditions, and minimize area of mid-seral habitats, which few if any species depend on as source habitat.

Wisdom et al. (2000) concluded that a major opportunity for resources managers in the basin. These opportunities existed for conservation and restoration of source habitats across various land ownerships and jurisdictions at multiple spatial scales. Related to the planning area these opportunities ranging down from the 3 key ERUs to the watershed levels as indicated by the mapping of the trends of these watersheds. These opportunities exist to be designed into long-term efforts to…" restore source habitats that have undergone strong, widespread decline, with simultaneous design of efforts to conserve and restore terrestrial species and their habitats.

B) Species Groups: Wisdom et al. (2000) described the following major findings and implicatiuons for the Species Groups relevant to the identified SCC for the Forests. Additional implications not in Wisdom et al. (2000) are noted.

1. For Species Group 1
   a. Basin-wide decline in late-seral interior and ponderosa pine.
   b. Basin-wide loss of large-diameter snags (>53 cm [21 in]).
   c. High risk of additional loss of ponderosa pine habitat through stand-replacing fires.
   d. Decline in old forests of aspen and cottonwood- willow.
2. For Species Group 2
   a. Declines in shrub understories of montane and lower montane forests.
   b. Basin-wide decline in old forests of interior and ponderosa pine and interior western larch.
   c. Basin-wide decline in old forests of cottonwood woodlands.
   d. Decline in availability of large snags and trees for foraging and nesting.
   e. Potential for negative impacts from agricultural pesticides.
3. For Species Group 5
   a. Reduction in the amount of old-forests and associated structures (snags, logs, and cavities), particularly within the montane and lower montane community groups.
   b. Fragmentation of habitat.
   c. Low population numbers of fisher.
   d. Negative effects resulting from higher road densities in source habitats. The loss of snags and logs associated with firewood collection may be higher along open roads.
   e. Declines in overall extent of aspen and cottonwood-willow, and shifts from early- and late-seral to mid-seral stages of these cover types.
   f. Possible unsustainable conditions of old forests where large transitions from shade-intolerant to shade-tolerant tree species have occurred. This issue is the result of the

exclusion of fire from many forested communities, which has resulted in increased susceptibility to stand-replacing fires.

4. For Species Group 7
    a. Declines in late-seral subalpine and montane forests in the Lower Clark Fork ERU.
    b. Loss of large-diameter snags (>45 cm [18 in] d.b.h.
    c. Declines in large aspen trees and forests primarily because of fire suppression.
    d. Increasingly disjunct distribution of source habitats that may affect population structure and persistence of boreal owls.
    e. Loss of microenvironments for small-mammal prey. Changes in forest structure and composition (such as loss of snags and logs) that may alter habitat for primary prey species.
5. For Species Group 11
    a. Decline in late-seral subalpine and montane forests. Cover types with basin-wide decline are western larch and whitebark pine. Declines of Engelmann spruce-subalpine fir are most notable in northern portions of the basin.
    b. Potential decline in key components of the shifting food and nesting resource, which is characterized by large areas of conifer trees infected with bark beetles, disease, or heart rot, or in the early stages of decay.
6. For Species Group 17
    a. Decline in late- and early-seral source habitats.
    b. Changes in vegetation composition and structure of understory shrub habitat.
    c. Loss of riparian shrubs.
    d. Increased interaction with humans.
    e. Isolated and disjunct populations of mountain quail are vulnerable to stochastic events.
7. For Species Group 22
    a. Incompatibility with domestic sheep and possibly domestic goats because of the potential for disease transmission and competition for forage.
    b. Reduction in forage quantity and quality, and habitat fragmentation because of successional changes.
    c. Disturbance and habitat displacement because of human activities in lambing areas.
8. For Species Group 26
    a. Basin-wide loss of large-diameter snags (>53 cm [21 in]) maternity roosts and day roosts.
    b. Destruction of roosts, disturbance of roosting bats, or both.
    c. Degradation and loss of native riparian vegetation.
    d. Impacts of pesticides on bats and their prey.
    e. Lack of information on hibernacula.
    f. The potential impacts of WNS if spreads to the planning area (WBWG 2009, Perry 2013).

9. For Species Group 27

    a. Direct loss of bat roosts because of cave and mine closures and destruction of abandoned buildings.
    b. Excessive disturbance of roosting bats because of human activities.
    c. High mortality of roosting bats or total loss of colonies because of vandalism and shooting.
    d. Reduction in bat prey base (moths) through exces- sive use of insecticides.
    e. The potential impacts of WNS if spreads to the planning area (WBWG 2009, Perry 2013).

This summary of ICBEMP findings and implications can be useful in the development of plan components whether DFCs, objectives, standards and/or guidelines as per the 2003 MOU (USDA Forest Service 2003b).

5.6 IDAHO COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY

In 2001, the U. S. Congress provided funding through the State Wildlife Grants program (SWG) to each State and territory with developing a State Wildlife Action Plan (SWAP). These proactive plans, known technically as "Comprehensive Wildlife Conservation Strategies," help conserve wildlife and vital natural areas before they become rarer and more costly to restore. They also are intended to make the best use of the federal funds provided through annual Wildlife Conservation and Restoration Program (WCRP) and the State Wildlife Grants (SWG) program to help meet the need for conservation of all fish and wildlife. The U.S. Fish and Wildlife Service was tasked with reviewing and approving these Comprehensive Wildlife Conservation Strategies (USFWS 2014, http://www.teaming.com/swap-overview).

State fish and wildlife agencies developed these strategic action plans by working with a broad array of partners, including scientists, sportsmen, conservationists, and members of the community. Working together, with input from the public, these diverse coalitions reached agreement on what needs to be done for the full array of wildlife in every State (USFWS 2014). The state of Idaho completed its CWCS in 2005 (IDFG 2005)

5.6.1 *SPECIES OF CONSERVATION CONCERN RELATIONSHIPS WITH COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY*

Bitterroot Mountains Section—This area (Figure **Error! No text of specified style in document.**-37 and Figure **Error! No text of specified style in document.**-38) consists of steep, dissected mountains with sharp crests and narrow valleys. Elevation ranges from1,200–7,000 feet). Perennial streams are generally fairly steep and deeply incised. Major rivers include the Coeur d'Alene, St. Maries, St. Joe, and Clearwater (IDFG 2005).

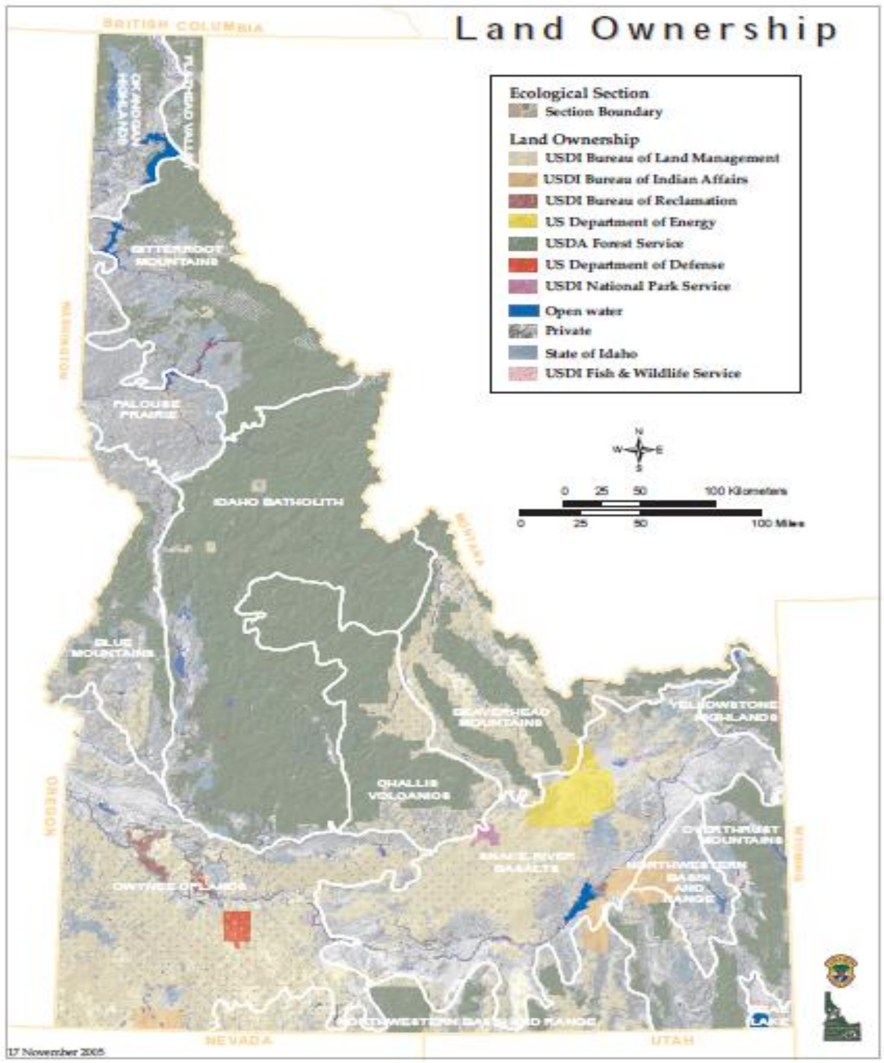


Figure Error! No text of specified style in document.**-37. Relationship of Comprehensive Wildlife Conservation Strategies Eecological Sections with U.S.Forest Service lands.**

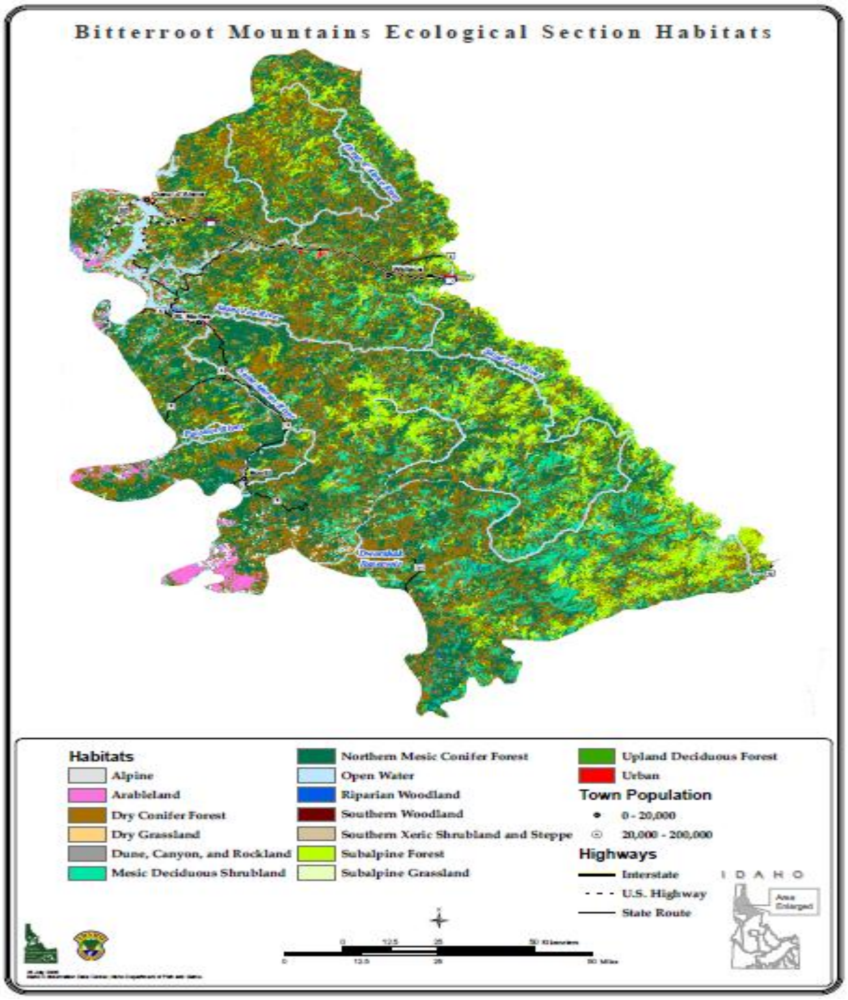


Figure Error! No text of specified style in document.**-38. Bitterroot Mountains Section**

The CWCS lists a total of 55 SGCN with a terrestrial relationship in this Ecological Section. Of these 55, the following 11 of 13 selected SCC species occur in this Ecological Section.

Amphibians

Coeur d'Alene Salamander—*Plethodon idahoensisa*[1]

Birds

Mountain Quail—*Oreortyx pictus*

Boreal Owl—*Aegolius funereus*[1]

Lewis's Woodpecker—*Melanerpes lewis*

White–headed Woodpecker—*Picoides albolarvatus*[1]

American Three–toed Woodpecker—*Picoides dorsalis*[1]

Pygmy Nuthatch—*Sitta pygmaea*

Mammals

California Myotis—*Myotis californicusa*[1]

Fringed Myotis—*Myotis thysanodes*[1]

Townsend's Big–eared Bat—*Corynorhinus townsendii*

Fisher—*Pekania* (*Martes*) *pennanti*[1]

[1] Species for which the Bitterrroot Mountains Ecological section represents a significant portion of their Idaho range (IDFG 2005)

Idaho Batholith Section—This area (Figure **Error! No text of specified style in document.-**37 and Figure **Error! No text of specified style in document.-**39) is characterized by extensive mountainous terrain, alpine ridges, cirques, and large U–shaped valleys with broad bottoms, and other features of glacial origins dominate many areas, such as the Sawtooth Mountains. Waterbodies are predominant, including major portions of the Salmon, Clearwater. Many perennial streams and lakes are present, as well as a number of reservoirs. Elevation ranges from 1,400 to 11,000 feet. (IDFG 2005).

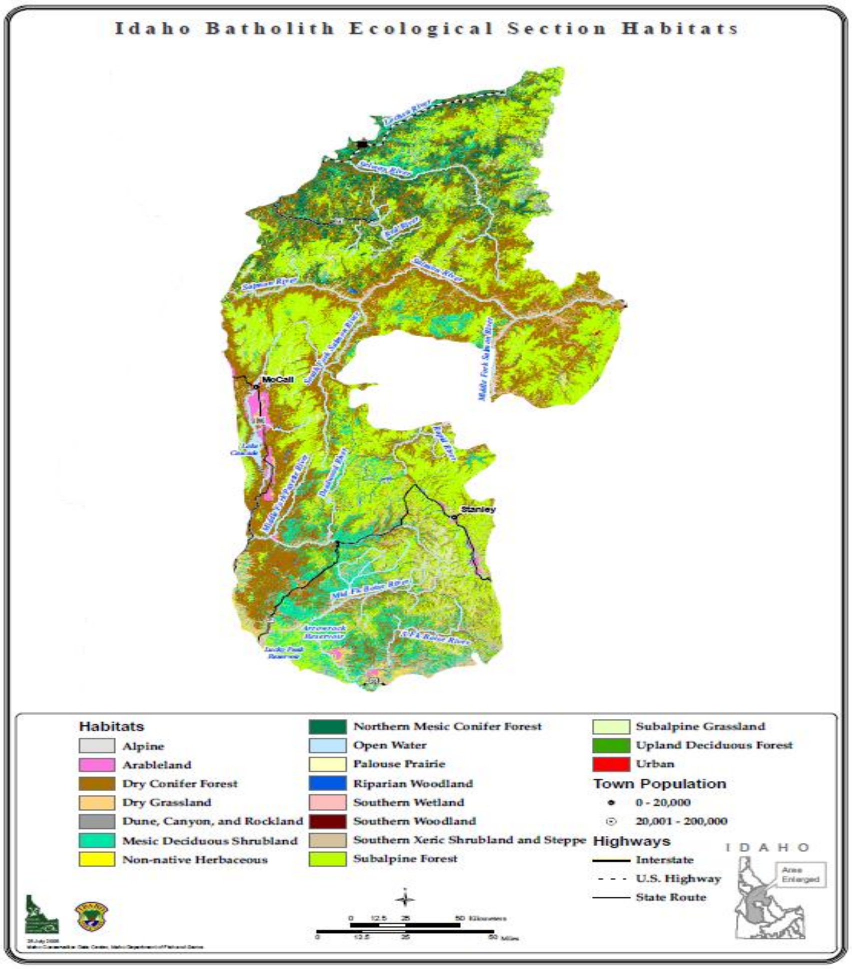


Figure Error! No text of specified style in document.**-39. IDAHO BATHOLITH SECTION**

The CWCS lists a total of 81 SGCN with a terrestrial relationship in this Ecological Section. Of these 81, 11 of the 13 selected SCC species occur in the Section.

Amphibians

Coeur d'Alene Salamander—*Plethodon idahoensisa*[2]

Birds

Mountain Quail—*Oreortyx pictus*[2]

Flammulated Owl—*Otus flammeolus*

Boreal Owl—*Aegolius funereus*[2]

Lewis's Woodpecker—*Melanerpes lewis*

White–headed Woodpecker—*Picoides albolarvatus*[2]

American Three–toed Woodpecker —*Picoides dorsalis*[2]

Pygmy Nuthatch—*Sitta pygmaea*[2]

Mammals

Fringed Myotis—*Myotis thysanodes*[2]

Townsend's Big–eared Bat—*Corynorhinus townsendii*

Fisher—*Pekania* (*Martes*) *pennanti*[2]

[2] Species for which the Idaho Batholith Ecological Section represents a significant portion of their Idaho range (IDFG 2005).

Blue Mountains Section—This area (Figure **Error! No text of specified style in document.-**37 and Figure **Error! No text of specified style in document.-**40) consists of steep, dissected mountains with sharp crests and narrow valleys. Elevation ranges from 1,200–7,000 feet). Perennial streams are generally fairly steep and deeply incised. Major rivers include the Coeur d'Alene, St. Maries, St. Joe, and Clearwater (IDFG 2005).

