# Biological Assessment

**for the**

# Rio Grande National Forest
# Land Management Plan

**September 28, 2018**

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# Introduction

This Biological Assessment (BA) conforms to legal requirements set forth under Section 7 of the Endangered Species Act (ESA) (19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14). Section 7(a) (1) of the ESA requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a) (2) requires that federal agencies ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of federally listed species, or destroy or adversely modify designated critical habitat.

This document assesses the effects of implementing the Preferred Alternative for the Rio Grande National Forest Land Management Plan on Threatened, Endangered, and Proposed (TEP) species known to exist on or near the proposed project area (hereafter referred to as the Forest Plan).

## Action Area

### Location and Description

The Rio Grande National Forest is administered by the U.S. Forest Service and is one of 154 national forests nationwide. The Forest is within the Rocky Mountain Region, which oversees national forests and grasslands in Colorado, Kansas, Nebraska, South Dakota, and Wyoming. There are 12 national forests and two national grasslands in Colorado.

The Rio Grande National Forest consists of approximately 1.83 million acres in south-central Colorado (Figure 1) and forms the backdrop for the San Luis Valley, one of the largest mountain basins in the world. The San Juan Mountains form the western boundary of the Forest. Elevation ranges from about 7,800 feet in the foothills to more than 13,000 feet along the Continental Divide. The eastern boundary follows the Sangre de Cristo mountain range, where elevations exceed 14,000 feet.

The San Luis Valley lies between the two ranges. The valley contains very little National Forest System land. Most National Forest System lands are located in the Sangre de Cristo and San Juan mountain ranges on either side of the San Luis Valley.

The range of ecosystems that occurs on the Forest is generally determined by elevation. At the highest elevations is alpine tundra, which transitions into spruce-fir forests, which is generally inhabited by Engelmann spruce and subalpine fir mixed with aspen. Vegetation in these ecosystems has been substantially altered by the recent spruce bark beetle infestation.

Below the spruce-fir ecosystem are the mixed-conifer ecosystems, which occur in the transition zone between the higher elevation spruce-fir and the pinyon-juniper. These ecosystems range from wet to drier ecosystem sites. They include a mix of conifer species, such as ponderosa pine, Douglas fir, white fir, Colorado blue spruce, and smaller amounts of aspen. Depending on site conditions, limber pine, bristlecone pine, and some pinyon pine or juniper can also be present.

At lower elevations is the pinyon-juniper woodland ecosystem, which includes pinyon pine, Rocky Mountain juniper, and Utah juniper. These woodlands generally occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges. Understory species include sparse perennial grasses, annual and perennial forbs, and sparse shrubs.

Small amounts of Rocky Mountain Gambel oak shrubland ecosystems are present at the north end of the San Luis Valley near Poncha Pass. The Southern Rocky Mountain montane-subalpine grassland ecosystem includes Thurber fescue, Arizona fescue, and several other grasses, forbs, and sedges.

The Rocky Mountain riparian ecosystem includes numerous riparian types in the upper montane and subalpine zones. These systems are highly varied and generally consist of cottonwoods, willows, sedges, and other herbaceous vegetation, aspen, and conifers such as blue spruce, Engelmann spruce, and subalpine fir.

The Forest provides habitat for many species of mammals, birds, reptiles, amphibians, and fish. Eight species are federally recognized as threatened or endangered animal species including: black-footed ferret, Canada lynx, Gunnison sage grouse, Mexican spotted owl, New Mexico meadow jumping mouse, Southwestern willow flycatcher, Uncompahgre fritillary butterfly, and yellow-billed cuckoo.

The Forest represents a large part of the core area for Canada lynx, which were reintroduced to Colorado from 1999 to 2006. The vast majority of Canada lynx in Colorado remain and reproduce in the high-elevation spruce-fir zone in the southwestern part of the state.

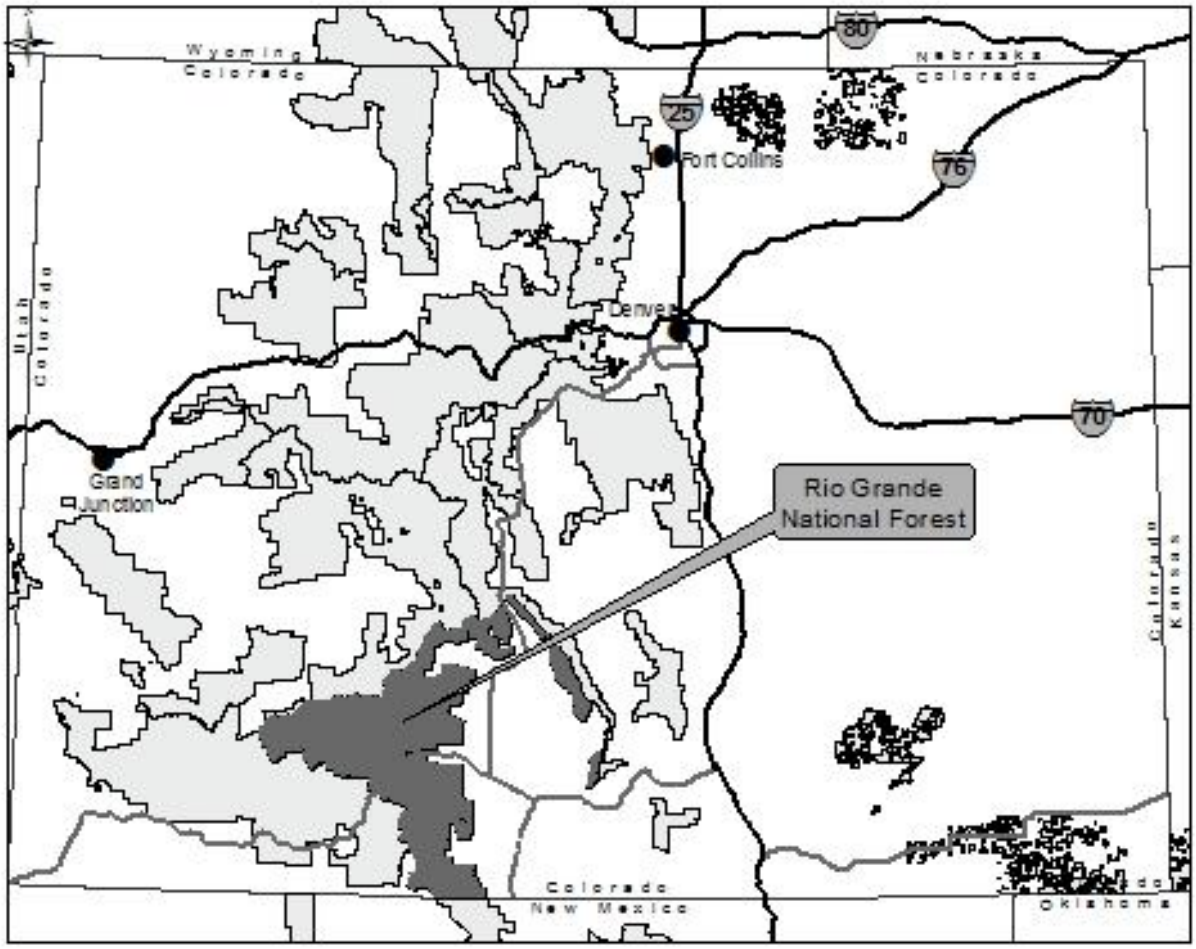


**Figure 1: Location of Rio Grande National Forest in Colorado**

# Forest Plan Components

## Background

Land management plans provide direction for the management of a national forest by guiding programs, practices, and projects. Land management plans are also referred to as forest plans. Forest plans establish overall management direction and guidance for each national forest. The forest plan guides project implementation, practices, and uses that assure sustainable multiple use management and outputs for the Rio Grande National Forest. The forest plan describes desired conditions, goals, objectives, standards, and guidelines, and identifies land suitability for multiple uses and resources in the plan area. This is similar to a city or county comprehensive plan that helps guide land use and development. Forest plan direction applies only to National Forest System lands and does not imply or form direction for other ownerships (36 CFR 219.2).

Forest plans are strategic in nature and do not compel any action, authorize projects or activities, or guarantee specific results. Forest plans provide the vision and strategic direction needed to move a national forest toward ecological, social, and economic sustainability. Project-level environmental analysis will be completed for specific proposals that implement forest plan direction. A forest plan may restrict the agency authorizing or implementing projects and activities. Projects and activities must be consistent with the forest plan (36 CFR 219.15).

Plan components included in forest plans provide integrated management direction that provide for the social, economic, and ecological sustainability and multiple uses of Forest lands and resources. In May 2012, the U.S. Department of Agriculture adopted 36 CFR 219 regulations, commonly called the 2012 Planning Rule, to guide collaborative and science-based development, amendment, or revision of forest plans that promote the ecological integrity of national forests while considering social and economic sustainability.

A forest plan establishes desired conditions, objectives, standards, guidelines, and land suitability. These are required plan components under the 2012 Planning Rule and Forest Service Handbook 1909.12. The forest plan provides guidance for project- and activity-level decision-making on the Forest for approximately the next 15 years.

## Plan Components Defined

Plan components guide future project and activities, as well as the monitoring program. Plan components are not commitments or final decisions approving projects or activities.

### *Desired Conditions*

The 2012 Planning Rule states, “a desired condition is a description of the specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates” (36 CFR 291.7(e)(1)(i).

### *Objectives*

According to the 2012 Planning Rule, “an objective is a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions.” (36 CFR 219.9 (e)(1)(i)). Objectives were developed considering the historic and anticipated budget allocations for the Forest, as well as professional experience in implementing various resource programs and activities. Objectives can

exceed or not meet an accomplishment based on numerous factors, including budget and staffing increases or decreases, changes in planning efficiencies, and unanticipated resource constraints.

### *Standards*

The 2012 Planning Rule defines standards as "a mandatory constraint on project and activity decision-making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements" (36 CFR 219.7(3)(1)(iii)). Standards can be applied Forestwide, or specific to a particular management area.

### *Guidelines*

Guidelines are described in the 2012 Planning Rule as "a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guidelines is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements" (36 CFR 219.7(3)(1)(iv)). A guideline can be Forestwide or specific to a management area.

### *Suitability of Lands*

Suitability determinations are required by the 2012 Planning Rule. The rule states, "Specific lands within a plan area will be identified as suitable for various multiple uses or activities based on the desired conditions applicable to those lands. The plan will also identify lands within the plan area as not suitable for uses that are not compatible with desired conditions for those lands. The suitability of lands need not be identified for every use and activity. Suitability identifications may be made after consideration of historic uses and of issues that have arisen in the planning process. Every plan must identify those lands that are not suitable for timber production" (36 CFR 219.7(e)(1)(v)).

The identification of suitability of lands for a particular use in the forest plan indicates that the use may be appropriate but does authorize a specific commitment. Uses or activities may not occur in areas that are identified as not suitable for that use or activity. Subsequent site-specific analysis compliant with the National Environmental Policy Act must be done to prohibit an existing use or authorize a new use. Generally, Forest lands are suitable for uses and management activities appropriate for national forests, such as outdoor recreation or timber, unless identified as not suitable.

### *Goals*

Goals can be included as optional plan components. Goals are broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Goals are expressed in broad general terms, but do not include completion dates (36 CFR 219.7(e)(2)).

### *Management Approaches*

Management approaches are optional plan content (FSH 1909.12 § 224) that describes the principal strategies and program priorities the responsible official intends to use to carry out projects and activities developed under the plan. Management approaches can convey a sense of priority and focus among objectives and the likely management emphasis. They relate to desired conditions and may indicate the future course or direction of change while recognizing budget trends, program demands, and accomplishments.

## Project and Activity Consistency with the Forest Plan

The National Forest Management Act of 1976 and the 2012 Planning Rule require that all projects and activities authorized by the Forest Service must be consistent with all applicable plan components (16

U.S.C. 1604 (i) as described at 36 CFR § 219.15 (c and d)). The approving document must describe how the given project or activity is consistent with applicable plan components by meeting the following criteria (36 CFR § 219.15(d)):

1. **Desired conditions and objectives.** Projects or activities contribute to the maintenance or attainment of one or more desired conditions or objectives or do not foreclose the opportunity to maintain or achieve any desired conditions or objectives over the long term.

2. **Standards**. Projects or activities comply with applicable standards.

