

WILDLIFE REVIEW FOR MIGRATORY BIRDS

RANGER DISTRICT:

Columbine Ranger District,
Hinsdale, La Plata and San Juan Counties, Colorado

PROJECT NAME:

Weminuche Grazing Analysis Landscape

BACKGROUND:

An Executive Order titled responsibilities of federal agencies to protect migratory birds was enacted in 2001 (EO 13186). This Executive Order highlights the important role of cooperation and communication among federal agencies in implementing bird conservation activities. The order requires federal agencies to consider the effect of land management planning and project implementation on migratory birds, particularly those species for which there may be conservation concern. EO 13186 requires federal agencies to “support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.” Agencies are to “restore and enhance the habitat of migratory birds, as practicable” and to “evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.” This direction is to be implemented “to the extent permitted by law and subject to the availability of appropriations and within administration budgetary limits, and in harmony with agency missions.”

There is conservation concern for some species of migratory birds due to naturally small ranges, loss of habitat, observed population declines and other factors. Migratory bird species of concern, for which project-level conservation opportunities may be applicable, are identified by a variety of sources. These sources include the Endangered Species Act (addressed in the Biological Assessment), the Forest Service Rocky Mountain Regional Forester’s Sensitive Species List (addressed in the Biological Evaluation), the SJNF Management Indicator Species list (addressed in the MIS analysis), the U.S. Fish and Wildlife Service’s Birds of Conservation Concern list (USDI Fish and Wildlife Service 2008), the Partners in Flight Colorado Bird Conservation Plan (Beidleman 2000), the Colorado Division of Wildlife’s Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern (CDOW 2005), Colorado’s Comprehensive Wildlife Conservation Strategy (CDOW 2006), and internal and public scoping.

This section reviews likely potential effects of the project alternatives on migratory bird species for which there may be conservation concern and that are thought likely to occur in the Weminuche Landscape. More detailed information on the habitat requirements, status, distribution, abundance and key habitat components of most species is on file at the Columbine Ranger Station office in Bayfield, Colorado and will not be reviewed here.

LAND MANAGEMENT PLANNING for BIRD CONSERVATION:

The San Juan National Forest recognizes the ecological and economic importance of migratory birds. The Forest Service implements bird conservation actions on a daily basis through applying National Forest Land and Resource Management Plan (Forest Plan) goals, objectives, standards and guidelines, and management direction for planning level and project-level decisions. Migratory bird conservation is often achieved through applying mitigation and effects analyses for bird species of concern, and through participating in Monitoring Colorado's Birds (Beason et al. 2005), and a number of local bird monitoring activities such as the North American Breeding Bird Survey (Sauer et al. 2005).

Bird Conservation on National Forest System Lands:

The San Juan National Forest (SJNF) conducts bird conservation activities at several levels by implementing: (1) Forest Plan goals, objectives, standards and guidelines, (2) Forest-wide bird monitoring activities (Beason et al. 2005, Sauer et al. 2005), and (3) site-specific project design criteria, mitigation and effects analyses for identified species of concern.

In addition, the SJNF Forest Plan (USDA Forest Service 2013b) includes a suite of management practices that may affect the condition of habitats used by migratory birds. These practices are guided by a variety of management directions that includes management area prescriptions, desired conditions, management goals and objectives, and management standards and guidelines. Forest Plan direction that is most relevant to bird conservation applies to vegetation diversity, landscape structural diversity, snags and coarse downed woody material, riparian condition, habitat improvements, ecological disturbance processes, and human disturbance at nesting sites.

Implementing Forest Plan direction, along with applicable laws, regulations and policies, supplies a framework for project design and mitigation that promotes management practices designed to conserve migratory birds. Examples of other laws, regulations and policies that are applicable to migratory bird conservation and that are applied during Forest Plan implementation include:

1. The Endangered Species Act, with its list of Threatened, Endangered, Proposed or Candidate species. Section 7 of the ESA requires analysis of project effects to individuals and priority habitats, along with consultation with the U.S. Fish and Wildlife Service in cases where a federal action may affect a listed species or its habitat. Results of the analysis of project effects are documented in the Biological Assessment (BA) found in the project record.
2. Other federal legislation, such as the Bald Eagle Protection Act, requires federal agencies to analyze potential project effects to other bird species or their key habitat components.
3. The U.S. Forest Service Rocky Mountain Region (Region 2) Sensitive Species list (USDA Forest Service 2013a) with its list of species for which there may be viability concern and agency actions may influence population trends or habitat value. Agency policy requires analysis of project effects to each species and its habitat with determination of effects documented in the Biological Evaluation (BE) found in the project record.
4. San Juan National Forest Land and Resource Management Plan (Forest Plan; USDA Forest Service 2013b) standards and guidelines for snag and large downed wood require maintaining minimum densities and sizes of standing snags (page 22, 2.2.7; page 30, 2.2.83; page 31, Table 2.2.3), migratory bird habitats (page 40, 2.3.55), habitat for management indicator species (page 36, 2.3.4; page 37, 2.3.7; page 37, 2.3.8; page 38, 2.3.23), alpine willow (page 37, 2.3.16; page 40, 2.3.56),

- wildlife leave trees in timber harvest areas (page 30, 2.2.82), and landscape structural diversity (page 30, 2.2.74,) within project areas after project completion.
5. Forest Plan standards and guidelines that specifically providing buffer zones and distances around raptor nests and roost sites from disturbance or vegetation manipulation (page 38, 2.3.35; page 40, 2.3.49; page 42, Table 2.3.2).
 6. Forest Plan standards and guidelines that specifically protect water quality and water influence zones (i.e. riparian zones) (page 53, 2.4.2, 2.4.3, 2.4.4, 2.4.6; page 54, 2.4.21, 2.4.22; page 55, 2.4.26, 2.4.28).
 7. Conservation measures recommended for game species by the Colorado Division of Parks and Wildlife, and U.S. Fish and Wildlife Service (mainly waterfowl).

BIRD CONSERVATION LISTS CONSIDERED:

To implement the conservation measures described in the Executive Order, all of the bird conservation lists described above were reviewed. There is much overlap among these lists, with many species occurring on more than one list and some species occurring on five or more lists (Appendix A).

The following section focuses on migratory bird species that have been identified as candidates for conservation priority by at least one of the following six lists: the U.S. Fish and Wildlife Service (FWS) Birds of Conservation Concern list for the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR 16), Colorado Partners in Flight Bird Conservation Plan for the Southern Rocky Mountains Physiographic Area (PA 62), the Colorado State Threatened and Endangered list, the U.S. Forest Service Rocky Mountain Region Sensitive Species List, species listed under the federal Endangered Species Act, and species designated as Management Indicator Species on the San Juan National Forest. More detailed information on the habitat requirements, status, distribution, abundance and key habitat components of most species is on file at the Columbine Ranger District office in Bayfield, Colorado and will not be reviewed here.