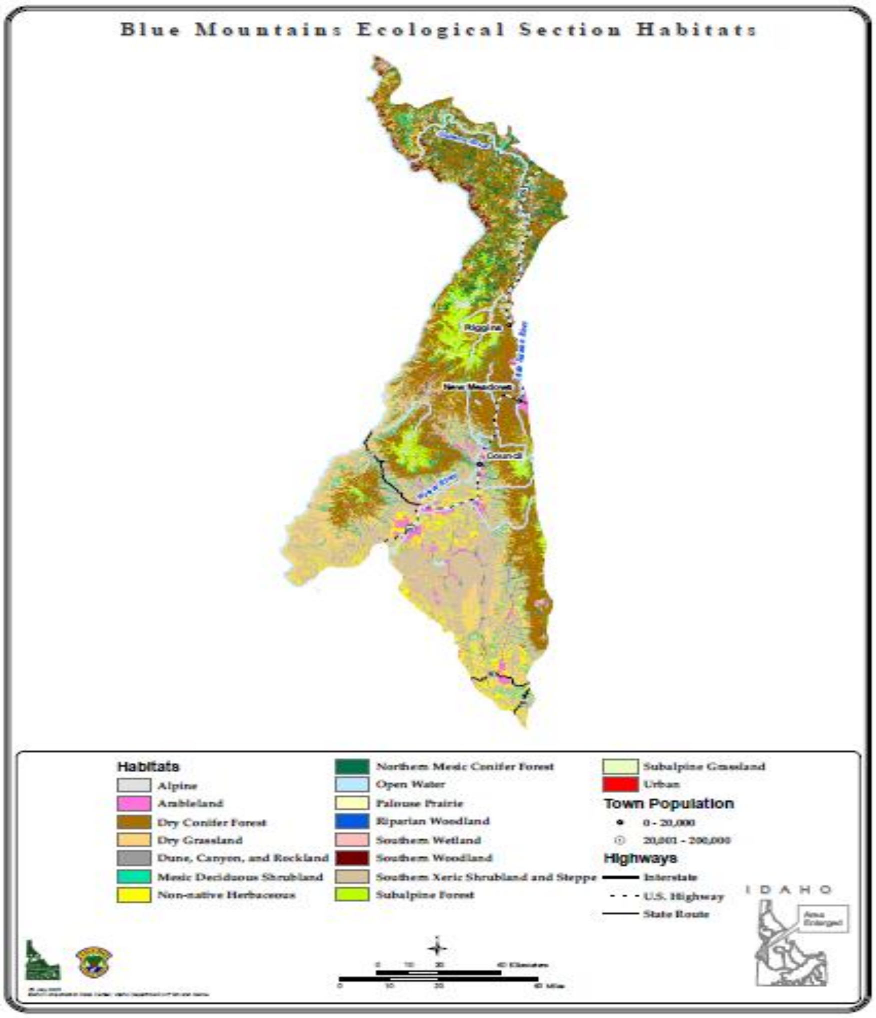


Figure Error! No text of specified style in document.**-40. Blue Mountains Section**

The CWCS lists a total of 88 SGCN with a terrestrial relationship in this Ecological Section. Of these 88, 11 of the 13 selected SCC species occur in the Section.

Birds

Mountain Quail—*Oreortyx pictus*

Flammulated Owl—*Otus flammeolus*

Boreal Owl—*Aegolius funereus*

Lewis's Woodpecker—*Melanerpes lewis*

White–headed Woodpecker—*Picoides albolarvatus*[3]

American Three–toed Woodpecker—*Picoides dorsalis*

Pygmy Nuthatch—*Sitta pygmaea*[3]

Mammals

California Myotis—*Myotis californicus*[3]

Fringed Myotis—*Myotis thysanodes*

Townsend's Big–eared Bat—*Corynorhinus townsendii*

Fisher—*Pekania (Martes) pennanti*

[3] Species for which the Blue Mountains Ecological section represents a significant portion of their Idaho range (IDFG 2005).

Palouse Prairie Section—This section (Figure **Error! No text of specified style in document.**-37 and Figure **Error! No text of specified style in document.**-41) is characterized by dissected loess–covered basalt plains, undulating plateaus, and river breaklands. Elevation ranges from 720–5,700 feet. The lower reaches and confluence of the Snake and Clearwater Rivers are major waterbodies (IDFG 2005).

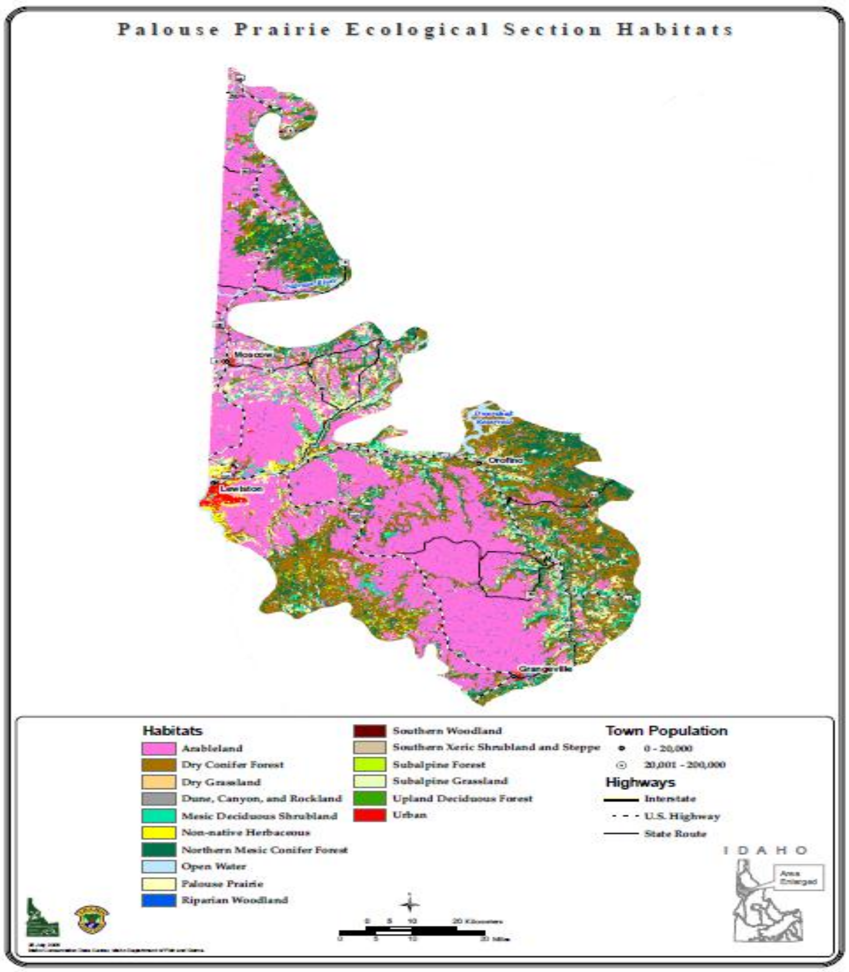


Figure Error! No text of specified style in document.**-41. Palouse Prairie Section**

The CWCS lists a total of 60 SGCN with a terrestrial relationship in this Ecological Section. Of these 60, 12 of the 13 selected SCC species occur in the Section.

Amphibians

Coeur d'Alene Salamander—Plethodon idahoensisa[4]

Birds

Mountain Quail—*Oreortyx pictus*

Flammulated Owl—*Otus flammeolus*

Boreal Owl—*Aegolius funereus*

Lewis's Woodpecker—*Melanerpes lewis*

White–headed Woodpecker—*Picoides albolarvatus*

American Three–toed Woodpecker—Picoides dorsalis

Pygmy Nuthatch—*Sitta pygmaea*

Mammals

California Myotis—*Myotis californicus*

Fringed Myotis—*Myotis thysanodes*

Townsend's Big–eared Bat—*Corynorhinus townsendii*

Fisher—*Pekania* (*Martes*) *pennanti*

5.6.1.1 CWCS Issues and Strategies for Conservation

1. The CWCS has made general recommended actions for conservation by priority habitats according to the ecological conditions represented within the Ecological Sections. These recommended actions are listed in the State Overview section (IDFG 2005).

2. The CWCS also provide additional recommended actions in the species-specific accounts located in Appendix F (IDFG 2005).

Further discussions for the identified SCC species and their associated habitats will be discussed at the Forest (Mid-scale) and Habitat-type group (fine-scale) levels.

5.7 Mid-scale (Forest Level): Nez Perce- Clearwater National Forests

The NPCNF (Figure **Error! No text of specified style in document.**-42) consists of approximately 4.0 million acres of beautiful and diverse land located in North Central Idaho. Wildlife habitat conditions vary widely from the dry, rugged canyons of the Salmon River to the moist cedar forests of the Selway drainage the rolling uplands of the Palouse, and the high-elevation mountains across the Forests.

[4] Species for which the Palouse Prairie Ecological section represents a significant portion of their Idaho range (IDFG 2005).

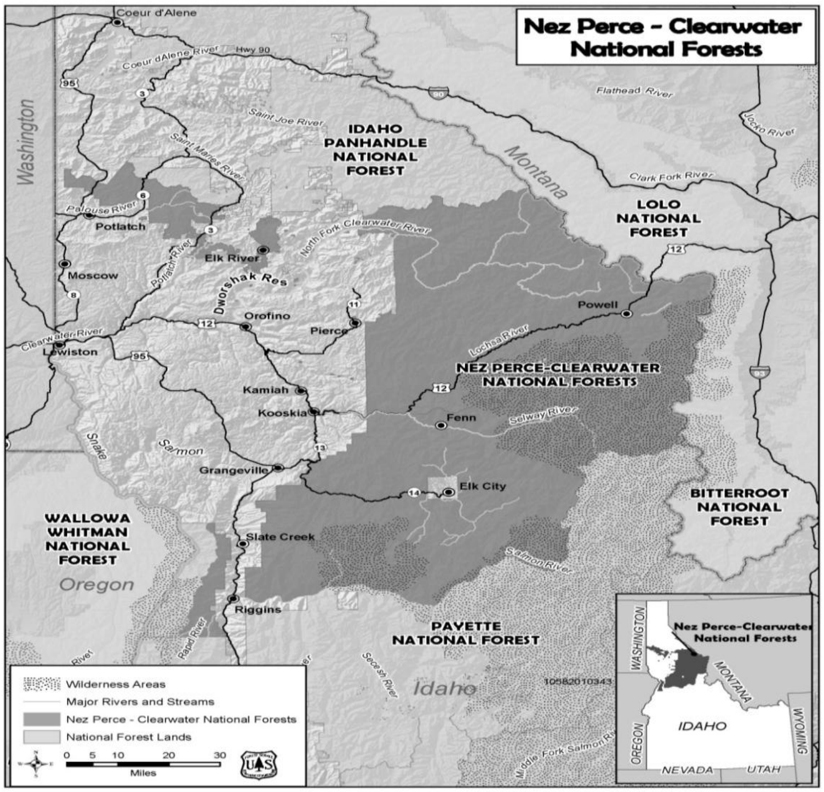


Figure Error! No text of specified style in document.**-42. Nez Perce-Clearwater National Forests**

5.7.1 *SCC Existing Habitat, Historical Range of Variation and 50-Year Projection Data*

The following data is based on applying the best available science to modeling species habitat at either, or both the to estimate existing habitat availability, Historical Range of Variation (HRV) without management influences, and the 50-Year projection of future habitat conditions based on the Proposed Action harvest schedule.

5.7.1.1 White-headed Woodpecker

Estimated existing habitat availability—Based on SIMPPLLE modeling of the best available science the amount of estimated suitable habitat is 33,777 acres and 70,333 acres of potentially suitable habitat in the planning area. Figure **Error! No text of specified style in document.**-43 depicts the estimated suitable habitat for the species as modeled. NOTE: Due to the low resolution of estimated suitable habitat Figure **Error! No text of specified style in document.**-44 depicts the points where estimated habitat exists. Also, there is no historical evidence that the species existsed in the interior of the Clearwater and Selway portions of the planning area.

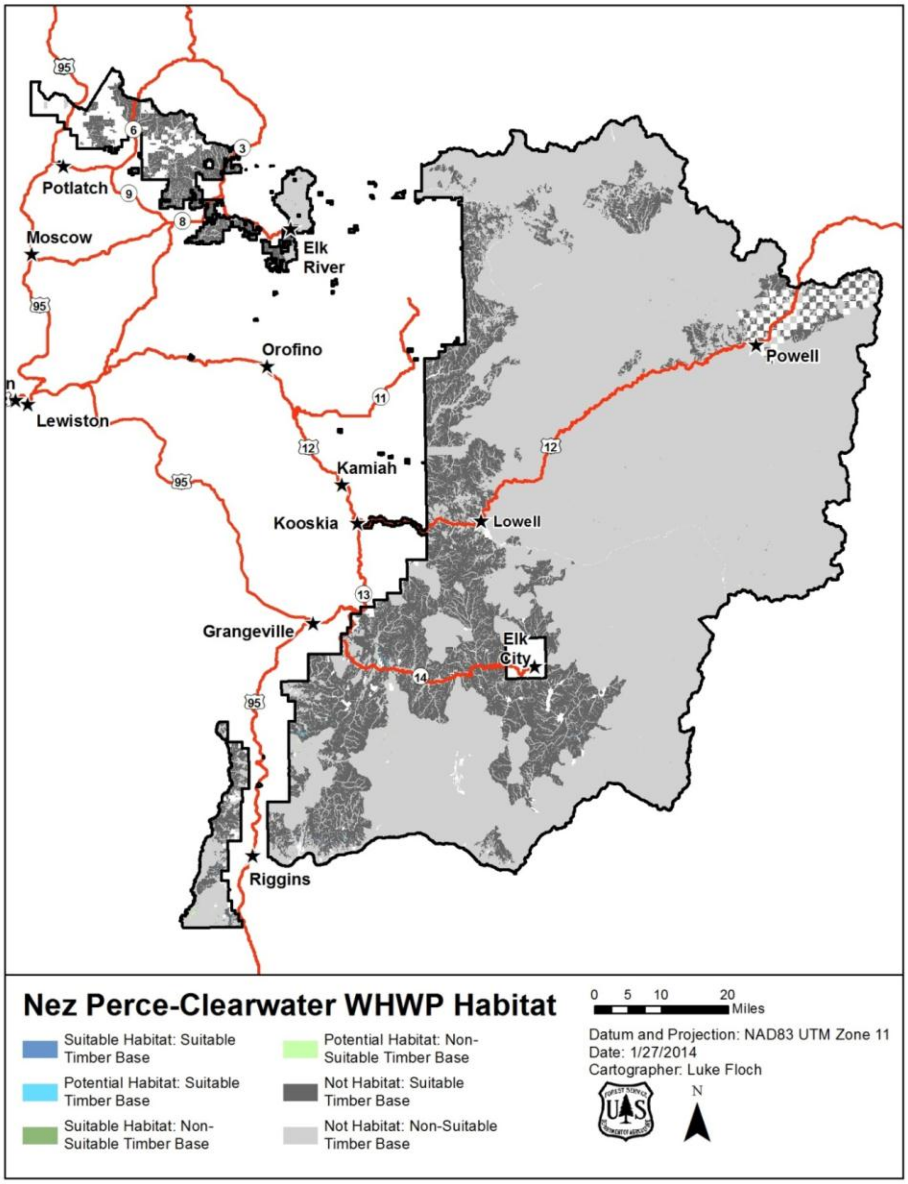


Figure Error! No text of specified style in document.**-43. Distribution of estimated suitable white-headed woodpecker habitat on the Nez Perce-Clearwater National Forests**

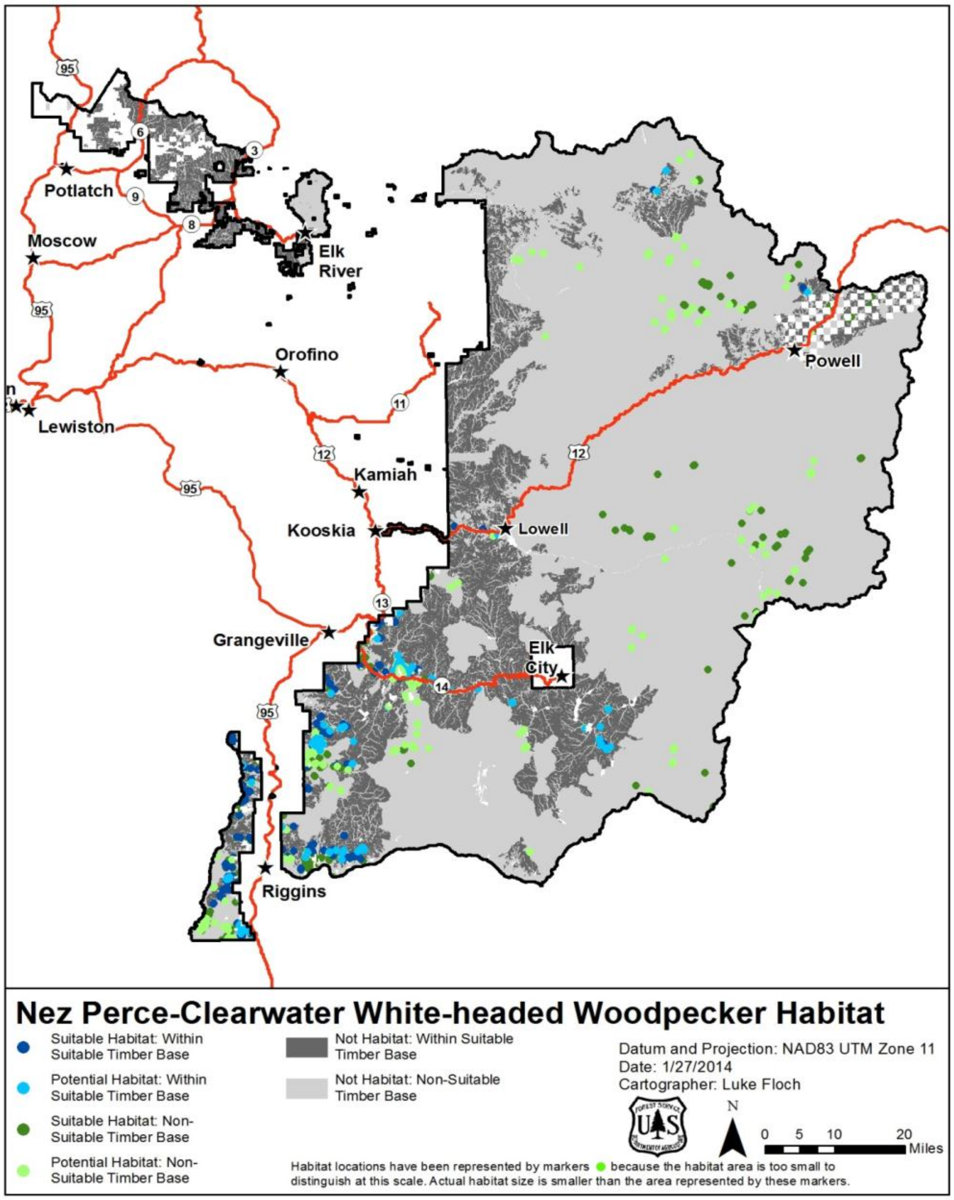


Figure Error! No text of specified style in document.**-44. Distribution of estimated suitable white-headed woodpecker habitat "points" on the Nez Perce-Clearwater National Forests**

Estimated Historical Range of Variation (HRV) Figure **Error! No text of specified style in document.**-45 and Figure **Error! No text of specified style in document.**-46 depicts the HRV (estimated suitable and potential habitat) for the species as modeled.