3. **Guidelines.** Projects or activities

    a. comply with applicable guidelines as set out in the plan or

    b. are designed in a way that is as effective in achieving the purpose of the applicable guidelines (§ 219.7(e)(1)(iv)).

4. **Suitability.** Projects or activities occur in an area

    a. that the plan identifies as suitable for that type of project or activity or

    b. for which the plan is silent with respect to its suitability for that type of project or activity.

When a proposed project or activity would not be consistent with the applicable plan components, the responsible official can do one of the following, subject to valid existing rights (36 CFR § 219.15(c)):

- Modify the proposed project or activity to make it consistent with the applicable plan components,
- Reject the proposal or terminate the project or activity,
- Amend the plan so that the project or activity will be consistent with the plan as amended, or
- Amend the plan contemporaneously with the approval of the project or activity so that the project or activity will be consistent with the plan as amended. This amendment may be limited to apply only to the project or activity.

# Description of the Forest Plan (Preferred Alternative)

Plan components proposed under the Forest Plan are listed in Appendix A. Primary components pertaining to federally listed and proposed species consist of the following:

### *Desired Conditions*

**DC-TEPC-1:** Maintain or improve habitat conditions that contribute to either stability, recovery or both, for threatened, endangered, proposed, and candidate species. (Forestwide)

Desired conditions related to habitat for Canada lynx are found in the Southern Rockies Lynx Amendment.

### *Standards*

**S-TEPC-1:** The Southern Rockies Lynx Amendment direction (Appendix E), as amended and modified by the forest plan record of decision, shall be applied. (Forestwide)

**VEG S7 (or S-TEPC-2):** Salvage activities in stands that represent high quality lynx habitat may occur in up to seven percent of the high-probability lynx use area (95 percent lynx use areas shown in Appendix G) that overlaps the suitable timber base 15 years from the date on the forest plan decision. Salvage activities in VEG S7 stands in combination with all vegetation management[50] activities including incidental damage resulting in either Stand Initiation Structural Stage[44] conditions, a reduction of horizontal cover[19], or both, are tracked for 15 years from the decision date for this forest plan decision. (High-probability lynx use areas)

**S-TEPC-3:** Southern Rockies Lynx Amendment standards VEG S1 and VEG S2 do not apply on lynx analysis units that have no overlap, either wholly or partially, with the high probability lynx use areas shown in Appendix G. All other management direction (excluding VEG S1 and VEG S2) in the Southern Rockies Lynx Amendment applies to areas outside of the high probability lynx use areas (95 percent use area). (Lynx Habitat Outside of High Probability Lynx Use Areas)

### *Guidelines*

**G-TEPC-1:** To avoid or minimize adverse effects to listed species and their habitat, management actions should be designed with attention to threatened, endangered, proposed, or candidate species and their habitats. (Forestwide)

# Species Considered

The list of federally threatened, endangered, and proposed species is displayed in Table 1, below. Although Critical Habitat occurs in the San Luis Valley for federally listed species on other land ownerships, there is currently no proposed or designated Critical Habitat located on the Forest for any species included in this analysis.

All threatened, endangered, proposed, and candidate species have been evaluated in Assessment 5 for the plan revision (February 2016). As required under the ESA, the analysis for the plan revision involves a new project request through the U.S. Fish and Wildlife (USFWS) IPaC system. This request for an initial list of threatened, endangered, and proposed species was requested and received on July 20, 2017 (TAILS #:06E24000-2017-SLI-1107 Lakewood Office and # 06E24100-2017-SLI-0401 Western Colorado Field Office). No change in federally listed or proposed species has occurred between February 2016 and July 20, 2017; however, one species included in Assessment 5 that occurred historically near the Forest boundary (black-footed ferret) is no longer included on the IPaC list for the Rio Grande National Forest. This species is therefore removed from further consideration and is not included in this analysis.
Table 1: List of Threatened, Endangered and Proposed for the Rio Grande National Forest (IPaC Consultation Lists, updated list obtained July 11, 2018) including local status, occurrence, and determination of effects. An updated IPAC species list based on the RGNF administrative boundary was requested on July 11, 2018 with lists received from the Western Colorado, Colorado, and New Mexico Ecological Services Field Offices. Because the planning area only occurs within the Western Colorado Field Office, this list will be utilized exclusively for this analysis. (USDI Fish and Wildlife Service 2018; Consultation code: 06E24100-2018-SLI-0505). Table 1 displays threatened, endangered, and proposed species listed for consideration in this analysis.

## Consultation History

Informal discussions with the U.S. Fish & Wildlife Service regarding the Forest Plan and the proposed Canada lynx VEG S7 standard have been on-going since the fall of 2017. An interagency meeting between the Service, the Rio Grande National Forest, and the R2 Regional Office to discuss lynx-related issues and the preliminary results of the Rocky Mountain Research Station (RMRS) lynx study was held

at the Regional Office on October 4, 2017. An interagency call to discuss the proposed VEG S7 iteration that was intended to go into the draft Plan Revision was held on October 31. The Service reviewed portions of the draft plan revision and Draft Environmental Impact Statement that was published in December 2017. A follow-up discussion between the Service, Rio Grande National Forest, and the Regional Office occurred on January 18, 2018. On-going developments and discussions regarding a new proposed VEG S7 standard and a focused conservation strategy for lynx habitat management have been on-going since that time, with interagency discussions occurring on April 13, May 21, June 21, and August 17, 2018. The finalization of the RMRS lynx study and summary report for key findings was central to these discussions. The proposed new standard was finalized and agreed to in concept by the Service during the June 21 discussion, including potential allowance thresholds (i.e. caps) for entering VEG S7 stands for limited salvage opportunities based on a prioritized management scenario discussed further on August 17, 2018. These thresholds have been increased since that time due to discussions between the U.S. Forest Service (USFS) Regional Office for the Rocky Mountain Region and the Rio Grande National Forest.

**Table1. Threatened, endangered, and proposed species considered**

| Species | Status | Occurrence on Forest | Critical Habitat Status | Current Status on Forest |
|---|---|---|---|---|
| **Animals** | | | | |
| Canada Lynx *Lynx canadensis* | Threatened | Species Present | No Critical Habitat in the planning area | Population trend uncertain. Extensive change in habitat components from spruce beetle outbreak. Timber salvage/winter recreational impacts primary conservation concern. |
| Mexican Spotted Owl *Strix occidentalis lucida* | Threatened | Species does not occur | No Critical Habitat in the planning area | Over 20 years of surveys with no documented occurrence suggests the species does not occur on Forest or in the San Luis Valley. |
| Uncompahgre Fritillary Butterfly *Boloria acrocnema* | Endangered | 5 of 11 known populations occur on Forest | No Critical Habitat in the planning area | Decreasing trend in presence detected at local sites. Long-term persistence an increasing concern. One local population likely extirpated. Potential recreational impacts/climate change primary conservation concern. |
| Southwestern willow flycatcher *Empidonax trailii extimus* | Endangered | 1 occurrence in over 20 years of survey effort. Peripheral to the planning area. | No Critical Habitat in the planning area | Riparian habitats; primarily structurally complex willows. Approximately 2000 acres of modeled potential habitat on Forest. Primarily occurs below 8500' in the SLV. Livestock grazing, recreation, other riparian related impacts primary conservation concern. |
| New Mexico Meadow Jumping Mouse *Zapus hudsonius luteus* | Endangered | Not known to occur | No Critical Habitat in the planning area. | Best potential habitat has been surveyed to protocol. Not known to occur. |
| Gunnison sage-grouse *Centrocercus minimus* | Threatened | Reintroduced population; Peripheral on Forest | No Critical Habitat in the planning area | Decreasing trend, persistence questionable. Approximately 4000 acres of habitat on Forest. Potential influences from alternatives. |
| North American Wolverine *Gulo gulo luscus* | Proposed Threatened | Not known to occur | No Critical Habitat in the planning area | Historic (<20 years) occurrences on Forest. Currently considered extirpated in CO. |
| Yellow-billed cuckoo *Coccyzus americanus* | Threatened | Not known to occur | No Critical Habitat in the planning area | Limited occurrence on San Luis Valley floor. |

| Species | Status | Occurrence on Forest | Critical Habitat Status | Current Status on Forest |
|---|---|---|---|---|
| **Fish** | | | | |
| Greenback Cutthroat Trout *Oncorhynchus clarkii stomias* | Threatened | Species not present in Rio Grande Basin or on Forest. | No Critical Habitat in the planning area | Species not present in Rio Grande Basin or on Forest. |
| Bonytail Chub *Gila elegans* | Endangered | Species not present in Rio Grande Basin or on Forest. | No Critical Habitat in the planning area | Species not present in Rio Grande Basin or on Forest. |
| Colorado Pikeminnow *Ptychocheilus lucius* | Endangered | Species not present in Rio Grande Basin or on Forest. | No Critical Habitat in the planning area | Species not present in Rio Grande Basin or on Forest. |
| Humpback Chub *Gila cypha* | Endangered | Species not present in Rio Grande Basin or on Forest. | No Critical Habitat in the planning area | Species not present in Rio Grande Basin or on Forest. |
| Razorback Sucker Xyrauchen texanus | Endangered | Species not present in Rio Grande Basin or on Forest. | No Critical Habitat in the planning area | Species not present in Rio Grande Basin or on Forest. |

## Species with "No Effects" Determination

These species and corresponding critical habitats (if applicable) are not included or discussed further in this Biological Assessment. USFWS concurrence is not being requested for "no effect" determinations.

The Rio Grande National Forest Land Management Plan would have **"no effect"** on **Mexican spotted owl, New Mexico meadow jumping mouse, yellow-billed cuckoo, greenback cutthroat trout, bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker**, based on the rationale provided below.

**New Mexico meadow jumping mouse -** There are currently no known occurrences of New Mexico meadow jumping **mouse** in the planning area. The planning unit contains no current or proposed Critical Habitat. Habitat evaluations and surveys for the New Mexico meadow jumping mouse and other small mammals were conducted on the Rio Grande National Forest and other potential habitat areas in 2010 (Frey 2011) and again in select locations on National Forest System lands in 2015 and 2016 (Schorr 2015, Schorr 2016). These survey efforts sampled many of the best known potential locations for the New Mexico meadow jumping mouse with no detections. Findings discussed during a recent interagency workshop in Durango, Colorado on March 7-8, 2018 further emphasize that the species is unlikely to occur in the San Luis Valley (J. Frey, pers, comment February 8, 2018).

**Mexican spotted owl -** The Rio Grande National Forest has completed habitat and presence/absence surveys for the Mexican spotted owl since the late 1980s. Repeat surveys with current personnel have been completed in areas considered to offer the "best potential habitat" on the Forest. The Bureau of Land Management (BLM) has also completed several years of surveys (2004-2009) in their best potential habitat. To date, no individuals have been detected on Forest or BLM lands in the San Luis Valley. Based on survey efforts, it is becoming increasingly unlikely that suitable nesting habitat for the Mexican spotted owl occurs on the Rio Grande National Forest.

**Yellow-billed cuckoo -** In Colorado**,** yellow-billed cuckoo was historically noted as rare summer visitors, primarily on the eastern plains, but also in Middle Park and on the western slope at Grand Junction (Sclater 1912). Bailey and Niedrach (1965) considered yellow-billed cuckoos an uncommon summer resident, mainly on the eastern plains and into the Front Range, with a few breeding records from Grand County and one bird collected in Montezuma County. Thus, the few historical records suggest that the species apparently has always been rare in western Colorado, an opinion shared by Andrews and Righter (1992). Recent breeding bird atlas work in Colorado revealed only a single likely nesting record west of the continental divide over the five years of fieldwork (Wiggins 2005).

The RGNF planning area is located almost completely east of the Continental Divide, but includes the San Luis Valley where yellow-billed cuckoo occurrence has been documented. The Rocky Mountain Bird Observatory received reports of yellow-billed cuckoos from two locations in the San Luis Valley in the summer of 2008. These occurred along the Conejos River in Conejos County and along the Rio Grande near Del Norte in Rio Grande County (Beason 2009). The species has not been documented within the planning area (Table 2).