Birds of Conservation Concern (BCR 16):

Birds of Conservation Concern are those bird species of the United States identified by the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service 2008) that, due to population decline, naturally small range, small population size, threats to habitat, or other factors, are candidates for pro-active conservation action. This list is intended to focus conservation attention on species that may be declining or have special habitat needs, and promote the long-term conservation of bird diversity in the United States. There are 27 bird species on the BCR 16 list, of which 6 species are known or thought likely to occur in the Weminuche Landscape (Appendix A). A total of 8 species on the BCR 16 list are not likely to occur in southwestern Colorado and 13 additional species are not likely to occur in the Weminuche Landscape.

Partners in Flight Bird Conservation Plan (PA 62):

Colorado Partners in Flight developed the Colorado Bird Conservation Plan (Beidleman 2000) to highlight priority bird species and habitats that occur in Colorado, based on the Partners-In-Flight Species Prioritization Process. The Colorado Bird Conservation Plan divides the state of Colorado into three Physiographic Areas, with the analysis area occurring in the Southern Rockies Physiographic Area (PA 62). The PIF plan identified 11 priority habitats for PA 62 including: alpine tundra, aspen, cliff/rock, high elevation riparian, lowland riparian, mixed-conifer, mountain shrubland, ponderosa pine, sagebrush shrubland, spruce-fir, and

wetlands. About 81% of the analysis area is in three PIF priority habitats, alpine tundra, spruce-fir and aspen dominated habitats. There are 31 bird species on the PA 62 list (Lewis's woodpecker occurs twice), of which 18 species are known or thought likely to occur in the Landscape (Appendix A). A total of 13 species on the PA 62 list are not likely to occur in the Landscape.

Colorado Parks and Wildlife State Listed Species:

The Colorado Wildlife Commission has designated a listing of Endangered, Threatened and Wildlife Species of Special Concern (Colorado Division of Wildlife 2009). Species that are listed as endangered are in imminent peril of becoming extinct in Colorado, while those listed as threatened are at risk of becoming endangered in the state. The state also maintains a list of species that may be at risk of becoming threatened or endangered at the state level and these species are labeled "Species of Special Concern". A total of 9 species may occur on the SJNF but only 1 is suspected of occurring in the Landscape (Appendix A).

U.S. Forest Service Rocky Mountain Region Sensitive Species List:

USFS sensitive species policy is to identify those species that occur on National Forest System lands for which there is conservation concern and whose key habitat components are or may be directly affected by the agency's forest management activities (USDA Forest Service 2013a). Eight criteria were considered and evaluated to determine whether a species merited sensitive status in the Rocky Mountain Region (FSM R2 Supplement 2600-2013-1, August 24, 2013). These criteria included 1) geographic distribution within the Region, 2) geographic distribution outside the Region, 3) capability of the species to disperse, 4) abundance of the species in the Region, 5) population trend in the Region, 6) habitat trend in the Region, 7) vulnerability of habitats in the Region, and 8) life history and demographic characteristics of the species. Application of these eight criteria to hundreds of species resulted in the designation of a list of sensitive species in the USFS Rocky Mountain Region (USDA Forest Service 2013a). Several species designated as Sensitive are also candidates for federal listing under the Endangered Species Act. There are 32 bird species on the Rocky Mountain Region sensitive species list, of which 6 species are thought likely to occur in the Landscape.

AFFECTED ENVIRONMENT:

Results:

Of the 48 bird species of concern identified on one of these lists (Appendix A) 24 species have breeding and/or non-breeding habitats in the Weminuche Landscape. Of the 24 species that are likely to occur in the Landscape, 17 species are likely to occur only during the breeding season, and 7 species occur in the analysis area year round.

The 24 bird species of concern that are likely to occur in the Landscape are grouped into seven general analysis categories based on life history requirements or the habitats where the species is most commonly found in the Landscape. The seven general analysis categories are:

1. Alpine Tundra (American pipit, brown-capped rosy finch and white-tailed ptarmigan);
2. Cavity Constructors (hairy woodpecker, red-naped sapsucker and Williamson's sapsucker);
3. Cavity Dependent (boreal owl and violet-green swallow);
4. Cliff Nesters (golden eagle, peregrine falcon and prairie falcon);
5. Mixed Conifer (broad-tailed hummingbird, dusky grouse, and flammulated owl);

6. Riparian/Wetlands (American dipper, black swift, cordilleran flycatcher, lazuli bunting, MacGillivray's warbler and Wilson's warbler);
7. Spruce-Fir (Cassin's Finch, Hammond's flycatcher, northern goshawk and olive-sided flycatcher).

It should be noted that some birds (such as Williamson's sapsucker, hairy woodpecker and northern goshawk) nest and forage in a wide variety of habitat types across the Landscape. Other species (such as golden eagle) nest in one habitat type (vertical cliff faces) but forage in another quite different habitat type (grasslands and alpine tundra). Also, some species that breed in the Landscape (such as olive-sided flycatcher and violet-green swallow) leave in late summer for other, generally remote, wintering areas (Central and South America). Other species however, are found in the Landscape year round (such as white-tailed ptarmigan and brown-capped rosy finch). Given these wide differences in habitat needs, length of time spent in the Landscape, widely differing relationships between key habitat components and the land management action being analyzed, the likely effects of livestock grazing on key habitat attributes and habitat quality may differ widely between bird species in the same analysis group.

Spruce-fir and alpine tundra, together, comprise 74% of the acres in the Landscape, and 73% of the acres that are suitable for domestic sheep grazing under current allotment configuration (Alternative 2).

For all species reviewed below, human disturbance associated with livestock management activities, and the livestock themselves, may temporarily displace individual birds if they are present near bird breeding activity areas. However, because project related activities are relatively short in duration in any given area, low in intensity and limited to relatively small areas at any given time. For these reasons disturbance to individual birds from livestock grazing activities is likely to be of short duration, low intensity, and temporary.

ENVIRONMENTAL CONSEQUENCES:

Direct and Indirect Effects:

For most bird analysis groups (4 of 7 groups) and half the bird species (12 of 24 species), domestic sheep grazing activities have little impact on their key habitat components and thus there is little difference in potential effects between the three action Alternatives (Alternatives 2, 3 and 4).

The four bird analysis groups unlikely to be affected by domestic sheep grazing activities are the cavity constructor group, cavity dependant group, cliff nesters, and mixed-conifer group. Domestic sheep prefer to quickly pass through forested habitats on their way to and from their preferred alpine grazing areas. Therefore, grazing impacts are generally light in closed canopy forest stands and impacts to standing trees are rare.

The three species of woodpeckers in the cavity constructor group rarely forage on the ground, and domestic sheep grazing has little affect on the standing dead and diseased trees that provide the key habitat component for this group. These woodpeckers construct nest cavities in ponderosa pine, Douglas fir, subalpine fir, Engelmann spruce and aspen, especially those conifers greater than about 16" diameter, and aspen greater than about 9" diameter (Winn 1998c, Yanishevsky and Petring-Rupp 1998, Schultz 2001). Cavities are constructed new each summer, mostly in live trees with heart rot but also in standing snags with hard outer shells and soft heart wood. Although a few snags may be cut for use as firewood by domestic

sheep herders, most sheep herder camps are located above timberline and moved frequently (about every five days), leading to widely dispersed cutting areas. For these reasons, activities associated with domestic sheep grazing have little effect on habitat capability for the cavity constructor group.