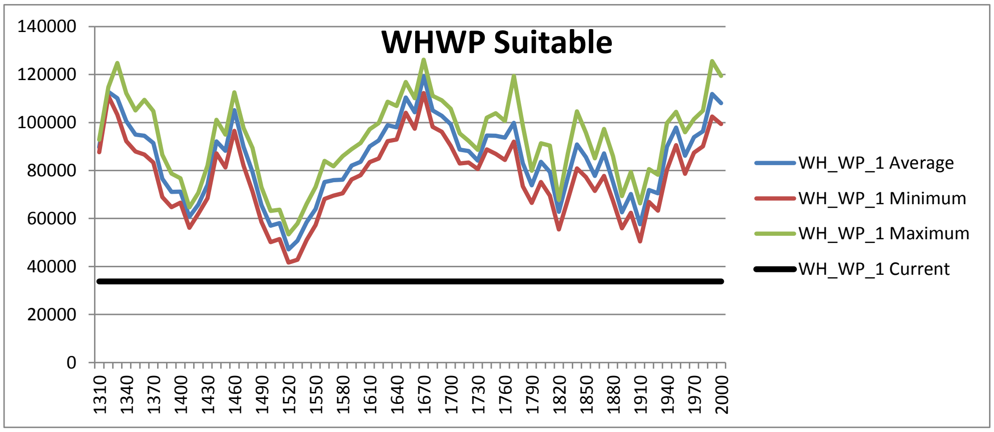


Figure Error! No text of specified style in document.**-45. Estimated Historical Range of Variation for white-headed woodpecker suitable habitat.**

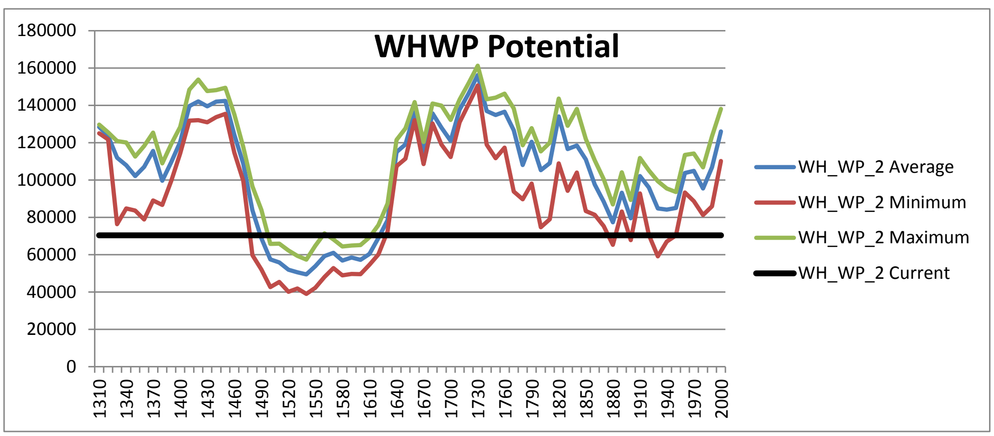


Figure Error! No text of specified style in document.**-46. Estimated Historical Range of Variation for white-headed woodpecker potential habitat.**

Estimated 50-Year Projection – **UNDER DEVELOPMENT**

(Figure is under development)

Figure Error! No text of specified style in document.**-47. Estimated 50-year projection for white-headed woodpecker habitat.**

Summary—Figure **Error! No text of specified style in document.**-45 and Figure **Error! No text of specified style in document.**-46 indicate that the current estimates of white-headed woodpecker habitat is currently departed from HRV (less than existing) for both suited and potential habitat. However, modeling just depicts the data based on the presence of key habitat attributes. Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Figure **Error! No text of specified style in document.**-47 may indicate the impactas of past fire suppression that has resulted in higher than normal stand conditions in potentially suitable habitat and/or the artifact of the documented significant decline of the ponderosa pine ecosystem in the planning area.

5.7.1.2 Pygmy Nuthatch

<u>Estimated existing habitat availability—</u>Based on SIMPPLLE modeling of the best available science the amount of estimated suitable habitat is 162,992 acres and 35,126 acres of potentially suitable habitat in the planning area. Figure **Error! No text of specified style in document.**-48 depicts the estimated suitable habitat for the species as modeled.

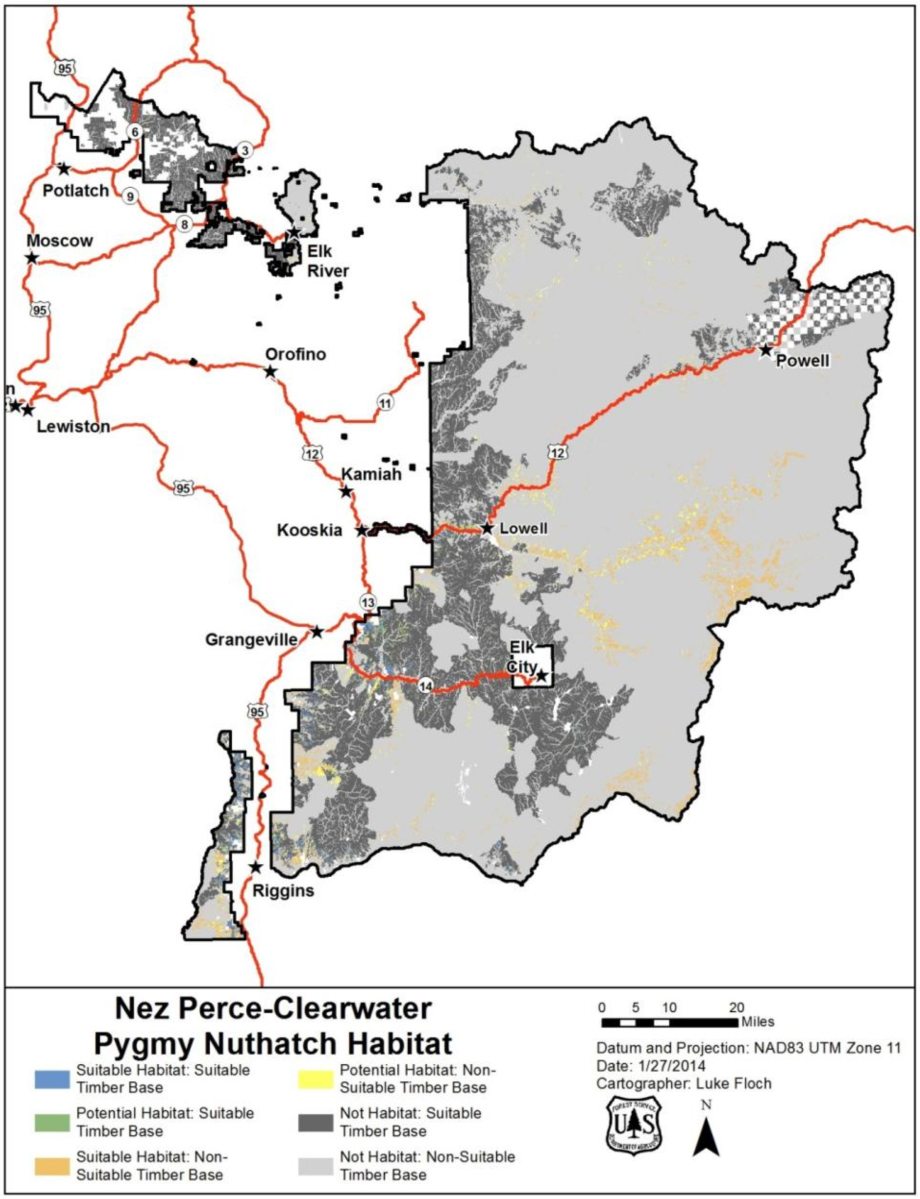


Figure Error! No text of specified style in document.**-48. Distribution of estimated suitable pygmy nuthatch habitat on the Nez Perce-Clearwater National Forests**

Estimated Historical Range of Variation (HRV)—Figure **Error! No text of specified style in document.**-49 and Figure **Error! No text of specified style in document.**-50 depicts the HRV (estimated suitable and potential habitat) for the species as modeled.

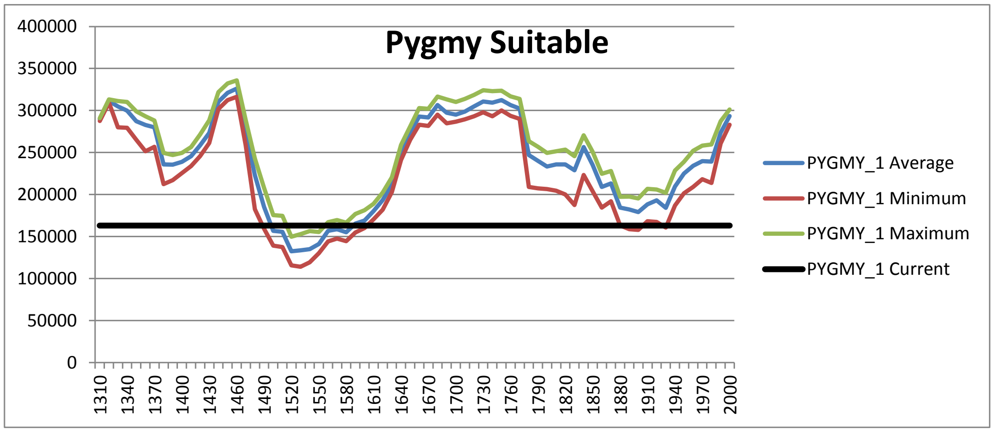


Figure Error! No text of specified style in document.**-49. Estimated Historical Range of Variation for estimated suitable pygmy nuthatch habitat**

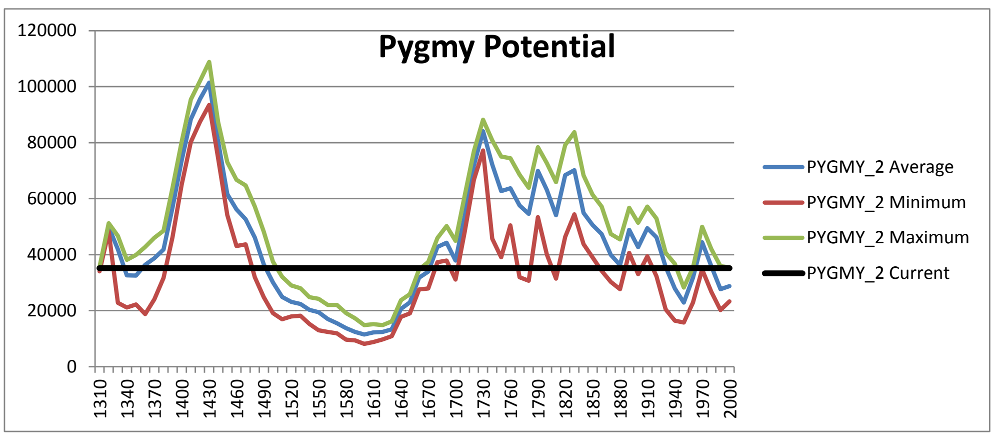


Figure Error! No text of specified style in document.**-50. Estimated Historical Range of Variation for potential pygmy nuthatch habitat**

Estimated 50-Year Projection—**UNDER DEVELOPMENT**

(Figure is under development)

Figure Error! No text of specified style in document.**-51. Estimated 50-year projection for pygmy nuthatch habitat**

Summary—Figure **Error! No text of specified style in document.**-49 and Figure **Error! No text of specified style in document.**-50 indicate that the current estimates of pygmy nuthatch habitat is currently departed from HRV for both suited (less than existing) and potential habitat (slightly more than existing). However, modeling just depicts the data based on the presence of key habitat attributes. Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Potential habitat estimates should be investigated to determine the variations depicted in Figure **Error! No text of specified style in document.**-50. Figure **Error! No text of specified style in document.**-51 may depict an artifact of fire suppression to habitat that may be selected for use if stand conditions would be more suitable for the species.

5.7.1.3 Lewis' Woodpecker

Estimated existing habitat availability—Based on SIMPPLLE modeling of the best available science the amount of estimated suitable habitat is 59,252 acres and 114,833 acres of potentially suitable habitat in the planning area for the Lewis' Woodpecker. Figure **Error! No text of specified style in document.**-52 depicts the distribution of estimated suitable habitat for the species as modeled.

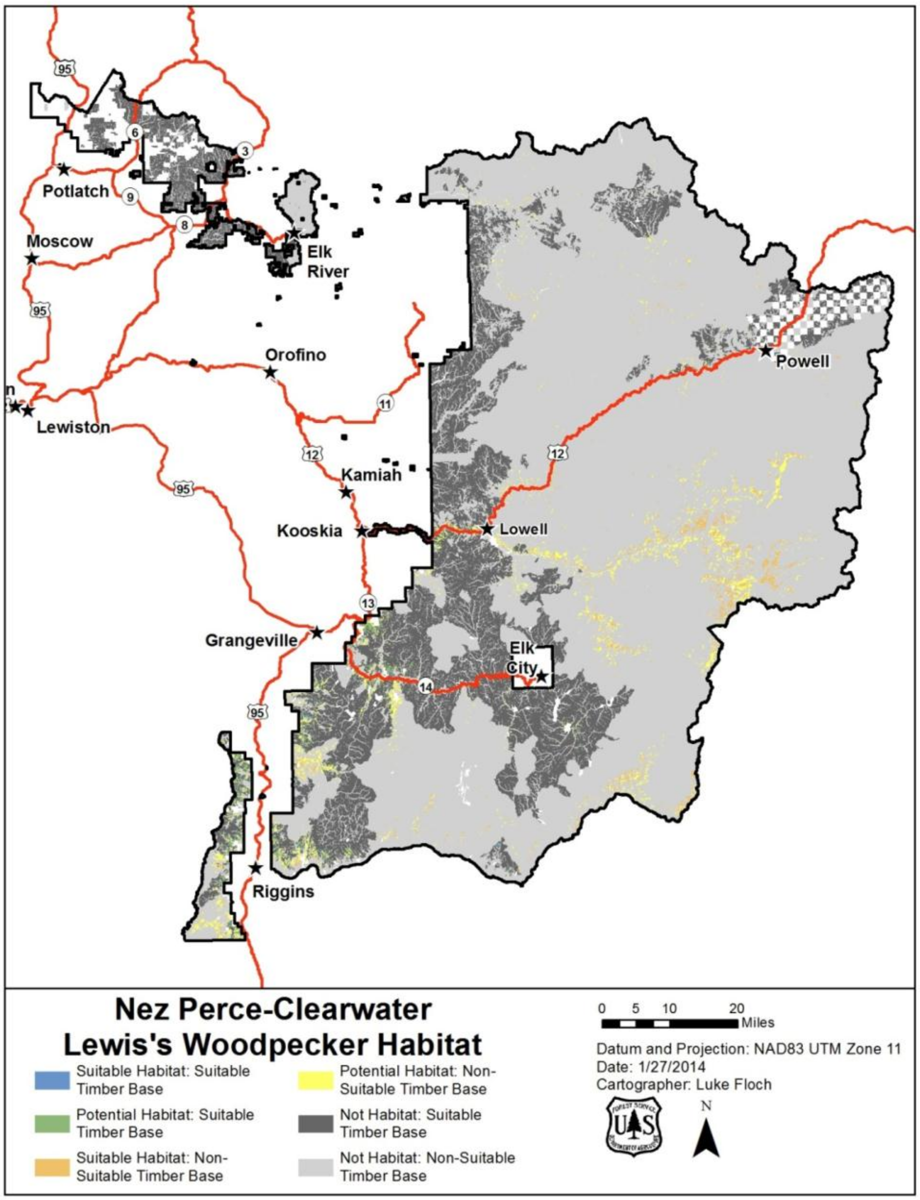


Figure Error! No text of specified style in document.**-52. Distribution of estimated suitable Lewis's woodpecker habitat on the Nez Perce-Clearwater National Forests**

Estimated Historical Range of Variation (HRV)—Figure **Error! No text of specified style in document.**-53 and Figure **Error! No text of specified style in document.**-54 depicts the HRV (estimated suitable and potential habitat) for the species as modeled.

