



United States Department of Agriculture
Forest Service

Salter Vegetation Management Project

*Biological Assessment for Threatened, Endangered and Proposed Wildlife
and Aquatic Species – FINAL DRAFT*

San Juan National Forest
Dolores Ranger District

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1 INTRODUCTION

The purpose of this document is to present the analysis and determination of effects of the alternatives on threatened, endangered and proposed wildlife and aquatic species.

Under the ESA, the effects analysis report is called a Biological Assessment (BA) and must be prepared for federal actions that impact federally listed species (endangered, threatened, and proposed) are “major construction activities” to evaluate the potential effects of the proposal these species and critical habitats.

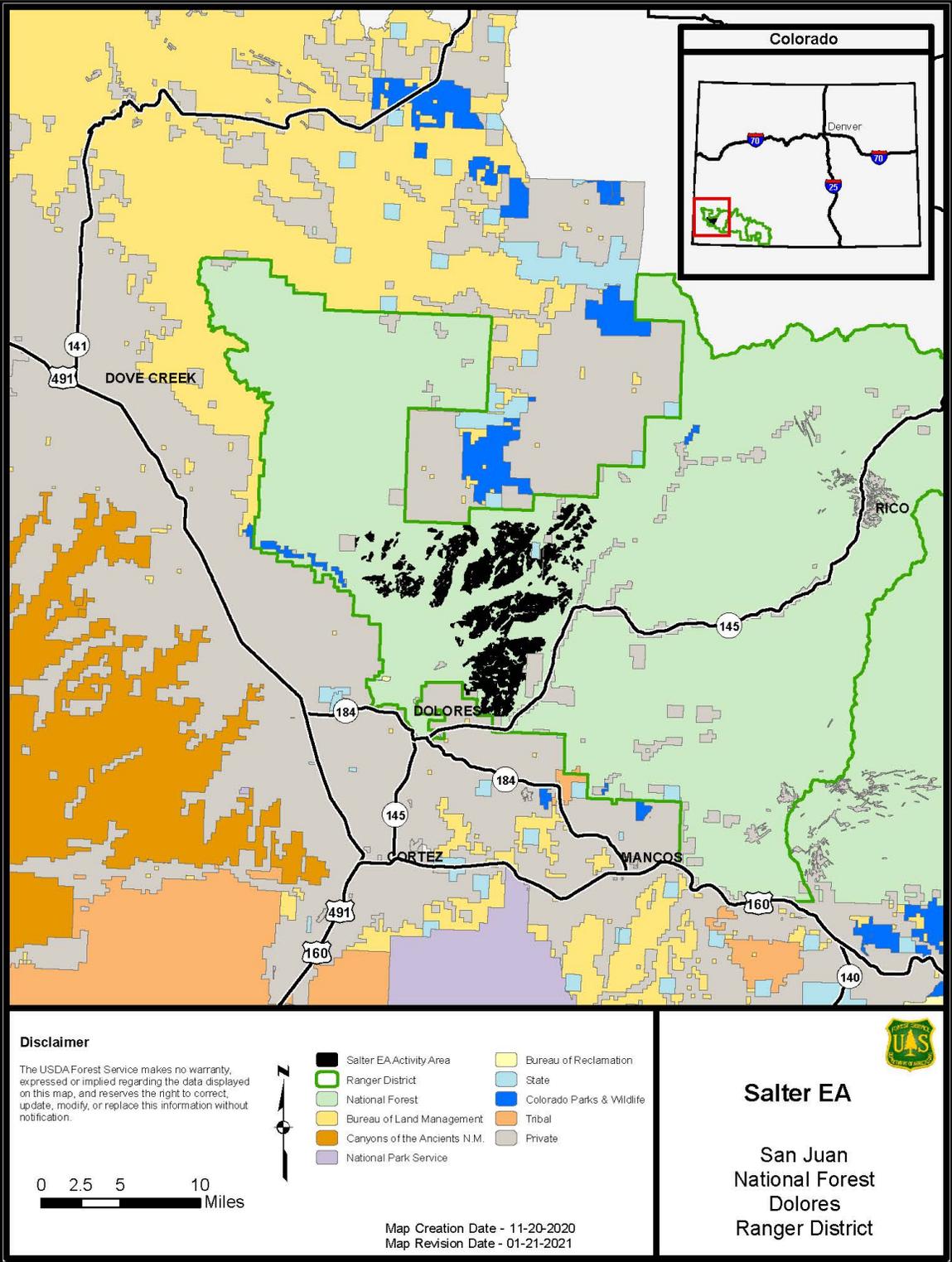
2 PROJECT INFORMATION

2.1 Location

The project area is located northeast of Dolores, Colorado, on the Dolores Ranger District. Proposed treatment areas are in the vicinity of Salter Y, Plateau Creek, Carlyle Point, Turkey Knoll, and Boggy Draw. The project is bordered in multiple locations by state and private lands; the Dolores River and McPhee Reservoir on the west; and the West Dolores and Dolores Rivers on the east. The project area is located on suitable timber lands within Management Area 5. Management Area 5 emphasizes active management and commodity production in order to meet multiple use goals (USDA 2013).