For the same reasons, sheep grazing also has little effect on the cavity dependent group. Boreal owl and violet-green Swallow are fairly common obligate secondary cavity-nesters (cavity dependent species) in the Weminuche Landscape. Boreal owls nest in abandoned woodpecker cavities in closed-canopy spruce-fir forests across the San Juan Mountains (Schultz 1999, Ryder 1998, Hayward et. al. 1993). Violet-green swallows nest in tree cavities bordering forest openings and forage in flight over the forest canopy, open meadows, river corridors, streams, beaver ponds, riparian areas and other forest openings (Pantle 1998).

Snags of the size that are likely to provide cavity construction and bark beetle foraging substrate, or secondary cavity nesting opportunities (Schultz 2001) are unlikely to be affected by domestic sheep grazing. Large pre-settlement trees would not be affected by livestock grazing activities thus future sources of snags and large-diameter live conifer trees for nest cavities would not be affected by Alternatives 2, 3 or 4. Light to moderate livestock grazing intensities may open up forest floor conditions somewhat, thereby making access to the forest floor easier and perhaps improving boreal owl foraging opportunities (Ryder 1998, Hayward et. al. 1993). Livestock grazing at higher intensities where grass/forb species diversity and plant vigor are negatively affected is likely to reduce boreal owl foraging habitat quality by reducing the abundance of food resources for the owl's primary prey species, the southern red-backed vole (Hayward et. al. 1993). Selection of Alternative 3 or 4 is likely to maintain or provide continued gradual but minor improvement in boreal owl foraging conditions through gradual improvement in rangeland health through the application of adaptive management techniques.

The cliff nester group is unlikely to be affected by domestic sheep grazing activities. These species include peregrine falcon, prairie falcon and golden eagle. There is one known nest site for one of these species in the Landscape, but all three are likely to nest and are known to forage in alpine areas of the Landscape in late summer after dispersing from nearby nest cliffs. All three species prefer to nest on prominent cliffs, have high nest site fidelity from year to year, have large home ranges, and regularly forage more than a dozen miles from their nest cliffs during a single day (Craig and Enderson 2004, Barrett 1998b, Jones 1998b, Levad 1998).

All three raptor species nest in locations inaccessible to sheep and forage in a variety of different habitats and across wide areas roughly equivalent to entire allotments. Large home ranges and utilization of a diversity of foraging habitats provides flexibility in adapting to small-scale changes in habitat structure. Given the generally good conditions of upland vegetation across most of the Weminuche Landscape (see vegetation monitoring section of EIS), it is unlikely that effects of domestic sheep grazing on the primary prey species of these three raptor species would reach an intensity sufficient to reduce prey abundance to a level that could reduce productivity of these raptors or survivorship of their young. Selection of Alternative 3 or 4 is likely to maintain or provide continued gradual but minor improvement in raptor foraging conditions through gradual improvement in rangeland health through the application of adaptive management techniques.

The mixed-conifer group is unlikely to be affected by domestic sheep grazing activities because sheep spend little time in this habitat type, preferring instead to pass rapidly through these typically dense stands on their way too and from preferred alpine foraging areas. Bird species of concern associated with mixed-conifer forests that are known to breed

in the Weminuche Landscape include broad-tailed hummingbird, dusky grouse and flammulated owl. Flammulated owls are associated with large pre-settlement fir trees or green aspen with nest cavities, and dense vegetation for roost sites, all of which would not be affected by domestic sheep grazing (Winn 1998b, McCallum et al. 1994, Reynolds and Linkhardt 1992). Dusky grouse and broad-tailed hummingbird use a variety of habitats in the Landscape, preferring mixed-conifer and aspen stands, especially with dense understories and along edges (Boyle 1998a, Toolen 1998a). Most dusky grouse nests have hatched before domestic sheep arrive and therefore trampling of eggs in ground nests by sheep or cattle is unlikely to pose a risk to grouse nests. Sheep forage utilization rates are typically low in mixed-conifer stands because sheep generally pass rapidly through them. Grasses and forbs have the remainder of the growing season after grazing to re-grow and set seed. Therefore, the intensity of impacts of sheep grazing on the mixed-conifer bird group is typically low, and is generally short in duration and small in scale. Selection of Alternative 3 or 4 is likely to maintain or provide continued gradual but minor improvement in habitat capability for birds in the mixed-conifer group due to gradual improvement in rangeland health expected to occur under application of adaptive management techniques.

The three bird analysis groups with potential to be affected by domestic sheep and cattle grazing activities are the alpine tundra group, riparian/wetlands group and spruce-fir group.

Alternative 1 – No Grazing

Alternative 1, the no grazing alternative, would be wholly beneficial for migratory birds of conservation concern because domestic livestock grazing would not be re-authorized in the Weminuche Landscape. There would be no potential for impacts to occur from activities associated with sheep or cattle permitted to graze in the Weminuche Landscape to birds in the seven analysis groups. The analysis groups that would benefit most from selecting Alternative 1 are the alpine tundra group (3 species), riparian/wetlands group (7 species), and spruce-fir group (3 species). The alpine tundra group would benefit most, compared to the other groups, from selecting Alternative 1. Selection of Alternative 1 has the potential to provide direct benefits to two of the three species in the alpine tundra analysis group (American pipit and white-tailed ptarmigan). The third species in this group (brown-capped rosy finch) is less likely to benefit from selecting Alternative 1 because it is less likely to be directly affected by sheep or cattle grazing activities.

Alternative 2 – Current Management

Selecting Alternative 2 would be the least beneficial alternative for birds of conservation concern, substantially less beneficial than selecting Alternative 1, and somewhat less beneficial than selecting Alternative 3 or Alternative 4, particularly for alpine species. For all bird species of conservation concern, selecting Alternative 2 could maintain current habitat conditions, and for some species, could continue the long-term gradual improvement in habitat conditions that has occurred over the past 30+ years.

Habitat conditions for some bird species are expected to continue to gradually improve under Alternative 2 because there was a substantial decline in the number of domestic sheep grazed in the Weminuche Landscape, then a stable but comparatively low number of sheep grazed in the Landscape for the past 30+ years. Numbers of domestic sheep permitted to graze in the Weminuche Landscape have dropped about 62% from a high of between about 10,300 and 11,500 animals from the 1940's through the 1970's, down to about 4,400 currently. In addition, numbers of sheep permitted to graze on the San Juan NF have dropped about 95% from a high of about 216,600 animals in the 1930's to about 10,800 currently.