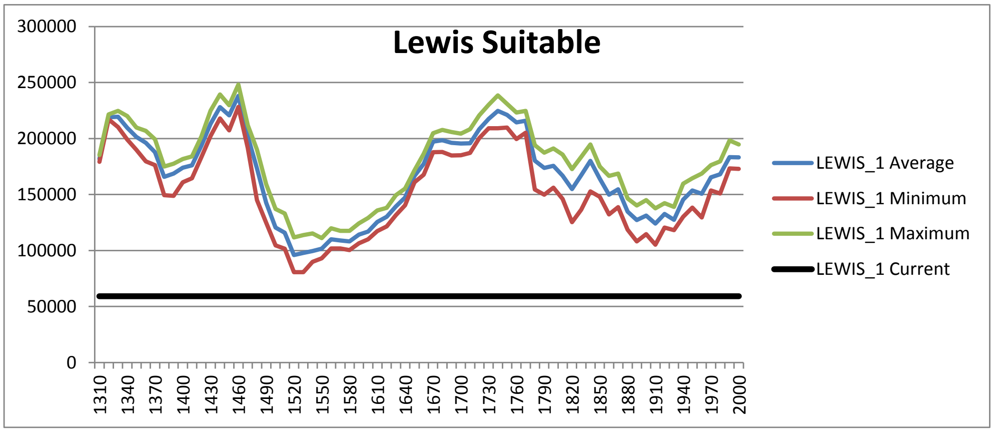


Figure Error! No text of specified style in document.**-53. Estimated Historical Range of Variation for estimated suitable Lewis's woodpecker habitat.**

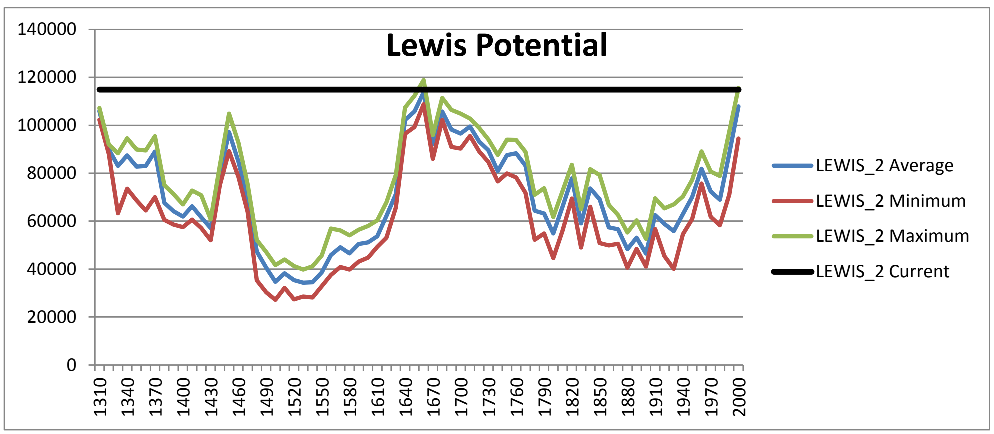


Figure Error! No text of specified style in document.**-54. Estimated Historical Range of Variation for estimated potential Lewis's woodpecker habitat.**

Estimated 50-Year Projection—UNDER DEVELOPMENT

(Figure is under development)

Figure Error! No text of specified style in document.**-55. Estimated 50-year projection for Lewis's woodpecker habitat**

Summary—Figure **Error! No text of specified style in document.**-53 and Figure **Error! No text of specified style in document.**-54 indicate that the current estimates of Lewis's woodpecker habitat is currently departed from HRV for both suited (less than existing) and potential habitat (slightly more than existing). Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Potential habitat estimates in Figure **Error! No text of specified style in document.**-54 should be investigated to determine if the variations represent either or both an artifact of fire suppression and varied habitat availability due to climate changes over time. Figure **Error! No text of specified style in document.**-53 may depict an artifact of fire suppression and habitat loss due to past management practices.

5.7.1.4 Fisher

Estimated existing habitat availability—Based on the modeling of the best available science the amount of estimated suitable habitat is 1,134,352 acres on the Clearwater portion and 685,137 acres on the Nez Perce portion of the planning area (USDA Forest Service 2014). Figure **Error! No text of specified style in document.**-56 depicts the distribution of estimated suitable habitat in the planning area, and Figure **Error! No text of specified style in document.**-57 and Figure **Error! No text of specified style in document.**-58 depicts the distribution of the 6,314,511 acres of estimated suitable habitat in the Northern region for the species as modeled (USDA Forest Service 2014).

Estimated fisher habitat was calculated in suitable and unsuitable timber base. Approximately 407,513.8 acres (1649.15 km^2) is contained within the suitable timber base, and 1,348,118.00 acres (5455.64 km^2) in the non-suitable base.

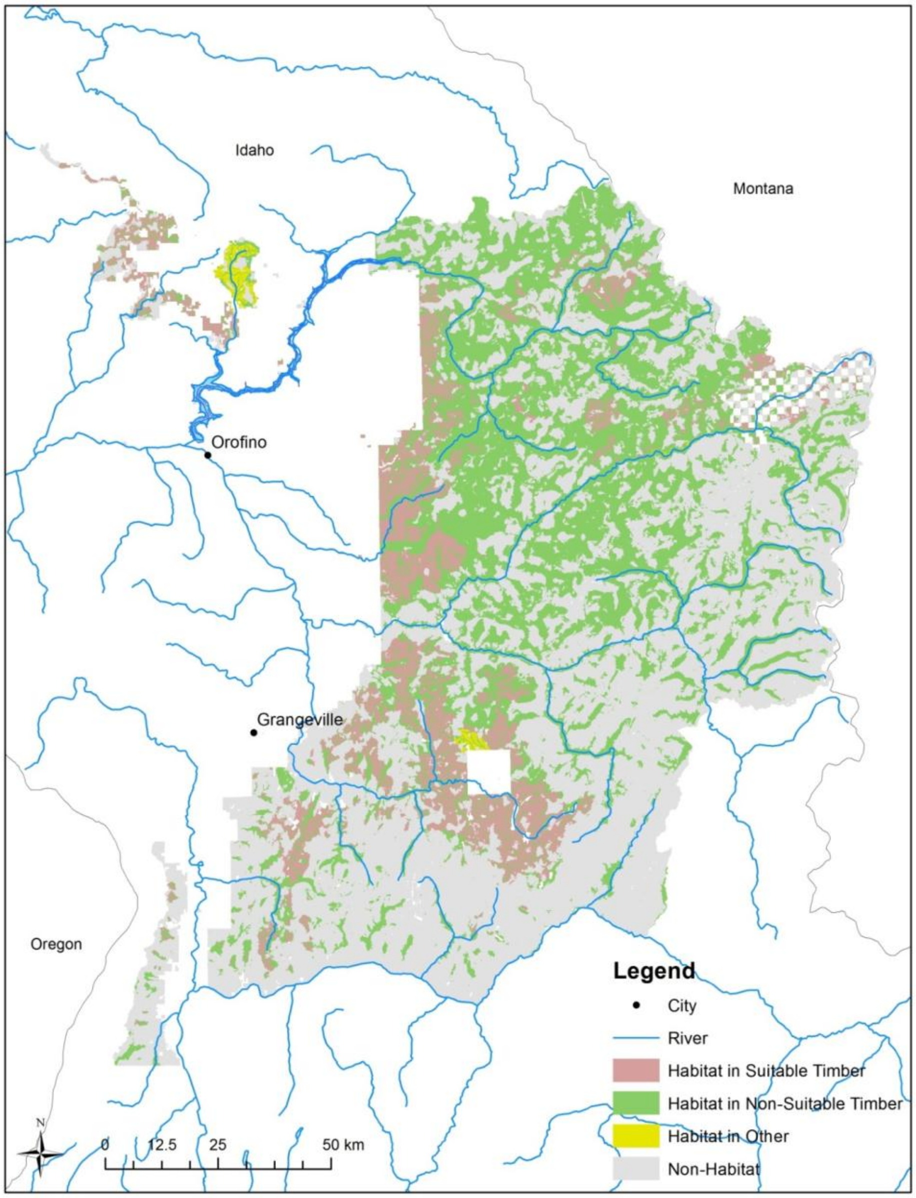


Figure Error! No text of specified style in document.**-56. Distribution of estimated suitable fisher habitat (Values) on the Nez Perce-Clearwater National Forests**

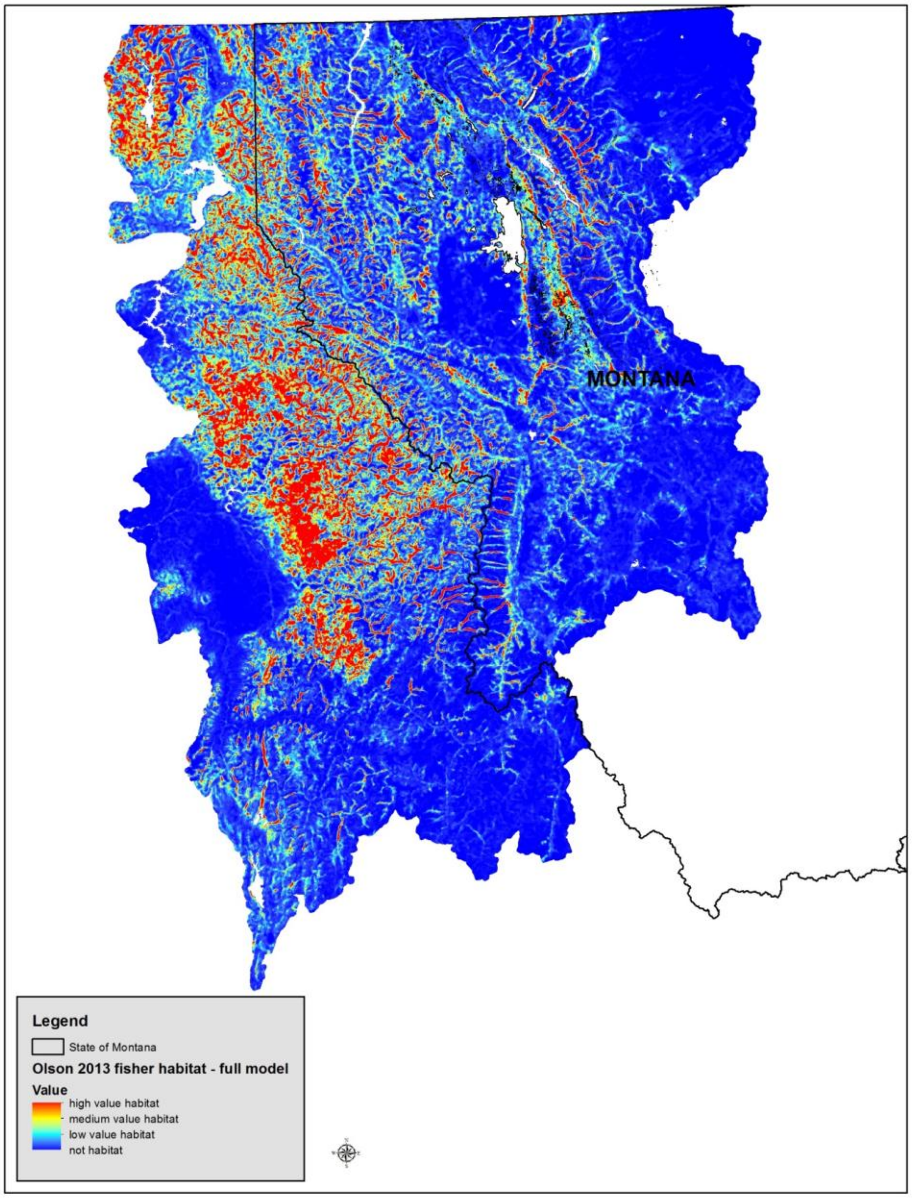


Figure Error! No text of specified style in document.**-57. The distribution of estimated fisher habitat in the Northern Region.**

Figure Error! No text of specified style in document.**-58. The distribution of estimated fisher habitat in the Northern Region**

Estimated Historical Range of Variation (HRV)—Figure **Error! No text of specified style in document.**-59 depicts the HRV (estimated suitable and potential habitat) for the species as modeled.

(Figure is under development)

Figure Error! No text of specified style in document.**-59. Estimated Historical Range of Variation for suitable fisher habitat.**

Estimated 50-Year Projection—UNDER DEVELOPMENT

Figure Error! No text of specified style in document.**-60. Estimated 50-year projection for fisher habitat**

Summary—Figure **Error! No text of specified style in document.**-59 indicate that the current estimate of fisher habitat is currently xxxxx from HRV (xxxx than existing) for both suited and potential habitat. However, modeling just depicts the data based on the presence of key habitat attributes. Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Figure **Error! No text of specified style in document.**-59 may indicate the impacts of past fire suppression that has resulted in higher than normal stand density conditions in potentially suitable habitat and a need to manage old forest conditions in the planning area.

5.7.1.5 Flammulated owl

Estimated existing habitat availability—Based on SIMPPLLE modeling of the best available science the amount of estimated suitable habitat is 177,088 acres and 55,571 acres of potentially suitable habitat in the planning area. Figure **Error! No text of specified style in document.**-61 depicts the distribution of estimated suitable habitat for the species as modeled.

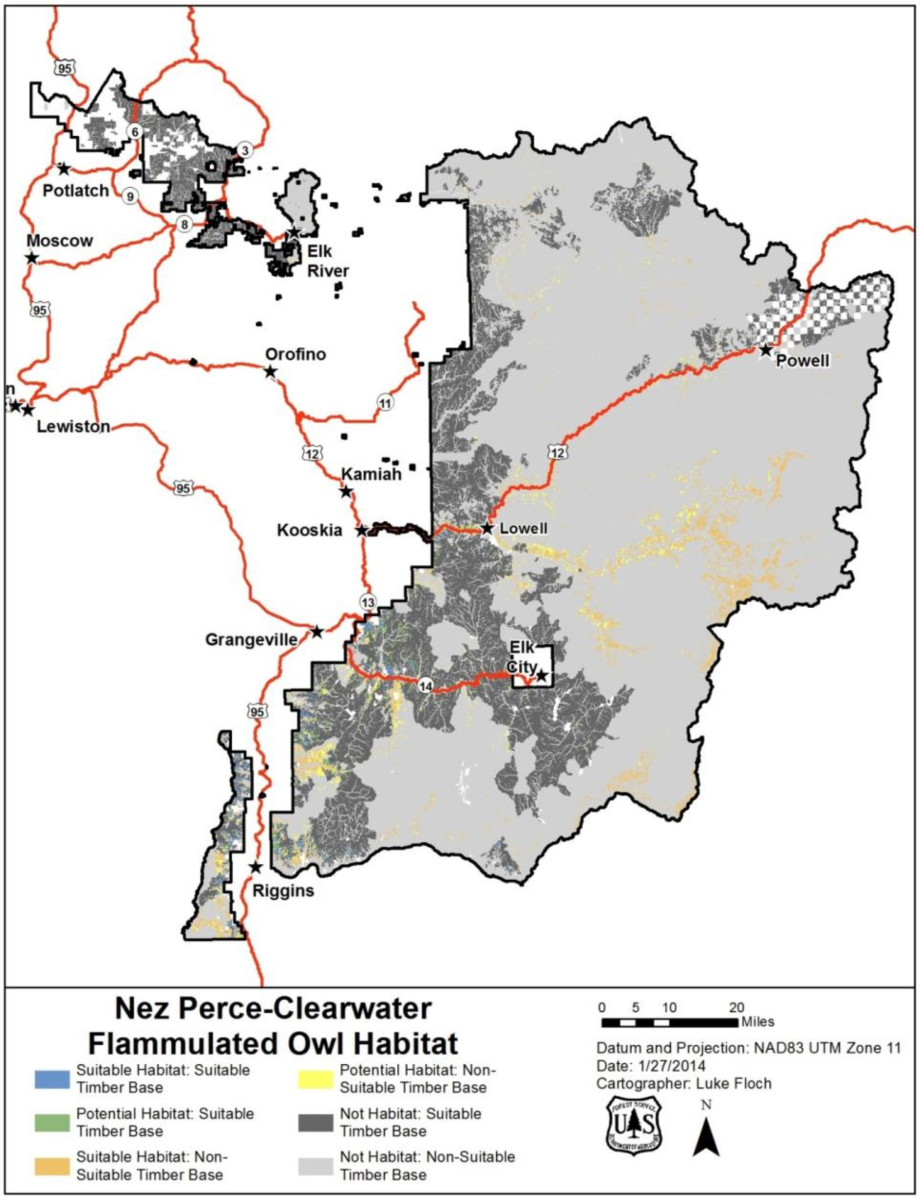


Figure Error! No text of specified style in document.**-61. Distribution of estimated suitable flammulated owl habitat on the Nez Perce-Clearwater National Forests**

Estimated Historical Range of Variation (HRV)—Figure **Error! No text of specified style in document.**-62 and Figure **Error! No text of specified style in document.**-63 depict the HRV (estimated suitable and potential habitat) for the species as modeled.