The legal description of the project area is: T37N R14W portions of Sections 5, 6, 7. T37N R15W portions of Section 10. T38N R14W portions of Sections 2-thru-9, 15-thru-20, 29-thru-32. T38N R15W portions of Sections 1-thru-5, 10-thru-15, 22-thru-26, 34-thru-36. T39N R13W portions of Section 6. T39N R14W portions of Sections 1-thru-24, 26-thru-35. T39N R15W portions of Sections 1, 8-thru-6. T39N R16W portions of Sections 10-thru-16, 22-thru-27, 35, 36. T40N R14W portions of Sections 34-thru-36. See Figure 1.

Figure 1. Vicinity Map of the Salter Vegetation Management Project.



The project area has been broken into six individual treatment blocks based on geographical location and transportation system (Table 1).

Table 1. Treatment acres by treatment block.

Block	Single Tree Selection (STS)	Commercial Thinning (CT)	Post-fledgling Family Area (PFA)	Plantation
Salter	1,518	348	N/A	629
Plateau Creek	2,065	479	N/A	N/A
Carlyle	3,605	1,334	1,057	N/A
House Creek	220	N/A	246	N/A
Boggy Draw	9,216	723	739	N/A
Turkey Knoll	3,051	231	N/A	N/A

2.2 Purpose and Need

The purpose and need for this project are derived from the differences between the existing forest vegetation conditions and the desired forest vegetation conditions, as defined by the San Juan National Forest Land and Resource Management Plan (Forest Plan).

All units proposed for treatment are located within Management Area 5 (MA 5). MA 5 is a management area allocation that provides for active management; emphasizing commodity production in order to meet multiple-use goals. In MA 5, forest visitors can expect to see a wide range of activities including timber harvesting. These are multiple-use areas where active management occurs in order to meet a variety of social, economic, and ecological objectives. These areas are easily accessible, occurring mostly on roaded landscapes and relatively gentle terrain. These are lands where timber harvesting and other management activities influence the composition, structure, and landscape patterns of the vegetation. Natural ecological processes and disturbance agents (including succession and fire) are often influenced by humans on many of these lands.

The overall objective of the Salter Vegetation Management project is to improve the resistance and resiliency of forest ecosystems over the long-term; increase the forest developmental stages (age and size classes) on the landscape; and provide economic support to local communities by providing timber products to local industries in a sustainable manner.

In this context, there is a need to:

1. The need to improve resilience or maintain the resistance of forest ecosystems over the long term to increase protection against epidemic insect and disease outbreaks.
2. The need to increase the structural diversity of the ponderosa pine forest represented across the landscape, including forest developmental stages (age and size classes).
3. The need to provide economic support to local communities by providing timber products to dependent local industries in a sustainable manner.

Elevations in the analysis area ranges from 7,800 feet at the southwestern end of the analysis area, to 8,800 feet on the northern end. The topography of the treatment area is predominately mesa top with

southwest aspect. Slopes range from 0 to approximately 20 percent, with steeper draws and canyons which intersect the project area throughout.

The dominant forest type of the proposed project areas is Ponderosa pine with an under story of Gambel oak, grass and forbs. The forest structure is variable and includes plantations from the 1980's intermixed with natural regeneration and overstory trees, to mature stands that are generally even aged. Although pre-dominantly even aged, modeling suggests that there are two underrepresented size classes relative to stand structure. The presence of other tree species—e.g., Douglas-fir, white fir, blue spruce, or Rocky Mountain juniper is infrequent to rare.

Large trees, 28" in diameter and above with only a few trees per acre are poorly represented. In some cases, these trees are relics left from the last harvest entry. The second underrepresented stand structural component is the 12" to 24" size class with basal areas ranging from 80 to 140 sq. ft. per acre. These trees average 80-120 years with stand initiation in the 1900 to 1940's era. The majority of the stocking in the project area is represented in this diameter class. These stands typically support the successful establishment of seedlings and regeneration. However, seedling establishment and regeneration can be episodic in nature, very patchy and variable. Yet where seedlings are represented, there are often 400 to 500 seedlings per acre present on a site.

Gambel oak is found in the understory of both stand-types in tree and brush form with variable densities and diameters. Natural meadows are occasionally found in low lying draws where aspen is often present. Aspen is a minor tree species, but does persist in some areas and can dominant the canopy in microsites that have adequate moisture and soil. Encroachment of conifer species into these areas due to the lack of disturbance has inhibited recruitment conditions in some stands. Grass and forb production is lacking in most areas of over-story pine where pine litter dominates the ground layer. Many areas contain over 18" of litter which creates conditions for potential adverse impacts to Ponderosa pine root systems during fuels treatment or other fire activity.

