3.2.3.1 Wildlife

The 2012 Planning Rule (USDA, 2012) provides direction to maintain diversity of animal communities and the persistence of native species through an emphasis on a coarse filter approach (FSH 1909.12 23.11 (1)(c)) (U.S. Department of Agriculture, Forest Service, 2015). The coarse filters are those key ecosystems that, when conserved, also conserve the majority of wildlife species. The plan must provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area (U.S. Department of Agriculture, Forest Service, 2015). As described in the Planning Rule and in the Directives, plan components developed for ecosystem integrity and ecosystem diversity are expected to provide for ecological conditions necessary to maintain the persistence or contribute to the recovery of native species within the plan area (FSH 1909.12, sec 23.11).

The Wildlife section evaluates terrestrial and aquatic wildlife species, including birds, mammals, reptiles, amphibians, and some invertebrates. The analysis evaluates the sufficiency of plan components and alternatives to meet the substantive requirements of the 2012 Planning Rule under sections 219.8 – Sustainability, 219.9 – Diversity of plant and animal communities, and 219.10 – Multiple use and associated directives as they relate to wildlife. It also evaluates whether the plan meets requirements of other laws, policies, and regulations pertaining to wildlife as described below in the 'Relevant Laws, Regulations and Policy' section.

Section 219.8 – Sustainability – of the 2012 Planning Rule requires that forest plans must provide for social, economic, and ecological sustainability within Forest Service authority and consistent with the inherent capability of the plan area. Ecological sustainability is provided through ecosystem integrity, which is defined in the planning rule as:

> *The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.*

An ecosystem is defined as the following (36 CFR 219.19):

> Ecosystem. A spatially explicit, relatively homogeneous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries. An ecosystem is commonly described in terms of its:
>
> 1. Composition. The biological elements within the different levels of biological organization, from genes and species to communities and ecosystems.
> 2. Structure. The organization and physical arrangement of biological elements, such as snags and down woody debris, vertical and horizontal distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity.
> 3. Function. Ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances, including wind, fire, and floods.
> 4. Connectivity. Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long-distance range shifts of species, such as in response to climate change.

Ecological integrity, as described above, influences the ecological conditions for wildlife in the plan area. Ecological conditions are defined in the Planning Rule as:

> *The biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems. Ecological conditions include habitat and other influences on species and the environment. Examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species.*

Section 219.8 also requires the plan to provide for social and economic sustainability, which includes multiple uses and ecosystem services. Multiple uses and ecosystem services both have implications for how wildlife is addressed in the plan as directed under 219.10 of the Planning Rule.

Section 219.9 of the 2012 Planning Rule adopts a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area. It does so under two parts pursuant to Section 219.8 *paragraph a* and *paragraph b*. *Paragraph a* is intended to provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area. *Paragraph a* requires plans to maintain or restore the diversity of ecosystems and habitat types throughout the plan area. In doing so, the plan must include plan components to maintain or restore:

i. Key characteristics associated with terrestrial and aquatic ecosystem types;

ii. Rare aquatic and terrestrial plant and animal communities; and

iii. The diversity of native tree species similar to that existing in the plan area.

Ecosystem diversity is defined as “the variety and relative extent of ecosystems” (36 CFR 219.19). Habitat types are defined as “a land or aquatic unit, consisting of an aggregation of habitats having equivalent structure, function, and responses to disturbance” (U.S. Department of Agriculture, National Forest Service, 2015).

Paragraph b of Section 219.9 of the Planning Rule requires that the planning rule requires additional species-specific plan components be included in the plan to provide such ecological conditions in the plan area where ecological conditions are insufficient to provide for at-risk species. At-risk species are defined as “a term used in land management planning and this Handbook (1909.9 zero code) to refer to, collectively, the federally recognized threatened, endangered, proposed, and candidate species and species of conservation concern within a plan area.”

Pursuant to these requirements, this analysis will first evaluate how the suite of plan components and alternatives provide ecological conditions for 1) ecosystem integrity as it relates to wildlife, 2) how they provide for the diversity and abundance of wildlife, and 3) how the plan components and alternatives provide for at-risk species and “contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area”(USDA, 2012). Evaluation of how the coarse filter would provide for the diversity and abundance of wildlife is found in the Diversity and Abundance of Wildlife section. Evaluation of the consequences of the proposed plan for at-risk species are in two documents – the ‘Abundance and Diversity of Wildlife’ section and the ‘Threatened, Endangered, Candidate, and Proposed Wildlife Species’ section.

While meeting the requirements of 219.8 and 219.9 of the Planning Rule, the plan must provide for ecosystem services and multiple uses for wildlife and fish. Section 219.10 requires the deciding official to consider habitat conditions, subject to the requirements of § 219.9 for wildlife, fish, and plants commonly enjoyed and used by the public for hunting, fishing, trapping, gathering, observing, subsistence, and other activities. Plan components for wildlife uses were developed in collaboration with the Nez Perce Tribe and the Idaho Fish and Game. The suite of plan components and alternatives will be analyzed for whether they provide for habitat conditions for species commonly enjoyed and used by the public as described above.

This report provides information on the degree to which the draft plan and alternatives provide ecosystem components that will maintain the diversity of animal communities and support the persistence of most native species in the plan area. By design, this report relies in part on the coarse-filter information in the Forestlands section as a key part of that analysis. The directives state "for most species, the only practical quantitative evaluation of their required ecological conditions is an assessment of habitat conditions (ecological conditions)" (FSH 1909.12 23.13) (U.S. Department of Agriculture, Forest Service, 2015). In all reports, the analysis will evaluate how plan components and alternatives provide ecological conditions for wildlife, first through a coarse filter approach and then, if needed, through a fine filter approach. The fine filter is composed of needs of at-risk species that are not well captured by coarse filter components and require individual attention. Some discussion is included from other resource reports as needed, particularly the Forestlands, Soil Resource, Water Resources, and Aquatic Ecosystems and Fisheries sections, for describing additional ecological conditions relevant to evaluation of wildlife habitats.

The Forestlands section describes how plan components in the No Action Alternative and action alternatives would provide for ecological sustainability and ecological integrity of ecological conditions for species that rely on forest vegetation characteristics, as directed by the 2012 Planning Rule. The Forestlands section discusses the degree to which some key ecosystem characteristics, which are identified as indicators for that analysis, would be maintained or restored by each alternative. More specifically, that report provides information regarding the potential impacts of the draft plan and alternatives on a variety of ecosystems, plant communities, and vegetation characteristics. These plant communities and vegetation characteristics provide many, but not all, of the habitat components required by terrestrial animal communities and native wildlife species. The 'Abundance and Diversity of Wildlife' section of this report will evaluate the effects of the plan components and alternatives with regard to how they will affect wildlife habitats.