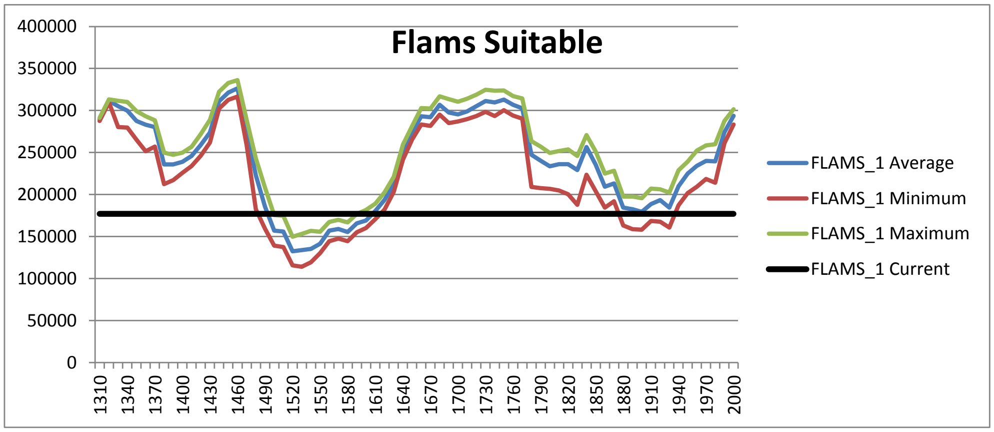


Figure Error! No text of specified style in document.**-62. Estimated Historical Range of Variation for suitable flammulated owl habitat**

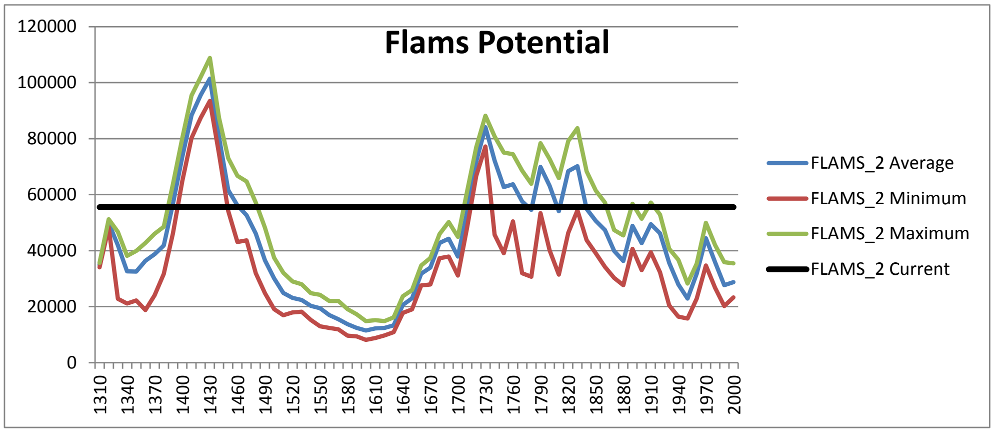


Figure Error! No text of specified style in document.**-63. Estimated Historical Range of Variation for potential flammulated owl habitat**

Estimated 50-Year Projection—UNDER DEVELOPMENT

Figure Error! No text of specified style in document.**-64. Estimated 50-year projection for flammulated owl habitat**

Summary—Figure **Error! No text of specified style in document.**-62 and Figure **Error! No text of specified style in document.**-63 indicate that the current estimates of flammulated owl habitat is currently departed from HRV for both suited (less than existing) and potential habitat (slightly more than existing). However, modeling just depicts the data based on the presence of key habitat attributes. Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Potential habitat estimates should be investigated to determine if the variations depicted in Figure **Error! No text of specified style in document.**-63 represent varied habitat availability due to climate changes over time. Figure **Error! No text of specified style in document.**-62 may depict an artifact of fire suppression and habitat loss due to past management practices.

5.7.1.6 Boreal Owl

Estimated existing habitat availability—Based on SIMPPLLE modeling of the best available science the amount of estimated suitable nestimg habitat is 22,418 acres and 10,159 acres of potentially suitable habitat in the planning area. Figure **Error! No text of specified style in document.**-65 depicts the distribution of estimated suitable habitat for the species as modeled.

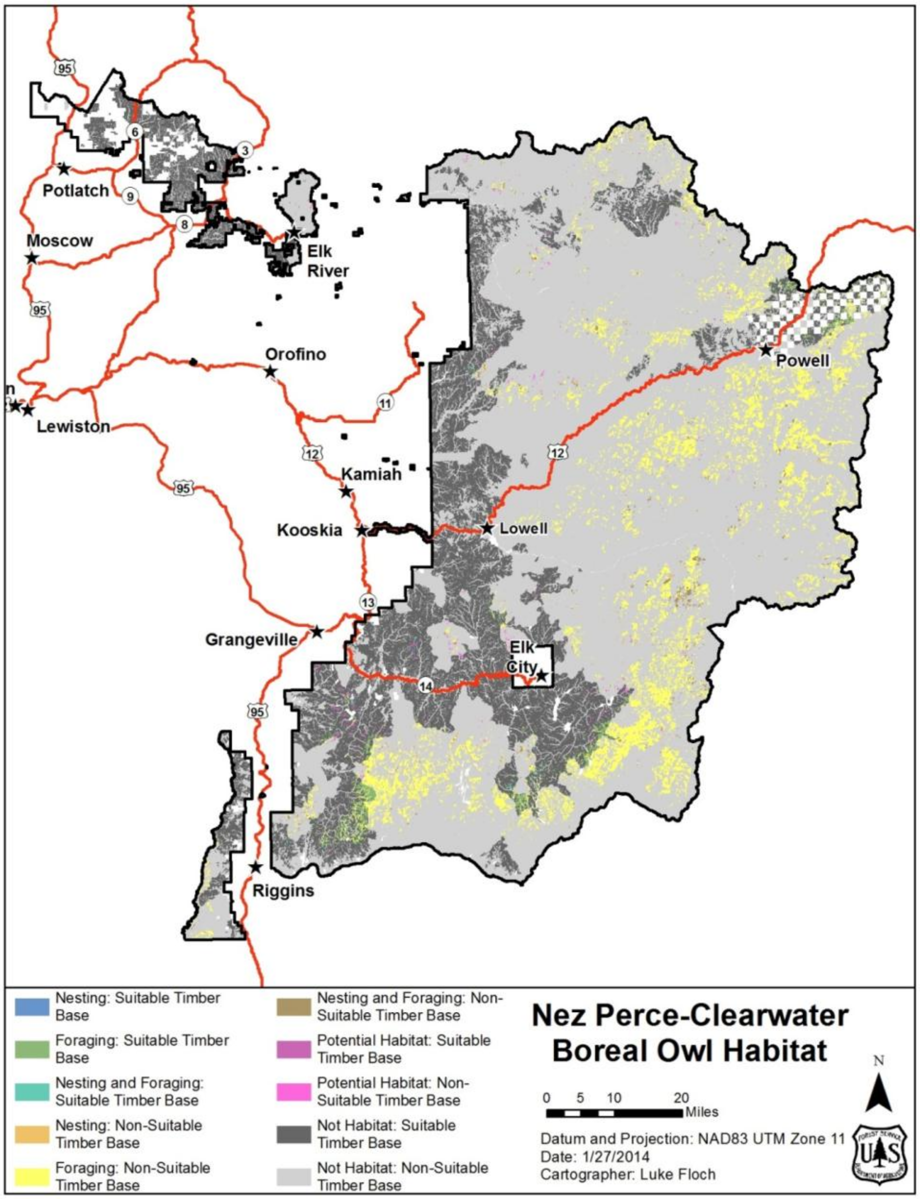


Figure Error! No text of specified style in document.**-65. Distribution of estimated suitable boreal owl habitat on the Nez Perce-Clearwater National Forests**

Estimated Historical Range of Variation (HRV)—Figure **Error! No text of specified style in document.**-66 and Figure **Error! No text of specified style in document.**-67 depict the HRV (estimated suitable and potential habitat) for the species as modeled.

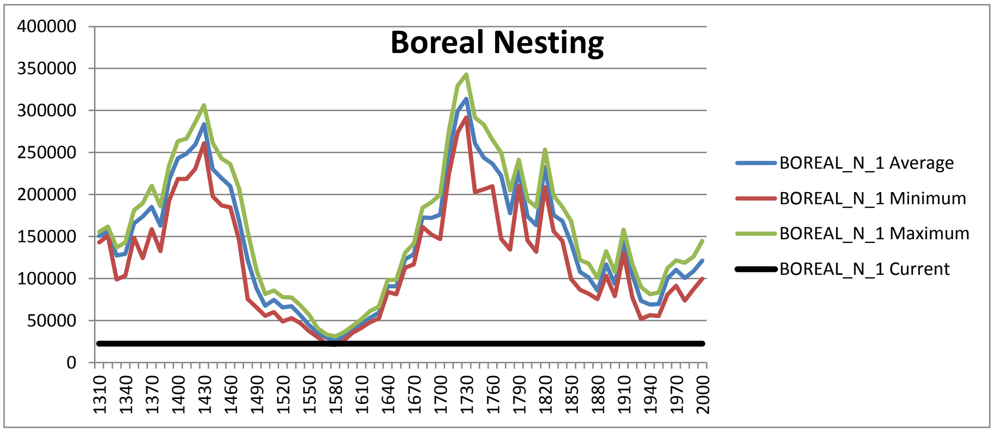


Figure Error! No text of specified style in document.**-66. Estimated Historical Range of Variation for boreal owl nesting habitat**

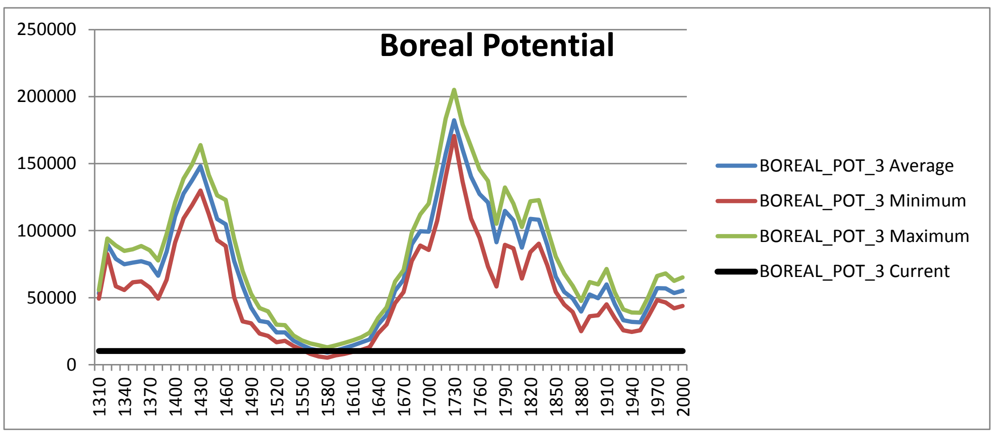


Figure Error! No text of specified style in document.**-67. Estimated Historical Range of Variation for potential boreal owl habitat**

Estimated 50-Year Projection – UNDER DEVELOPMENT

(Figure is under development)

Figure Error! No text of specified style in document.**-68. Estimated 50-year projection for boreal owl habitat habitat.**

Summary—Figure **Error! No text of specified style in document.**-66 and Figure **Error! No text of specified style in document.**-67 indicate that the current estimates of boreal owl habitat is currently departed from HRV (less than existing) for both suited and potential habitat. However, modeling just depicts the data based on the presence of key habitat attributes. Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Figure **Error! No text of specified style in document.**-66 and Figure **Error! No text of specified style in document.**-67 may indicate the impacts of past fire suppression that has resulted in a decline of high-elevation old forest conditions in the planning area.

5.7.1.7 American Three-toed Woodpecker

<u>Estimated existing habitat availability—</u>Based on SIMPPLLE modeling of the best available science the amount of estimated suitable nestimg habitat is 22,418 acres and 10,159 acres of potentially suitable habitat in the planning area. Figure **Error! No text of specified style in document.**-69 depicts the distribution of estimated suitable habitat for the species as modeled.

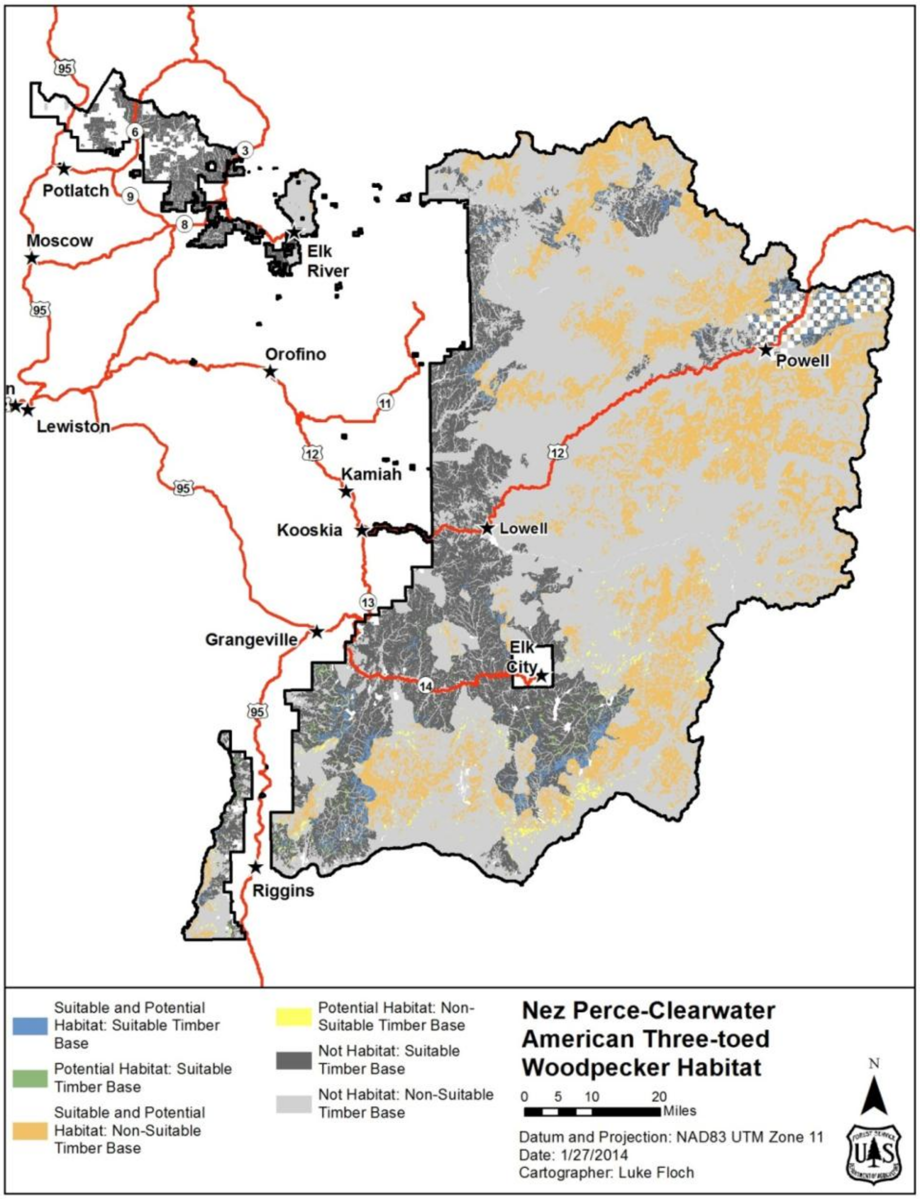


Figure Error! No text of specified style in document.**-69. Distribution of estimated suitable American three-toed woodpecker habitat on the Nez Perce-Clearwater National Forests**

<u>Estimated Historical Range of Variation</u> (HRV)—Figure **Error! No text of specified style in document.**-70 and Figure **Error! No text of specified style in document.**-71 depicts the HRV (estimated suitable and potential habitat) for the species as modeled.

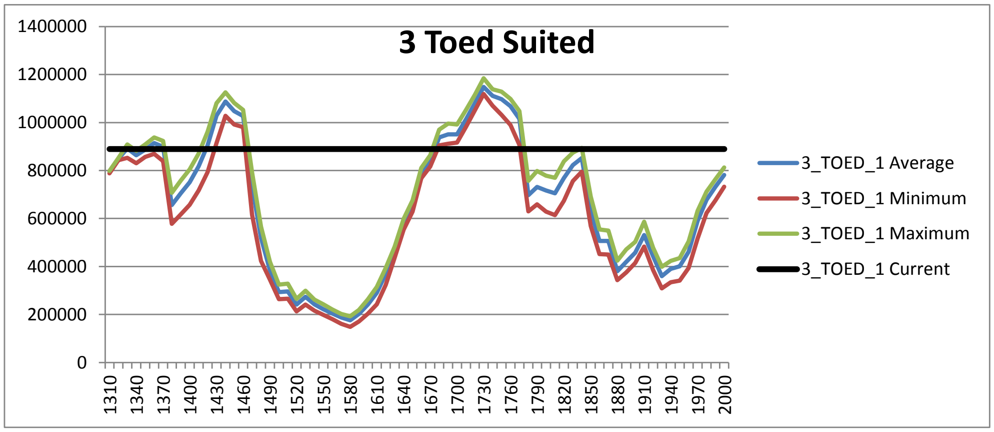


Figure Error! No text of specified style in document.**-70. Estimated Historical Range of Variation for suitable American three-toed woodpecker habitat.**

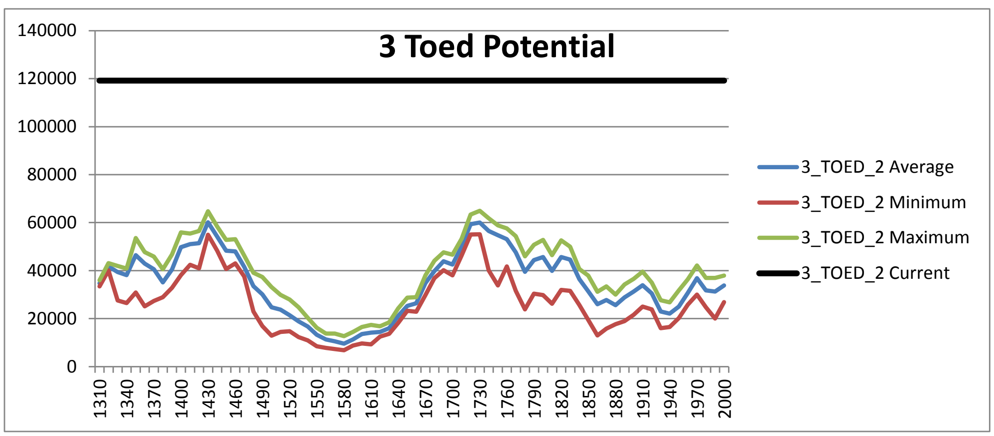


Figure Error! No text of specified style in document.**-71. Estimated Historical Range of Variation for potential American three-toed woodpecker habitat.**

Estimated 50-Year Projection – UNDER DEVELOPMENT

Figure Error! No text of specified style in document.**-72. Estimated 50-year projection for American three-toed woodpecker habitat.**

Summary—Figure **Error! No text of specified style in document.**-70 and Figure **Error! No text of specified style in document.**-71 indicate that the current estimates of American three-toed woodpecker habitat is currently departed from HRV (less than existing) for both suited and potential habitat. However, modeling just depicts the data based on the presence of key habitat attributes. Actual stand conditions may contain stand densities and other attributes that are less suited for this species. Figure **Error! No text of specified style in document.**-70 may indicated that existing conditions are greater than historic but that historical conditions are trending towards existing as it has done in the past. Figure **Error! No text of specified style in document.**-71 may indicate the impacts of past fire suppression that has resulted in higher than normal stand conditions in potentially suitable habitat and that potential three-toed woodpecker habitat was less available in the past in the planning area.