2.3 Public Comments and Issues Addressed in This Analysis

Issues are points of concern about effects that may occur as a result of implementing a proposed action. Issues are generated by the public and are in response to the proposed action; others are identified by the interdisciplinary team based on local and specific scientific knowledge and may be used to disclose and compare effects between actions. Issues identified during scoping can either be addressed by developing alternatives to the proposed action or by adjusting the proposed action to resolve conflicts [36 CFR 220.7 (b)(2)(i)].

The following are public comments received as they relate to wildlife, along with the consideration of those comments and response.

Summary of comments: The proposed vegetation treatments and connected activities could result in various impacts to wildlife, including: displacement of wildlife, particularly deer and elk, onto private lands where treatments are proposed near the Forest Service and private land boundary and adverse impacts from unauthorized motorized travel on project created roads and trails during and post project implementation. As well, the proposed prescriptions for clear cut and leave group size may be

inadequate and lead to reduced available hiding and escape cover. In addition, concerns over guzzler installation was raised, where the public wanted to know the exact location of each guzzler, along with how guzzlers would be maintained. To protect wildlife species and minimize the potential for poaching, exact locations are not disclosed in this document.

Response to comments: Potential issues and concerns were resolved through project modification, application of best management practices and project design features.

2.4 No Action Alternative

Under the No Action Alternative, there would be no change in current management. Under this alternative, no additional timber harvest would occur in the project area. For analysis purposes, it is assumed that ongoing and previously permitted National Forest activities would continue to occur in the project area. These activities would include livestock grazing, completion of existing timber sale contracts, continued suppression of both natural and human caused wildfires, road maintenance, motorized and non-motorized recreation, camping, and personal use firewood cutting.

2.5 Alternative 2 – Modified Proposed Action (26" DBH Cap)

The Dolores Ranger District is proposing tree-cutting, tree planting, and activity fuel burning in the locations displayed and described in figure 1, table 2, and figures 6-11-appendix A. The combined acreage of these project areas is approximately 22,346 acres. Treatments would lower pine stocking levels, reduce the presence of dwarf mistletoe disease, and remove infested bark beetle trees, and dead trees. The proposed actions would create gaps and small openings in the dense canopy to allow sunlight to reach the forest floor and activity fuel burning would reduce duff, exposing bare soil and encouraging the growth of young trees and understory.

Four silvicultural treatments are proposed to move the treatment area towards the desired conditions. Immediately prior to harvesting, a condition specific prescription based on stand exam data, local knowledge of the area, and walk-thru exams would be applied to each stand. The final prescriptions would vary depending on stand-specific objectives and current conditions.

A group, clump and individual structure distributed across the landscape is desired while achieving basal area targets. This will be achieved through enhancement of current stand components or through harvest designed to achieve conditions conducive to gaining more desired conditions over time. Utilizing harvest to replicate historic tree patterns is intended to improve ecological function and resilience and to return the role of fire on the landscape.

A group is several to many trees, and can be $\frac{1}{2}$ to $\frac{3}{4}$ of an acre in size with all trees growing in close proximity to each other with interlocking crowns for the most part, with a clearly definable edge. Defining the edge is key in determining a group size as well as undesirable ingrowth in need of removal. Stems can be separated by as much as 20 feet. Typically, main stems of the trees in a group have not been influenced greatly by the proximity of neighboring trees. A clump is a small group of trees growing with stems touching at the base or nearly so. The main stems of trees in a clump have likely been influenced by the proximity of neighboring trees. Individual trees are trees within a stand's matrix that are single trees allowed to be open grown with full canopy sunlight.

Table 2. Vegetation treatment type and description.

Treatment Type	Treatment Description ¹
Single Tree Selection	An uneven-aged regeneration method where individual trees of all size classes up to 26 inches diameter at breast height are evaluated and removed more or less uniformly throughout the stand creating or maintaining a multiage structure of groups, clumps and individuals to promote growth of remaining trees and to provide space for regeneration. Multiple entries of this activity ultimately results in an uneven-aged stand of 3 or more age classes. This would be the preferred and dominate prescription used. 50-to-70 basal area per acre of residual basal area depending upon stand condition. There are 19,675 acres of this treatment type.
Commercial Thinning	Silviculture "Free Thinning" with enhancement objectives in mixed stocking ponderosa pine with a variable residual square feet of tree stem basal area of 50 -70 basal area per acre depending upon stand condition. Individual trees of all size classes up to 26 inches diameter at breast height are evaluated and removed throughout the stand creating or maintaining a multiage structure of groups, clumps and individuals. These stands have some of the following characteristics: recent treatment, structure is more clump than group, inconsistent harvestable volume per acre. Goal is to enhance current qualities of the stand to promote resiliency to disturbances. Includes the plantation units. There are 3,115 acres of this treatment.
Post-fledgling Family Area Thinning (PFAT)	PFA prescription is a free thinning in which trees of all size classes up 22 inches are evaluated for harvest while retaining a 100-to-120 residual basal area target. A focus on large groups of 20-30 trees or more is desired with internal clumps made up of 3-to-5 large and mature trees with interlocking crowns. Individual tree structure and isolated clumping is not desired structure in this treatment type. When structure is not available, thinning should focus on creating conditions for long-term structure moving towards PFA desired conditions.
Pre-commercial Thinning	Thinning of ponderosa pine (Less than 5 inches diameter) to variable spacing specifications. Would be implemented in any treatment unit.
Brush Thinning	Thinning of understory brush species (generally target brush less than 6 inches diameter at root collar), mainly Gambel oak; to create openings for seedling recruitment and reduce ladder fuel effects on residual trees. Would be implemented in any treatment unit. No more than 50%, or 9,000 acres, of the acres treated with the single tree selection prescription would also receive this treatment.