Alpine tundra represents about 30% of migratory bird habitats in the Weminuche Landscape, and about 33% of the alpine tundra habitat in the Landscape is suitable for sheep grazing under current management. Sheep obtain most of their forage and spend most of their time in the alpine zone. Alpine habitats are also potentially the most sensitive habitats to livestock grazing because of their very short annual growing seasons, harsh environmental conditions, frequently shallow soils, and often long time span for vegetation recovery. Therefore the three bird species whose primary habitats occur in the alpine zone have the most potential to be negatively affected by impacts of domestic sheep grazing activities.

Of the three bird species in the alpine tundra analysis group, two (American pipit and white-tailed ptarmigan) can be directly affected by domestic sheep grazing because they nest on the ground and forage in areas suitable for domestic sheep grazing. These two species can be directly affected through the loss of cover at nest sites, nest trampling by grazing animals, and reduced quality of foraging habitat due to grazing reducing plant material upon which their insect prey depends (Hoffman 2006, and Versaw 1998). The third species in the alpine analysis group, brown-capped rosy finch, is unlikely to be directly affected by sheep grazing because nests are located in rock cliff crevices and adults forage mainly on or near snow fields, areas that are actively avoided by domestic sheep (Nelson 1998).

For the two alpine tundra bird species of conservation concern with potential for affects from domestic sheep grazing, selecting Alternative 2 would be the least beneficial of the three action Alternatives (Alternatives 2, 3 and 4) but could result in maintaining current habitat capability and/or continue the generally gradual but minor long term improvement in vegetation conditions across the Landscape, assuming the seven currently vacant allotments remain vacant.

Of the six species in the riparian/wetland group (American dipper, black swift, cordilleran flycatcher, lazuli bunting, MacGillivray's warbler and Wilson's warbler), three species are unlikely to be directly affected by domestic sheep grazing. These three species nest in places usually avoided by sheep such as behind or immediately adjacent to waterfalls (black swift), on rock walls overhanging fast flowing streams (American dipper), and in dirt cut banks (cordilleran flycatcher). These three species also typically forage in areas not frequented by sheep such as in rapidly flowing water (American dipper), high above the surrounding mountain peaks (black swift), or in the overhead forest canopy (cordilleran flycatcher). For these reasons, selecting Alternative 2 would have little impact on habitat capability for these three species in the riparian/wetland analysis group.

The remaining three species in the riparian/wetland group (lazuli bunting, MacGillivray's warbler, and Wilson's warbler) are associated with dense willow and riparian shrublands (Carter 1998, Righter 1998, and Toolen 1998b). Field monitoring in the Weminuche Landscape found that browsing appears to be affecting willows in some small and localized areas. Sheep readily browse on willows in riparian and wetland areas but most of the willow riparian areas across the Landscape are in upper mid-seral successional stage, or are in an upward trend and therefore meeting land management plan direction for riparian condition.

The remaining three bird species in the riparian/wetland analysis group are also commonly found in tall willows on mountain side slopes associated with springs, or sites with a heavy snowpack that extends late into the summer. Some heavy browsing was observed on upland willows in a few localized areas. It was difficult to determine with certainty however whether the primary cause of this browsing was domestic sheep or elk. Sheep trailing was also evident in some riparian and willow dominated areas but current plant species composition and distribution are likely similar to conditions found during the reference period. All but one

of the 15 riparian monitoring samples met the project's desired conditions. Therefore, overall, the negative effects of sheep grazing and trailing in riparian/wetland areas appears to be small in scale and/or limited to localized areas. For these reasons, selection of Alternative 2 would be beneficial to birds in the riparian/wetland analysis group, but the benefits of continued gradual minor habitat improvement, such as has been occurring for the past 30+ years, would probably be small in scale, limited to localized areas, and minor in intensity. The benefits for these species of selecting Alternative 2 therefore would be less than the benefits for selecting Alternative 1, or for Alternative 3 or 4.

Spruce-fir forests make up about 44% of the Weminuche Landscape and 37% of the spruce-fir forests in the Landscape are currently suitable for sheep grazing. Bird species of concern associated with spruce-fir habitats that are known to breed in the Weminuche Landscape include Cassin's finch, Hammond's flycatcher, northern goshawk, and olive-sided flycatcher. Hammond's flycatcher is associated with mixed-conifer forests and is often found on steep hillsides adjacent to streams and in moist ravines (Sedgwick 1998a). Suitable overstory trees for olive-sided flycatcher nesting and foraging perch sites (Jones 1998a) and northern goshawk nest trees (Kennedy 2003, Barrett 1998a, Reynolds et al.) are unlikely to be affected by continued sheep grazing under any of the action alternatives (Alternative 2, 3 or 4).

The spruce-fir analysis group is unlikely to be directly affected by domestic sheep grazing activities because sheep spend little time in this habitat type, preferring instead to pass rapidly through closed canopy forests on their way to and from preferred alpine foraging areas. In general, sheep spend little time in mature closed-canopy spruce-fir forests because of the lack of forage under these stands. In addition, many of the mature spruce-fir stands in the Weminuche Landscape occur on relatively steep slopes, areas livestock prefer to avoid. Usually, sheep grazing impacts in closed canopy spruce-fir forests are small in scale, limited to localized areas where animals rest near the edges of parks or alpine zones, and minor in intensity.

Perhaps the greatest current and near-future (5- to 10-years) influence on spruce-fir forest habitat conditions in the Weminuche Landscape is a spruce beetle (*Dendroctonus rufipennis*) outbreak that is rapidly expanding from northern and eastern portions of the Landscape towards southern and western portions of the Landscape. The spruce beetle is the most significant natural mortality agent of mature spruce trees. Spruce beetle outbreaks can cause extensive tree mortality and modify stand structure by reducing the average tree diameter, height, and stand density. Infected trees often take a couple years to die, so infestations appear to be more widespread in following years. Beetles grow to adulthood inside trees and then take off to infect new trees. However, most of the spruce-fir forests in the Weminuche Landscape are mixed with varying amounts of subalpine fir, which are not affected by spruce beetles. For this reason, stands with higher fir composition are less affected by beetles than stands with higher spruce composition.

Large stands of Engelmann spruce has either died or is dying, causing extensive openings in the overstory forest canopy. For example, within the past five years, the upper third of the Pine River and Vallecito Creek drainages have had extensive areas of mortality of mature Engelmann spruce trees, in some areas exceeding 80% to 90% of mature overstory trees. Within stands affected by spruce beetles, there is a high probability that most spruce trees over five inches diameter will die. Within the next five years the beetle outbreak is expected to expand down the Pine River and Vallecito Creek drainages, and is expected to increase in the upper Florida River and Missionary Ridge portions of the Weminuche Landscape. In the near term (5- to 10-years) substantial portions of the mature spruce-fir habitat in the Landscape could be affected by high mortality of overstory spruce trees.

The effect of the ongoing and expanding spruce beetle outbreak in the Weminuche Landscape on habitat capability for migratory birds associated with mature spruce-fir forests is not clear. However, it is expected that the effects of beetle activity is likely to be widespread, substantial in some portions of the Landscape, and has potential to alter the abundance of spruce-fir associated bird communities for decades to come.