Plant communities in the Forestlands section are discussed as broad potential vegetation type groups and analysis in that report addresses succession, dominance types, density, resilience, size class, old growth, aspen, both live and dead large diameter trees, and some non-forested types. These characteristics will support many wildlife species. Many species depend on vegetation structural characteristics as key requirements and will be evaluated under ecosystem plan components. Plant communities for non-forested vegetation and their conditions, as well as effects, are discussed in the non-forested vegetation section of the Forestlands report.

A broad variety of wildlife, both terrestrial and aquatic associated species, use aquatic habitats, riparian areas, rivers, ponds, wetlands, and lakes. Aquatic habitats are discussed in the 'Aquatics Ecosystem and Fisheries' and 'Water Resources' sections. These sections describe how plan components in the No Action Alternative and action alternatives would provide for ecological sustainability and ecological integrity of aquatic habitats, as directed by the 2012 Rule. The 'Aquatics Ecosystem and Fisheries' section discusses the degree to which key ecosystem characteristics of aquatic habitats would be maintained or restored by each alternative from mostly a fisheries perspective. More specifically, that report provides

information regarding the potential impacts of the draft plan and alternatives on a variety of aquatic ecosystems characteristics. These aquatic communities and vegetation characteristics provide many of the habitat components required by aquatic wildlife communities and native aquatic wildlife species. While those reports focus on fisheries and water quality and quantity, the Wildlife section evaluates the effects on aquatic wildlife.

Many species of wildlife in the plan area use or depend on soils, rock, cliff, talus, caves, or non-vegetative characteristics, in part or exclusively, for their habitat requirements. This report refers to those habitat features as substrate habitats, which include soil conditions, rock outcrops, talus, cliffs, caves, mines, cervices, cut banks, or other geological features. For example, many species depend on the ability to burrow into soils for dens and hiding habitats but are otherwise generalists in regards to vegetation. Other species are specialized to vegetation and also require burrowing habitats. A suite of species is reliant upon rock outcrops, talus, or cliff habitats. These species are analyzed as a group under substrate habitats.

The Planning Rule recognizes that coarse-filter plan components may not be sufficient to ensure recovery or persistence of those species within the plan area for some at-risk species, such as threatened, endangered, proposed, or candidate species or those identified as species of conservation concern. Where that is the case, species-specific plan components that would contribute to the recovery of listed species or maintain the viability of species of conservation concern within the plan area are included in the plan. A discussion of how the draft plan and alternatives would contribute to the recovery of threatened, endangered, proposed, or candidate species through both coarse-filter and species-specific plan components is found in the 'Threatened, Endangered, Candidate, and Proposed Wildlife Species' section.

Terrestrial wildlife species are important as contributors to biological diversity and ecosystem integrity, as well as providing benefits to humans in the form of viewing, hunting, trapping, cultural relevance, and sense of place. Many species serve ecological roles that contribute to the function of an ecological system. For example, some wildlife species disperse seeds and play an important role in reforestation after disturbance. Other species disperse fungi, many of which form symbiotic relationships with vegetation required for nutrient exchange between plants and their environments. A number of bird species forage heavily on insects, which provides an important checks and balances system on insect pests. Ensuring that native wildlife species are present, abundant, diverse, and will persist over the long term in the plan area will guarantee that ecosystems function properly and safeguard that wildlife continue to be available for a variety of human uses.

The 2012 Planning Rule requires that the plan must include components, such as standards or guidelines, to maintain or restore connectivity. As it pertains to wildlife, connectivity is defined as "the ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the daily and seasonal movements of animals within home ranges, the dispersal, and genetic interchange between populations, and the long distance range shifts of species, such as in response to climate change" (36 CFR 219.19). Habitat connectivity is widely recognized as a crucial component for maintaining biodiversity and managing for sustainable populations of native species (Cushman & Landguth, 2012; Haber & Nelson, 2015; Hansen, 2009; McClure, Hansen, & Inman, 2016; McIntyre & Ellis, 2011; Parks, McKelvey, & Schwartz, 2012; Wade, McKelvey, & Schwartz, 2015) (Western Governors Association, 2008).

Relevant Laws, Regulations, and Policy

Federal Laws

The following includes the key set of statutory authorities that affect wildlife management on National Forest System lands. They are briefly identified and described below to provide context to management and the draft environmental impact statement evaluation of the wildlife resource. Many other laws, regulations, executive orders, and policies not described below also guide the management of this resource.

Bald and Golden Eagle Protection Act of 1940: This act prohibits unauthorized possession of bald and golden eagles, as defined through subsequent regulations.

Endangered Species Act of 1973, as amended: This act provides requirements for federal agencies with regard to species listed as threatened, endangered, or candidate under the act. Section 2 requires all federal agencies to “seek to conserve endangered species and threatened species.” Section 5 directs the Secretary of Agriculture to "establish and implement a program to conserve fish, wildlife, and plants," including federally listed species. Section 7 requires federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats.

The Federal Cave Resources Protection Act of 1988: The purpose of this act is to protect and preserve significant caves and cave resources, including animal and plant life occurring naturally in caves, on federal lands and to foster cooperation and exchange of information between governmental authorities and those who use caves for a variety of purposes. A list of significant caves is to be maintained and periodically updated and significant caves are to be “considered in the preparation or implementation of any land management plan.”

Migratory Bird Treaty Act of 1918: This act prohibits unauthorized possession of migratory birds, as defined through subsequent regulations.

National Forest Management Act of 1976: This act states that the Secretary shall “promulgate regulations” under the principles of the Multiple-Use Sustained-Yield Act of 1960 to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the Plan” (Pub. L. 94-588, Sec. 5 (g)(3)(B)). The 2012 Planning Rule was determined to be consistent with this act (77 FR 21162).