5.7.1.8 Mountain Quail

Estimated existing habitat availability—Based on SIMPPLLE modeling of the best available science the amount of estimated suitable habitat is 507,793 acres in the planning area. Figure **Error! No text of specified style in document.**-73 depicts the estimated suitable habitat for the species as modeled. **NOTE:** There is no historical evidence that mountain quail existed in the mid-upper rwaches of the Selway and Salmon River drainages compared to "potential" habitat depicted in Figure **Error! No text of specified style in document.**-73.

Estimated Historical Range of Variation (HRV)—Figure **Error! No text of specified style in document.**-74 depicts the HRV (estimated suitable and potential habitat) for the species as modeled.

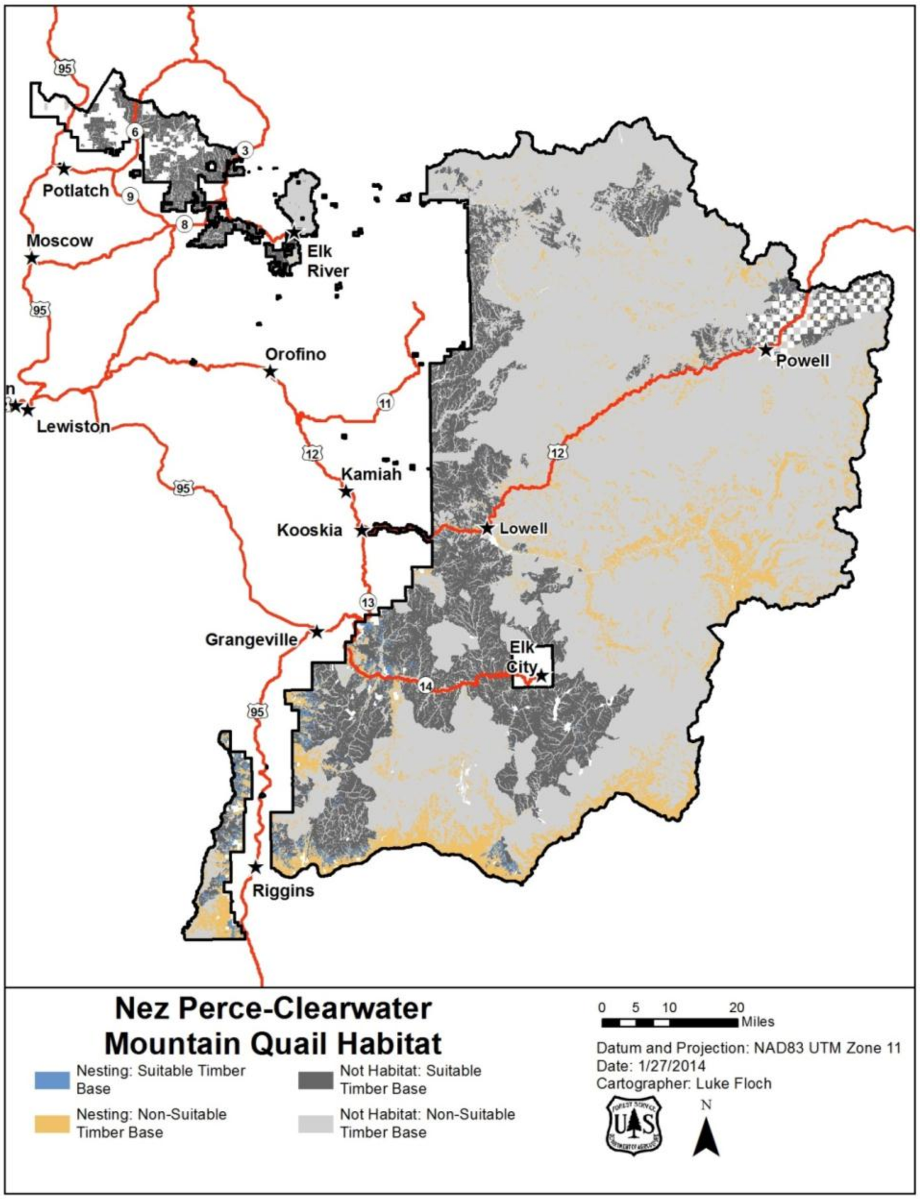


Figure Error! No text of specified style in document.**-73. Distribution of estimated mountain quail habitat on the Nez Perce-Clearwater National Forests**

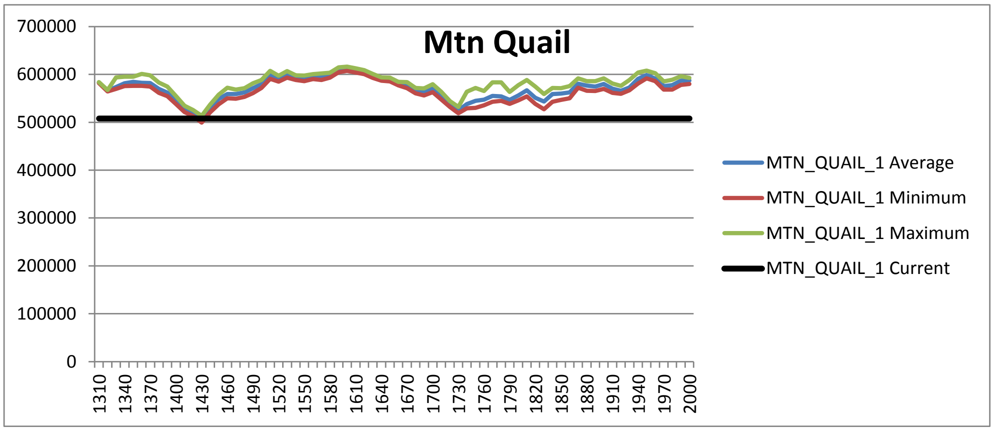


Figure Error! No text of specified style in document.**-74. Estimated Historical Range of Variation for mountain quail habitat.**

Estimated 50-Year Projection—**UNDER DEVELOPMENT**

Figure Error! No text of specified style in document.**-75. Estimated 50-year projection for mountain quail habitat habitat.**

Summary—Figure **Error! No text of specified style in document.**-74 indicate that the current estimates of mountain quail habitat is currently departed from HRV (less than existing) for estimated suited habitat. However, modeling just depicts the data based on the presence of key habitat attributes. Actual habitat conditions may contain other attributes that are less suited for this species. Known existing conditions for riparian areas indicate that riparian conditions have degraded since historic. In addition, the introduction and establishment of invasive plants, increased human development in lower portions of mountain quail habitat, and the introduction of non-native animals have degraded mountain quail habitat on NFS lands. The range retraction of the species indicates a clear and present need to restore habitat condition for this species in the planning area.

5.7.2 *Other Species of Conservation Concern: Not Modeled*

The following species were not modeled:

- Fringed Myotis—This species was not modeled due to the lack of definable parameters.
- Townsend's Big-eared Bat—This species was not modeled due to the lack of definable parameters.
- California Myotis—This species was not modeled due to the lack of definable parameters.
- Coeur d'Alene salamander—This species was not modeled due to the lack of definable parameters.

- Bighorn Sheep—This species was not modeled based on other rationale for its selection as an SCC.

5.8 Forest Plan Revision Landscapes (Sections and Biophysical Settings) relevant to Terrestrial Wildlife Species

A) Idaho Batholith and Bitterroot Mountains: The Forests consider the Idaho Batholisth and Bitterroot Mountains as the primary ecological sections for planning purposes. These two sections are relatively the same as described and used in the 2005 Idaho CWCS (IDFG 2005), and are contained within the Central Idaho and Lower Clark Fork, Columbia Plateau and Blue Mountains ERUs as defined by ICBEMP (Wisdom et al. 2000).

B) Other incorporated Ecological Sections: The Palouse Praire (similar to part of the ICBEMP Columbia Plateau ERU) and Blue Mountains (similar to the Blue Mountains ERU) Ecological Sections, used in the CWCS, have been incorporated into the Bitterroot Mountains and Idaho Batholith ecological sections for planning purposes. However, both the Blue Mountains Ecological Sections have unique differences in topography, wildlife species and habitat conditions that is recognized in the 2005 Idaho CWCS. The differences from the Bitterroot Mountains and Idaho Batholith should be recognized at a finer-scale because of wildlife habitat conservation issues and strategies. The wildlife habitat conservation issues and strategies disclosed at the ICBEMP and Idaho CWCS-levels will be related to discussed at the Forest and Habitat-type Group levels.

C) Breaklands Biophysical Setting

This setting primarily occurs in the Idaho Batholith and Bitteroot Mountains Ecological Sections. The landscape[5] is dominated by steep slopes and deep canyons through which flow the Clearwater, Lochsam Salmon, Selway and South Fork Clearwater Rivers.

In the Idaho Batholith surface soils are derived from granite, border zone and basalt geologies. Landslides and surface creep are the dominant erosion processes. Stream channels are typically v-shaped draws with high sediment delivery efficiency. Channel gradients are steep. Water movement is largely on the surface. Large wood and sediment moving through stream systems are dependent upon debris damming and sediment loading. Channels are prone to debris torrents. Riparian habitats comprise 5 to 10 percent of the landscape.

Habitat Characterizations: Featured tree species in breakland habitats include shade-intolerant ponderosa pine and Douglas fir. Douglas fir grows well on the breaklands, except on the driest sites. Dense stands dominated by ponderosa pine or Douglas-fir stands are susceptible to western pine beetle and root disease, respectively. Douglas fir, because of its susceptibility to root disease typically does not live beyond 150 years, except in isolated, open-grown stands. Grand fir often co-dominates with Douglas-fir in moist habitats protected from frequent wildfire. Both Douglas fire and shade tolerant grand fir are prolific on northerly aspects in much of this landscape, creating dense stands that threaten the long-term survival of shade intolerant.

[5] Landscape: Spatially heterogeneous geographic areas characterized by diverse interacting patches or ecosystems….Landscape ecology emphasizes the relationships of pattern, process(es), and scale ...(with) conservation and sustainability (adapted from Wu and Hobbs 2002).

North Idaho Old Growth type 1 (Green et al. 2011) and large, open-grown ponderosa pine with isolated Douglas characterize the old growth[6] forest features on southerly aspects. Because of steep terrain (which favors increased intensity and spread of wildfires), mixed coniferous old forest patches on breakland landscapes are typically small, localized and uncommon. The typical old forest character is large, old "legacy" or "relic" trees[7] on ridges and riparian habitats that have survived one or more lethal episodes. Patches of old forest (typically north Idaho Old Growth types 3 and 4) can be located on gentle terrain and moist habitat "inclusions" within this landscape. Mixed severity fire, root disease and periodic Douglas-fir beetle can create increasing amounts of snags during mid-seral to late-seral successional classes (Bollenbacher et al. 2009 USDA Forest Service 2008).

Wildlife Uses: Southerly exposed habitats provide mature, open forest conditions for flammulated owls, pygmy nuthatches and white-headed woodpecker. At low elevations, burned trees and large live trees provide habitat for Lewis' woodpeckers. Mature and old forest habitats are preferred by the California myotis, flammulated owl, pygmy nuthatch and white-headed woodpecker. Dense, shrub-dominated draws, dissecting ponderosa pine and Douglas-fir forest stands, are preferred by mountain quail. Locally occurring harsh habitats features, such as rock outcrops of basalt and limestone, caves and abandoned mines, talus slopes, provide habitats preferred by a variety of wildlife species.

Native grasses and shrubs, occurring during the early stages of forest succession or permanent grass/shrubs habitats, provide winter, spring and fall forages for elk, bighorn sheep, and mule deer. Bunchgrass, shrubs and young forest habitats provide quality bighorn sheep, elk, deer winter forages. On northerly aspects, because relatively moist conditions grass/shrub openings created by stand-replacing disturbance, do not persist beyond one to two decades, due to rapid reforesting of young conifers. During extreme winter conditions with deep snow or cold, big game species often use young Douglas-fir as an alternate forage. North-slope habitats often provide denser mid-seral, mature and older forest habitats for northern goshawk and pileated woodpecker.

Typically, wildlife habitats in Idaho Batholith Breaklands are drier on all aspects than breaklands found in the Bitterroot Mountain breaklands.

Disturbance processes: The primary disturbance process affecting plant succession, composition and distribution is fire. Most fires are minor ground fires and relatively small. The influences of both low- and mixed-severity[8] fires typically create or maintain a patchy mosaic of under-burn and irregular sized openings with a periodic creation of snags. Steep terrain favors

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[6] **Old Growth**: The culmination of stand development resulting from forest succession and lack of stand-replacing disturbances within the natural life span of the oldest trees. In moist, mixed coniferous forests, these stands are composed mainly of shade-tolerant and regenerating tree species. In dry forest types (e.g., ponderosa pine), old growth attributes are isolated, large trees. Old, seral and long-lived trees from a past fire disturbance may still dominate the upper canopy, snags and coarse woody debris are available, in all stages of decomposition typical of the site, as inclusions and patchy understories, understories may include tree species uncommon in the canopy, due to inherent limitations of these species under the given conditions.

[7] **Legacy trees:** Old trees that have survived stand-replacing natural disturbances or spared from timber harvest.

[8] **Mixed-severity Fire:** Fire that either causes selective mortality in dominant vegetation, depending on different species' susceptibility to fire, or varies in time or space between understory and stand-replacement. Mixed-severity fires include patchy, mosaic-creating fires and other fires that are intermediate in effects

rapid, upslope spread of wildfires. Dryer sites within this group can have a stand-replacing fire. Fire-free intervals can range from 5 to 50 years on the drier types, to over 200 years on moister sites. Steep slopes and narrow riparian habitats promote a fire return interval in riparian and moist habitat inclusions that rarely exceeds 150 years. On southerly aspects with warm, dry open-grown Douglas-fir and ponderosa pine habitat types, stand-replacing fire in the driest stands is unusual). Without fire, stands develop to the pole stage and mature forest. Because tree establishment is episodic and slow, stands may be uneven-aged or may consist of numerous even-age clusters of trees.

Northerly aspects support warm, dry Douglas-fir, grand fir and ponderosa pine habitat types with succession dominated by ponderosa pine on the driest sites, Douglas-fir and western larch on moderately dry sites and grand fir generally on the moister sites. Early seral species (shrubs, forbs and grasses), Douglas-fir, ponderosa pine and grand fir, readily re-establish following wildfire episodes. Mixed- and high-severity[9] fires typically create variable effects in these steep riparian habitats. A sustained supply of large standing and down, dead wood for wildlife is available as the result of episodic (wildfire and insect/disease outbreaks) and chronic (endemic tree pathogens, competition for tree growing space, windthrow) disturbances.

The fire regime typically created a mosaic of burned and unburned patches between 50 and 1000+ acres[10] (Green et al. 2011). Patches on dry aspects are uneven-aged, reflecting diverse fuels and non- to mixed-severity wildfire severity. Patches on moist aspects are even-aged, reflecting uniform vegetation and fuel conditions, and wildfire severity.

D) Uplands Biophysical Setting

This setting primarily occurs in the Idaho Batholith and Bitteroot Mountains Ecological Sections. This landscape is a mix of gentle to steep slopes, forming shallow canyons and contain relatively productive conditions for vegetative growth.

Surface soils are derived from granite, border zone and basalt geologies. The warm, moist climate, in combination with deep, volcanic ash soils, creates high site productivity. Surface creep is the dominant erosion process, mass wasted areas are local and uncommon. Stream channels are typically U-shaped draws with low to moderate sediment delivery efficiency. Major channel gradients are gentle. Water movement is largely on the surface. Large wood and sediment moving through stream systems are dependent upon episodic stream flows. Steep slopes are common but are relatively short. Riparian habitats are extensive, comprising 15 to 30 percent of the landscape.

Habitat Characterizations: Primary tree species are grand fir, Douglas-fir, and western larch. Ponderosa pine is common on warmer, drier micro-sites, subalpine fir and Engelmann spruce on cooler, moist micro-sites. Grand fir mosaic sites appear as diverse community structure with "patchy" tree cover. Compared to the surrounding area, the grand fir mosaic is characterized by

[9] **High-severity (aka, stand-replacement, lethal-severity, lethal) Fire:** Fire that kills or top-kills above ground parts of the dominant vegetation, changing above ground structure substantially. The majority (more than 75+%) of the above ground, dominant vegetation is either consumed or dies as a result of the fire. A fire that kills most of the trees, to be replaced by new trees, is called a stand-replacing fire.

[10] Large patch size range approximates the area of relatively consistent forest vegetation. Patches are often defined by the distance from the canyon bottom to major ridge, major topographic, or aspect breaks. This area is could also be defined by relatively consistent fuel conditions, fire behavior (spread, intensity) and vegetative response.

increased soil moisture, strongly acidic soils, and allelopathic plants. (Ferguson 2000). Conifer reforestation can be retarded or completely unsuccessful due to these conditions. Patches of old growth with natural openings of tall shrubs and forbs are important characteristics of the grand fir mosaic.

Lodgepole pine often occurs on micro-sites with other conifers. Dense, uniform tree cover is typical. Dense stands dominated by Douglas-fir stands are susceptible to bark beetle and root diseases. Early seral species (shrubs, forbs and grasses) and the full array of mixed conifer species readily re-establish following lethal wildfire episodes. Featured tree species is ponderosa pine.