**Listed fish species -** For fish species, all water diversions from the San Juan Basin that could influence these species have been previously consulted. Formal consultation for the four Colorado River fish (bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker) was conducted under the Programmatic Biological Assessment for Minor Water Depletions Associated with Routine Forest Decisions In the Upper Colorado River Basin (USFS 1993), and the related BO by the USFWS, the Final Biological Opinion for Small Water Depletions on Seven National Forests in Colorado and One in Wyoming (USFWS 1993). For the San Juan River Basin, the SJNF initiated formal consultation in January 1996 under the San Juan National Forest Programmatic Biological Assessment for Water Depletions Associated with Routine Forest Actions Occurring within the Upper San Juan River Basin (USFS 1996) and the related BO of March 1996 (USFWS 1996). These consultations addressed the majority of historic water uses including the transbasin diversions.

While there are no currently federally listed and proposed fish species on the Forest, the potential for water export could impact future listings. The Rio Grande Basin has experienced several proposals to export water from the Basin in the recent past. These proposals have been extensively vetted in Division 3 Water Court and the Water Court confirmed that there are no available water resources. Therefore no future transbasin diversions are expected and similarly the Forest Plan does not expect or propose any additional transbasin diversions. Therefore the Forest Plan would have no effect on listed fish species. All species with “no effect/not likely to jeopardize” determinations in this analysis will not be included in the biological assessment for this project unless further information is requested by the USFWS.

# Species Carried Forward for Analysis

The remaining four animal species – **Canada lynx, Uncompahgre fritillary butterfly, Southwestern willow flycatcher**, and **Gunnison sage-grouse** – are expected to have measureable effects in association with the Forest Plan. These effects are analyzed in the following sections.

### *Direct Effects to Species from Implementation of the Forest Plan*

The Forest Plan provides a framework that guides site-specific actions but does not authorize, fund, or carry out any project or activity. Because the land management plan does not authorize or mandate any site-specific activities or ground-disturbing actions, there can be **no direct effects**. However, there may be implications or longer term environmental consequences at the project level of managing the RGNF under this plan which could result in effects to TEP species or their proposed or designated critical habitats.

After the Forest Plan is finalized, all site-specific activities must conform to the management direction incorporated into the Forest Plan and they must meet any site-specific NEPA and ESA requirements.

# Canada lynx (*Lynx canadensis*)

### *Existing Conditions and Trends*

### *Status*

Canada lynx were listed as "Threatened" in the 48 contiguous states in 2000 (65 FR 16053). Critical Habitat for the contiguous United States Distinct population Segment DPS) was first designated in 2006 (71 FR 53355) revised in 2009 (74 FR No. 36) and again in 2014 (79 FR No. 177) – none of which occurs in the Southern Rockies or the planning area. The 2014 Rule found that the primary constituent elements lynx need for reproduction and survival do not occur in the quantity and spatial arrangement necessary to provide for the conservation of the species. In September of 2016, the 2014 Rule was remanded and the USFWS was directed by the U.S. District Court of Montana to develop a new proposed Critical Habitat Rule that includes the Southern Rockies including the Rio Grande National Forest (9th Circuit, U.S. District Court of Montana, Case 9:14-cv-00270-DLC, Document 62, 09/07/2016). However, a recent Species Status Assessment concludes that the Canada lynx may no longer warrant protection under the Endangered Species Act and should be considered for delisting due to recovery (USFWS 2017).

### *Natural history and key ecological conditions*

Canada lynx habitat in Colorado primarily occurs in the subalpine and upper montane forest zones. An analysis of radio-collared lynx reintroduced in Colorado indicates that the majority of the habitat used occurs between 9,900 – 11,620 feet (Theobald and Shenk 2011). Forests in these zones typically contain deep winter snows and are dominated by subalpine fir, Engelmann spruce, aspen, and lodgepole pine. A preference for these forest types, particularly spruce-fir associations, has been documented with lynx reintroduced to Colorado, including locally on the Rio Grande National Forest where lodgepole pine occurrence is generally limited (Theobald and Shenk 2011). Additional recent information demonstrates the close relationship of lynx on the Rio Grande National Forest to particular locations within the subalpine forest zone and their use of specialized forest structure (Ivan et al. 2014, Squires et al. 2018). Other habitats used by reintroduced lynx locally include spruce-fir/aspen associations and various riparian and riparian-associated areas dominated by dense willow, particularly during the summer period (Shenk 2009).

Throughout North America, the distribution of lynx is closely tied to habitats that support an abundant population of snowshoe hare (Koehler and Brittell 1990, Aubry et al. 2000). These habitats are generally defined as regenerating stands that contain dense, small-diameter trees that provide both food and horizontal cover. In Colorado, both small diameter lodgepole stands and mature spruce-fir stands support the highest density of snowshoe hares, although spruce-fir latter may be of more importance on a year-round basis (Ivan 2011). Reintroduced lynx in Colorado also utilize red squirrels, cottontails, and other alternate prey items, particularly when snowshoe hare populations decline. Red squirrels are closely associated with mature forest conditions, and would occur sympatrically with snowshoe hare as an important alternate prey species (Buskirk et al. 2000). The increased use of riparian-willow systems by reintroduced lynx during late summer and fall is also considered to be associated with alternate prey sources (Shenk 2009). Canada lynx breed from March through April in the northern portion of their range, with kittens usually borne in May through June (Mowat et al. 2000).

Births by reintroduced lynx in Colorado occurred in late May to mid-June (Shenk 2006). All den sites found in Colorado have occurred within the spruce-fir zone on steep, north-facing slopes and are most

often associated with substantial amount of large diameter woody debris (Merrill 2005, Shenk 2009). The average elevation at Colorado den sites is 11,004 feet (Shenk 2009). Disturbances event such as insects and disease and windthrow contribute to the downed log component and are therefore important ecosystem processes for denning habitat. Functional denning habitat occurs within or adjacent to dense horizontal cover that provides protection and foraging opportunity (Squires et al. 2008). Because lynx may frequently move their kittens in the first few months, multiple maternity sites are needed that provide kittens with overhead cover and protection from predators and the elements (Ruediger et al. 2000). Colorado borne kittens have been found in or near the den site into mid-July.

Lynx reproductive rates in Colorado have varied greatly since kittens were first documented in 2003. After den visits identified 16 kittens in 2003, researchers found 39 kittens in 2004; 50 kittens in 2005; 11 kittens in 2006; 11 kittens in 2009; 14 kittens in 2010. During the 2006, 2009 and 2010 seasons, Colorado-born lynx were documented as successfully producing third-generation Colorado kittens. In 2010, researchers estimated that between 30 and 40 percent of female lynx bore litters of kittens (Colorado Parks and Wildlife 2010). During a recent study on the Rio Grande National Forest, successful reproduction was documented again during the 2015 and 2016 breeding seasons (Squires et al. 2016, 2017). This represents the first documented lynx reproduction in Colorado since 2010.

Lynx are known to move long distances, but open areas, whether man-made or natural, may not be used as extensively (Mowat et al. 2000). In north-central Washington, lynx typically avoided openings greater than about 300 feet wide (Koehler and Brittell 1990). However, the Southern Rockies consist of more heterogeneous forest types and their response to natural or created openings may differ (Ruggiero et al. 2000). Initial habitat use information for lynx in Colorado during the reintroduction effort indicates that canopy closures of at least 40% are important at the site-scale, regardless of the type of cover involved (Shenk 2006). Additional analysis of radio-collared data for reintroduced lynx in Colorado indicates that the average proportion of forest (upper montane) in lynx habitat was 0.65, with the majority occurring in areas with at least 20% forested (upper montane) cover. Habitat use was also associated with distance from large patches (>50 ha, 124 ac.) of forest (upper montane) cover, with the majority of habitat within 3.35 km (2.1 mi.), and the average at 0.36 km (0.2 mi). The average proportion of grasslands was 0.16. There was little association of lynx habitat use areas with other land cover types (Theobald and Shenk 2011). This data indicates that most lynx use in Colorado is associated with larger contiguous blocks of forest that is primarily dominated by spruce-fir forest cover types.

Forested conditions between foraging and denning habitat has also been shown to facilitate movement within the home range, particularly along ridgelines where lynx commonly travel (Ruggiero et al. 1994). Linkage areas may be provided by forest stringers that connect large forested areas, or by low, forested passes that connect subalpine forests on opposite sides of a mountain range (Ruediger et. al. 2000).

### *Risk Factors*

The Canada Lynx Conservation Assessment and Strategy (LCAS; Ruediger et al. 2000) and Southern Rockies Lynx Amendment (SRLA; USDA Forest Service 2008) identified and addressed risk factors with the potential to affect lynx productivity, mortality, and movements. Factors under Forest Service jurisdiction consist of the following:

<u>Vegetation and timber management:</u> Forest management practices such as thinning, commercial harvest, road construction, and post-harvest treatments all influence habitats for lynx and prey. Snowshoe hares may reach highest densities in young, dense coniferous or coniferous-deciduous forests, or mature forests with a dense understory of shrubs, aspen, and/or conifers. Red squirrels appear to be most abundant in mature cone-bearing forests. Lynx natal dens are generally located in areas with large quantities of coarse woody debris, such as blowdown, root wads, etc., which may occur in mature forests or in regenerating stands (Ruediger et al. 2000).

Wildland fire management: Fire, wind, insects, and disease historically played an important role in maintaining the mosaic of forest successional stages that provide habitat for both snowshoe hare and lynx. For the first few years after a burn, there appears to be a negative correlation between lynx use and the amount of area burned. This short-term effect is likely due to the reduction of snowshoe hare populations, removal of cover, and possibly also to increased competition from coyotes in open habitats. The lag time until the peak of hare population increase is generally about 15 to 30 years (this varies depending on tree species, habitat type and severity of disturbance). Re-sprouting of broadleaf species occurs more quickly, in 3 to 12 years (Ruediger et al. 2000).

Grazing: Livestock grazing could have local effects on lynx foraging habitat in areas that grow quaking aspen and willow in riparian areas. Local impacts could affect individual lynx. However, no information exists to indicate that grazing poses a threat to overall lynx populations (USDI Fish and Wildlife Service 2003, p. 40083). In addition, appropriate grazing management can rejuvenate and increase forage and browse in key habitats (USDA Forest Service 2008).

Recreational uses: Lynx are thought to have a competitive advantage in places where deep, soft snow in mid-winter tends to exclude other predators, a time when availability of prey is most limiting for lynx. Some activities, such as winter recreation, may compact the snow and thereby provide other predators (e.g., coyotes) with access into lynx habitat, thereby increasing the potential for competition and predation. Widespread human activity (snowshoeing, cross-country skiing, snowmobiling, snow cats, etc.) may lead to patterns of snow compaction that make it possible for competing predators such as coyotes and bobcats to occupy lynx habitat through the winter, reducing its value to and even possibly excluding lynx (Ruediger et al. 2000, USDA Forest Service 2008).

Highways and human developments: Highways (generally defined as having two or more paved lanes, high speeds and high traffic volumes) are a known source of direct mortality of lynx. Within lynx home ranges, highways and associated high-intensity uses and developments may constrain habitat use and impede daily movements. At a broader scale, lynx are known to disperse and make exploratory movements across long distances and varied habitat and terrain. Maintaining connectivity within and between lynx subpopulations is an important consideration to maintain long-term persistence. However, the Forest Service has limited authority over highways and no authority to manage activities on private land. Factors identified as potentially affecting lynx movements on Forest Service lands consist of permanent developments and vegetation management projects (USDA Forest Service 2008).

### Risk Factors Specific to the RGNF

The threats and risk factors identified in the SRLA and the management direction to address them remain valid on the Forest. Specific threats and risk factors in the post spruce beetle environment include:

- Uncertainties associated with baseline habitat condition changes due to significant natural events such as spruce beetles, and the relationship of these changes to ongoing management activities that further influence baseline conditions. Habitat baseline conditions have been addressed through recent mapping updates; however, uncertainty in regards to management activity thresholds remains.
- Uncertainty in what constitutes high-quality habitat in the post spruce beetle landscape, and revised management direction to address these conditions in association with vegetation management. This has been addressed via current and ongoing research on the RGNF.
- Inability to accurately map occurrence and distribution of high-quality habitat in the post spruce beetle landscape.

- A substantial increase in over-the-snow vehicles, potential snow compaction and recent modeling suggests that climate change is likely to impact lynx in the contiguous North American Distinct Population Segment. Although the timing, magnitude, and consequences of climate-related impacts are difficult to predict, lynx habitats and populations in the contiguous U.S. are likely to be smaller and more isolated in the future and, therefore, more vulnerable to other threats (USDI 2013).