Silviculture Descriptions in Detail

Single Tree Selection - Single Tree Selection (STS) is an un-even aged regeneration harvest method approved for use under the Land and Resource Management Plan at 2.9.14 for ponderosa pine. Single tree removal is an uneven-aged regeneration method where individual trees of all size classes up to 26 inches diameter at breast height are evaluated and removed more or less uniformly throughout the stand creating or maintaining a multiage structure to promote growth of remaining trees and to provide space for regeneration. Multiple entries of this activity ultimately results in an uneven-aged stand of three or more age classes. The purpose of this entry is regeneration to promote the propagation of a new cohort of trees. Trees are individually selected for removal based on spacing, tree form, insect or disease evidence and species preference. With any un-even aged prescription there is no terminus to the management of the stands, meaning that process continues indefinitely with re-entry every 20-to-25 years. This is referred to as a cutting cycle. The initial cut would reduce basal area, but with most stands,

¹ No tree larger than 26.9 inch diameter at breast height would be cut in alternatives 2 and 3.

the first entry alone would not achieve the desired uneven-aged structure described above. More specifically, the stands lack enough trees in all the age classes to meet the desired target per age class. To compensate for this more trees than desired would be left in certain age classes to maintain the desired basal area target. Overtime, and with continued entries, the stand would eventually become regulated and then only trees in excess in each size class would be removed at each cutting cycle.

The single tree selection prescription would be applied to the majority of the project area. The prescription that follows was developed on the average stand characteristics taken from stand exam data. All the prescriptions would have the same basic components but may vary slightly due to changes in site conditions and stand locations in the project area as the stands identified for treatment are relatively uniform.

Single tree selection prescriptions would all have the same basic components and would use a BDQ method where “B” is the desired residual basal area, “D” is the maximum tree size (all trees 26.9” and larger diameter at breast height would be retained in all stands) and “Q” describes the diameter distribution as a ratio of the number of trees in succeeding size classes. Based on stand exam data the general prescriptions would target a residual basal area of 50-to-70 ft²/acre with a mean or target of 66 basal area when conditions allow.

For the average stand in the project area, the residual basal area would be 60-to-68 ft²/acre depending upon the silviculture treatment. The maximum diameter to harvest would be 26.9” and the q-factor would be 1.3 (applied to 2-inch diameter classes). The residual stocking level of 50-to-70 ft² was chosen to allow sufficient growing space to establish new regeneration while reducing severe fire risk and promoting tree vigor. The maximum diameter of 26.9” addresses management objectives by providing a continuous supply of desirable saw timber products without allowing trees to progress into age related decadence while at the same time maintaining a large tree emphasis on the landscape. A q-factor of 1.3 keeps sub-merchantable trees fully stocked for the next cohort. The harvests would take place on a 20 to 25-year cutting cycle to allow for sufficient stand growth while at the same time keeping stand density within the target range.

Aspen trees found in distinguishable groups would be targeted for a lower basal area to increase vigor and promote recruitment conditions. This would be done by thinning around aspen trees to create as close to full sunlight conditions as possible. Aspen is a shade intolerant species and requires full sunlight to vigorously grow and regenerate. The overall goal is to increase light to the forest floor and expand the aspen stands which increases stand composition and enhances wildlife habitat. Aspen comprises less than one percent (90 acres) of the activity area so this effort would provide the growing space to expand this critical species. No aspen trees would be prescribed for cutting under this proposal.

Commercial Thinning – Commercial Thinning (CT) Thinning is defined as an intermediate harvest treatment designed to improve the overall stand functionality and improve growth rates by reducing trees per acre. Thinning does not have specific silviculture objectives related to regeneration as it is an intermediate prescription, however, conditions will be created that promote regeneration. No modeling was conducted related to commercial thinning due to the intermediate nature of the prescription and related difficulty to accurately model the outcomes. These areas are a minor component of the overall

project acres. Based on stand exam data, the general prescriptions would target a residual basal area of 50-to-70 ft² per acre with a mean or target of 60 basal area, depending on stand conditions. In general, emphasis would be placed on retaining the healthiest green trees in the groups, clumps, and individuals depending upon current structure and stand productivity

Aspen trees would be targeted for a lower basal area to increase vigor and promote recruitment conditions. This would be done by thinning around the aspen trees and removing pine trees to create space which is essential in promoting aspen regeneration. The overall goal is to increase light to the forest floor and expand the aspen cohorts which increases species diversity and improves wildlife habitat. Aspen comprises less than one percent of the stand area so this effort would provide the growing space to expand this critical species. No aspen would be prescribed for cutting under this proposal.