Old forest is typically associated with relatively broad, riparian habitats of major streams. At higher elevations of the Bitterroot Mountains, mixed stands of old grand fir, alder, western coneflower (*Rudbeckia occidentalis*), and occasionally Pacific yew (*Taxus brevifolia*), occur as the 'grand fir-mosaic'. Old forest stands, regardless of forest type, typically occur where moisture or soil conditions are resistant to all but the most extreme wildfire conditions.

North Idaho Old Growth Type 3, 4 and 7 (Green et al. 2011) characterizes the old forest features. The typical old forest character is dominated by large, old grand fir. Because the uneven terrain encourages low- and mixed-severity wildfires, old forest patches historically have been uneven-aged, shade-tolerant species residing in patches ranging 300 to 1,500 acres (Green et al. 2011). Smaller patches of old forest (typically North Idaho Old Growth Type 3) can be located as “inclusions” where topography and/or or climatic factors locally protect sites from frequent fires. Old Growth Type 3 seldom occurs in extensive stands. Infrequent wildfires favor the accumulation of large standing/down dead wood. Large, dead wood accumulations typically range from 20 to 40 tons per acre. A few large live (“legacy” or “relict”) trees (typically grand fir, Douglas-fir on the uplands, Engelmann spruce or western red cedar (*Thuja plicata*) in riparian habitats), persist following lethal wildfire.

Wildlife Uses: Meadows, grand fir mosaic and young forest habitats provide elk and deer spring, summer and fall forages. Gentle, southerly exposed grassy ridges and basins provide conditions favored by elk for calving. Mature grand fir forest habitats, where tree canopy closure moderates snow depths and the understory is dominated by Pacific yew, are preferred by moose. Moose also successfully forage in all seasons in shrub habitats that follow stand-initiation disturbances. These conditions typically occur in grand fir cover types following stand-re-initiation. Large patches of mature and old forest habitats provide nesting and foraging habitats for pileated woodpecker, and denning and prey habitats for fisher. Mid-seral and mature forest habitats for northern goshawk.

Disturbance processes: The primary landscape disturbance processes affecting plant succession, composition and distribution are highly variable, lethal (stand-replacing) wildfire (occurring at intervals of 150 to 250+ years (Keane et al. 2002). Though this landscape readily ignites by summer lightning, wildfire episodes are typically limited to upland habitats burning at low-lethal intensity and spread. Irregular terrain discourages rapid spread or intense wildfires. Strong wind episodes, in combination with extended drought, are the conditions believed necessary to create large, lethal wildfires that have been documented in similar landscapes. Relatively short, steep slopes and extensive riparian habitats result in a fire return interval in riparian and moist habitat inclusions that can exceed 300 years. Low-severity fires can burn on ridges (drier inclusions), beginning in stem-exclusion, at a rate two to three times as often as mixed- and high-severity fires.

This complex fire regime typically creates a mosaic of mixed- to lethal-burned uplands and non-lethal or unburned riparian habitats. Small openings created by the more frequent low- and mixed-severity fires results in a mix of seral and climax tree species and ages.

Patch sizes of local mixed- to lethal-burns generally approximate the area of relatively uniform wildfire features (general aspect, distance from the canyon bottom to major ridge, vegetation conditions (dominant tree species, density, standing/down dead wood). Green et al. (2011) concluded that approximately 46% of old growth mixed conifer forests occur in patches of 300 to 1,500 acres. Patches are generally even-aged, reflecting uniform wildfire severity. A more frequent and low-severity wildfire regime "functions" outside of riparian habitats.

E) Subalpine Biophysical Setting

The subalpine setting occurs at the higher portions of the Plan area. This landscape is characterized by broad ridges and steep slopes. Glaciated, frost-churned ridges, umbric old surface and high elevation stream terraces occur within this setting. Surface soils are derived from granite and border zone geologies, overlaid with volcanic ash. Surface creep is the dominant erosion process. Stream channels are characterized by v-shaped draws and high sediment delivery efficiency. Glacial troughs are characterized by u-shaped draws and low sediment delivery efficiency. Channel gradients are mixed. Water movement is largely on the surface. Because of small streams and mixed gradients, large wood and sediment move slowly through the stream systems. Steep slopes are common but are relatively short. Riparian habitats comprise 10 to 20 percent of the landscape.

Habitat Characterizations: Lodgepole pine cover types tend to dominate the major broad ridges. Inclusions of Subalpine fir and Engelmann spruce cover types typically occupy in riparian habitats in glaciated troughs. Patches on dry aspects are even-aged, reflecting uniform vegetation and fuel conditions, and stand-replacing wildfire severity. Patches on moist aspects are uneven-aged, reflecting diverse vegetation and fuel conditions, and mixed-severity wildfire. The fire regime typically created a mosaic of burned and unburned patches between 50 and 1000+ acres. Because of cold, generally moist northerly exposed terrain (which favors infrequent large wildfires), Green et al. (2011) concluded that approximately 55% of old growth Engelmann spruce/subalpine fir forests occur in patches between 100 and1,100 acres. On habitats dominated by lodgepole pine (dry ridges and rocky basins), patches ranged 1,000-3,200 acres.

The cool, moist climate supports lodgepole pine on drier habitats and shade-tolerant subalpine fir and Engelmann spruce on moister habitats. Lodgepole pine stand structure is typically single-storied and even-aged. In subalpine fir and Engelmann spruce stands, stand structure is often a mix of age classes. Lodgepole pine stands reaching 80 years of age with stand size of greater than 8 inches in diameter, often experience severe mortality by mountain pine beetle creating snags and down fuel leading to potential severe fire effects depending on time since the infestation (Keane et al. 2002). Whitebark pine occurs as inclusions within lodgepole pine stands or as co-dominants in mixed stands of subalpine fir. The harshest environments (driest, coldest sites) are often open stands of whitebark pine or grass and exposed rock. Featured tree species in subalpine habitats are whitebark pine and quaking aspen. Whitebark pine has historically been common throughout the subalpine setting. Whitebark pine, however, is very susceptible to blister rust. On lodgepole pine dominated sites, stand-replacing fire was likely most common. Subalpine fir is susceptible to wooly adelgid. Both lodgepole pine and subalpine fir readily re-establish following wildfire episodes. Featured tree species are western larch and whitebark pine and, locally, ponderosa pine and western white pine.

North Idaho Old Growth types 2, 5, 6, 8 and 9 (Green et al. 2011) dominated by subalpine fir and/or whitebark pine, with local inclusions of mountain hemlock, characterize the old growth forest features.

Wildlife Uses: Episodic (wildfire and insect/disease outbreaks) and chronic (endemic tree pathogens, competition for tree growing space, windthrow) disturbances provide large down, dead wood for some species, and forest openings for others. Large patches of dead, dying lodgepole pine support American three-toed woodpecker habitat. Dying or fire-killed lodgepole pines are used, respectively, by three-toed and black-backed woodpeckers. Mature and old forest habitats are favored by boreal owl. Summer forages favored by elk occur in permanent meadows and early succession forests growing on deep, moist (productive) soils.

Canada lynx reside in this landscape yearlong, relying on snowshoe hares for prey. Here, dense stands of tall shrubs and/or young lodgepole pine and where subalpine fir/Engelmann spruce limbs extend down beyond the deepest snow conditions. These conditions typically occur in young lodgepole pine stands between 20 and 40 years old and in dense mid-seral, multi-storied subalpine fir/Engelmann spruce stands. The highest populations of wintering snowshoe hare populations are associated with dense conifer/shrub habitats capable of hiding snowshoe hares from forest predators. Preferred snowshoe hare winter habitats exceed 31% horizontal cover at mid-winter snow depths.

Disturbance processes: The dominant upland disturbance processes are associated with episodic insect mortality in lodgepole pine dominated stands, followed mixed-lethal and lethal wildfires. Lethal fires are more prevalent in mature or diseased lodgepole pine and less frequent in subalpine fir and whitebark pine stands. Severe wildfire originating in more productive forest types often influence fire severity in these habitats. Fire severity is affected by periodic outbreaks of mountain pine beetle that led to large fuel loads and a pulse event for snag creation. Mixed landscape and vegetative conditions results in a fire return intervals in riparian and moist habitat inclusions that often exceed 150 years.

5.9 FOREST HABITAT-TYPE GROUPS (FINE-SCALE)

On the Forests, forested habitat conditions for wildlife have been described in the *"Target Stands for Multiple Objectives"* document (USDA Forest Service 2013). Target stands are used to achieve the landscape level DFC. The target stand does not prescribe treatments, but simply represents the desired condition at various phases of stand development. This Target Stand document characterized habitat-type groups, which may contain variations based on the inherent diversity of habitat-type groups in the planning area (USDA Forest Service 2013).

Generally, the majority of wildlife species described in this Assessment are associated with the following Habitat Type Groups to meet all or part of their life-cycle needs at fine and mid-scales:

- Warm/Dry (Habitat Type Group 1)

- Moderately Warm/Dry (Habitat Type Groups 2 and 3)
- Moist Mixed Conifer (Habitat Type Groups 4, 5 and 6)
- Cool and Wet/Moist Subalpine Fir (Habitat Type Groups 7 and 8)
- Cool/Cold Upper Subalpine (Habitat Type Groups 9, 10 and 11)

Fine-scale grass and shrub-land and riparian area habitat-type groups are not defined and described in Target Stands for Multiple Objectives document (USDA Forest Service 2013). Grass and shrub-land and riparian area habitats support Mountain quail and Coeur d"Alene salamander for all or part of their life-cycle needs. Descriptions of these habitats are located in the vegetation and aquatics sections of the Assessment.

The NPCNF Target Stand document specifically mentions five SCC species (e.g. white-headed woodpecker, pygmy nuthatch, fisher, boreal owl and flammulated owl) because they are currently Regional Forester Senstive Species (RFSS) and/or MIS, under the current Forest Plan. Indirectly, the Target Stand document also references other woodpeckers. This would potentially include other SCC species such as Lewis's woodpecker and American three-toed woospecker.

Wildlife species not selected as SCC are also known or expected to use these habitat-type groups. Some species are closely associated with the compositional, structural and other habitat characteristics attributed to old-growth-type forests for their individual life-cycle needs, but are not old-growth "dependent". Some of these ecosystem attributes may be represented by old-growth conditions defined by Green et al. (2011).

One or more of these habitat-type groups are located within the three biophysical settings used by the Forests.

1. Breaklands
2. Uplands
3. Subalpine

5.9.1 *Warm/Dry (Habitat Type Group 1)*

Habitat-Type Group Characterization: In Version 1.0 of the Target Stand document the Warm/Dry category have not been developed. This is high priority to complete. The Warm/Dry category/group represents unique dry ponderosa pine breakland areas that are often an emphasis for fuel management and ponderosa pine restoration (USDA Forest Service 2013).

This group is characterized by very dry ponderosa pine or Douglas-fir climax forests with bunchgrass understories and a high frequency, low severity fire regime. These areas often lie at low elevations, at the transition from forested to open savannah or grassland communities. These sites are more often targeted for fuels or ecosystem prescribed fire treatments rather than commercial timber projects (USDA Forest Service 2013).

Applicable objectives for this group are likely to include ponderosa pine restoration, grass forage production, and open forest conditions consistent with the frequent historic fire regime. These types may be particularly sensitive to changing climate conditions in terms of potential timber suitability (USDA Forest Service 2013).

This group is particukarly important for the following SCC species.

Associated Species—The following SCC are associated with this habitat-type group:

- White-headed woodpecker
- Lewis's woodpecker
- Fringed myotis
- Bighorn sheep
- Mountain quail (winter)

5.9.2 *Moderately Warm/Dry (Habitat Type Groups 2 and 3)*

Habitat-Type Group Characterization: In this category these habitat type groups cover the transition from dry to moist, including ponderosa pine and Douglas-fir climax habitat types and more moist grand fir climax types with grass or shrub understories. A wide diversity of species composition is possible, including ponderosa pine and Douglas-fir on the drier sites and western larch, grand fir, subalpine fir, Engelmann spruce, and lodgepole pine on the moistest sites. Fire intervals are generally from 5 to 50 years from low to moderate severity (USDA Forest Service 2013).

A variety of objectives are listed in this category. This group is particularly important for the following SCC species.

Associated Species—The following SCC are associated with this habitat-type group:

- White-headed woodpecker
- Pygmy nuthatch
- Lewis's woodpecker
- Flammulated owl
- Fisher
- Townsends' big-eared bat
- California mytotis
- Fringerd myotis
- Mountain quail (summer)

5.9.3 *Moist Mixed Conifer (Habitat Type Groups 4, 5 and 6)*

Habitat-Type Group Characterization: The habitat types in ***Group 4*** (moderately warm and moist grand fir) are characterized by mixed species stands of grand fir, Douglas fir, lodgepole pine, Engelmann spruce and occasionally western larch or ponderosa pine, with diverse shrub and forb understories. These habitat types are common at mid elevations on north slopes and lower slopes in slope positions or geographic areas too dry for western red cedar. The habitat types in ***Group 5*** (moderately cool and moist western red cedar) are characterized by mixed species stands of western red cedar, grand fir, and Douglas fir, with diverse shrub and forb understories. Western white pine, larch, and ponderosa pine are less frequent components. These habitat types are common in the western portion of the subbasin on lower slopes and northerly aspects, but become increasingly rare toward the headwaters. The habitat types in ***Group 6*** (moderately cool and wet western red cedar) are characterized by stands of grand fir and western red cedar. Douglas-fir and western white pine are less common. They often have fern and herb understories. These habitat types are generally limited to riparian areas along streams and moist lower slopes in the western part of the subbasin.

A variety of objectives are listed in this category. This group is particularly important for the following SCC species.

Associated Species—The following SCC are associated with this habitat-type group:

- Flammulated owl
- Fisher
- Lewis's woodpecker
- Townsend's big-eared bat

5.9.4 *Cool and Wet/Moist Subalpine Fir (Habitat Type Groups 7 and 8)*

Habitat-Type Group Characterization: In this category **Group 7** (Cool and Moist subalpine fir) is characterized by stands of subalpine fir, Engelmann spruce, and lodgepole pine, with brush understories. Western larch, whitebark pine, and Douglas-fir are less common components. Subalpine fir/menziesia is the habitat type in this group most frequently found in the subbasin. These habitat types are common and occur at upper elevations on north aspects and moist lower slopes (Green et al. 2011, USDA Forest Service 2013). **Group 8** (Cool and Wet subalpine fir) is characterized by stands of subalpine fir, Engelmann spruce, and lodgepole pine, with shrub, forb or graminoid understories. Subalpine fir/bluejoint reedgrass is the habitat type in this group most frequently found in the subbasin. These habitat types are uncommon and occur at upper elevations in riparian areas (Green et al. 2011, USDA Forest Service 2013).

A variety of objectives are listed in this category. This group is particukarly important for the following SCC species.

Associated Species—The following SCC are associated with this habitat-type group:

- Boreal owl
- American three-toed woodpecker woodpecker

5.9.5 *Cool/Cold Upper Subalpine (Habitat Type Groups 9, 10 and 11)*

Habitat-Type Group Characterization: In Version 1.0 of the Target Stand document the Cool/Cold Dry Upper Subalpine groups has not been developed. This is a high priority to complete. The Cool/Cold Dry Upper Subalpine Group contains whitebark pine restoration opportunities, which are of particular interest due to its listing as a sensitive species (USDA Forest Service 2013). The cool lower elevation portion of this group may also apply to terrestrial SCC wildlife.

Two Variations, a Whitebark pine emphasis (Variation 1) and Variation 2, a non-Whitebark pine emphasis, have been identified but not yet developed. Integrated objectives for this category have not yet been developed.

Associated Species—The following SCC may be associated with this habitat-type group at the cool end of one or more habitat type groups:

- Boreal owl
- American three-toed woodpecker woodpecker

5.10 OTHER FINE-SCALE HABITATS

The following habitat categories are not defined and described in Target Stands for Multiple Objectives (USDA Forest Service 2013).

5.10.1 *Grasslands and Shrublands*

Habitat Characterization: Grasslands and shrublands are those areas where the combination of soils, precipitation, topography, and natural role of fire results in the perpetuation of non-forested plant communities. Three grassland series, dominated by bluebunch wheatgrass, Idaho fescue, or carex species and five shrubland series dominated by stiff sage, smooth sumac, curl leaf mountain mahogany, snowberry, and hackberry occur in the canyons of west-central Idaho and adjacent areas. The extent of the shrublands within the Forests can be estimated based upon the extent of non-forested areas as identified by FIA plots (approximately 15% of the breaklands and less than 5% of the uplands are non-forest).

Major stressors include:

1. Livestock grazing levels and practices (primarily historic)
2. Invasive plants and noxious weeds.
3. Fire intensity, size, and frequency greater than natural conditions

Current Conditions:

1. Specific information regarding the condition of grasslands and shrublands on the Forests is limited or non-existent.
2. Recent information gathered within representative areas indicate >50% of these areas retain high native species integrity and <25% display low native species integrity.
3. Canyon grasslands are especially vulnerable to invasive weeds. Many invasive weed species have the ability to flourish since they are adapted to hot, dry environments and are not particularly palatable to wildlife and livestock. The remote and rugged nature of the canyon grassland offer unique challenges for invasive weed management.

Associated Species—The following SCC are associated with this habitat-type group:

- Mountain quail—where permanent water is closely available
- Rocky Mountain bighorn sheep—only in the Lower Salmon River Canyon area

5.10.1.1 References

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Tisdale, E.W. 1986. Canyon Grasslands and Associated Shrublands of West-central Idaho and Adjacent Areas.

5.10.2 *Riverine Riparian and Wetlands*

Habitat Characterization: Riverine riparian and wetlands across the Forests vary greatly in their characteristics, and scale of their occurrence. The description of these habitats is located in the Aquatics portion of the Assessment.

Associated Species—The following SCC are associated with this habitat-type group:

- Coeur d'Alene salamander

5.10.3 *Old Forest Habitat*

Old forest habitat is an important source habitat condition that provides essential denning, nesting, foraging, and cover habitat for many wildlife species. The majority of the wildlife SCC species are associated to various degrees with old-forest habitat.