## Environmental Baseline

The Rio Grande National Forest includes some of the most important lynx habitat in Colorado. Approximately 85% of the 218 lynx reintroduced to Colorado from 1999-2006 were released on the RGNF. Although lynx have established home ranges in other parts of the state, most lynx remain and reproduce in the high-elevation spruce-fir zone of southwestern Colorado, including the RGNF. Currently, lynx continue to utilize and reproduce on the RGNF, and local spruce-fir habitats remain essential to their eventual recovery and delisting (USDA Forest Service 2014). Of about 12 geographic locations in Colorado where lynx can consistently be located, at least six (50%) occur on the RGNF. Reproduction is known to or has occurred in the recent past in all of these locations, highlighting the importance of certain geographic areas to the species.

### *Movement and Habitat Connectivity*

Lynx habitat extends across administrative boundaries within the greater San Juan Mountains area and includes the San Juan and Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forests. Individual lynx that utilize the RGNF are known to have used all or any one of these units in the greater San Juan Mountains area (Theobald and Shenk 2011). Connective habitat between administrative units in the San Juan Mountains and beyond is essential for facilitating movement of Canada lynx across the landscape.

Initial habitat mapping efforts in Colorado identified four key linkage areas associated with the Rio Grande National Forest and adjacent land ownerships. These linkage areas were incorporated into the SRLA and remain important to addressing potential habitat connectivity concerns associated with primary highways that cross the Forest. Two of the linkage areas, Wolf Creek Pass and North Pass, have been documented in reports as primary lynx movement areas across Highway 160 and 114, respectively (Shenk 2005, Ivan 2011). Lynx use of the Spring Creek Pass Linkage Area that joins with the Gunnison National Forest on Highway 149 has also been documented during snow tracking efforts (D. Clark, pers. comm.2017). The North Pass linkage area is considered one of the most important habitat connectivity areas in Colorado because it facilitates lynx movement to and from the core area of the San Juan Mountains to areas in the remainder of the state, and beyond (Ivan 2011). Connective habitat between administrative units in the San Juan Mountains is essential for facilitating movement of Canada lynx across the landscape. Recent information involving telemetry data from the lynx reintroduction effort further demonstrates that the RGNF is important to both fine-scale movements of residential lynx as well as faster long-distance movement of lynx within areas in the vicinity of North Pass (Buderman et al. 2018).

### *Habitat*

Baseline habitat conditions involving lynx habitat in the planning area has been modeled and mapped since 2001 (Ghormley 2011). In 2011, a habitat mapping update occurred between the three Forests in the San Juan Mountains utilizing the current GIS corporate data layer (USDA Forest Service 2011). Vegetative characteristics were identified that meet the criteria for both primary and secondary habitat, as well as non-habitat and suitable and unsuitable habitat conditions. The 2011 mapping criteria identified approximately 1,044,367 acres (57%) on the Forest as lynx habitat. At that time, only 6,299 acres (0.6%)

were identified as unsuitable due to management activities or natural disturbances. For mapped lynx habitat, the lynx analysis unit (LAU) is used and defined as approximately the home range size of a female lynx. No LAUs on the RGNF exceeded the 30% unsuitability threshold.

During severe drought conditions that began around 2002, extensive habitat changes were occurring on some parts of the RGNF in association with a spruce beetle outbreak in the spruce-fir ecosystem. By 2014, data from insect and disease inventory flights suggested that approximately 75% of the lynx habitat on the Forest was affected to various degrees by spruce beetle mortality, with overstory mortality rates ranging from less than one tree per acre (TPA) to over 100 TPA in some areas. As of 2017, overstory mortality in the spruce-fir ecosystem had increased to 100% (USDA Forest Service 2017) and closely overlaps known core use areas by lynx. However, while the spruce beetle outbreak primarily affects the overstory component of Engelmann spruce it also promotes the release and growth of understory vegetation that provides horizontal cover values for snowshoe hare. In 2013, the West Fork Fire Complex burned approximately 110,000 acres of spruce-fir/aspen mix on the San Juan and Rio Grande National Forests. This was the first major natural fire start since the creation of the RGNF and eventually influenced about 88,000 acres on the RGNF. Much of the fire occurred in spruce-fir forest and burned at moderate to high-intensity. Based on the small sample of GPS collared lynx on the RGNF from 2015-17, lynx appear to be avoiding the burn area at this time except where islands of unburned forest vegetation remains (Squires et al. 2016).

In February 2018, baseline habitat conditions within the planning area were updated using the most recent corporate GIS data. This update displays a significant change from 2011, with unsuitable habitat conditions averaging 24% across all LAUs on the Forest and about 26% in LAUs with known lynx occurrence[1]. In addition, 11 of the 29 LAUs (38%) currently exceed the 30% unsuitable habitat threshold defined in the SRLA (Table 3). This change is primarily due to the spruce beetle outbreak and, in two LAUs, the West Fork Fire Complex.

In the subalpine forests of Colorado, spruce beetle outbreaks may be as significant as fire to wildlife habitat and stand development since they occur more frequently and within a shorter time frame (Baker and Veblen 1990, Veblen et al. 1994). For example, there have been at least five major outbreaks of spruce beetle in the southern Rockies since the mid 1800's, some affecting thousands of square miles (Roovers and Rebertus 1993). These events provide the key ecosystem characteristics associated with suitable landscapes for some spruce-fir associated species such as woodpeckers and also promote snag and downed log components for others, including key prey species for lynx such as snowshoe hare (Buskirk and Ruggiero 1994, Ivan et al. 2014).

**Table 2. Change in lynx suitable habitat availability 2011 – 2018, RGNF**

| LAU | Suitable Habitat (2011) | Suitable Habitat (2018) | Change in Unsuitable (2011 – 2018) | Percent Decrease in Available Suitable Habitat (2011 - 2018) | Percent of Habitat Unsuitable (2018)* |
|---|---|---|---|---|---|
| 4MILE TO LA GARITA CREEK | 51,903 | 29,421 | - 9,907 | 19.1% | 26.0% |
| ALAMOSA | 32,603 | 28,505 | - 2,852 | 8.7% | 9.4% |
| BONANZA | 44,136 | 30,267 | - 1,151 | 2.6% | 3.8% |
| CARNERO | 45,111 | 27,298 | - 2,369 | 5.3% | 8.6% |
| COCHETOPA | 18,944 | 13,154 | - 259 | 1.4% | 3.0% |

[1] No lynx occurrence has been documented in the Sangre de Cristo North and Sangre de Cristo South LAUs.

| | | | | | |
|---|---|---|---|---|---|
| CONEJOS CANYON | 36,144 | 34,027 | - 2,232 | 6.2% | 6.2% |
| CREEDE | 36,943 | 17,189 | - 13,892 | 37.6% | 45.5% |
| DEEP CREEK | 23,415 | 11,716 | - 7,020 | 30.0% | 37.9% |
| EMBARGO | 39,150 | 17,035 | - 15,601 | 39.8% | 48.1% |
| GROUNDHOG PARK | 18,913 | 7,445 | - 8,225 | 43.5% | 52.8% |
| HOGBACK | 47,394 | 22,701 | - 24,426 | 51.5% | 52.7% |
| LA JARA | 51,570 | 41,188 | - 1,086 | 2.1% | 2.8% |
| LAGARITA WILDERNESS | 17,263 | 6,467 | - 9,028 | 52.3% | 58.8% |
| PINOS-ROCK | 56,874 | 44,658 | - 1,927 | 3.4% | 4.3% |
| RITO-ARCHULETA | 40,291 | 36,308 | - 5,391 | 13.4% | 15.7% |
| SAGUACHE PARK | 31,989 | 22,947 | - 8,910 | 27.9% | 29.1% |
| SANGRE DE CRISTO NORTH+ | 50,411 | 46,927 | - 135 | 0.3% | 0.4% |
| SANGRE DE CRISTO SOUTH+ | 8,121 | 19,976 | - 11 | 0.1% | 0.1% |
| SNOWSHOE | 40,390 | 20,221 | - 16,346 | 40.5% | 46.2% |
| STONEY PASS | 42,053 | 26,664 | - 15,365 | 36.5% | 36.7% |
| THIRTYMILE | 38,974 | 15,742 | - 23,303 | 59.8% | 61.3% |
| TRES MESA | 44,872 | 17,407 | - 26,477 | 59.0% | 60.5% |
| TROUT-HANDKERCHIEF | 74,324 | 54,776 | - 18,630 | 25.1% | 26.2% |
| TROUT CREEK | 52,559 | 29,056 | - 20,194 | 38.4% | 41.5% |
| VICTORIA-CHAMA | 41,893 | 39,995 | - 3,844 | 9.2% | 9.5% |
| | | | | | |
| | 986,241 | 661,090 | - 238,583 | - 24% | |

* Red indicates values exceed 30% threshold for unsuitable habitat identified in the SRLA

+ Currently no known lynx occurrence/use in these LAUs

Until recently, there was no science-based information to predict how Canada lynx might respond to the extensive habitat change associated with the spruce beetle outbreak. Some key ecosystem characteristics known to be important to the viability of lynx, such as high late-successional mixed-conifer stands with green, multi-storied canopy conditions, have been greatly reduced in quality and extent. The bark beetle outbreak may also have impacts on other species that prefer live foliage and dense mature forest canopies. For example, the occupancy of red squirrels in local spruce-fir forests have declined significantly as overstory mortality has increased (Ivan et al. 2017). Conversely, the associated understory release appears to be promoting the rapid growth of dense understory conditions preferred by snowshoe hare. A recent study by Colorado Parks and Wildlife found that hare densities in spruce-beetle killed forest on the RGNF are on average the highest in Colorado (Ivan et al. 2017).

Whether lynx can persist in such conditions has not been rigorously evaluated through science-based methods and was a primary research need identified on the Rio Grande National Forest (USDA Forest Service 2014).

### *Lynx Study Information*

In 2013, a collaborative study between the Rocky Mountain Research Station, Colorado Parks and Wildlife, the Rio Grande National Forest, and other partners was initiated to investigate how lynx respond to forests heavily influenced by spruce bark beetles in the San Juan Mountains of southern Colorado. The study area overlapped 377,513 acres of core lynx habitat in the San Juan Mountains, with the majority (344,642 acres or 91%) occurring on the Rio Grande National Forest. The remainder of the study area overlapped part of the Grand Mesa, Uncompahgre and Gunnison national forests administrative area. The

primary purpose of the study was to address management questions associated with the identification and maintenance of suitable habitat for lynx and primary prey species in spruce-beetle impacted forests, as well as to inform an expected increase in post-beetle management activities, such as timber salvage. The study evaluated lynx resource selection at two spatial scales. First, the landscape-level analysis characterized and spatially predicted resource use (i.e., selection) by lynx at a broad-regional scale. At the second scale, stand-level analyses characterized what forest attributes were being preferentially used by lynx. Relative to salvage activities, the landscape scale analysis informs where proposed salvage treatments may occur in relation to lynx habitat, whereas the stand-level analysis informs specific silvicultural prescriptions and recommendations.

The study utilized 11 GPS collared lynx (6 males, 5 females) captured from 2015-2017 to characterize what habitat components lynx are selecting during both winter and summer periods. This resulted in 11,628 locations for the winter and 7,721 during summer, which represents the sample of lynx resource use. Random samples representing approximately 7,000 locations per individual lynx were utilized to characterize availability across the study area at the landscape scale. With the sample of use and availability, resource selection function (RSF) models were built to examine selection behavior of lynx. Landscape variables were calculated at multiple scales to identify the best-supported model in predicting lynx resource selection. An abiotic model was identified as a base model of resource selection by lynx, which was then augmented with variables that described forest characteristics (e.g., canopy cover, sub-canopy tree densities) to further inform our understanding of lynx resource selection.

For stand-level analysis, forest data were quantified on vegetation plots at used and available locations for Canada lynx that were documented during winter and summer seasons from 2015-2017. Both summer and winter home range areas for lynx were identified. Used and available locations were sampled equally for both winter and summer. At each plot, several forest- and stand-level attributes were measured and recorded in the field including horizontal cover, pellet density of snowshoe hares, cover of grass, forbs, and shrubs, downed woody debris, stem density of understory by species and overall, canopy cover, and tree density and size for larger-sized trees. The Forest Vegetation Simulator (FVS) was used to calculate a variety of forest metrics commonly used for local forest management. Functional responses in habitat use provided important insight concerning how Canada lynx altered their use of a forest resource as that resource changed in availability. A summary of information was developed to characterize forest metrics at used and available lynx locations during the winter and summer.