Nez Perce Treaty of 1855: This treaty retained certain rights to hunt, fish, graze, and gather on the lands ceded to the United States. These rights retained on ceded lands are known as “off-reservation treaty rights” or “other reserved rights.” These treaty rights include hunting, gathering, and grazing rights on federal lands within the plan area. Trust responsibility arises from the United States' unique legal and political relationship with Indian tribes. It derives from the Federal Government's consistent promise, in the treaties that it signed, to protect the safety and well-being of the Indian tribes and tribal members. The federal trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal treaty rights, lands, assets, and resources, as well as a duty to carry out the mandates of federal law with respect to all federally recognized American Indian and Alaska Native tribes and villages.

Sikes Act of 1974, as amended: This act states that Forest Service policies recognize the fact that state agencies and Indian tribes are responsible for management of animals, whereas national forests manage wildlife habitats in cooperation with those entities. The Sikes Act directs the Secretaries of Interior and Agriculture to cooperate with the states in developing comprehensive plans to plan, maintain, and coordinate the conservation and rehabilitation of wildlife, fish, and game, including but not limited to protection of species considered threatened or endangered pursuant to Section 4 of the Endangered Species Act (16 USC 1533) or considered to be threatened, rare, or endangered by the state agency.

Executive Orders

Executive Order 11644 – Use of Off-Road Vehicles – 1972, as amended by Executive Order 11989: This order addresses the use of off-road vehicles on public lands. It requires the Forest Service to "establish polices and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands." The order directs agencies to designate the "specific areas and trails on public lands on which the use of off-road vehicles may be permitted and areas in which the use of off-road vehicles may not be permitted." The minimization criteria are identified in the final rule for Travel Management – Designated Routes and Areas for Motor Vehicle Use. This rule is commonly referred to as the 2005 Travel Management Rule and implements provisions of Executive Orders 11644 and 11989 regarding off-road use of motor vehicles on federal lands. Regulations implementing this rule are found in 36 CFR § 212. The portion of the rule pertaining to motor vehicle use is subpart B and the portion of the rule pertaining to motorized over-snow vehicle use is subpart C, which was updated in January 2015. The "minimization criteria" referenced in the 2015 circuit court opinion and district court order are in 36 CFR § 212.55(b), where specific criteria for designation of trails and areas relevant to wildlife specify that "in designating National Forest System trails and areas on National Forest System lands, the responsible official shall consider effects on the following with the objective of minimizing… (2) Harassment of wildlife and significant disruption of wildlife habitats." The Nez Perce-Clearwater designates specific areas and trails for the use of motor vehicles, including off-road vehicles. These areas and trails are displayed on the Nez Perce-Clearwater's motor vehicle use maps, as required by 36 CFR § 212 subpart B.

Executive Order 12898 – Environmental Justice – February 11, 1994: This order directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations to the greatest extent practicable and permitted by law.

Executive Order 13112 – Invasive Species – February 3, 1999: This order called upon executive departments and agencies to take steps to prevent the introduction and spread of invasive species and to support efforts to eradicate and control invasive species that are established.

Executive Order 13186 – Migratory Birds – January 10, 2001: This order was issued by President Bill Clinton in furtherance of the purposes of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Coordination Act, the Endangered Species Act, and the National Environmental Policy Act. This order requires including effects of federal actions on migratory birds as part of the environmental analysis process. On January 17, 2001, the Forest Service and the Fish and Wildlife Service signed a memorandum of understanding to complement the executive order. The memorandum of understanding expired in 2017; however, other sections of the executive order, coupled with the Migratory Bird Treaty Act and Bald and Golden Eagle Act, address Forest Service avian compliance to protect migratory birds.

Policy

2001 Roadless Area Conservation Rule (36 CFR § 294 subpart B; 66 FR 3244-3273): This rule includes a prohibition on road construction and road reconstruction in inventoried roadless areas and prohibits timber cutting, sale, or removal except in certain circumstances.

2012 Planning Rule: The rule requires Forests to maintain the diversity of plant and animal communities and support the persistence of native species within the plan area. Forests are directed to use a "complementary ecosystem and species-specific approach to provide for the diversity of plant and animal communities" and to maintain species persistence in their planning.

Relative to wildlife species, the rule directs Forests to consider:

1. habitat conditions for at-risk species, subject to the requirements of 36 CFR § 219.9;
2. habitat conditions for wildlife, fish, and plants commonly enjoyed and used by the public for hunting, fishing, trapping, gathering, observing, subsistence, and other activities in collaboration with federally recognized Tribes, Alaska Native Corporations, other federal agencies, and state and local governments (§ 219.10 (a)(5)), subject to the requirements of § 219.9;
3. dominant ecological processes, disturbance regimes, and stressors such as natural succession, wildland fire, invasive species, and climate change;
4. the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8);
5. habitat and habitat connectivity; and
6. riparian areas (§ 219.10 (a)(1)).

The 2012 Planning Rule requires that forest plans use a complementary ecosystem and species-specific approach. The responsible official determines whether or not the plan components provide the ecological conditions necessary to contribute to the recovery of federally listed threatened and endangered species; conserve proposed and candidate species; and provide ecological conditions to maintain a viable population of each species of conservation concern within the plan area. If the responsible official determines that the ecosystem plan components are insufficient to provide such ecological conditions, then additional species-specific plan components, including standards or guidelines, must be included in the plan to provide such ecological conditions in the plan area (36 CFR § 219.9 (b)(1)). If the responsible official finds that it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of a species of conservation concern in the plan area, then the responsible official must show that the plan includes plan components, including standards or guidelines, to maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

The term *Recovery* is defined in the 2012 Planning Rule as "the improvement in the status of a listed species to the point at which listing as federally endangered or threatened is no longer appropriate." The term *Conserve* is defined as "to protect, preserve, manage, or restore natural environments and ecological communities to potentially avoid federally listing of proposed and candidate species." And, the term *Conservation* is defined as "the protection, preservation, management, or restoration of natural environments, ecological communities, and species" (36 CFR 219.19).

2015 Final Land Management Planning Directives: These directives provide specific information regarding implementation of the 2012 Planning Rule, including identifying at-risk species and guidance for development of plan components to provide ecological sustainability for at-risk species. The directives state that plan components developed for ecosystem integrity are expected to provide conditions that will maintain the persistence or contribute to the recovery of native species within the plan area. They also state that if components for ecosystem diversity are not adequate to do that for at-risk species, then species-specific plan components should be developed.

Plan components developed for multiple uses may contribute to, or detract from, ecological conditions needed for at-risk species. For example, on some forests or grasslands a portion of the plan area may have a desired condition for undeveloped remote recreation. Such a desired condition should be taken into account when evaluating the ecological conditions for at-risk species because it may mitigate some stressors, contribute to ecological conditions, or provide refugia.