Post-fledgling Family Area Thinning (PFAT) - The post-fledgling family area thinning applies to currently mapped post-fledgling family (PFA) areas and is a commercial thinning by definition, and as such, an intermediate harvest treatment. The prescription is also designed to improve the overall stand functionality and improve growth rates by reducing trees per acre while maintaining or promoting a relatively closed canopy. Post-fledgling family area thinning does not have specific silviculture objectives related to regeneration. No modeling was conducted related to commercial thinning due to the intermediate nature of the prescription and the related difficulty to accurately model the outcomes. These areas are a minor component of the overall project acres. The base prescription was developed with technical input from the district wildlife biologist. Trees of all size classes up to 22-inches diameter at breast height are evaluated for harvest and designated for removal, with an emphasis on large leave groups with 20-to-30 trees per group. The objective is to promote clumps of 3-5 mature and older trees with interlocking crowns within groups. Individual tree structure and isolated clumping is not desired structure in this treatment type nor is promoting aspen. Small openings of two acres or less can be created when implemented for insects (ex: bark beetles) or disease (ex: mistletoe) (Reynolds et al. 1992). Where existing conditions do not provide for application of this prescription, thinning will focus on enhancing what is desirable and creating conditions for recruitment of desired structure over time (Reynolds et al. 1992).

Pre-commercial Thinning (support treatment) - Precommercial thinning could be applied in any unit identified for silviculture treatment. The prescription would attempt to create variable spacing with an emphasis on clumping and individual patterns, considering the overall improvement of growth and resiliency. This pre-commercial thinning prescription would increase resiliency and promote healthy and productive pine stands. Due to a limited number of trees less than 5 inches diameter at breast height; not all stands would require this treatment; each stand would be evaluated by a certified silviculturist prior to implementation to determine the site-specific need.

Brush Thinning (support treatment) - This treatment could take place in any unit identified for silviculture treatment. The presence of Gambel oak and other woody brush species in this pine ecosystem are both a hindrance and help. Oak specifically plays an important part in pine stands in southwest Colorado, most notably it is a very important species for wildlife habitat providing cover and concealment for big and small game animals and as a food source for a number of species. However, if

not controlled with fire or mechanical treatments, oak creates difficulties in the management of pine. Although oak plays a role in nutrient cycling and providing fuels for natural and prescribed fire, it also dominates the understory in many places and competes for light and nutrients needed for young pine trees. There may be instances where the silviculturist needs to prescribe, in conjunction with the wildlife biologist, mastication or hand cutting of brush to reduce its presence in the pine stands. This would be done on a limited basis due to cost and the limited occurrence of this condition on the ground. The focus of these prescriptions would be to remove oak but other brush may be impacted during implementation. Total removal of oak would not be implemented, but rather, a reduction with the purpose of creating openings for pine regeneration in areas that have insufficient stocking levels. The focus of the treatment would be on oak, in the brush form, with a desire to remove species 6 inches diameter at root collar and less.

Conditions Influencing Silvicultural Treatments

Adjusting basal area retention prescriptions within stands or implementing a support treatment would be condition-driven and initiated when a trigger or indicator shows that a threshold has been reached. Once a threshold has been reached, a determination regarding the appropriate management action, or suite of prescriptions, would be made by a certified silviculturist during site-specific prescription development for each stand.

Stands that have an above average threat of a bark beetle infestation, either from identified stand traits or untreated nearby stands, would have a lower basal area retention prescription applied.

Indicators and triggers suggesting the need for the application of a lower basal area retention prescription include: the SDI is greater than 175, the current basal area or the basal area in adjacent stands is greater than 80 BA, or the stand currently has bark beetle populations in or around the stand. These stands displaying these conditions would have the lower spectrum of basal area retention applied. The goal is to reduce basal areas, which in turn lowers the percent chance of an infestation and lessens the spread of the current infestations (Negron et al. 2008). Areas with heavy mistletoe, especially if advanced regeneration is in place, will also be targeted for the lower spectrum of basal area retention. Typically, the mistletoe in early to mid-stages of infections occupies the upper canopies of a stand. By removing highly infested trees, a reduction in the parasitic plant occurs and a separation of canopies occurs; making it less likely to spread. Areas of stands with advanced regeneration in need of releasing to improve growth will receive a lower basal area retention prescription. Forest inventory has shown one of the missing size class components in these stands is seedlings to mid-closed. If regeneration has occurred, then a reduction in older trees around the regeneration will promote an increase in age class diversity. Stands with aspen present in distinguishable groups will receive the lower end of the basal area retention prescription. Increasing sunlight to the forest floor through conifer canopy reduction will enhance recruitment conditions in aspen and reduce overall competition for plant resources (source).