### *Study Results*

The information collected for the lynx study successfully explains and models what lynx are selecting and not selecting (i.e., avoiding) in spruce-fir ecosystems altered by the spruce beetle outbreak on the Rio Grande National Forest (Squires et al. 2018). The results of the Resource Selection Function (RSF) model for winter (January-April) are of particular interest because this period is the most critical in regards to lynx survival. The RSF model successfully explains 95% of the winter lynx use in the study area, with approximately half of the total study area (49.9%) being selected for and half (50.1%) less selected. The West Fork Fire Complex is not included in the RSF model. Based on GPS locations from individual lynx, however, it is evident that collared lynx are avoiding the fire landscape at this time. An exception to this involves unburned islands of forest vegetation within but close to the burn perimeter.

Based on the top model, winter use is best explained by a combination of abiotic factors and forest vegetation factors. Approximately half of the lynx use is explained by abiotic factors such as precipitation and landscape roughness, while the vegetation factors include dead forest canopy comprised of larger trees, aspen canopy, a subcanopy of subalpine fir and small spruce, and the presence of Douglas-fir. However, the presence of Douglas-fir is a negative relationship, indicating that lynx are avoiding dryer sites that contain this species. Of the vegetation factors lynx are selecting for, the presence of subalpine fir in the subcanopy is the most significant. Dense horizontal cover conditions of at least 45% are primarily

being selected by lynx, which suggests that lynx are actively selecting forest stands with high horizontal cover values that also support high snowshoe hare densities. Reproduction has also been documented within areas of extensive overstory mortality. Both lynx use areas and reproduction areas sometimes overlap with habitat areas that are currently considered unsuitable habitat on a coarse scale, suggesting that new definitions of suitable and quality habitat in forests heavily influenced by bark beetles is warranted.

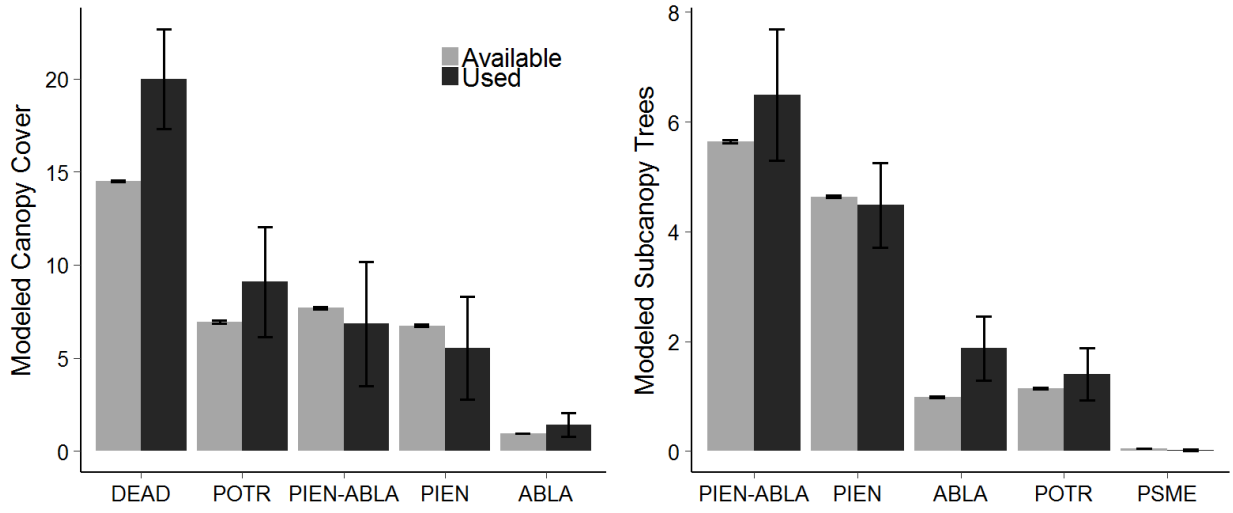


**Figure 2. Forest attributes and Canada lynx use (Squires et al., 2018)**

### *Key Findings from Current Research*

The following results from completed and ongoing research studies on and adjacent to the RGNF concerning snowshoe hare distribution; lynx diets, distribution, and habitat use:

- Snowshoe hare occupancy is reduced slightly due to high degree of overstory mortality from spruce beetles (Ivan et al. 2017).
- Red squirrel occupancy significantly decreases due to overstory mortality due to spruce beetle (Ivan et al. 2017).
- Bullets number 1 and 2, above, are notable because typically 90%+ of lynx winter diet is snowshoe hare, while red squirrel is < 10%. During periods of low hare abundance (2006-09) when female lynx did not produce litters of kittens, the diets switched to consist of up to 72% red squirrels (Ivan and Shenk 2016).
- A recent mark recapture study on the RGNF found that snowshoe hare densities on the Rio Grande National Forest average more than twice the density known anywhere else in Colorado. This may be related to understory release from overstory mortality (Ivan et al. 2017).
- There are 12 locations in the state of Colorado that are consistently occupied by lynx, over half of these (58%) occur wholly or partially on the Rio Grande National Forest (J. Ivan data in Squires et al. 2018).
- Despite the high degree of overstory mortality, lynx on the Rio Grande National Forest tend to demonstrate some site fidelity and remain and produce litters of kittens where they have done so in the past. This indicates that location is important in the context of management activities (Ivan et al. 2017).

- Lynx movement paths further display the importance of the Rio Grande National Forest for within-home range movements, and long range movements up through North Pass area and Monarch Pass (Ivan et al. 2017).
- Documented lynx kittens at all dens located indicates lynx are reproducing in spruce-fir forests with extensive overstory mortality.
- Resource selection functions defined a 95% use area for lynx on the Rio Grande National Forest, which identified the top covariates of winter use selection. Understory density describes 50% of winter selection. Lynx are selecting for areas with > 45% understory horizontal cover (Squire et al. 2018). ***This is a new finding and forms the basis for a new vegetation standard that is incorporated in the Forest Plan (VEG S7). Subalpine fir (ABLA) is the primary understory component preferentially selected by lynx, but use also includes small dense spruce and aspen mix.***

- Large dead trees are a key component of selected habitat and usually in association with understory. Remaining live trees are important (Squires et al. 2018).

## Winter Recreation and Snow Compaction

The potential influences of winter recreation, particularly those activities which result in snow compaction, were identified as a risk factor in the LCAS because of the possibility that snow compaction might serve as travel routes for potential competitors and predators of lynx, especially coyotes (Ruediger et al. 2000). As a result, the LCAS recommended two objectives and two standards related to winter dispersed recreation.

The Rio Grande National Forest began mapping winter recreation and snow compaction routes in concert with the final Common Vegetation Unit lynx habitat map in 2001. The process by which the Forest estimated our groomed, designated, and snow-compacted areas is not well documented in the initial mapping rationale documents; however, our GIS files suggest that the first iterations of the process were completed around January 2002.

The 2002 winter recreation and snow compaction map for the Forest included all known groomed snowmobile routes and designated winter recreational trails as well as areas of concentrated dispersed winter recreation use, the latter of which is sometimes referred to as "winter play areas". Table 4, below, displays miles of winter recreation trails and routes for the Rio Grande National Forest as described in the FEIS for the SRLA (USDA Forest Service 2007). This baseline represents our section 7 consultation responsibilities in relationship to the SRLA Management Direction.

**Table 3. Miles of Estimated Designated and Groomed Winter Routes on the Rio Grande National Forest. Information is from Table 3-24 in the FEIS for the Southern Rockies Lynx Amendment (USDA Forest Service 2007). This represents the Forest baseline in relationship to Section 7 responsibilities and SRLA Management Direction.**

| Rio Grande National Forest | NFS Total Miles of Designated Routes | NFS Total Miles Groomed Routes | NFS Total Miles of Groomed or Designated Recreation Winter Trails and Routes in Lynx Habitat within LAUs | NFS Total Miles of Groomed or Designated Recreation Winter Trails and Routes within LAUs |
|---|---|---|---|---|
| TOTALS | 314 | 167 | 196 | 319 |

| | | | | |
|---|---|---|---|---|
| | | | | |

The 2002 GIS table that accompanies the winter recreation map indicates that approximately 128,208 acres of concentrated dispersed winter recreational use (i.e. winter play areas) are also estimated as occurring on the Rio Grande National Forest. While some of these acreages may be included in Table 4 above, it appears that most of this is additional acreage that is considered to be snow compacted. Currently, the Forest recognizes that winter recreational use has increased considerably since the 2002 data was compiled.

## Environmental Consequences

### *Indirect Effects to Canada lynx*

The Forest Plan provides a framework that guides site-specific actions but does not authorize, fund, or carry out any project or activity. Because the land management plan does not authorize or mandate any site-specific activities or ground-disturbing actions, there can be no direct effects.

In 2008 management direction in the SRLA (USDA Forest Service 2008) was incorporated into 8 Land and Resource Management Plans (forest plans) in Forest Service Region 2 as a means of adding consistent management direction to conserve and promote recovery of, and reduce or eliminate potential adverse effects to, Canada lynx. Management direction provided under the SRLA was the outcome of an analysis of lynx risk factors associated with multiple use activities under Forest Service jurisdiction. Risk factors identified in the SRLA as potentially affecting lynx productivity, mortality, and movements identified in the SRLA included vegetation and timber management, wildland fire management, livestock grazing, recreational uses, and impacts associated with permanent developments. These factors continue to be relevant to management of forest resources.

**Lynx Management Direction under the Forest Plan**
Under the current condition there is the continued need to reduce or eliminate lynx risk factors as well as provide additional direction to sufficiently address the continued recovery of Canada lynx due to the current habitat conditions associated with the spruce beetle outbreak in the spruce-fir ecosystem. In response, the Forest Plan prescribes the following management direction:

**S-TEPC-1**: The Southern Rockies Lynx Amendment direction (Appendix E (*Appendix C of this document*)), as amended and modified by the Rio Grande National Forest forest plan record of decision, shall be applied. (Forestwide)

**VEG S7** (or **S-TEPC-2**): Salvage activities in stands that represent high quality lynx habitat may occur in up to seven percent of the high-probability lynx use area (95 percent lynx use areas shown in Appendix G, (*Figure 3 of this document*)) that overlaps the suitable timber base 15 years from the date on the forest plan decision. Salvage activities in VEG S7 stands in combination with all vegetation management[50] activities including incidental damage resulting in either Stand Initiation Structural Stage[44] conditions, a reduction of horizontal cover[19], or both, are tracked for 15 years from the decision date for this forest plan decision. (High-probability lynx use areas)

**S-TEPC-3**: Southern Rockies Lynx Amendment standards VEG S1 and VEG S2 do not apply outside of the high probability lynx use areas and any lynx analysis unit that is contained either partially or entirely within the 95 percent use areas shown in Appendix G (*Figure 3 of this document*)). All other management direction in the Southern Rockies Lynx Amendment applies to areas outside of the 95 percent use area. (Lynx Habitat Outside of High Probability Lynx Use Areas)
Further clarification of the application of these standards and the rationale for modification of SRLA is described in the Forest Plan as follows:

***Management Approaches***

The 2008 Southern Rockies Lynx Amendment Record of Decision amended eight forest plans including the Rio Grande. The direction prescribed in the 2008 Southern Rockies Lynx Amendment (Appendix E) is incorporated, as modified below, into the current direction and would apply Forestwide. Additional direction and modifications of the 2008 direction is needed to sufficiently address the continued recovery of Canada lynx due to the current habitat conditions associated with the spruce beetle outbreak in the spruce- fir ecosystem. This direction supplements, and replaces management direction related to salvage in the Southern Rockies Lynx Amendment, specifically VEG S1 and VEG S2.

Even with higher levels of mortality due to spruce beetle infestation high quality lynx and snowshoe hare habitat persists and vegetation management activities have the potential to benefit and adversely affect lynx and snowshoe hare habitat and populations (ILBT 2013, p. 71). Most vegetation management activities reduce canopy cover and horizontal cover in the understory which could reduce snowshoe hare densities and habitat values for Canada lynx.

The direction below is intended to encourage vegetation management in areas where habitat quality for lynx and snowshoe hare can be improved while retaining existing high quality habitat. The overall goal is to maintain areas that support high densities of snowshoe hare while promoting vegetation management that restores habitat and landscape permeability for lynx movement.