Development of plan components for proposed and candidate species should be based on the ecological conditions necessary to conserve proposed and candidate species that were identified in the assessment phase or through information brought forward during the public and governmental participation process and maintain or restore their habitats in the plan area to contribute to preventing them from being federally listed (FSH 1909.12, ch. 10, sec. 12.55).

Additional policies specific to Wildlife include the following:

- *36 CFR 212 Travel Management*
- *36 CFR 223 Special Forest Products*
- *36 CFR 228 Minerals*
- *36 CFR 241 Fish & Wildlife*
- *36 CFR 251 Land Uses*
- *36 CFR 254 Land Ownership Adjustments*
- *36 CFR 262 Law Enforcement Support Activities*
- *36 CFR 293 Wilderness*

State and Local Policy

- **Title 36 – Fish and Game:** This policy provides the State of Idaho's comprehensive wildlife laws.
- Idaho Department of Water Resources requirements
- Idaho Department of Environmental Quality requirements

State and Local Plans

Clearwater County Natural Resources Plan: This plan establishes a framework for the county's resource management activities.

Clearwater County Community Wildfire Protection Plan

Idaho County Natural Resources Plan*:* This plan clearly states the desires and objectives of the county regarding management of the natural resources located on public lands located within the county.

Idaho County Wildland-Urban Interface Wildfire Mitigation Plan: This plan was developed to address the National Fire Plan, consistent with Federal Emergency Management Agency requirements, at the county level and it describes the risks and potential treatments within the wildland-urban interface of Idaho County.

Benewah County Natural Resources Plan

Idaho Elk Plan: This plan functions as an action plan to provide the specific goals, strategies, and performance objectives for elk management. The planning process outlines the current status of hunter preferences and wildlife populations to determine goals, strategies, and performance objectives that will drive future management direction. The plan provides guidance to Idaho Fish and Game's staff to manage Idaho's elk habitat and populations.

Idaho Whitetail Deer Plan: This plan provides guidance to Idaho Fish and Game staff to manage Idaho's white-tailed deer habitat and populations.

Idaho Moose Plan: This plan provides guidance to Idaho Fish and Game staff to manage Idaho's moose habitat and populations.

Idaho Mule Deer Plan: This plan provides guidance to Idaho Fish and Game staff to manage Idaho's mule deer habitat and populations.

Idaho Bighorn Sheep Plan: This plan provides guidance to Idaho Fish and Game staff to manage Idaho's bighorn sheep habitat and populations.

Idaho Mountain Goat Plan. This plan provides guidance to Idaho Fish and Game staff to manage Idaho's mountain goat habitat and populations over the next six years. The plan directs Idaho Fish and Game to sustain or increase mountain goat populations across the state. To accomplish this goal, Idaho Fish and Game has identified statewide management direction and strategies, as well as specific strategies for each Population Management Unit (PMU).

Latah County Community Wildfire Protection Plan

Shoshone County Fire Mitigation Plan

State Wildlife Action Plan*:* Idaho's statewide plan for conserving and managing Idaho's diverse fish and wildlife and the habitats they depend on serves as strategic direction to implementing proactive, nonregulatory, action-based solutions to conserve fish and wildlife. The Plan provides a checklist of wildlife species in the state; provides criteria for identifying species of greatest conservation need; and provides an assessment of each species of greatest conservation need, including their extirpation risk in Idaho. The document identifies associated conservation targets, such as habitat and species assemblage, and a narrative description for each conservation target, its viability, and prioritized threats and strategies.

Methodology

Spatial Scale

The spatial scale is the plan area of the Nez Perce-Clearwater. However, in some cases, the evaluation looks at the broader landscape when evaluating cumulative effects, connectivity, and wide-ranging species. The plan area was chosen because it represents nearly 4 million acres of habitats for wildlife, which is sizable enough to contain populations of most species. Furthermore, the Nez Perce-Clearwater only has control over activities and actions within the plan area.

In general, the analysis area for wildlife includes all lands managed by the Nez Perce-Clearwater; however, for the purposes of this document it may include segments outside National Forest System boundaries. In some cases, National Forest System lands may provide all, or a high percentage, of the habitat for a given species; however, in most instances, wildlife generally move from area to area without regard for boundaries. Cumulative effects analyses generally include lands within other ownerships immediately adjacent to the Nez Perce-Clearwater, although for some wide-ranging species the analysis area may have been a little larger and included an evaluation of connectivity between larger areas of habitat, such as connectivity for grizzly bears between recovery zones.

Temporal Scale

In most cases, the temporal scale of analysis included the life of the revised Forest Plan. Some habitat analyses are evaluated over a longer timeframe. The Ecosystem Research Group report (Ecosystems Research Group, 2019), for example, assessed habitat changes for the next five decades. Past actions were also considered, as they play a role in determining the existing conditions and may interact cumulatively with the effects of the revised Forest Plan. In some cases, it may be appropriate to evaluate a longer time scale. Such instances include situations where a wildlife species' generation time or life span is longer than the life of the plan or the five-decade timeframe. Some habitat management may have effects that last much longer than 50 years. For example, management in mature or old forest that could occur under the selected alternative may affect habitat conditions at a site for hundreds of years. These effects would be of little consequence at a landscape scale unless they occurred at a pace that affected the proportions of those habitat types through time in the plan area. To account for these situations, the analysis used modeling for 50-years through SIMPPLLE and 100- and 50-years in PRISM. The analysis recognizes that effects can last over longer time periods.

Some changes that would occur under the plan may be permanent and consequences may be permanent. The conversion of native habitats to a condition dominated by exotic vegetation could have effects that would be more or less permanent. The loss of ancient trees could be permanent from a practical standpoint given the length of time needed for trees to reach that age. Similarly, in the event the climate changes enough so that forest conditions of the past could not be maintained, the effects of some management may never return to their historic range of variability. The question then becomes whether those systems are sustainable through time. In summary, effects for most species will be the life of the plan, except in the cases described above when generation times are long, when species are dependent upon old growth, or in cases where effects are more or less permanent. In those instances, the analysis used different timeframes on a case-by-case basis.