Spruce-fir forests are in close proximity to some preferred sheep and cattle grazing areas and some small and localized areas of grazing impacts were observed in spruce-fir forests along the margins of open parks and at the spruce-fir/alpine interface. These impacts appeared to be small in scale, minor in intensity, and generally limited to localized areas where animals rest near the edges of parks or alpine zones.

The remaining two species in the spruce-fir analysis group (Cassin's finch and northern goshawk) may have some direct negative effects from sheep and cattle grazing in areas where localized grazing impacts are occurring. In these areas there may be reductions in the abundance and diversity of potential insect and small mammal and bird prey due to the impacts of livestock grazing on vegetation structure on which these prey species' diversity and abundance depends (Kennedy 2003, Barrett 1998a, Winn 1998a, Reynolds et al. 1992). For this reason, selecting Alternative 2 would be the least beneficial for birds in the spruce-fir analysis group, compared to selecting Alternatives 1, 4 or 3, in that order.

Undoubtedly, the small scale and generally low intensity of negative effects to bird habitats associated with domestic sheep grazing activities in spruce-fir forests is low in comparison to the expectation of near-future widespread, potentially substantial, and expected long-term impacts from the ongoing spruce beetle outbreak that is rapidly expanding within the Weminuche Landscape.

Alternative 3 – Adaptive Management w/ Forage Reserves

Selecting Alternative 3 would be more beneficial for bird species of conservation concern in the alpine, riparian/wetland and spruce-fir analysis groups than selecting Alternative 2, but less beneficial than selecting Alternatives 1 or 4, in that order. The benefits of selecting Alternative 3 are likely to be generally small in scale and limited to localized areas where livestock grazing impacts are currently occurring. Improvement in habitat conditions for birds in these analysis groups are likely to be less under Alternative 3 than under Alternatives 1 or 4, but somewhat more than under alternative 2. Under Alternative 3, there would be about 21,849 acres of alpine and spruce-fir habitats suitable for domestic sheep and cattle grazing, which is a 51% reduction compared to Alternative 2 (about 42,465 acres).

The application of adaptive management strategies and design criteria under Alternative 3, compared to Alternative 2, is expected to result in more rapid improvement in habitat conditions for the alpine tundra, riparian/wetland and spruce-fir bird analysis groups because adaptive management strategies are not being fully applied under current grazing management practices (Alternative 2). Selection of Alternative 3 would result in greater improvement in habitat conditions for birds of conservation concern than Alternative 2 because the entire area of three vacant sheep allotments (Fall Creek, Flint Creek and Pine River) and portions of three other vacant allotments (Cave Basin, Johnson Creek and Rock Creek) that would be available for livestock grazing under Alternative 2 would all be closed to livestock grazing under Alternative 3.

Under Alternative 3, the three sheep forage reserve allotments (Leviathan, and portions of Johnson Creek and Rock Creek) and one cattle forage reserve allotment (portions of Cave Basin) would be available for grazing for only up to a maximum of three years out of any 10

consecutive years. Under Alternative 2, these same allotments could be fully restocked and grazed every year. For this reason, the intensity of grazing proposed for these forage reserve allotments would be less under Alternative 3 than could occur under Alternative 2.

The improvements in habitat conditions for bird species of conservation concern expected to occur under Alternative 3 are likely to be generally small and limited to those relatively small and localized areas where habitat conditions are being degraded by sheep and cattle grazing activities under current management practices. Although more rapid improvement in habitat conditions for bird of conservation concern is expected under Alternative 3 than under Alternative 2, habitat improvements as a result of the adaptive management approach are likely to be too small to affect populations or the total amount of habitat available in the Weminuche Landscape.

Selecting Alternative 3 would have negative effects for bird species of conservation concern, compared to selecting Alternative 1, because those localized areas of sheep and cattle grazing impacts would continue to be degraded by livestock grazing activities, such as near the alpine/spruce-fir interface, moist alpine areas adjacent to riparian zones or wet meadows, and upland willow stands in alpine basins. In addition, improvements in habitat capability for birds of conservation concern would likely occur over a longer time frame than under Alternative 1. In general however, habitat conditions for bird species of conservation concern are expected to continue to gradually improve in most areas under Alternative 3, but localized impacts would continue to occur in some areas.

Alternative 4 – Adaptive Management/Closing Vacant Allotments Alternative, the Preferred Alternative

Selecting Alternative 4 would be more beneficial for bird species of conservation concern in the alpine, riparian/wetland, and spruce-fir analysis groups than selecting Alternatives 2 or 3, but less beneficial than selecting Alternative 1. The benefits however are likely to be generally small and limited to localized areas where livestock grazing impacts are currently occurring. Improvements in habitat conditions for birds in these analysis groups are likely to be greater under Alternative 4 than under Alternatives 2 or 3, but less than under Alternative 1. Under Alternative 4, there would be about 18,688 acres of alpine and spruce-fir habitats suitable for domestic sheep and cattle grazing, which is a 56% reduction compared to Alternative 2 (about 42,465 acres). Under Alternative 4, there would be a 7% reduction in alpine and spruce-fir habitats suitable for sheep and cattle grazing, compared to Alternative 3 (about 21,849 acres).

The application of adaptive management strategies and project design criteria under Alternative 4 is expected to result in more rapid improvement in habitat conditions for the alpine tundra, riparian/wetland and spruce-fir bird analysis groups, compared to Alternative 2, because adaptive management strategies are not being fully applied under current grazing management practices (Alternative 2). Selection of Alternative 4 would result in greater improvement in habitat conditions for birds of conservation concern than Alternative 3 because the three sheep forage reserve allotments (Johnson Creek, Leviathan and Rock Creek) and the cattle forage reserve allotment (Cave Basin) proposed to be open under Alternative 3 would be closed to all livestock grazing under Alternative 4. The only allotments that are proposed to remain open to domestic sheep grazing under Alternative 4 are the five active allotments (Burnt Timber, Endlich Mesa, Spring Gulch, Tank Creek and Virginia Gulch) and the one active allotment currently stocked with cattle (Canyon Creek).

Although more rapid improvement in habitat conditions is expected under Alternative 4 than under Alternative 3 or 2, improvements in habitat conditions for bird species of conservation

concern as a result of the adaptive management approach are likely to be too small to affect populations or the total amount of habitat available in the Weminuche Landscape.

The improvements in habitat conditions for bird species of conservation concern expected to occur under Alternative 4 are likely to be generally small and limited to those relatively small and localized areas where habitat conditions are being degraded by sheep and cattle grazing activities under current management practices.

Selecting Alternative 4 would have negative effects for bird species of conservation concern, compared to selecting Alternative 1, because those localized areas where sheep and cattle grazing impacts are occurring would continue to be degraded by livestock grazing activities, such as near the alpine/spruce-fir interface, moist alpine areas adjacent to riparian zones or wet meadows, and upland willow stands in alpine basins. In addition, improvements in habitat capability for birds of conservation concern would likely occur over a longer time frame than under Alternative 1 in the absence of livestock grazing. In general however, habitat conditions for bird species of conservation concern are expected to gradually improve in most areas under Alternative 4, but localized impacts would continue to occur in some areas.