The Southern Rockies Lynx Amendment direction was developed prior to the 2012 Planning Rule. Standard VEG S7 is formatted to be consistent with the forest plan and similar to the Southern Rockies Lynx direction. The direction in the Southern Rockies Lynx Amendment is formatted differently than direction contained in this forest plan. Superscript numbers in the text refer to definitions contained in the Southern Rockies Lynx Amendment in Appendix E.

Standard VEG S7 (below) applies to salvage harvest[42] activities conducted in conifer forests that have lynx habitat attributes, but no longer meet the definition for standard VEG S6 due to tree mortality and associated forest structural changes. These stands still provide high quality lynx habitat and are characterized by dense horizontal cover[19], and include forest structure that provides cover and food for snowshoe hares, and foraging habitat, traveling, and hiding cover for Canada lynx. According to a recent study completed on the Forest (Squires *et al.* 2018), stands with Engelmann spruce and subalpine fir in the canopy, and subalpine fir in the sub-canopy are disproportionality selected by lynx. Stands where standard VEG S7 would apply continue to support snowshoe hare and secondary prey species, such as red squirrels, particularly when live vegetation and horizontal structure is present.

Salvage harvest in lynx habitat is prioritized as follows:

1. Choose areas with good habitat restoration potential that currently exhibit poor quality lynx habitat condition, (i.e., horizontal cover density less than 25 percent, subalpine fir is a minor component of the sub-canopy, favorable site conditions, and best available science suggest that conditions could be improved through vegetation management);
2. Choose areas that provide poor quality lynx habitat and poor habitat restoration potential; and

3. All other areas based on overall project considerations and needs.

Stands that are subject to VEG S7 represent high-quality habitat for lynx and are confined to the high probability lynx use area (95 percent areas) delineated in the Resource Selection Function model for the Forest (Squires *et. al* 2018). The high probability lynx use area map can be found in Appendix G. These areas are identified as having:

- Overstories that are predominantly live or dead Engelmann spruce and subalpine fir, or either species, with sub canopy layers dominated by subalpine fir, or a combination of either Engelmann spruce or aspen, or both; and
- Total live overstory canopy cover less than or equal to 40 percent; and
- Understory horizontal cover density at approximately 1 to 3 meters above ground level, is greater than or equal to 45 percent during winter foraging conditions for snowshoe hares.
- Openings in lynx habitat are areas with less than 25 percent total canopy closure. Areas with less than 25 percent horizontal cover are not considered suitable habitat.

During salvage project design, late-successional forest patches that are expected to remain green or mostly green in the next 15 years are identified for retention during project implementation. Foresters and wildlife biologists determine the optimal landscape heterogeneity objectives that include retention, opening patch size, and configuration. Project objectives should be considered at a watershed or sub-watershed scale, using the best available science.

Forest stands that meet the VEG S7 definition represent a high value subset of the overall suitable habitat in a lynx analysis unit. Management prioritization provides limited entry allowances into VEG S7 stands. A seven percent allowance into VEG S7 stands is available for use within 15 years of the decision date for this forest plan. Suitable lynx habitat is defined as stands with understory horizontal cover density greater than 25 percent

Hazard tree removal along open and administrative use roads, trails, and campgrounds are exempt from this direction. Removing hazards trees from these locations is done to maintain safety for the public and employees. This treatment may occur up to 250 feet from open and administrative use roads, trails, and campground boundaries.

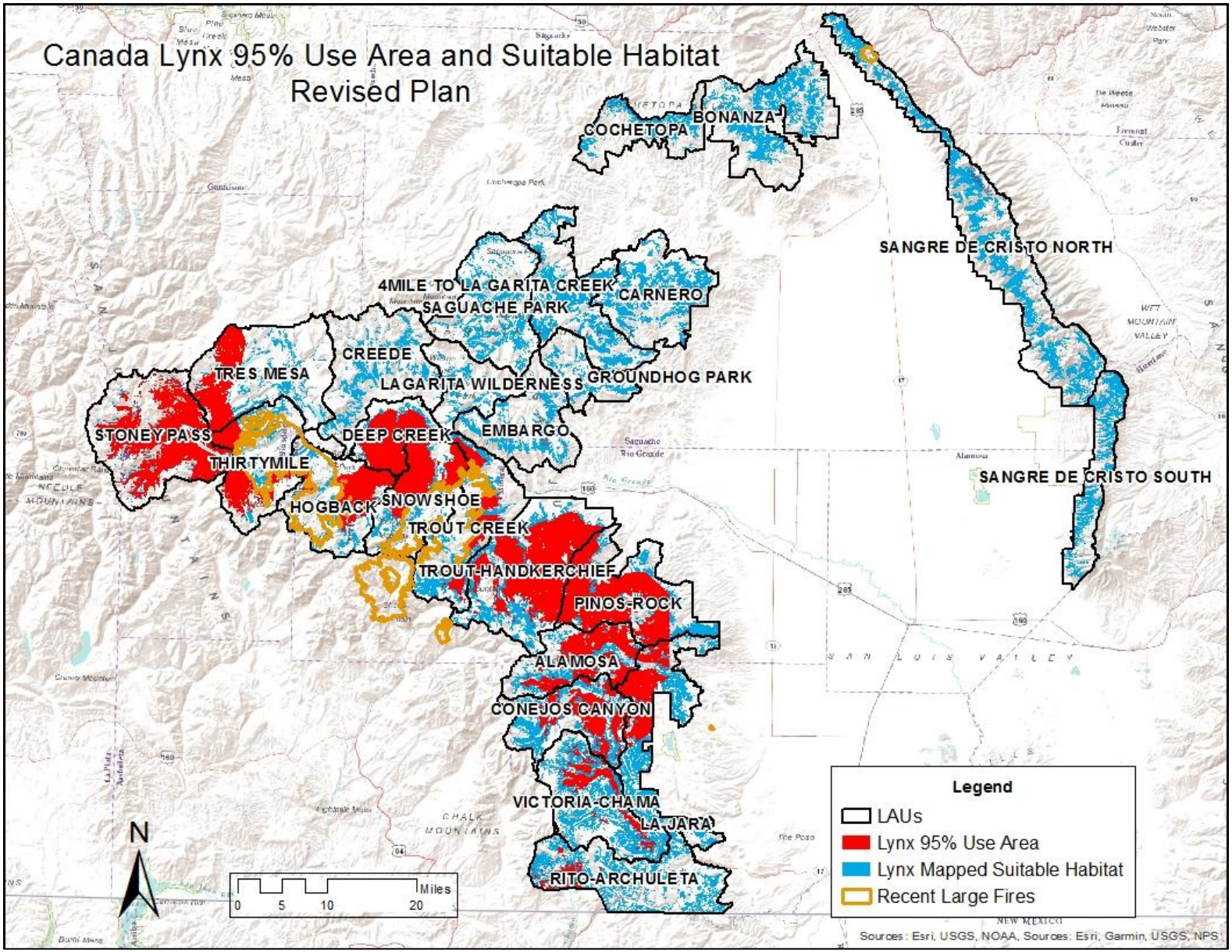


**Figure 3. Canada lynx 95% use area**

### *Effects on Canada lynx from Vegetation Management*

Timber harvest has the potential to impact lynx habitat depending upon the context in which is applied and the existing baseline conditions of the area being harvested. The highest quality habitat in the San Juan Mountains of Colorado involve mature or late successional spruce-fir stands that contain multi-storied canopy conditions for cover and foraging in proximity to high-quality denning habitat. Potential effects from timber harvest may include reduction in forested cover values important to key prey species such as snowshoe hare and red squirrel, and reduction in standing and downed log components that comprise denning habitat. With salvage harvest focused on the next seven years, potential damage to understory cover values from skid trails, landings, felling and are a primary concern in quality habitats for snowshoe hare and lynx. Conversely, forest vegetation management through timber harvest can also provide beneficial influences on lynx habitat, particularly when management activities are focused in areas that can promote regeneration and help develop landscape heterogeneity by mimicking the blowdown patterns that contribute to the small gap dynamics in spruce-fir forest types. Over time, forest regeneration can re-create beneficial habitat for lynx and its prey base (Simons-Legaard et al. 2013). Existing baseline conditions of late-successional habitat in regards to the amount of stand initiation structural stage conditions (i.e. openings), and the landscape patterns of these features are important factors regarding lynx use.

Since 2008, the Rio Grande National Forest has managed all mapped lynx habitat in accordance to the SRLA (. The SRLA contains management direction pertaining to various activities that might affect lynx habitat, including forest vegetation management. The goal of the SRLA is to use forest vegetation management as a tool to help focus and improve habitat conditions for lynx and primary prey species while minimizing potential impacts in high-quality habitats of disproportional value to lynx conservation. A significant focus of the management strategy involves fine-filter habitat components associated with All action alternatives incorporate the SRLA, and have multiple additional plan components to accommodate changes in the understanding of lynx habitat needs which have developed since the adoption of the SRLA in 2008. Most of these additional plan components address conservation needs and/or uncertainties associated with the extensive habitat change due to the spruce beetle outbreak.

Table 5, below, displays the amount of overlap between percentage of lynx habitat and suitable timber base. For this analysis, it is generally assumed that a higher percentage of overlap with the suitable timber base might be associated with more potential impact to lynx habitat. Because most all timber harvest in the spruce-fir ecosystem type on the Rio Grande National Forest is and will be associated with salvage for the next seven years or so, this may be true to a larger degree than if forest management activities were occurring in a green forest condition. Salvage harvest activities are not limited by size of created openings. Openings that approach or exceed around 300 meters in width are usually avoided by lynx (Koehler and Brittell 1990). However, habitat improvement can still be associated with salvage harvest depending upon where the activities are focused and their scale and intensity in relationship to core habitat areas for lynx. Other important factors associated with degree of impact include the broad-scale landscape context such as the amount of remaining suitable habitat in a lynx home range, retention of standing live and dead trees patches in relationship to created openings, and connectivity values between leave patches and openings created by salvage harvest. Proximity and connectivity to areas where timber harvest activities are prohibited or greatly limited, such as designated wilderness or roadless areas, are likely to also be of value to lynx in relationship to adjacent timber harvest areas.

**Table 4: Overlap between mapped lynx habitat, overstory mortality from spruce beetles as mapped by aerial detection surveys and mapped suitable timber base.**

| | Existing Condition | Forest Plan |
|---|---|---|
| | Suitable Timber Base | Suitable Timber Base |
| **Spruce Beetle Kill in Lynx Habitat** | 278,094 | 289,310 |
| **Percent Lynx habitat inside/outside this classification** | 56/44 | 53/47 |

The information provided in Table 5, above, indicates that the amount of area associated with the mapped suitable timber base increases by approximately 11,216 acres (4.0%) in under the Forest Plan in relationship to existing baseline conditions suggesting potential for a slight increase in timber harvest acres. The potential effect of this is difficult to discern because of the variables discussed previously as associated with timber harvest in relationship to influences on habitat values preferred by lynx. For example, some disproportionally small areas may be particularly high value to lynx and reproductive success so potential impacts are not directly correlated with comparisons between acreage differences. Based on the preliminary results from the local lynx study that suggest that high densities of medium and larger, dead trees retain preferred habitat value for lynx, particularly when in association with dense understory conditions, it is likely that some preferred timber salvage areas will overlap closely with the key ecosystem characteristics that lynx appear to be selecting for in the forests heavily influenced by spruce beetle. It is assumed that preferred habitat values for lynx will be potentially less impacted under the Forest Plan. The fact that a rapid understory release is occurring or likely to occur in many areas also suggests that preferred habitat values snowshoe hare are likely to improve through ecological processes associated with natural recovery, with recruitment of downed log components contributing to the understory cover values that hares prefer over time as snag fall rates increase. Conversely, however, a decrease in timber salvage acres may represent a loss in habitat improvement opportunity if the activities are focused in areas where existing understory cover is sparse and regeneration would be encouraged.

The Forest Plan incorporates existing management direction from the SRLA. Because of the uncertainties associated with the habitat changes due to the spruce beetle outbreak, one additional standard (S-VEG/LYNX-7) has been incorporated. This standard addresses uncertainties associated with high-quality habitat due to the changed habitat condition, and provides additional focus on the importance of retaining and/or minimizing influences to dense understory values of importance to snowshoe hares. As with the current SRLA VEG S-6 standard, timber harvest is not prohibited in these stand conditions; however if entry occurs, effects to understory conditions are intended to be minimized. However, there remains some risk of impact above baseline conditions to understory values associated with the new VEG S-7 standard.