Use of models, maps, and data

The Nez Perce-Clearwater relied on a variety of databases to support the development of plan components and assess the consequences of alternatives to threatened, endangered, and candidate species. The Nez Perce-Clearwater's map-based information is stored in a GIS database maintained by the Nez Perce-Clearwater's GIS specialists. GIS-based data includes layers such as forest vegetation layers, elevation slope and aspect layers, administrative boundaries, management areas, road and travel layers, recreation sites, timber suitability layers, range, wildlife databases, wildlife habitat models, and others.

The Nez Perce-Clearwater used spatial wildlife habitat models to evaluate the environmental consequences of the proposed plan on federally listed threatened, endangered, proposed, and candidate species. The models used are identified in the individual section for each species. Wildlife analyses relied on quantitative and spatial outputs from a number of modeling exercises, using geographic information systems and other tools. Such models were used to evaluate:

- proportions of unique habitat types affected by permanent human developments, such as roads and other infrastructure;
- amounts and types of habitat for species, such as lynx and wolverine;
- important areas for wildlife habitat connectivity; and
- predicted changes in climate patterns and potential impacts to wildlife and habitat.

Statistician George Box famously wrote "all models our wrong but some are useful" (Box, 1979). This statement implied that models do not perfectly represent reality exactly, but models often do provide remarkably useful approximations (Box, 1979). A model is a simplification or approximation of reality

and will not reflect all of reality. In this analysis, it is not assumed that the models are exact representations of reality, only that they approximate reality in a useful way through the parameters they are meant to inform. With this in mind, it is important to understand that models have limitations. There is uncertainty with all models, including models of the natural range of variation that occurred in the past, as well as the changes predicted to occur in the future. In addition, models, maps of habitat, and numeric estimates of habitat or species populations may change over time due to changes on the ground, as technology changes to acquire better data, or as on-the-ground inventories are conducted that better inform our understanding. Inventories, models, maps, and data may be updated periodically for the implementation of projects.

A variety of sources were used to determine historic and existing vegetation conditions on the Nez Perce-Clearwater. The development of management recommendations for the draft environmental impact statement to maintain or restore ecological conditions was based on the historic range of variability and desired future conditions influenced by climate change. Movement towards the desired conditions for vegetation under the revised Forest Plan would provide for an array of ecological communities of sufficient size, structure, and distribution that is expected to maintain habitats for the vast majority of native species that occur on the Nez Perce-Clearwater. See the Forestlands section for additional information.

The natural range of variation reflects the ecosystem conditions that have sustained the current complement of wildlife and plant species on the Nez Perce-Clearwater and provides context for understanding the natural diversity of ecosystems and processes, such as wildfire, insects and disease, and plant succession. The natural range of variation, current conditions, future trends, and effects of alternatives for vegetation were estimated using the SIMPPLE and PRISM models, which use VMap and Forest Inventory and Analysis data sets for inputs and calibration of the models. SIMPPLLE estimates the natural range of variation for vegetation composition, size class, canopy cover, density, pattern, patch size, and patch distribution (Ecosystems Research Group, 2019). SIMPPLLE is a spatially-interactive, dynamic landscape modeling system for projecting temporal changes in the spatial distribution of vegetation in response to insects, disease, wildland fire, and other natural and management-caused disturbances.

A Canada lynx habitat model was created, as described in the 2014 Threatened, Endangered, Proposed, and Candidate Species Assessment ((U.S. Department of Agriculture, 2014). This model used vegetation data for broad potential vegetation types that are known to contribute to lynx habitat. The lynx habitat was run in the SIMPPLLE to estimate the natural range of variability for lynx habitat in the plan area. Vegetation model outputs were then used to determine the effects on lynx habitat from the plan components and alternatives. The Ecosystem Research Group interpreted vegetation model outputs to estimate the natural range of variation and current and potential future habitat for a select set of wildlife species over the next 50 years. Although model outputs show future trends over the next 50 years, there is uncertainty regarding the timing and magnitude of trends due to the uncertainty associated with the models.

In some cases, we relied on models that were developed by scientists or state agencies. For example, we employed models developed by a combination of the Inman wolverine habitat model (Inman, 2013) and the Copeland wolverine habitat model (Copeland et al., 2010). In some cases, models were relied upon that were developed by scientists or state agencies. For example, models employed were developed by a combination of the Inman wolverine habitat model (Inman, 2013) and the Copeland wolverine habitat model (Copeland et al., 2010) and a composite model of the two to estimate wolverine habitat in the plan area.

Multiple connectivity models have been created for many different species using a variety of methods. The Ecosystem Research Group interpreted vegetation model outputs to estimate connectivity of vegetative cover for wildlife over the next 50 years (See Appendix C for more details). This was one of many aspects of connectivity considered in the development of plan components and analysis of effects. Models for connectivity for each species were obtained from published scientific articles.

Downscaled climate models were used to predict the effects of a changing climate. For the draft environmental impact statement, the Nez Perce-Clearwater used a compilation of climate change effects published for the U.S. Forest Service Northern Region Adaptation Partnership (Halofsky et al., 2018a, 2018b) that summarizes climate change projections by subregions. Furthermore, McKelvey and Buotte (2018) provided a summary of modeled climate change effects on wildlife in the northern Rocky Mountains.

Past, Present, and Future Activities used in the Analysis

Past and present activities have affected habitat conditions in the plan area. Activities and factors include fire suppression, past timber harvest practices, road development, exotic forest diseases, invasive plants, fuels, and mining. Before about the 1980s, timber management, coupled with fire suppression, favored dominance by shade intolerant forest species, reduced old growth, increased forest density, changed patch size, reduced patch heterogeneity, changed landscape pattern, and reduced amounts of non-forested habitats. Since the 1987 plans were signed, timber harvest has declined but fire suppression has continued which has exasperated some conditions like encroachment of grand fir into ponderosa types, decreased early seral and non-forested habitats, increased mature seral stages, continued favoring of fire intolerant species, and decreased heterogeneity across the landscape.

Roads increased through the managed front country with associated timber harvest through the 1980s, but the road system has been reduced by hundreds of miles through Forest Service closures since the 1987 plans were signed. Roads were also reduced or prevented through the Idaho Roadless Rule. Still, some areas in the managed front have relatively high road densities usually on lands where timber harvest is emphasized.

Exotic forest disease, such as blister rust, has caused substantial decline in two important tree species, the western white pine and the whitebark pine. Whitebark pine provides mast for a number of wildlife species. The effects of the loss of white pine are unknown for wildlife but probably could be an important change in wildlife habitat.