Retention of upper basal areas will be focused on high productivity areas with minimal eminent risk of infestation of bark beetles or heavy disease. Site index will be used by the silviculturist, in combination with current conditions, to make a final call at the time of prescription writing. The goal will be to move stands to desired conditions given the variables of this landscape.

Connected Actions

Site Preparation - This treatment is done prior to planting and involves potentially the following actions:

- Mechanical felling and processing of dead trees to reduce hazardous fuels, except those required to meet San Juan National Forest wildlife snag requirements set forth in Table 2.2.3 of the land and resource management plan. Any live trees that are infested with bark beetles would also be removed, but isolated green trees that are not infested would not be cut.
- Removal of hazardous fuel (dead trees only) utilizing the same approach as harvest in single tree selection but leaving 1/3 of all potential volume to be utilized as enhancements and mitigations.
- Placement of logs on contours for erosion control and placement of logs for microsite creations to enhance planting survivability.
- Hand scraping of ground vegetation (scarification) to expose bare mineral soil and reduce competition.

Reforestation - Hand planting of ponderosa pine stock from locally collected seed.

Transportation System - Other activities associated with the proposed vegetation treatment would include maintenance-related roadwork. The work would be performed prior to, during, and/or following treatments. The majority of this work would involve reshaping and smoothing of the road surface and restoring any associated drainage ditches or rolling dips. Several additional Maintenance Level 1, stored roads, that have been closed and unused for the last 20-to-30 years would be reopened, used and put back in storage after use. These roads could require some level of reconstruction in addition to normal maintenance to return them to an operational status. Reconstruction would largely consist of clearing downed trees and grown-in vegetation, installing or repairing drainage at stream crossings, along roadside ditches or associated with rolling dips and repairing failed sections of the roadway. Forest products would be removed off the Forest via the identified Forest Service roads. Some primary haul routes would require upgrades to the surface and could include the change of surfacing type to accommodate the volume of forest products being removed. See Table 3 for more information.

Table 3. Primary road haul routes.

Treatment Block	Forest Service Road Number and Name
Salter	FSR 510 Dry Canyon; FSR 521 Ormiston Point
Plateau	FSR 523 Trimble; FSR 514 The Glade; FSR 521 Ormiston Point
Carlyle Point	FSR 524 Plateau; FSR 525 Trail Canyon; FSR 514 The Glade; FSR 526 Dolores Norwood
Boggy Draw	FSR 527 Boggy Draw; FSR 526 Dolores Norwood
Turkey Knoll	FSR 249 Bald Hill Res; FSR 527 Boggy Draw; FSR 532 Cottonwood; FSR 526 Dolores Norwood
House Creek	FSR 526 Dolores Norwood; FSR 529 Beaver Rim

No new permanent roads are proposed to be built with this project, though temporary roads may be required to reduce the need for excessive tractor skidding and allow wood products to be moved to the permanent road system. Creating these roads would involve clearing vegetation and minimal

construction. They would be constructed, utilized and reclaimed when rainfall and erosion potential is minimal. These segments would be decommissioned within five years of first use.

Any existing system roads currently closed to public motorized use will remain closed (except for permitted use) during and following operations. Closures would be accomplished via a variety of means, such as gates or boulder barriers with disturbed areas scarified and seeded following use. All roads in the project area that are currently open to public car and truck traffic would remain open following operations. For safety, short term closures of publicly accessible roads or trails may be necessary during logging operations.

Fuels Treatments - Other related forestry activities would include the reduction of activity fuel. Cutting and removal of trees would result in limbs, tops, un-merchantable boles and stems, referred to as slash. Slash typically concentrates at landing locations or within the treatment units themselves. Landings would be identified by the sale administrator during implementation with guidance from the design features developed during this analysis. Timber sale or stewardship contracts would require concentrations of this material to be disposed of by a) piling for later burning, b) lopping and scattering throughout the unit, c) a combination of scattering and piling/burning or d) removal from the site. The method used would be dependent upon the amount of slash generated and the mechanical means employed by the contractor, as well as, specific conditions within the unit.

Other Actions

Wildlife Habitat Enhancement – Wildlife guzzlers would be installed within the project area under this proposal. The goal is to provide additional water sources for wildlife during dry months and in years when drought conditions are present, as well as to encourage large game to remain upland on Forest Service land ownership to decrease the potential for damage to private property. The Salter Project is mostly situated on flat plateaus, rugged rocky draws or where well-distributed perennial water sources are lacking. The area serves as an important migration route for mule deer and elk; and also supports habitat for other wildlife species, including upland gamebirds and migratory birds.