Forest vegetation management associated with the timber program often has a potential to assist with the maintenance of various successional stages on the landscape that are beneficial to lynx. These opportunities are likely less evident on the Rio Grande National Forest because of the focus associated with salvage of dead and dying trees due to the spruce beetle outbreak. Adverse impacts to some of the key ecosystem characteristics associated with the conservation, recovery and viability of lynx can be anticipated in association with the timber program. However, potential adverse effects from all action alternatives are expected to be minimized with the incorporation of the existing SRLA direction, the addition of a new vegetation standard, and other plan components associated with the plan revision.

Table 6 provides estimates of potential Veg S7 allowances and unsuitable habitats in LAUs overlapping the lynx 95% Use Area delineated by Squires et al. (2018).

**Table 5. Estimates of existing conditions and allowances under Veg S7, Forest Plan**

| LAU | 95% Selected Lynx Use Area (acres) | Potential Veg S7 acres Utilized Based On Hazard Tree Rd & Site Buffers (acres) | Potential Veg S7 Caps Based on Forest Plan Suitable Timber Base (Acres -7% of Area/LAU) | RGNF Lynx Habitat Model: Unsuitable Habitat Overlap with Forest Plan Suitable Timber Base and 95% Lynx Use Area (acres) | RGNF Lynx Habitat Model: Suitable Habitat Overlap of 95% Lynx Use Area with Forest Plan Suitable Timber Base (acres) |
|---|---|---|---|---|---|
| ALAMOSA | 23,664 | 1,292 | 348 | 643 | 4,138 |
| CONEJOS CANYON | 20,205 | 1,534 | 587 | 674 | 7,420 |
| DEEP CREEK | 23,143 | 424 | 105 | 903 | 553 |
| HOGBACK | 18,479 | 1,569 | 443 | 1,795 | 4,320 |
| LA JARA | 18,542 | 556 | 413 | 482 | 5,001 |
| PINOS-ROCK | 44,114 | 4,122 | 1454 | 779 | 18,896 |
| RITO-ARCHULETA | 4,758 | 164 | 62 | 76 | 795 |
| SNOWSHOE | 22,818 | 253 | 152 | 379 | 1,770 |
| STONEY PASS | 51,586 | 1,188 | 121 | 256 | 1,422 |
| THIRTYMILE | 17,525 | 439 | 255 | 1,049 | 2,582 |
| TRES MESA | 21,297 | 841 | 303 | 2,252 | 1,964 |
| TROUT-HANDKERCHIEF | 52,520 | 4,770 | 2281 | 6,765 | 24,344 |
| TROUT CREEK | 15,345 | 666 | 194 | 604 | 2,067 |
| VICTORIA CHAMA | 10,540 | 77 | 46 | 0 | 334 |
| TOTALS | 344,536 | 17,896 | 6,763 | 16,657 | 75,606 |

### *Effects on Canada lynx from Fire Management*

Plan direction that relate to fire focuses on the natural role that fire plays in the ecosystem. All alternatives contain plan direction regarding unplanned wildfires where they would only be extinguished when they are a threat to human life or values at risk, or if they risk the ability of the site to sustain ecosystems. The Forest Plan contains direction for fire management zones which create a prioritization framework for fire management tied to resource protection or risks to human life and property.

The majority of spruce-fir forests in Colorado are considered Fire Regime V systems, indicating that wildfire is an infrequent disturbance event that may occur every 200+ years (Schmidt et al. 2002). In the San Juan Mountains of southern Colorado, fire return intervals in spruce-fir systems may average from 300 to 600 years (Romme et al. 1992). Large wildfires in spruce-fir systems are primarily associated with extreme weather events such as drought and high winds rather than fuels, stand age, or insect and disease factors and tend to be high-intensity stand replacement events when they do occur (Bessie and Johnson 1995, Sherrif et al. 2001, Veblen 2003). The West Fork Fire Complex of 2013 burned in a similar pattern during the dry and windy climatic conditions prior to the start of the monsoon season.

Wildfires in spruce-fir systems can be patchy and non-continuous but most often result in crown fires that typically kill most (>90%) of the canopy trees over large areas (Veblen 2003). Fire Regime V events tend to be stand initiating, and the rate and pattern of forest development can be highly variable and is primarily dependent upon seed availability and site factors (Veblen et al. 2003 Roovers and Rebertus

1993). From an ecological point of view, fire events tend to have the greatest influence on stand susceptibility to subsequent beetle attacks (Bebi et al. 2003).

Currently, there is no clear evidence that bark beetles or windthrow events influence the frequency of fire events in spruce-fir forests (Baker and Veblen 1990, Sherrif et al. 2001, Bebi et al. 2003, Veblen 2003). Recent local studies also suggest that fire severity is not influenced by spruce beetle outbreaks, with climatic factors being most significant to creating conditions conducive to large, high-severity fires in the subalpine zone of Colorado (Andrus et al. 2016). However, fire hazard may be greater during the two years following a beetle attack when the dead needles and fine twigs are still on the trees (Schmid and Amman 1992).

Because of the fire regime associated with lynx habitat, most wildfires would be expected to move forests into a more open condition that is less desirable or beneficial to lynx. However, post-fire use by lynx is expected to be associated with characteristics of the burn such as size, severity, and landscape patterns. Recent information from Washington State indicates that lynx in those forests will still use burned areas as early as one-year post-fire, although they do show a preference for unburned "islands" of vegetation within those burned areas (Vanbianchi et al. 2017). This information suggests that lynx will utilize burned landscapes but primarily where residual undisturbed mature forest or comparable dense vegetation remains in close proximity to the burn, either as part of a larger landscape mosaic within a burn mosaic or immediately adjacent to the burned area. Local movement data from lynx on the Forests suggests a similar pattern of use of unburned islands within two years of the 2013 West Fork Fire; however, lynx are also clearly avoiding the larger burn area (Squires et al. 2016).

In the medium term (approximately 5-15 years), fire can induce regeneration/succession which can eventually result in an increased prey base (Fox 1978). Fire exclusion generally results in forests that have full canopy cover but little of the understory vegetation that Lynx and their prey base require. The heterogeneity of local spruce-fir systems on the Rio Grande National Forest, however, in association with the natural patch dynamics contributes to a mosaic of forest conditions that provide small openings and cover in close proximity for lynx and their primary prey species. However, when a wildfire start does occur and expands into local lynx habitat it is likely to be a large scale stand-replacement event similar to the West Fork Fire Complex of 2013. The West Fork Fire burned through approximately 20,000 acres of mapped lynx habitat, with about 23% being high intensity, 50% moderate intensity, and 27% low intensity. Both moderate and high-intensity burn areas were considered to be converted to unsuitable habitat conditions because of the fire, with three of the four affected LAUs now having relatively high unsuitable habitat values (USDA Forest Service 2013).

The use of wildland fire for resource benefit is expected to increase under all action alternatives. This will involve allowing more wildfires to burn when conditions allow, particularly when human resource values and safety are not at risk such as in designated wilderness. The effect of wildland fire in Class V fire regime systems will likely have short to mid-term negative effects on lynx depending upon individual fire characteristics and patterns, with large openings created by high-intensity fire being avoided by lynx until such time that forest vegetation returns and grows dense enough to support prey species such as snowshoe hare. In many local spruce-fir sites, aspen is likely to be a pioneer species on local wildfire sites. Aspen may support lower of snowshoe hare and other prey species for the first couple decades or more, but is not expected to provide higher quality habitat values until such time that spruce or other conifer trees take hold and grow into foraging habitat condition for snowshoe hare. This could take several decades or more depending upon site conditions and other factors. In the long-term, wildland fire in lynx habitat can be expected to result in high-quality habitat for primary prey species, and can be expected to be of high value to lynx depending upon the landscape patterns involving unburned areas of larger, intact forest that provides other cover, foraging, and denning values to lynx.

Suppression of wildland fire in spruce-fir ecosystems is expected to remain a primary tactic for multiple local resource values, including protection of wildlife habitat. In areas where stand initiation amounts

have already exceeded desired conditions for lynx and other spruce-fir associated wildlife species, fire suppression tactics may be used to extinguish fires as quickly as possible, or allow them to burn for resource benefit under prescribed conditions. This latter opportunity may be more limited in spruce-fir ecosystems than in lower elevation forests that support more fire-adapted vegetative communities because wildfires in Fire Regime V systems tend to be driven by climatic conditions that result in higher intensity stand replacement fires. The potential for climate change to influence the disturbance ecology patterns in local subalpine forests, including frequency and severity of wildland fire, is generally unknown but is a concern in identifying and balancing the need for extensive tracts of intact forest with openings that provide for the regeneration of early seral forest conditions that tend to support high densities of snowshoe hare and other potential prey species (Savage et al. 2017).

### *Effects on Canada lynx from Fuels Management*

Fuels management activities in lynx habitat across all alternatives are not expected to be applied frequently on a landscape scale because of the associated fire regime. However, pile burning and other slash clean-up activities associated with activity fuels from timber harvest may be used frequently. Fuels management activities have the potential to be have negative effects on lynx habitat. These effects are addressed in plan direction, to avoid negative impacts to lynx habitat, maintaining the vegetative structure and connectivity required by the species.

### *Effects on Canada lynx from Grazing*

Cattle grazing can reduce shrub size and vigor, generally leading to more open conditions in contrast to the Lynx's preference for dense undergrowth (Aubry et al. 2000). Cattle grazing can reduce winter forage and cover for snowshoe hares and is correlated with decreases in snowshoe hare abundance. The primary concern from livestock grazing on lynx habitat involves browsing and trampling impacts on understory or riparian associated species such as aspen and willow, which function as important cover and forage habitats for prey species such as snowshoe hare. High-elevation riparian willow often functions as a key habitat for a variety of prey species during the summer period. Grazing in these areas can reduce the cover and forage value of these areas. The current management direction from the SRLA regarding livestock grazing has been incorporated into the plan revision. In most cases, cattle grazing tends to be a minor influence on these habitat types due to their elevation and inaccessibility to livestock. Therefore, no updates to the management direction regarding livestock grazing has occurred.

The existing management direction regarding livestock grazing in addition to the new plan components are expected to maintain the vegetative conditions associated with the Lynx and their important prey species

### *Effects on Canada lynx from Road Construction and Reconstruction, Road Management, and Motorized Off-Highway Travel*

High volume roads and highways are known to have an impact on lynx movement and habitat connectivity, but the impact of lesser used roads and native surface roads is less well understood. Road-related mortality of lynx occurs most often when highway traffic volume approaches or exceeds 4,000 vehicles per day. Given the slower speeds and reduction in use associated with native surface forest roads, indirect impacts are less likely to occur. In some cases, however, vehicle traffic may affect lynx behavior by deferring intended crossings and movements. However, such impacts are expected to be minimal depending on road density values in particular areas, especially when in association with other high-use recreation areas such as developed campgrounds.

Plan direction could be used to defer road construction and maintenance projects in Lynx denning habitat to avoid take when the dens are in use. Forest Plan direction also allows for the use of seasonal closures to protect wildlife and fisheries habitat. If used properly, this plan direction could ensure that the road

network has no more than a negligible impact to the Lynx population, commensurate to a minor adverse effect in the form of unintentional harassment.

Snowmobile use by recreationists often directly overlaps mapped lynx habitat because of human preferences for high-elevation, deep snow areas. Lynx can be negatively affected by use of over-the-snow vehicles due to noise and displacement. Winter periods can also be particularly stressful for lynx as they establish and reoccupy winter home ranges that will supply the food resources to feed themselves and often the previous years' kittens, and provide them with enough resources to prepare for the coming breeding season. The probability of negative impacts occurring likely increases with increasing snowmobile use and the amount of accessible terrain. The current increasing trend in snowmobile use in Colorado and on the Forest and the increased ability of the machines to pioneer into previously secluded habitat areas has the potential to increase potential displacement and/or disturbance of lynx in some areas. For example, requests for guide permits to lead snowmobile groups spruce-fir ecosystems that also support lynx are a recent activity on the Rio Grande National Forest.

Road and trail grooming for snowmobile access also results in snow compaction. In some cases, extensive play areas used repeated by snowmobiles also results in snow compaction. Baseline conditions regarding snow compaction are associated with the SRLA and have been incorporated into the Forest Plan.