Mining was extensive in the days of early European settlement and several areas of the Nez Perce-Clearwater were impacted by the gold rush. Most of the impacts were to river systems where, in some cases, extensive changes to stream geomorphology occurred. Mining continues today but is much less intrusive. It is mostly constituted of small-scale operations that are conducted so as to minimize impacts to federally listed fish.

A number of invasive weeds have been introduced and spread. In some cases, these species have displaced native vegetation, especially in the warmer drier, non-forested habitats. These serve as important winter habitats for big game and important habitats for species that use non-forested habitats. These changes can be more or less permanent without comprehensive restoration and an integrated approach to control the spread of invasive weeds. Existing invasive weed species continue to spread and new invasive weed species continue to be introduced outside of Forest Service control. Ongoing efforts to control and prevent invasive weed species continues through cooperative weed partnerships.

Methods and Assumptions

Evaluation of Threats

The Nez Perce-Clearwater adopted a framework similar to those used by a number of conservation organizations, including the Nature Conservancy, the International Union for Conservation of Nature and Natural Resources, and Nature Serve, for identifying the magnitude of threats (Salafsky, 2003). The general approach is to evaluate the scope and severity of threats to assign the magnitude of the threats. The Nature Serve method uses a combination of the scope of the threats and the severity of the threats to assign an estimated impact. The Nez Perce-Clearwater adjusted the scale of the threats to the spatial distribution of the Nez Perce-Clearwater and used the Nature Serve criteria for assigning scope and severity.

The scope of a threat is the spatial overlap of that threat with that of the conservation target, which in this case is the key ecological characteristic or species distribution in the plan area. The severity of the threat is the extent to which it will either reduce the percent area of a conservation target or reduce the population numbers, extent, or distribution of a species. The scope was informed by evaluating the distribution of the threat against either 1) the distribution of modeled habitat within the Nez Perce-Clearwater or 2) the distribution of observations within the habitat preferences of the species when habitat models were not available. The severity is the degree to which a threat is likely to destroy or eliminate populations or reduce distribution within next 15-years.

The impacts or magnitude of the threat were assigned based on a matrix that assigns a severity score based on the combination of these two factors (Salafsky, 2003; Master et al, 2012). Depending upon the combination of scope and severity, the method assigns a relative threat impact that ranges from very high, high, medium, and low.

Table 1. Definitions of scope and severity for evaluation of threats to wildlife in the plan area.

Threat Scope
Pervasive = Affects all or most (71-100%) of total population for a species or occurrences in plan area or affects area/percent of habitat
Large = Affects much (31-70%) of total population for a species or occurrences in plan area or affects area/percent of habitat
Restricted = Affects some (11-30%) of total population for a species or occurrences in plan area or affects area/percent of habitat
Small = Affects a small proportion (1-10%) of total population for a species or occurrences in plan area or affects area/percent of habitat
Negligible = Affects a negligible proportion (<1%) of total population or occurrences
Unknown
Does not occur = Threat does not occur within plan area
Threat Severity
Within the scope, the threat is:
Extreme = Likely to destroy or eliminate occurrences or reduce population or distribution of habitat 71-100%
Serious = Likely to seriously degrade/reduce affected occurrences or habitat or reduce population 31-70%
Moderate = Likely to moderately degrade/reduce affected occurrences or habitat or reduce population 11-30%
Slight = Likely to only slightly degrade/reduce affected occurrences or habitat, or reduce population 1-10%
Negligible = Likely to have only negligible negative effects on occurrences or habitat or reduce population <1%
Neutral or Benefit Potential = Not a threat
Unknown

The distribution of the threats was often constrained or determined by land designations, such as designated wilderness, Idaho Roadless Rule areas, Wild and Scenic Rivers, or multiple-use lands. Because management areas by nature are spatial in extent, the analysis found it easy to evaluate the scope of threats by nesting them within management area direction. For example, designated areas, such as wilderness, prohibit many management actions. Whereas, in the general forest areas, more management actions are allowed that could be considered threats, such as timber production, motorized recreational uses, road construction, or other threats that are allowed. Therefore, the analysis could analyze the effects of the threats from the plan direction, plan components, and alternatives by evaluating the percent of a species habitat or area occupied by various land designations. For any given threat, if that activity is not allowed under the management direction for the land designation, then it was not considered a threat for that portion of the Nez Perce-Clearwater. When a threat was present regardless of management area direction, the distribution and intensity of the threat was informed by published literature, models, or agency expertise.

Figure 1. The rule-based threat category based on the combination of scope and severity.

		Scope				
		Pervasive	Large	Restricted	Small	*Unknown*
Severity	Extreme	Very High	High	Medium	Low	Medium
	Serious	High	High	Medium	Low	Medium
	Moderate	Medium	Medium	Low	Low	Low
	Slight	Low	Low	Low	Low	Low
	Unknown	Medium	Medium	Low	Low	

Threats were evaluated in detail in this report when they were identified as medium through very high or if a threat was identified within the best available scientific information as significant threats to threatened, endangered, or candidate species. Plan components and alternatives were developed to address threats within Forest Service control to federally listed threatened, endangered, proposed, or candidate wildlife species and are evaluated below. The intended effect of plan components is to reduce the scope or severity of threats. Alternatives considering land allocation, such as those for management areas, recommended wilderness allocation, and Wild and Scenic River suitability, often altered the scope of the threats.

The unified classifications of threats (Salafsky, 2008) was used as the basis to identify the list or definition of threats. This classification system is a hierarchical listing of terms and associated definitions that are comprehensive and exclusive at the upper levels of the hierarchy, expandable at the lower levels, and simple, consistent, and scalable at all levels. In some cases, the analysis found it was necessary to use expanded definitions at the third level. For example, the analysis evaluated the effects of several types of practices associated with silviculture distinctly as third level threats because their effects are different. For example, regeneration harvest has different effects than thinning and the Nez Perce-Clearwater thought it useful to distinguish these. Examples of these categories include commercial and noncommercial thinning, intermediate harvest, clear cuts, site prep, and firewood gathering. Similarly, the analysis expanded recreation and evaluated more specific categories of recreation than is generally included in in the standard lexicon (Salafsky, 2008). To focus our analysis, some threats were eliminated altogether because they did not occur within the plan area. So, the analysis evaluated these threats only once for the whole plan area and, when the threat did not occur, the analysis did not continue using that category of threats. For example, agricultural and aquaculture do not occur within the plan area as defined. The Nez Perce-Clearwater is not aware of any oil and gas production in the plan area. The analysis considered the plan area to be absent of war, military exercises, and civil unrest as these are not threats at this time and are not likely to be threats within the life of the plan. These categories were considered but eliminated from future evaluation.