Old growth is a dynamic structural condition that is associated with both mid-seral successional stages dominated by early-seral conifer species and late-seral successional stages dominated by later-seral and climax conifer species. Old forest habitats are distinguished by old trees and related structural attributes, which include tree size, signs of decadence, large snags and logs, canopy gaps, and understory patchiness (Green et al. 2011). Old forest habitat develops when structural elements (e.g., large snags, logs, understory structure) are found in proximity to old, large trees, typically those defined as legacy trees (refer to Appendix x). A wider recognition of mid-seral old growth forest stand conditions has grown out of a national effort to describe old-growth forest attributes and conduct restoration in those types of forests (Franklin et al. 2007; Wisdom et al. 2000).

Due to differences in forest/habitat types, site quality, climate, and disturbance patterns, old forests may vary extensively in tree sizes, age classes, and presence and abundance of structural elements (Helms 1998).

In 2003, the USDA Forest Service (Regions 1, 4 and 6), USDI BLM (Oregon, Washington, Idaho, and Montana), USDI FWS (Regions 1 and 6), Environmental Protection Agency (Region 10), and National Marine Fisheries Service (NW Region) signed an Interagency Memorandum of Understanding whose purpose was to cooperatively implement *"The Interior Columbia Basin Strategy"* through 2012 (USDA Forest Service 2003a and 2003b). A specific component of this strategy is "Terrestrial Source Habitats Maintenance and Restoration." The Terrestrial Source Habitats Maintenance and Restoration component specifically highlights that, "Old forest in the dry and moist forest potential vegetation groups [PVGs] is relatively scarce therefore management direction shall address steps appropriate to prevent the loss of this habitat and promote long-term sustainability of these existing stands. Restoration direction shall be developed to increase the geographic extent and connectivity of these vegetation groups addressing active and passive management options, where appropriate (such as harvest, thinning, prescribed fire and wildland fire for resource benefit)." (USDA Forest Service et al. 2003a).

The term “old-forest” rather than “old-growth” was adopted by the ICBEMP terrestrial landscape assessment team for their analysis (Hann et al. 1997). Spies and Duncan 2009 have also stated that the term “old-growth”, because it had taken on so many social connotations, would not provide the same opportunity to distinguish older forest conditions that historically developed with disturbance from those that developed without disturbance. To facilitate the ICBEMP terrestrial assessment, the following old forest stages (called structural stages) were defined:

- Old-forest multi storied
- Old-forest single storied

For the terrestrial assessment conducted by Hann et al. (1997) structural stages were assigned to Physiognomic Types. Old-forest structural stages were assigned to the following Physiognomic Types:

- Late-seral Shade-intolerant Multi-layer Forest (old-forest multi storied structural stage was assigned to this type)
- Late-seral Shade-tolerant Multi-layer Forest (the old-forest multi storied structural stage was assigned to this type)
- Late-seral Shade-intolerant Single-layer Forest (the old-forest single storied structural stage was assigned to this type)
- Late-seral Shade-tolerant Single-layer Forest (the old-forest single storied structural stage was assigned to this type)

Wisdom et al. (2000) used the structural stages to define source habitat for the wildlife assessment in ICBEMP. This analysis was founded on the terrestrial dynamics assessment conducted by Hann et al. (1997), using the Physiognomic Types and other classification schemes. The term “old-forest habitat” may better represent the desired habitat condition for SCC compared to “old growth” for several reasons, including the belief that the definitions and variables that define old growth vary considerably with no single set of attributes or definitions that describes all types of old growth, particularly that produced by disturbance processes.

For example, some old-growth definitions exclude forests with fire influences, even where fire is a part of the historical disturbance regime. In other cases, such disturbance is incorporated in the old-growth concept. It is however, generally agreed that old-growth forests share several traits in common, for example, they contain relatively mature old trees with little to no evidence of postsettlement activities. Thomas et al. (1979) emphasize that there is no single all-inclusive definition for old growth characteristics which vary by region, forest type, and local conditions. Spies and Duncan (2009) states that a universal old growth definition is not desirable and that forest ecologists should develop unique definitions for each forest type, taking into account forest structure, development, function, and patterns of human disturbance. However, old-growth conditions are a key element of the old forest spectrum for SCC species associated with old forest attributes and conditions. Old growth conditions also support small wildlife species diversity (Groves 1994).

Planning Area: The minimum criteria for defining old forest habitat should use a subset of the large tree size class and associated canopy cover classes, species composition, snags, and coarse woody debris described in USDA Forest Service (2014). Because data for these various attributes are not available a subset of the large tree size classes (≥15 inchess d. b. h. and ≥20 inches d. b. h.) was used to identify vegetative size class conditions that have the potential, at least in terms of some basic criteria, to be potentially old forest habitat. Green et al. 2011 should be a key factor in defining the late-seral porion of the "Old Forest"wildlife habitat definition.

Associated Species—The following SCC are associated with old forest habitat attributes and conditions:

- White-headed woodpecker
- Pygmy nuthatch
- Lewis's woodpecker
- Flammulated owl
- Fisher
- Boreal owl
- American three-toed woodpecker
- Fringed myotis
- Townsend's big-eared bat
- California myotis

5.10.4 *Fine- or Meso-filter elements*

The following habitat attributes can be considered as either fine- or meso-filter elements, or both for SCC and non-SCC species (Hunter 2005).

1) Snags and Coarse Woody Debris

Snags (standing dead trees) are ecologically important habitat structures (for nesting, feeding, perching, and/or roosting) for a wide variety of wildlife species. Historically, the presence of snags, hollow and dead portions of live trees, and woody debris depended on a variety of factors, including vegetative patterns and distribution, site potential, and disturbance regimes. Historical quantities and conditions of snags and coarse woody debris would mirror the vegetative species that occurred on a site and represent the kinds of habitats and mortality agents that operated there (USDA Forest Service 2010a).

Studies of young and mature stands which incorporate a large, old tree cohort provide greater biological diversity than stands of comparable age lacking such a cohort. Forest management practices, as depicted with the variable (tree) retention concept (described by Franklin et al. [2007]), serve to maintain structural (biological) diversity through all forest succession stages.Once they fall, snags become down wood that provide other habitat structures (including den sites) for a different and very wide suite of wildlife species and some plant species.

For some very small or sedentary species (e.g., fungi and some invertebrates), these may constitute entire habitats. For larger creatures (e.g., a mammal that uses logs for dens), these may be a critical element of their overall habitat (Hunter 2005).

Down wood is also critical for nutrient cycling, moisture retention, providing effective microsites for tree regeneration, diversity of soil micro-organisms, and hydrologic function. Snags are short-term and vary greatly throughout the life cycle of a forest stand. If a stand originates following a fire, the resulting young stand may begin under a high number of snags. However, most snags only remain standing for a few years, to a very few decades. How long these snags remain standing is a function of the structure, species composition, and age of the previous stand, the fire severity, snag size, and site factors like soil characteristics, slope position, and landscape position. An insect or disease outbreak may rapidly increase the number of snags. A severe windstorm may rapidly reduce the number of snags (while increasing the amount of down wood). Root pathogens may provide gradual input of snags until all the trees are killed, but depending upon the particular pathogen, these snags may not remain standing for very long. Various severe weather conditions may serve either to increase or decrease snag numbers.

Vegetative composition and diversity, including within-patch structure containing large live trees and snags, and large down wood are the critical components for most native wildlife species. Snags are naturally created over time and as various disturbance processes occur across the landscape. Live trees >15.0 inches d. b. h., are important contributors to snag recruitment in later seral stages. Retaining selected live, large trees in timber harvest units also contributes to both within-stand structural diversity and future snags and large down wood during the mid- and late-seral successional stages.

Conserving dead- wood in a forest managed for timber means avoiding the destruction of existing deadwood and leaving some dead or dying trees behind after a logging operation to support wildlife species diversity (Groves 1994, Hunter 2005).

Associated Species—The following SCC are associated with snags, logs and other coarse woody debris habitat attributes:

- White-headed woodpecker
- Pygmy nuthatch
- Lewis's woodpecker
- Flammulated owl
- Fisher
- Boreal owl
- American three-toed woodpecker

2) Patches

The isolation of patches or distance between patches plays an important role in many ecological processes. Wildife habitat management is managing patch size and habitat quality over time as stands in early-seral stage habitats grow and progress through subsequent seral stages of development. In actively managed areas remnant large-diameter trees may lack habitat attributes of old-forest habitat, such as large-diameter snags and logs, canopy gaps, signs of decadence, legacy trees, and understory patchiness (USDA Forest Service 2010a). Managers need to consider patch size and habitat distribution to ensure wildlife habitat connectivity is retained (USDA Forest Service 2010a).

Features of large patches typically include: 1) A “relatively” similar (i.e., essentially even-aged) stand development stage throughout (i.e., stand-initiation, stem exclusion, stand-re-initiation, mature, and old forest), approximating the historic range of availability and well distributed on the forest landscape, 2) Perimeters located on ‘fire defensible’ topographic (combinations of major ridges, streams and existing roads) or landscape features (aspect and/or landscape breaks), 3) periodic intermediate disturbances, such as pre- and commercial thinning, low- and mixed-severity fire inclusions, 4) Include a variety of forest structure such as forested riparian habitats, mature clumps/legacy trees, and small openings (gaps/inclusions) or sparse understory due to low- and mixed-severity disturbances) (USDA Forest Service 2010a).

Habitat associations with middle-aged and older forest attributes of larger tree sizes, standing dead/down large trees, and patch sizes serve as surrogates for other species or group of species. Large patches of mature and old forest assure the availability and diversity of habitat conditions preferred by fisher, northern goshawk, pileated woodpecker and interior forest species.

For example, in ponderosa pine forests suitable habitat for white-headed woodpeckers among others, are favored by retaining large patches of mature and late mature forest and assuring the presence of large standing and down wood for rearing and foraging (IDFG 2005, USDA Forest Service 2010a). Green et al. (2011) concluded that approximately 47% of old growth ponderosa pine and mixed conifer forests occur in patches of 1,000 to 6,000 acres. Patches on dry aspects are uneven-aged resulting from non- to mixed-severity wildfire. Patches on moist aspects are even-aged with uniform vegetation and fuel conditions resulting from stand replacing fires.

Promoting larger patches of these forest habitats requires both consideration for retention (where habitat componets are in short-supply or lacking) and creation (where large sized trees or other plan components are needed to perpetuate their future availability for wildlife). Methods to conserve and restore habitat and habitat components across the landscape should consider making smaller patches larger, and builds upon existing patches to increase their size if outside HRV. This can result in habitats becoming less fragmented on the landscape, connectivity is restored or improved and landscapes become more in sync with historical conditions (USDA Forest Service 2010a).

Large patches, within the HRV, contribute to the: 1) Retention of mid- and mature forest habitats preferred by fisher, northern goshawk, pileated woodpecker and interior forest habitats, and 2) Better represent natural conditions prior to Euro-American settlement.

Associated Species—The following SCC are associated with patch-related habitat attributes:

- White-headed woodpecker
- Pygmy nuthatch
- Lewis’s woodpecker
- Flammulated owl
- Fisher
- Boreal owl
- American three-toed woodpecker

3) Springs, Pools, and Other Small Wetlands

Smaller wetlands can play a key role in conservation of biodiversity. The unique flora and fauna that occupy springs and the essential role these springs play in providing water for wide-ranging terrestrial animals are a classic example. In addition small, often ephemeral, pools characterize many forests and grasslands where water table confitions allow pool and ponds to form (Hunter 2005).

These sites often support special examples of invertebrates and amphibians because they lack predatory fish, and are likely to be very important to breeding water birds, amphibians and invertebrates within forests manad for multiple uses such as timber production (Hunter 2005).

Since these wetlands are small, independent ecosystems, but they are really too small to be part of a coarse-filter strategy therefore should best considered in a mesofilter context (Hunter 2005).

5.11 CONCLUSIONS

This Assessemt has used broad-scale information from the ICBEMP, the Idaho CWCS and other best-available science to indicate that each of the 13 selected terrestrial SCC require management direction in the Nez Perce-Clearwater National Forests LRMP Revision. This Assessment discloses the amount and distribution of existing habitat for 8 SCC as modeled using the best available information on these species, as well as the broad-scale status of the remaining 5 SCC that were not modeled.

Each of these broad-scale assessments and best-available science documents the need to restore and/or maintain habitat, and address specific risks to species persistence. This Assessment documents strategies and opportunities to restore habitats in short-supply and/or that have been degraded, and manage risks to habitat and species-specific needs.

The information in this Assessment discloses the many needs for terrestrial SCC management that may be viewed by some as constraints on vegetation management. However, the information in this assessment clearly states that if properly approached vegetation management can proceed with a restoration emphasis in many cases. Considering the large amounts of actively managed acres are contain the ecosystems in need to restoration the Forest should be able to integrate these restoration needs into the program of work for timber management through the entire length of the next planning cycle. Thus instead of constraining vegetation management these restoration needs are actually opportunities for vegetation management for the foreseeable future.

The ICBEMP recognizes that trends in forest structure has seen a significant increase in mid-seral stages at the expense of both early- and late-seral stages in the ERUs encompassing the planning area. Throughout the basin, mid-seral shade-tolerant forests seem to be at nearly twice their historical levels (Hann et al. 1997). A widespread change has been the transition of Pacific and interior ponderosa pine old forests to mid-seral stands of interior Douglas-fir and grand fir-white fir.

The ICBEMP recommends the management of mid-seral stands for increased vegetative diversity and structure. The ICBEMP disclosed the implications of the results for managing old-forest structural stages include consideration of (1) conservation of habitats in sub- basins and watersheds where decline in old forests has been strongest, (2) silvicultural manipulations of mid-seral forests to accelerate development of late-seral stages, and (3) long-term silvicultural manipulations and long-term accommodation of fire and other disturbance regimes in all forested structural stages to hasten development and improvement in the amount, quality, and distribution of old-forest stages.

Other best available science also recognize these trends and recommend the management to restore the ponderosa pine ecosystem (Casey et al. 2012, Crist et al. 2009, IDFG 2005, Mehl and Haufler. 2001, Nez Perce Tribe 2011 and NPCC 2003 and 2004a,b). Conservation strategies are in place in Regions 4 and 6 immediately adjacent to the planning area for ponderosa pine ecosystems and associated wildlife species (USDA Forest Service 2010a, Mellen-McLean et al. 2013, USDA Forest Service 2011).

This Assessment also complements the 2005 Idaho CWCS which discusses 12 of 13 of these SCC species as Idaho SGCN and recommends actions for these species as well as the ecosystems that support them. This Assessment also complements the Northwest Power and Conservation Council 2003 Clearwater and 2004 Salmon subbasin plans, and the 2011 Nez Perce Tribe Clearwater River Basin (ID) Climate Change Adaptation Plan.

Lastly, the NPCNF have taken a first step to integrate multiple resource objectives by preparing a management guide titled "*Target Stands for Multiple Objectives"* (USDA Forest Service 2013). This guide describes the development of target stand conditions for the Primary Habitat Type Groups on the Forests through an integrated interdisciplinary process. This document describes desired conditions for, and specifically names, several of the SCC in this Assessmsnt, and indirectly other SCC. This guide also reiterates the ecosystem restoration recommendations made by the ICBEMP and Idaho CWCS, and other best available science documented in this SCC Assessment.

This guide is incomplete at this time. It is recommended that this guide be completed as soon as possible for incorporation by reference into the Forest Plan revision. When complete this guide can complement the recommendations made by the ICBEMP and Idaho CWCS, and other best available science documented in this Assessment, and interface with the Forest Plan Revision.

Various references used in this SCC Assessment recognize and recommend the restoration of ecosystems that have notably declined and have known composition, structure and function departure issues within the planning area (Crist et al. 2009; IDFG 2005, Mehl and Haulfer 2001 and Wisdom et al. 2000). Clear and present opportunities exist for the NPCNF to use integrated and innovative plan components that use silvicultural methods to restore these ecosystems that also support terrestrial SCC while producing timber to support local economies. In light of the increased severity of wildfire and stresses on these ecosystems the need is urgent.

5.12 POTENTIAL PLAN COMPONENTS

Potential plan components to sustain SCC may include DFCs, objectives, standards and/or guidelimes and can be developed based on the following recommendations from the best-available science contained in this Assessment:

- Old forest management, which includes old-growth conditions appropriate for cover-types,

- Protection of the remaining, and restoration of, the large-diameter ponderosa pine ecosystem. This includes the retention of all remaining large-diameter (≥15 inches d.b.h) ponderosa pine trees, reducing late-seral tree competition to sustainable levels, and re-establishing historical fire regime patterns.
- Reduce the extent and influence of shade-tolerant forests in areas needed to protect and restore ponderosa pine and white pine.
- Reduce the risk of stand-replacing fires in late-seral ponderosa pine. Use understory thinning and prescribed burns to enhance development of ponderosa pine old forests and to reduce fuel loads while minimizing impacts to wildlife species.
- Manipulate mid-seral forests to accelerate development of late seral stages where needed while providing early-seral forests to benefit other wildlife species.
- Snag and down log management, which includes retention and long-term management,
- Protection and restoration of riparian habitats,
- Protection of bat maternity and winter roosts,
- Reducing or elimating disease transmission threats to bighorn sheep.
- Retaining patches of undisturbed habitat in vegetation management areas that provide microhabitat amd microclimate conditions capable of supporting species diversity.
- Providing forest stand conditions that reduce soil compaction, and retain and reduce damage to ground cover in timber management areas.
- Manage the spread of, reduce the extent of, and eradicate established non-native invasive noxious plants and animals to the extent possible.
- Decommision un-needed and un-used roads to eliminate barriers to wildlife dispersal, reduce habitat fragmentation, and iprove habitat security as soon as practible.
- Limit or avoid disturbances to unique wildlife habitats such as wet, fractured rock outcrops, calcareous substrates, talus slopes, isolated gorges and narrow canyons, and riverside sandbars.

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