Cumulative Effects:

The Weminuche Landscape has had a limited history of mining activities that have affected habitat conditions for birds of conservation concern, but those areas are relatively small and impacts have been generally small. In a few very limited areas, mining activities removed relatively small amounts of habitat at the mine sites themselves, as well as cutting trees off-site for use underground as mine timbers, building materials, and for use as heating and cooking fuel. Compared to other areas in the San Juan Mountains, mining had comparatively few impacts on downstream water quality or leaching of heavy metals from waste storage piles that would have affected streamside vegetation and reduced bird habitat capability (Larison et al. 2000). Compared to other portions of the San Juan Mountains, much less surface evidence remains today of mining activities in the Weminuche Landscape.

There has been little past or expected near future development of the few private inholdings remaining within the Weminuche Wilderness portion of the Landscape. However, the volume and intensity of many forms of recreation continues to gradually increase throughout most of the Landscape. Recreation is especially intense in some portions of the Landscape such as the Emerald Lake, Cave Basin, City Reservoir and upper Pine River areas. The road and motorized trail networks within and immediately adjacent to the Landscape in the Middle Mountain, Endlich Mesa and Missionary Ridge areas see substantial amounts of motorized use during snow free and winter seasons, and use continues to grow each year. Most of the recreation in the wilderness portions of the Landscape is during the snow-free seasons, overlapping with the migratory bird breeding seasons. Outside the Wilderness, motorized and non-motorized recreation occurs year round and in some areas overlaps with limited wintering areas for birds of conservation concern, such as white-tailed ptarmigan. The cumulative effect of increased recreation on the habitat capability for birds of conservation concern is unknown. Because recreation activities at most sites is of limited duration (only a few days at a time), the effects on birds of conservation concern are likely to be small, of short duration and generally limited in scale, and therefore generally affecting relatively small numbers of individuals.

Influences that continue to affect vegetation in the Weminuche Landscape and therefore affect habitat capability for birds of conservation concern include ongoing fire suppression, commercial timber harvests, personal use firewood harvesting of standing dead trees for

home heating purposes, fire suppression and fuel mitigation activities, and natural events such as wild fire, forest insect and disease outbreaks, wind throw events, and avalanches. All these activities have contributed to changes in the composition, structure, and function of forested habitats in the Landscape, and the amounts, distribution and capability of habitats for birds of conservation concern.

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LITERATURE CITED:

- Abele, S. C., V. A. Saab, and E. O. Garton. 2004. Lewis's woodpecker (*Melanerpes lewis*): a technical conservation assessment. USDA Forest Service Rocky Mountain Region. Available on the world wide web at:
<http://www.fs.fed.us/r2/scp/assessments/lewisswoodpecker.pdf>
- Andrews, R., and R. Righter. 1992. Colorado birds: a reference to their distribution and habitat. Denver Museum of Natural History, Denver, CO. 442 pp.
- Barrett, N. 1998a. Northern goshawk. Pages 116-117 *in* Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Barrett, N. 1998b. Golden eagle. Pages 124-125 *in* Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Beason, J., R. Leivad, and T. Leukering. 2005. Monitoring Colorado's birds: the 2004 field season report. Unpublished report on file at the San Juan Public Lands Center, Durango, CO. 60 pp.
- Boyle, S. 1998a. Broad-tailed hummingbird. Pages 244-245 *in* Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Carter 1998. MacGillivray's Warbler. Pages 432-433 *in* Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Colorado Division of Wildlife. 2006. Colorado's comprehensive wildlife conservation strategy and wildlife action plans. Available on the world wide web at:
<http://wildlife.state.co.us/WildlifeSpecies/ColoradoWildlifeActionPlan/>
- Colorado Division of Wildlife. 2009. Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern. Available on the world wide web at:
http://wildlife.state.co.us/species_cons/list.asp

- Craig, G. R., and J. H. Enderson. 2004. Peregrine falcon biology and management in Colorado 1973-2001. Colo. Div. Wildl. Tech. Pub. No. 43, DOW-R-T-43-04, Denver, CO. 80 pp.
- Dobbs, R.C., P.R. Martin, and T.E. Martin. 1998. Green-tailed towhee (*Pipilo chlorurus*). In A. Poole and F. Gill, editors, *The Birds of North America*, No. 368. The Birds of North America, Inc., Philadelphia, PA. 24pp.
- Durango Bird Club. 2003. A checklist of the birds of southwestern Colorado. Durango Bird Club, Colorado Division of Wildlife and the U.S.D.A. Forest Service San Juan National Forest.
- Hayward, G.D., P.H. Hayward, and E.O. Garton. 1993. Ecology of Boreal Owls in the northern Rocky Mountains, USA. Wildl. Monogr. 124. 59 pp.
- Hoffman, R. W. 2006. White-tailed ptarmigan (*Lagopus leucura*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available on the world wide web at: <http://www.fs.fed.us/r2/projects/scp/assessments/whitetailedptarmigan.pdf>.
- Jones, S. L. 1998a. Olive-sided flycatcher. Pages 268-269 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Jones, S. 1998b. Prairie falcon. Pages 130-131 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Kennedy, P. L. 2003. Northern goshawk (*Accipiter gentilis atricapillus*): a technical conservation assessment. USDA Forest Service, Rocky Mountain region. Available on the World Wide Web at: <http://www.fs.fed.us/r2/projects/scp/assessments/northerngoshawk.pdf>.
- Kingery, H. E. 1998. American dipper. Pages 374-375 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Kuenning, R. R. 1998. Lewis's woodpecker. Pages 248-249 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Larison, J. R., G. E. Likens, J. W. Fitzpatrick, and J. G. Crock. 2000. Cadmium toxicity among wildlife in the Colorado Rocky Mountains. *Nature* 406:181-183.
- Levad, R. 1998. Peregrine falcon. Pages 128-129 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- McCallum, D.A., P. Morgan, J. Verner and G.D. Hayward. 1994. Conservation status of Flammulated Owl in the United States. Pages 74-78 in *Forest owl conservation assessment: Flammulated, Boreal and Great Gray Owls in the United States*. Hayward, G.D. and J. Verner, tech. editors. 1994. Gen. Tech. Rep. RM-253. Fort Collins CO: U.S.D.A. Forest Service, Rocky Mountain Forest and Range Experiment Station.