Assumptions

The forest plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carry out a project or activity, including ground-disturbing actions. As a result, it does not result in direct effects to wildlife but may result in indirect or cumulative environmental consequences from managing the Nez Perce-Clearwater under this programmatic framework. Before ground-disturbing actions take place, they must first be authorized in a site-specific environmental analysis. Therefore, none of the alternatives would cause unavoidable adverse impacts or an irreversible or irretrievable commitment of resources. The Forest Plan's desired conditions, objectives, standards, guidelines, management area allocations, and suitability will be followed when planning or implementing new site-specific projects and activities. Laws, regulations, and policy regulations will also be followed when planning or implementing new site-specific projects and activities. Terms and conditions and reasonable and prudent measures resulting from U.S. Fish and Wildlife Service consultation on the programmatic framework of the forest plan will be followed when planning or implementing new site-specific projects and activities, unless modified by site-specific consultation.

The planning rule makes the assumption that natural systems will provide the ecological conditions for most native species in the plan area if they are operating within their natural range of variability and have ecological integrity. This framework is identified by the planning rule as the coarse filter. The coarse filter concept has not been subject to rigorous scientific testing. However, the coarse filter approach is much more practical from a management stand point in providing for the diversity and abundance of wildlife, which moves away from single species management. Implementation will be subject to testing with appropriate monitoring data. See draft Revised Forest Plan Appendix 3.

Effects analyses, including some of the modeling efforts, are based on the following assumptions:

- There is some degree of uncertainty with all modeling efforts, but the models used in the effect's analysis provide a reasonable approximation of past, current, and predicted future environmental conditions upon which to base assessments and form conclusions.
- Data collected at the national forest, regional, and national scale have varying levels of accuracy but provide a reasonable representation of wildlife occurrence, abundance, distribution, and habitat conditions on the Nez Perce-Clearwater.
- The natural range of variation reflects ecosystem conditions that have sustained the current complement of wildlife and habitats on the Nez Perce-Clearwater and provides the context for understanding natural diversity of ecosystems and processes, such as wildfire, insects and disease, and natural plant succession.
- Population trends of wildlife species may change as a result of effects from National Forest management practices. However, due to the natural range of vegetation patterns and disturbance processes in the northern Rocky Mountains, fluctuations in wildlife populations and distribution are normal and often result from natural factors, such as predation, starvation, disease, or wide-scale habitat changes resulting from fire, flood, drought, and other natural disturbance processes. For migratory species, a change in population may not reflect a change in local habitat conditions but rather occur as a result of activities or conditions experienced elsewhere in the United States or even in other countries.
- Effects of permanent changes to habitat are more impactful than those that temporarily alter habitat conditions but do not result in permanent habitat loss. Permanent habitat loss includes construction of buildings, paved roads, dams, and some aquatic alterations. Temporary impacts result from changes to habitat that will recover through time. Examples of these types of impacts include forestry, fuels treatments, and wildfire. These impacts do not result in permanent loss of habitat.
- Global and state species rankings are accurate indices of species status at the relative scale but may or may not be indicative of local wildlife populations in the Nez Perce-Clearwater.
- Wildlife habitat occurs as a function of the biophysical composition of the landscape. Habitat for wildlife is a product of the vegetation, water, soils, topography, and associated both natural and human-induced ecological processes from the micro-site level to local, regional, and global extents. The wildlife analyses rely on, and often tier to, information and analysis presented in other sections of this document.

Wild animals are mobile, wary, and often actively avoid humans. Therefore, it can be difficult to locate and study individuals, let alone obtain meaningful scientific information for entire populations. Population trend information is extremely difficult to obtain because it requires data for at least a reasonable reference set of individuals, including information on survival and reproduction rates and immigration and dispersal. Considering the large number of wildlife species inhabiting the vast expanse of the Nez Perce Clearwater for at least part of their life cycle, there is limited scientific information on biology, ecology, and population trends for the majority of species present that is specific to the plan area. Some species are rare or associated with remote, rugged environments or are present here for a relatively short time before moving elsewhere, making detection and observation even more difficult.

Habitat, on the other hand, is generally stationary and can be readily surveyed, monitored, and studied over time. However, the large geographic extent and wide range of habitat diversity within the Nez Perce Clearwater generates considerable complexity for research and monitoring purposes. Demonstrating causality and relationships between the myriad of factors affecting wildlife habitat is not only difficult

but also costly. As a result, uncertainty exists regarding the direct, indirect, and cumulative impacts of various collective management activities on individual animals, habitat, and wildlife populations. Further, the science surrounding climate change is still relatively new and somewhat limited. While there is an appreciable body of science on the topic and information is growing at a considerable rate, there is still much ambiguity and scientific disagreement on not only the potential impacts to habitat but also how such impacts might affect wildlife populations.

The analysis assumes that there is variability in the abundance of different species but that the coarse filter would provide for the majority of these species. Similarly, the analysis assumes that few species require species specific plan components. However, the analysis also assumes that most species have a distinctive ecological niche that allows them to persist or thrive despite competition from other species. While many species have a distinctive niche, most habitat features that make up the niches of species are often common and, in most cases, will be present without specifically describing these features in desired conditions provided for specifically by plan components.

Providing for ecological integrity is an outcome of the revised Forest Plan. It starts with a comparison of the current abundance and condition of various habitats with ecological reference conditions, including the historic range of variability, based on our knowledge of the past and on our understanding of ecological processes, such as fire, flooding, insects, and disease. This coarse filter approach to providing ecological conditions that provide for the diversity and abundance of wildlife and viable populations of Species of Conservation Concern is reflected in the vegetation desired conditions in plan components and alternatives for the revised Forest Plan. The coarse filter approach forms the foundation of the analysis for each species. The report by the Ecosystem Research Group (2019) assessed the effects on selected species of moving towards the desired conditions for vegetation. It is important to note that the Ecosystem Research Group (2019) found that habitat abundance would be maintained for all the species analyzed in that report. The coarse filter concept has not been subject to rigorous scientific testing.