As a means to supplement natural water sources that do occur in the area, the district would install four guzzlers in strategic locations in the Salter and Plateau treatment blocks to provide connectivity to other perennial waters sources. Site locations were chosen by surveying the project area for accessibility and installation suitability. The surrounding landscape, existing water sources and wildlife movement patterns were also considered. Guzzlers would be catchment-type guzzlers, by which rainwater and snowmelt is funneled into a holding tank (usually via an “apron”) and delivered through an open drinking pan. Fencing would be built around the guzzlers to protect the structure from unintended use or damage. The footprint size of a guzzler is approximately 12 by 12 feet, with protective fencing measuring approximately 20-25 feet around the site. Site preparation involves clearing the space with hand tools and setting a portion of the guzzler approximately 4-12 inches in the ground. Site preparation is dependent on soil conditions and rocky terrain. All materials are brought in with a UTV or ATV and temporary road construction is not necessary to install a guzzler.

Snowplowing: Normal operating season would be from April 1 until November 30. Winter season would be from December 1 until February 28. Snow plowing would be allowed to facilitate access. Additional time outside of those defined above may be granted by the line officer if conditions allow.

2.6 Alternative 3 – Large Tree Retention (20” DBH Cap)

This alternative is identical to Alternative 2 in all aspects except for the tree diameter component. With this alternative there would be a 20-inch diameter at breast height (DBH) restriction on all silvicultural treatments. Design features would also be identical to Alternative 2. See previous section for more information.

2.7 Design Features

The following design features are applicable to wildlife resources. See the Environmental Analysis for other resource design features.

Wildlife and Terrestrial Ecosystems:

1. Surveys for northern goshawks and other raptors (generally Cooper’s hawk and sharp-shinned hawk) would be completed prior to project implementation. If active northern goshawk nests are discovered, all project operations would be restricted annually from March 1 to August 31 within one-half (½) mile of the active nest. If other raptor nests are discovered, all project operations would be restricted annually from March 1 to August 31 within one-quarter (¼) mile of the active nest.
2. Northern Goshawk Prescriptions:
 - a. Nest Areas - No harvest or treatment of any kind would occur in the nest area (includes 30 acres around nest) of a goshawk nest. This design feature only applies to the Boggy, Carlyle and House Creek treatment blocks.
 - b. Post-fledgling Family Area (PFA) - An intermediate harvest treatment would be applied to this area adjacent to occupied nest sites. Designed to improve the overall stand functionality while maintaining or promoting a relatively closed canopy. Trees of all size classes up to 22-inches diameter at breast height are evaluated for harvest and designated for removal, with an emphasis on large leave groups with 20-to-30 trees per group. The objective is to promote clumps of 3-5 mature and older trees with interlocking crowns within groups. Individual tree structure and isolated clumping is not desired structure in this treatment type nor is promoting aspen. Small openings of two acres or less can be created when implemented for insects (ex: bark beetles) or disease (ex: mistletoe) (Reynolds et al. 1992). Where existing conditions do not provide for application of this prescription, thinning will focus on enhancing what is desirable and creating conditions for recruitment of desired structure over time (Reynolds et al. 1992).
3. Elk Production Habitat - Operations in Colorado Parks and Wildlife mapped elk production habitat would not occur from May 15 to June 30 without line officer approval. The only operations that would be approved are travel through mapped production areas to units outside of the production areas. This would only be approved after consultation with Colorado Parks and Wildlife about the amount of proposed use and access routes. This design feature only applies to the Turkey Knoll treatment block.

4. Critical Elk Winter Range - Operations in Colorado Parks and Wildlife mapped critical elk winter range would not occur from December 1 to April 30 without line officer approval. The only operations that the line officer would approve are travel through mapped winter range areas to units outside of the critical winter range. This would only be approved after consultation with Colorado Parks and Wildlife about the amount of proposed use and access routes. This design feature only applies to a portion of the Boggy treatment block.
5. To meet the desired conditions, leave a minimum of 1 snag per acre of at least 12 inches diameter at breast height and 25 feet tall. If trees in this size class are not available, then leave 2 to 3 snags per acre of at least 9 inches diameter at breast height and 15 feet tall.
6. Consult with wildlife biologist prior to layout of projects that include oak treatment in order to identify areas to be treated (assure benefit wildlife and maintain clumps of dense understory oak for turkey nesting habitat).
7. Mechanized equipment must not operate within enclosure areas that protect wildlife. Consult with the wildlife biologist when developing marking guidelines for trees within enclosures.

3 METHODS AND SPECIES CONSIDERED FOR ANALYSIS

3.1 Analysis Area

The analysis area includes the Salter Vegetation Management Project Area boundary. It is large enough to be representative of the effects of natural events (fire, drought, etc.) and proposed management activities to evaluate the impacts for all species addressed.

3.2 Species Considered for Analysis

The following information includes listed species, along with associated habitat that are located on the Dolores Ranger District of the San Juan National Forest, or are located adjacent to or downstream of the project and could potentially be impacted by proposed activities of the project. A pre-field review was conducted of available information to assemble occurrence records, describe habitat needs and ecological requirements needed to complete the analysis. Sources of information included Forest Service records and files, the State Natural Heritage Program database, state wildlife agency information, and published research. In addition, an unofficial Information for Planning and Consultation (IPAC) list was generated on November, 30th, 2020 to verify current species list and critical habitat.