- Nelson, D. L. 1998. Brown-capped rosy-finch. Pages 522-523 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Div of Wildlife, Denver, CO.
- Pantle, D. 1998. Violet-green swallow. Pages 338-339 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Reynolds, R.T. and B.D. Linkhart. 1992. Flammulated Owls in ponderosa pine: evidence of preference for old-growth. Pages 166-169 in old-growth forests in the Southwest and Rocky Mountain Regions: proceedings of a workshop. U.S.D.A. Forest Service Gen. Tech. Report RM-213.
- Reynolds, R. T., R.T., M. Graham, H. Rieser, , R.L.Bassett, P.L. Kennedy, D.A. Boyce, Jr., G. Goodwin, R. Smith and E.L. Fisher. 1992. Management recommendations for the Northern Goshawk in the Southwestern United States. Rocky Mountain. Forest and Range Experiment Station and Southwestern Region Forest Service, U.S. Forest Service, U.S. Dept. of Agriculture. Gen. Tech. Rep. RM-217.
- Righter, R. 1998. Lazuli bunting. Pages 494-495 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Ryder, R. A. 1998. Boreal owl. Pages 228-229 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- San Juan National Forest. 2004b. Green-tailed towhee species assessment, San Juan National Forest. Unpublished document on file at the Durango Public Lands Center, Durango, CO. 28 pp.
- Sauer, J. R., J. E. Hines, and J. Fallon. 2005. The North American Breeding Bird Survey, results and analysis 1966-2005. Version 2005.2, USGS Patuxent Wildlife Research Center, Laurel, MD. Available on the World Wide Web at: <http://www.mbr-pwrc.usgs.gov/bbs/>
- Schultz, C. 2001. Characteristics of trees used by cavity-nesting birds in western Colorado. Unpublished report on file, Columbine Ranger District Office, Bayfield, CO. 16 pp.
- Schultz, C. 1999. 1998 boreal owl surveys, San Juan-Rio Grande National Forests, spring and autumn 1998. Unpublished Report on file, San Juan National Forest, Durango, CO. 14 pp.
- Sedgwick, J. A. 1998a. Hammond's flycatcher. Pages 274-275 in H. E. Kingery, ed. Colorado Breeding Bird Atlas. Colorado Bird Atlas Partnership. Denver, Colorado.
- Sedgwick, J. A. 1998b. Cordilleran flycatcher. Pages 280-281 in H. E. Kingery, ed. Colorado Breeding Bird Atlas. Colorado Bird Atlas Partnership. Denver, Colorado.
- Toolen, J. F. 1998a. Blue grouse. Pages 140-141 in H. E. Kingery, ed. Colorado Breeding Bird Atlas. Colorado Bird Atlas Partnership. Denver, Colorado.
- Toolen, J. F. 1998b. Wilson's warbler. Pages 436-437 in H. E. Kingery, ed. Colorado Breeding Bird Atlas. Colorado Bird Atlas Partnership. Denver, Colorado.

- USDA Forest Service. 1983. Final environmental impact statement for the land and resource management plan for the San Juan National Forest. USDA Forest Service. Durango, CO.
- USDA Forest Service 2013a. Region 2 Regional Forester's Sensitive Species List, FSM R2 Supplement 2600-2013-1, August 24, 2013.
- USDA Forest Service 2013b. volume II: Final San Juan National forest and Proposed Tres Rios Field Office Land and Resource Management Plan. USDA Forest Service, San Juan National Forest, 15 Burnet Court, Durango, CO 81301. 328 pp. Available on line at <http://www.fs.usda.gov/goto/sanjuan/planning>.
- USDI Bureau of Land Management. 1985. San Juan/San Miguel Planning Area Resource Management Plan. Bureau of Land Management, Montrose District, Colorado, September 1985.
- USDI Bureau of Land Management. 1991. Record of Decision. San Juan/San Miguel Resource Management Plan Amendment. Bureau of Land Management, Montrose District, San Juan/San Miguel Planning Area, Colorado, October 1991.
- USDI Bureau of Land Management. 2000. Colorado Bureau of Land Management Sensitive Fish and Wildlife Species list for the San Juan Resource Area, Information Bulletin No. CO-2000-14 (April 2000).
- USDI Fish and Wildlife Service. 2008. Birds of conservation concern 2008. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VA. 87 pp.
- USDI Fish and Wildlife Service. 2015. Unit Species List of federal Threatened, Endangered, and Proposed species for the San Juan National Forest, March 25, 2015. Email from USDI Fish and Wildlife Service, Grand Junction, CO. On file at the Columbine Ranger District, Bayfield, CO.
- Versaw, A.E. 1998. American pipit. Pages 410-411 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Div of Wildlife, Denver, CO.
- Winn, R. 1998a. Cassin's finch. Pages 526-527 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver, CO.
- Winn, R. 1998b. Flammulated owl. Pages 210-211 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Div of Wildlife, Denver, CO.
- Winn, R. 1998c. Williamson's sapsucker. Pages 254-255 in Colorado breeding bird atlas, H. E. Kingery, ed. Colorado Bird Atlas Partnership and Colorado Div of Wildlife, Denver, CO.
- Winternitz, B.L. 1976. Temporal change and habitat preference of some montane breeding birds. *Condor* 78:383-393.
- Yanishevsky, R., and S. Petring-Rupp. 1998. Management of breeding habitat for selected bird species in Colorado. Colorado Division of Wildlife, Denver, Colorado. 791 pp.

APPENDIX A: Migratory birds that are listed on the FWS BCR 16 list, PIF PA 62 list, Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern, and USFS Rocky Mountain Region Sensitive Species List, with potential for occurrence in the Weminuche Landscape.

Species	Status*	Preferred Habitats	Likelihood of Occurrence@	Season of Occurrence	Analysis Group
American Bittern	FS, BCR	Riparian/Wetlands (cattail marsh)	Low	N/A	N/A – no suitable marshes in Landscape
American Dipper	PIF	Riparian/Wetlands (fast-moving streams)	High	Breeding Season	Riparian/Wetlands
American Pipit	PIF	Alpine Tundra, cultivated agriculture	High	Breeding Season	Alpine Tundra
Bald Eagle	FS, BCR, State	Riparian/Wetlands (cottonwood gallery forest), Grassland, Sagebrush, Pinyon-Juniper, Ponderosa Pine	Low	N/A	N/A – no cottonwood gallery forest, nesting or winter foraging habitat in Landscape
Band-tailed Pigeon	PIF	Ponderosa Pine	Low	N/A	N/A - no suitable ponderosa pine forest in Landscape
Black Swift	FS, PIF	Riparian/Wetlands (waterfalls)	High	Breeding Season	Riparian/Wetlands
Boreal Owl	FS, PIF	Spruce-Fir	High	Year Round	Cavity Dependant
Brewer's Sparrow	FS, BCR, PIF	Sagebrush	Low	N/A	N/A, no suitable sagebrush in Landscape
Broad-tailed Hummingbird	PIF	Mountain Shrub, Aspen, Ponderosa Pine, Mixed Conifer, Riparian/Wetland	High	Breeding Season	Mixed-conifer
Brown-capped Rosy Finch	BCR, PIF	Alpine Tundra	High	Year Round	Alpine Tundra
Cassin's Finch	BCR	Spruce-Fir, Mixed Conifer, Aspen, Pinyon-Juniper, Ponderosa Pine	High	Year Round	Spruce-Fir
Columbian Sharp-tailed Grouse	FS, State	Mountain Shrub	Low	N/A	N/A, not known to occur in San Juan County
Cordilleran Flycatcher	PIF	Riparian/Wetlands (canyon streams)	High	Breeding Season	Riparian/Wetlands
Dusky Grouse	PIF	Mixed Conifer	High	Year Round	Mixed-conifer
Ferruginous Hawk	FS, BCR, State	Agricultural, Grasslands	Low	N/A	N/A, not known to occur in San Juan County
Flammulated Owl	FS, BCR, PIF	Ponderosa Pine, mixed-conifer	High	Breeding Season	Mixed-conifer
Golden Eagle	BCR	Barren (rock cliffs), Agricultural, Grasslands, Alpine Tundra	High	Year Round	Cliff Nesters
Grace's Warbler	BCR, PIF	Ponderosa Pine	Low	N/A	N/A, not known to occur in San Juan County
Gray Vireo	BCR	Pinyon-Juniper	Low	N/A	N/A, not known to occur in San Juan County
Green-tailed Towhee	PIF	Mountain Shrub, Sagebrush	Low	N/A	N/A, not known to occur in San Juan County
Gunnison Sage	BCR,	Sagebrush	Low	N/A	N/A, not known to