The companion approach to the course filter of ecosystem diversity is the “fine filter” approach in which conservation strategies are used for individual species or groups of species to contribute to species diversity. The fine filter approach narrows the focus to those species that require ecological conditions that may not be provided through coarse filter plan components. This fine filter approach is reflected in the species-specific plan components for wildlife found in the draft Forest Plan. Each species’ assessment in this report evaluates the effects of the coarse filter, fine filter, and other components in the draft Forest Plan.

A variety of sources were used to determine historic and existing vegetation conditions on the Nez Perce-Clearwater. The development of management recommendations to maintain or restore ecological conditions was based on the historic range of variability and desired future conditions influenced by climate change. Movement toward the desired conditions for vegetation under the revised Forest Plan would provide for an array of ecological communities of sufficient size, structure, and distribution that is expected to maintain habitats for the vast majority of native species that occur on the Nez Perce-Clearwater. See the Forestlands section for additional information.

Measurement Indicators

Key ecosystem characteristics were identified as indicators of ecological integrity of biological resources in term of composition, structure, function, and connectivity. Some of these components are addressed in detail in other sections of the Draft Environmental Impact Statement. Since wildlife habitat is largely dependent upon hydrologic and vegetative conditions, the wildlife and habitat analyses presented within his report often tiers to key indicators and measures found in the other sections. Other key indicators and measures of wildlife habitat quality vary by wildlife species and unique habitat types and are addressed in those sections that follow. Unless noted otherwise for a particular species or habitat, key indicators for indirect and cumulative effects include quantitative measures where available of anticipated changes to species habitats, as well as qualitative descriptions of plan component contributions to, or potential to address, key stressors for species and their habitats.

For forested habitats, key characteristics include the percent of various size classes, the relative density, species composition, dominance type, the amount and size of snags, the amount and size of downed wood, the presence of large and very large live trees within many age classes, connectivity of forested habitats, and the landscape configuration and distribution of forest patches. Also important are the presence and distribution of stands of deciduous forest.

For non-forested habitats, key indicators are condition, species composition, extent, and distribution. As non-forested habitats are uncommon in the forest, the connectivity of non-forest vegetation is an important consideration. These are discussed in conjunction with early seral conditions as many species use both.

As many species use ecotones, which are the edges between two habitats, the interface between non-forested and/or early seral forest and mature forest is an important feature of habitat for many species. This is best indicated by the landscape configuration and distribution of patches of nonforested and early seral forest and mature forest. The size and shape of patches influences the quality of habitats for species that use ecotones. A landscape that reflects natural disturbance patterns provides this patch heterogeneity.

For aquatic wildlife habitats, key indicators are the amount and distribution of aquatic habitats relative to management areas, the condition of and types of vegetation surrounding aquatic habitats, the condition of water quality, stream geomorphology, and hydrology. The connectivity of aquatic and riparian habitats is also an important consideration.

Many species are vegetation generalists, occurring in many vegetation types and conditions. Rather than vegetation conditions, these species require features like rock outcrops, talus, cliffs, cutbanks, caves, or soils suitable for burrows, rocks, or logs for hiding. These habitats are collectively referred to as substrate habitats and the presence of wildlife that depend upon them often depend upon their presence but are not often dependent upon their condition. While these habitats are often fairly permanent, they can be impacted by some activities that cause loss or alteration. Examples include mining and quarrying and road construction. Some species that use these habitats might be sensitive to recreation like rock climbing. Their presence, distribution, and threats are the key indicators for these habitats.

Some species are habitat generalists, occurring in many habitats, but are reliant upon the presence of the resources they require. Examples include hummingbirds relying mostly upon nectar resources and predators like coyotes occurring wherever prey is present. From a habitat standpoint, the species that use nectar resources would require flowering plants. Therefore, flowering plants are an indicator for some wildlife species.

A few species are high elevation or alpine specialists. Examples of these species are the wolverine, the grey crowned rosy finch, and American pipets. Their habitats have few threats, except for perhaps future climates. High elevation vegetation functioning within the natural range of variation are indicators for some of these species. Whitebark pine is important to grey jays as they exploit the mast resource these trees provide. Whitebark pine is another indicator for alpine habitats.

About one-third of all wildlife species are dependent upon either snags or downed wood, or both, so snags and downed wood are analyzed in their own section. Snag retention guidelines vary by alternatives and various species use different size classes and decay stages. Indicators for snags are whether they will be present and usable by a variety of wildlife based on the sizes and decay classes available under the plan components and alternatives.

Key indicator for analysis of most wildlife species associated with hardwood trees

Hardwood tree dominance type and presence is an important indicator for the wide variety of wildlife species associated with hardwood tree habitats. Trends over time in the non-coniferous vegetation types, such as hardwood and grass and shrub plant communities, are difficult to portray through modeling. Persistent non-forested plant communities are relatively rare types on the Nez Perce-Clearwater and are naturally fragmented in nature and there is no specific direction in the PRISM model (see Appendix B) to sustain these non-coniferous vegetation types. Therefore, model results, although helpful, should be supplemented with other information for discerning the trend and amounts of these communities over time. Since hardwood trees are largely associated with early-successional forest conditions, modeling of forest successional stages, including forest size classes, and disturbance processes and their effects on non-coniferous vegetation can provide insight and information for the assessment of trends in hardwood species over time.

Because deciduous trees and shrubs along low-gradient streams are maintained by periodic flooding, the Ecosystem Research Group modeled upland riparian deciduous communities that are maintained by other disturbance factors, such as fires, insects, and disease, on the Nez Perce-Clearwater. Their query was designed to assess the availability of habitats that provide shrubs and deciduous trees within riparian habitat conservation areas and riparian management zones. For the current condition, a GIS layer including the locations of all VMap areas with cover types dominated by shrubs and deciduous trees was used. For purposes of modeling future vegetation treatments, areas that are mapped as riparian habitat conservation areas and riparian management zones are not suitable for timber production. Future habitat was modeled as forest openings containing riparian shrubs and hardwood trees, primarily resulting from moderate- or high-severity wildfires and insects and disease within 20-years following the disturbance.

The model predicts that, under all alternatives, upland riparian deciduous communities would stay within the minimum and maximum range of the natural range of variation over the five-decade future time period. Acres of riparian habitat in an early-successional condition would increase dramatically as a result of primarily wildfire disturbance. The results under the alternatives are all similar in magnitude and trend. These disturbances are probably positive trends for broad leaved and riparian associate species. However, some species that depend upon more mature forest conditions in riparian areas or forested wetlands will likely be adversely affected disturbance in riparian habitats locally when these disturbances occur.

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