Species considered for analysis based on five criteria listed below. The criteria were used to identify species that would experience “no effect” from the implementation of the proposed action and could, therefore, be eliminated from further analysis.

1. Analysis area is outside the species’ range.
2. Potential habitat for the species does not exist within the project area or where proposed activities would take place.
3. No critical habitat occurs in the project area.

4. The type or intensity of the activity in the proposed action is expected to have no impact/effect on these species or their habitat; or proposed activities do not take place in potential or occupied habitat.
5. The associated conservation design of the proposed action eliminates any potential for negative impact on the species.

Wildlife Species Dismissed from Analysis: Habitat is absent, no known records exist or proposed activities would not occur in habitat for Canada lynx, New Mexico meadow jumping mouse, Mexican spotted owl, Gunnison’s Sage-grouse and Western yellow-billed cuckoo. Therefore, these species are dismissed from further analysis because the proposed action is not expected to impact these species.

Fish Species Dismissed from Analysis: Habitat for bonytail chub, Colorado pikeminnow, humpback chub and razorback sucker is absent in the project area. Project is outside of its occupied range and does not deplete water from the basin. Therefore, these species are dismissed from further analysis because the proposed action is not expected to impact these species.

The following table documents the rationale for excluding a species or if further analysis is necessary to identify potential effects of proposed activities (See Table 5). No species were carried forward for analysis.

Table 4. Federally listed species for the San Juan National Forest and potential occurrence in the project area.

Species and Status	Present or Suspected In Project Area?	Habitat Description	Suitable Habitat or Critical Habitat Present in Project Area?	Rationale
Canada lynx (<i>Lynx canadensis</i>) Threatened	No	Forested (Spruce fir primarily) areas of various development stages. Dependent on snowshoe hare.	No	Not present and therefore no further analysis needed. Lynx, lynx habitat, LAUs, linkage areas or critical habitat does not occur in the western portion of the District.
New Mexico meadow jumping mouse (<i>Zapus hudsonius luteus</i>) Endangered	No	Meadows and open clearings	No	Not present and therefore no further analysis needed.
Mexican spotted owl (<i>Strix occidentalis lucida</i>) Threatened	No	Nests in caves, cliffs, or trees in steep-walled canyons with distinct cliff bands and vegetated benches.	No	Not present and therefore no further analysis needed. The Dolores River Canyon adjacent to the Project Area is steep-walled; however, it is lacking the distinct cliff-bands and vegetated benches preferred by owls. Potential habitat occurs downstream the Dolores River, but no habitat exists within Project Area.
Western yellow-billed cuckoo (<i>Coccyzus americanus</i>) Candidate	No	Breeds in riparian woodlands with dense understory vegetation.	No	Not present and therefore no further analysis needed. Scattered cottonwoods occur in some drainages in the project area but lack the dense understory or basal area preferred by cuckoos.
Gunnison Sage-grouse (<i>Centrocercus minimus</i>) Threatened	No	Sagebrush parks.	No	Not present and therefore no further analysis needed. The project is located outside the critical habitat. Suitable

Species and Status	Present or Suspected In Project Area?	Habitat Description	Suitable Habitat or Critical Habitat Present in Project Area?	Rationale
				habitat is not present in the Project Area.
Bonytail Chub (<i>Gila elegans</i>) Endangered	No	Large streams and reservoirs	No	Not present and therefore no further analysis needed. Project is outside of its occupied range and does not deplete water from the basin.
Colorado Pikeminnow (<i>Ptychocheilus lucius</i>) Endangered	No	Large streams and reservoirs	No	Not present and therefore no further analysis needed. Project is outside of its occupied range and does not deplete water from the basin.
Humpback Chub (<i>Gila cypha</i>) Endangered	No	Large streams and reservoirs	No	Not present and therefore no further analysis needed. Project is outside of its occupied range and does not deplete water from the basin.
Razorback Sucker (<i>Xyrauchen texanus</i>) Endangered	No	Large streams and reservoirs	No	Not present and therefore no further analysis needed. Project is outside of its occupied range and does not deplete water from the basin.

3.3 Consultation to Date

Informal conferencing was initiated with U.S. Fish and Wildlife Service (Service) in May 2020.

3.4 Determination of Effect

The proposed action will have “No Effect” to any federally listed species.

4 Literature Cited

Negrón, J., Allen, K., Cook, B., Withrow, J. 2008. Susceptibility of ponderosa pine, *Pinus ponderosa* (Dougl. Ex Laws.), to mountain pine beetle, *Dendroctonus ponderosae* Hopkins, attack in uneven-aged stands in the Black Hills of South Dakota and Wyoming, USA. *Forest Ecology and Management* 254: 327–334.

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