Species	Status*	Preferred Habitats	Likelihood of Occurrence@	Season of Occurrence	Analysis Group
Grouse	ESA, PIF, State				occur in San Juan County
Hairy Woodpecker	MIS	Ponderosa Pine, Mixed Conifer, Spruce-Fir, Aspen, Pinyon-Juniper, Riparian/Wetlands (cottonwood gallery forest)	High	Year Round	Cavity Constructors
Hammond's Flycatcher	PIF	Mixed Conifer, Spruce-Fir	High	Breeding Season	Spruce-fir
Juniper Titmouse	BCR	Pinyon-Juniper	Low	N/A	N/A, not known to occur in San Juan County
Lazuli Bunting	PIF	Riparian/Wetlands (Riparian shrublands)	High	Breeding Season	Riparian/Wetlands
Lewis' Woodpecker	FS, BCR, PIF	Ponderosa Pine, Riparian/Wetlands (cottonwood gallery forest)	Low	N/A	N/A no ponderosa pine or cottonwood gallery forest in Landscape
Loggerhead Shrike	FS	Agriculture, Pinyon-Juniper, Sagebrush,	Low	N/A	N/A, no sagebrush or suitable shrublands in Landscape
MacGillivray's Warbler	PIF	Riparian/Wetlands (Riparian shrublands)	High	Breeding Season	Riparian/Wetlands
Mexican Spotted Owl	ESA, PIF, State	Mixed Conifer,	Low	N/A	N/A, not known to occur in San Juan County
Northern Goshawk	FS	Mixed Conifer, Spruce-Fir, Aspen, Ponderosa Pine	High	Breeding Season	Mixed Conifer
Northern Harrier	FS	Agricultural, Riparian/Wetlands (cattail marsh)	Low	N/A	N/A – no suitable wetlands or cattail marshes in Landscape
Olive-sided Flycatcher	FS, PIF	Mixed Conifer, Ponderosa Pine, Spruce-Fir	High	Breeding Season	Spruce-fir
Peregrine Falcon	FS, BCR, State	Barren (rock cliffs)	High	Breeding Season	Cliff Nesters
Pinyon Jay	BCR	Pinyon-Juniper	Low	N/A	N/A, not known to occur in San Juan County
Prairie Falcon	BCR	Barren (rock cliffs), Grasslands	High	Breeding Season	Cliff Nesters
Purple Martin	FS, PIF	Aspen	Low	N/A	N/A, not known to occur in San Juan County
Red-naped Sapsucker	PIF	Aspen	High	Breeding Season	Cavity Constructors
Sage Sparrow	FS, PIF	Sagebrush	Low	N/A	N/A, not known to occur in San Juan County
Short-eared Owl	FS, PIF	Agricultural, Riparian/Wetlands (cattail marsh)	Low	N/A	N/A – no suitable wetlands or cattail marshes in Landscape
Southwestern Willow Flycatcher	ESA, BCR, State	Riparian/Wetlands (Riparian shrublands)	Low	N/A	N/A, not known to occur in San Juan County
Violet-green Swallow	PIF	Aspen, Ponderosa Pine, Barren (rock cliffs)	High	Breeding Season	Cavity Dependant
Virginia's	PIF	Mountain Shrub	Low	N/A	N/A no Gambel oak or

Species	Status*	Preferred Habitats	Likelihood of Occurrence@	Season of Occurrence	Analysis Group
Warbler					mountain shrub communities Landscape
Western Burrowing Owl	FS, BCR, State	Grasslands (prairie dog colonies)	Low	N/A	N/A, not known to regularly occur in San Juan County
Western Yellow-billed Cuckoo	BCR, ESA, State	Riparian/Wetlands (cottonwood gallery forest)	Low	N/A	N/A, not known to occur in San Juan County
White-tailed Ptarmigan	FS, PIF	Alpine Tundra	High	Year Round	Alpine Tundra
Willet	PIF	Riparian/Wetlands (mudflats)	Low	N/A	N/A, not known to occur in San Juan County
Williamson's Sapsucker	PIF	Ponderosa Pine, Mixed Conifer, Spruce-Fir	High	Breeding Season	Cavity Constructors
Wilson's Warbler	PIF	Riparian/Wetlands (Riparian shrublands)	High	Breeding Season	Riparian/Wetland

Status Codes*:

BCR = On Bird Conservation Region 16 (Southern Rockies/Colorado Plateau) Birds of Conservation Concern List (USDI Fish and Wildlife Service 2008).

ESA = Listed under the federal Endangered Species Act of 1973 as Threatened, Endangered, Proposed or Candidate for federal listing and known or likely to occur or have habitat on lands administered by the SJNF (USDI Fish and Wildlife Service 2015). Effects to these species were analyzed in the Biological Assessment, available in the project record.

FS = On USDA Forest Service Rocky Mountain Region (Region 2) Regional Forester's Sensitive Species List (USDA Forest Service 2013a). Effects to these species were analyzed in the Biological Evaluation, available in the project record.

MIS = Management Indicator Species for the San Juan National Forest. Effects to these species were analyzed in the MIS report, available in the project record.

PIF = On Colorado Partners in Flight Physiographic Area 62 List (Beidleman 2000).

State = On Colorado Parks and Wildlife's Listing of Endangered, Threatened and Wildlife Species of Special Concern (Colorado Division Of Wildlife 2009).

Likelihood of Occurrence@:

High = Species is known or thought likely to occur in the project area during either breeding or non-breeding seasons due to documented occurrence or presence of suitable habitat(s). Species may occur in small numbers or in widely distributed areas.

Moderate = May occur in the project area during some years, but is unlikely to breed due to lack of habitat(s). Or, occurrence in the project area is irregular and unpredictable and during the non-breeding season only.

Low = Species is not known or thought likely to breed or winter in the project area due to lack of suitable habitat(s).