**Table 6. Miles of Estimated Designated and Groomed Winter Routes on the Rio Grande National Forest. Information is from Figure 3-24 in the FEIS for the Southern Rockies Lynx Amendment (USDA Forest Service 2007). This table represents the Forest baseline in relationship to Section 7 responsibilities and SRLA Management Direction**

| Rio Grande National Forest | Total Miles of Designated Routes | Total Miles Groomed Routes | Total Miles of Groomed or Designated Recreation Winter Trails and Routes in Lynx Habitat within LAUs | Total Miles of Groomed or Designated Recreation Winter Trails and Routes within LAUs |
|---|---|---|---|---|
| TOTALS | 613 | 613 | 196 | 319 |

Under the Forest Plan, the snow compaction baseline is not to be exceeded without following the SRLA objectives and guidelines in the Human Uses section of the SRLA, and documenting the rationale for this deviation. Additional GIS work completed in 2016 resulted in a new map of snow routes and suspected compacted routes for the Rio Grande National Forest. Based on this mapping effort, the compacted routes are believed to be similar to the 2008 SRLA baseline but total routes used by snowmobiles had nearly doubled.

Snow compaction is considered a potential issue for lynx because other predators such as coyotes may take advantage of hard packed over-snow routes created by snowmobiles to access deep snow habitat areas that were formerly inaccessible to them. This may result in competition for resources such as snowshoe hare that lynx depend upon. While use of snow compacted routes by coyotes is a commonly observed occurrence locally, the effects of this increased access on lynx are uncertain. If further research indicates that it is a problem locally, then seasonal or local closures could mitigate the problem.

The Forest Plan Revision decision will determine the suitability of over-the-snow areas but delineated routes will not be determined until the travel management planning process.

### *Effects on Canada lynx from Trail Management, Developed Recreation, and Dispersed Recreation*

#### Off-Trail Over-The-Snow Vehicle Use

The Forest Plan retains existing areas open to OSV cross-country use. Currently a total of 673,840 acres are available for off-road/trail over-the-snow vehicle use within 25 of the 26 LAUs on the RGNF (table 8). Overlay of open use areas with Canada lynx 95% Use Areas identified by Squires et al. (2018) shows a high proportion of overlap in the Tres Mesa, Trout-Handkerchief, and Pinos-Rock LAUs.

**Table 7. Off-trail over snow vehicle use, RGNF**

| LAU | Off-Trail Use Allowed (ac) | Overlap of Open OSV Use and Lynx 95% Use Area (ac) | Percentage of 95% Use Area Overlapped by Open OSV Areas |
|---|---|---|---|
| 4MILE TO LA GARITA CREEK | 66,649 | 0 | 0.0% |
| ALAMOSA | 17,288 | 7,148 | 30.2% |
| BONANZA | 49,132 | 0 | 0.0% |
| CARNERO | 51,351 | 0 | 0.0% |
| COCHETOPA | 36,465 | 0 | 0.0% |
| CONEJOS CANYON | 19,731 | 8,873 | 43.9% |
| CREEDE | 21,453 | 0 | 0.0% |
| DEEP CREEK | 5,408 | 2,785 | 12.0% |
| EMBARGO | 36,262 | 0 | 0.0% |
| GROUNDHOG PARK | 19,647 | 0 | 0.0% |
| HOGBACK | 21,187 | 7,929 | 42.9% |
| LA JARA | 10,090 | 3,177 | 17.1% |
| LAGARITA WILDERNESS | 8,614 | 0 | 0.0% |
| PINOS-ROCK | 41,969 | 27,124 | 61.5% |
| RITO-ARCHULETA | 34,847 | 342 | 7.2% |
| SAGUACHE PARK | 39,482 | 0 | 0.0% |
| SANGRE DE CRISTO NORTH | 3,569 | 0 | 0.0% |
| SANGRE DE CRISTO SOUTH | 683 | 0 | 0.0% |
| SNOWSHOE | 3,212 | 2,101 | 9.2% |
| STONEY PASS | 11,446 | 4,727 | 9.2% |
| THIRTYMILE | 18,127 | 5,296 | 30.2% |
| TRES MESA | 58,980 | 11,220 | 52.7% |
| TROUT-HANDKERCHIEF | 67,701 | 39,920 | 76.0% |
| TROUT CREEK | 25,379 | 4,637 | 30.2% |
| VICTORIA-CHAMA | 5,168 | 829 | 7.9% |
| TOTAL | 673,840 | 126,111 | 36.6% |

The impact that outdoor recreation may have to lynx is not clear although a number of studies are underway (Maze 2013). As stated previously, snowmobile use of Lynx habitat may have impacts to the species by facilitating the movement of competitive species such as coyote (Kolbe et al. 2007). Non-

motorized over-snow travel may have a similar effect, although at a lesser scale and intensity. This may not directly impact lynx as the species spends the great majority of its time in thick brush and timber that is not generally suitable for over-the-snow travel, mechanized or not.

There is no indication that other types of recreation have much impact on Lynx of their habitat, as hikers and other recreationists generally stay out of the thickest brush that makes up the lynx's preferred habitat.

### *Summary of Indirect Effects to Canada lynx*

The SRLA provides an overview of all activities that might influence Canada lynx and the key ecosystem characteristics that define their primary habitat and that of their important prey species. The management direction that addresses these activities is incorporated into the action alternatives for the plan revision. Of these, forest vegetation management is considered the most influential, primarily because of potential effects of vegetative structure that supports snowshoe hare and, to a lesser degree, other important prey species. Therefore, the forest vegetation management (timber) program has the greatest potential to influence Canada lynx depending primarily upon where these activities are located. Conversely, forest vegetation management can also be an important tool for improving lynx habitat both spatially and temporally over time and thus have beneficial influences to lynx habitat.

Wildland fire can have extensive negative influences on lynx habitat locally because of the fire regime associated with local subalpine forests. In the short to mid-term (several decades), these fires can have detrimental effects on lynx habitat quality depending upon factors such as location, scale, and intensity. Conversely, wildland fire can be a beneficial influence on lynx habitat over the long term if burn intensities and spatial aspects of burn and unburned areas are in close proximity to each other.

Recreational programs may have negative influences on lynx habitat, primarily as associated with winter recreational use of motorized over-the-snow machines, or snowmobiles. Effects can include potential disturbance and displacement, and potential facilitation of completion by other carnivores, such as coyotes, for food resources. Livestock grazing can and has been documented as a concern on vegetation structure and composition, particularly in riparian zones where aspen and willow provide important summer foraging habitat for a wider variety of prey species than during the winter periods. Most grazing issues involving lynx habitat have occurred at mid-elevations where dryer riparian habitat vegetation can be more readily influenced by livestock. However, upper elevation willow carrs can also be influenced.

Other human uses and key habitats involving road management, summer recreation, linkage areas, and habitat connectivity can also be influential depending on location, scale and intensity.

Programs that have the greatest potential to impact lynx are those that have the potential to affect the vegetative cover needed by lynx or their prey base. Timber harvest, fire, fuels management, and, to a lesser degree cattle grazing, all have the greatest potential to impact lynx's required vegetative cover. Over-snow recreation has potential to disturb and displace lynx and increase snow compaction levels. In-stream minerals dredging activities have some minor potential to interfere with lynx travel corridors. Vegetation management activities that occur during the reproductive season is the likely the only program that has much potential to cause direct mortality to lynx. This can be mitigated by timing restrictions in key reproductive habitat until such time the kittens can likely move between maternal dens (after at least July 15).

### *Comparison of Plan Component Effects Addressing Lynx Risk Factors*

Table 9 provides a summary of plan component response to lynx risk factors under the Forest Plan in comparison to management direction under the existing forest plan.

**Table 8. Lynx Risk Factor Summary Effects Comparison for the current Forest Plan in Relation to the Previous Plan**

| Risk Factor | Ecological Element at Risk | Plan Component Code Addressing Risk (Existing Condition) | Plan Component Code Addressing Risk (Forest Plan) | Effects Analysis Summary |
|---|---|---|---|---|
| Vegetation and Timber Management | Denning habitat availability | SRLA: VEG G11 | S-TEPC-1 | **Previous and current Forest Plan**<br>• Provides that denning habitat should be distributed in each LAU. |
| | Foraging and cover habitat availability | SRLA: VEG S1, VEG S2, VEG S5, VEG S6, VEG G1, VEG G5VEG G10 | S-TEPC-1<br>VEG S7 (S-TEPC-2) | **Previous Plan**<br>• Provides for retention 70% of overstory cover, in all LAUs<br>• Restricts precommercial thinning removal of snowshoe hare habitat without overstory cover, with exceptions, in all LAUs<br>• Restricts regeneration to 15% or less within an LAU during a 10 year period, in all LAUs<br>• Restricts regeneration harvest projects not meeting VEG S1, S2, S5, or S6, within WUI, to no more than 3% of lynx habitat in the administrative unit.<br>• Provides for 70% retention of snowshoe hare and red squirrel habitat in stands identified as suitable habitat, in all LAUs<br>• Restricts incidental removal of winter snowshoe hare habitat with overstory cover due to salvage harvest, in LAUs exceeding 30% unsuitable habitat, and LAUs with 15% or more regeneration harvest within a 10 year period, in all LAUs<br>• Does not limit incidental damage or removal of high quality hare habitat during salvage operations in stands not classified as multi-story mature or late successional conifer forests.<br><br>**Forest Plan:**<br>• Provides for retention of 70% retention of overstory cover, in 95% use area<br>• Removes requirement for 70% retention of overstory cover, in areas outside the 95% use area<br>• Restricts regeneration to 15% or less within an LAU during a 10 year period, in 95% use area<br>• Removes restriction of regeneration harvest projects not meeting |

| Risk Factor | Ecological Element at Risk | Plan Component Code Addressing Risk (Existing Condition) | Plan Component Code Addressing Risk (Forest Plan) | Effects Analysis Summary |
|---|---|---|---|---|
| | | | | VEG S1, S2, S5, or S6, within WUI, to no more than 3% of lynx habitat in portions of the administrative unit outside the 95% use area.<br>• Restricts precommercial thinning removal of snowshoe hare habitat without overstory cover, with exceptions, in all LAUs<br>• Provides for 70% retention of snowshoe hare and red squirrel habitat in stands identified as suitable habitat, in all LAUs<br>• Provides for retention of existing snowshoe hare habitat with overstory cover, with exceptions, within the 95% use area only<br>• Removes restriction on incidental removal of winter snowshoe hare habitat with overstory cover due to salvage harvest, in LAUs exceeding 30% unsuitable habitat, and LAUs with 15% or more regeneration harvest within a 10 year period, in all LAUs outside the 95% use area.<br>• Provides for up to 7% incidental removal of snowshoe hare habitat in stands identified as Unsuitable due to bark beetle mortality, except for hazard tree removal within 250' of open roads, administrative sites, and administrative roads, within 95% use area. |
| | Landscape connectivity | SRLA: ALL S1, LINK S1 | S-TEPC-1 | **Previous and current Forest Plan:**<br>• Provides for retention of connectivity. |
| Wildland Fire Management | Denning, forage, and cover availability | SRLA: VEG 03 | S-TEPC-1 | **Previous and current Forest Plan**:<br>• Provides an emphasis to conduct fire use activities to restore ecological processes and maintain or improve lynx habitat. |
| Livestock grazing | Cover and foraging habitat availability | SRLA: LINK G2, GRAZ G1, GRAZ G2, GRAZ G3, GRAZ G4 | S-TEPC-1 | **Previous and current Forest Plan:**<br>• Reduces risk of lynx and prey species habitat loss due to grazing. |
| Recreational Uses | Increased risk of mortality due to predator competition | SRLA: HU G4, HU-G10, HU-G12 | S-TEPC-1 | **Previous and current Forest Plan:**<br>• Reduces risk caused by predator competition facilitated by snow compaction activities. |

| Risk Factor | Ecological Element at Risk | Plan Component Code Addressing Risk (Existing Condition) | Plan Component Code Addressing Risk (Forest Plan) | Effects Analysis Summary |
|---|---|---|---|---|
| Highways | Increased mortality | SRLA: LINK S1, HU G9 | S-TEPC-1 | **Previous and current Forest Plan:**<br>• Reduces risk of highway-related lynx mortality. |
| Highways and Permanent Developments | Foraging and cover habitat availability | SRLA: HU G1, HU G2, HU G5, HU G11 | S-TEPC-1 | **Previous and current Forest Plan:**<br>• Provides for retention of snowshoe hare habitat and lynx cover in otherwise fragmented areas. |
| | Landscape connectivity | SRLA: ALL S1, ALL G1, HU G3, HU G6, HU G7, HU G8, LINK G1 | S-TEPC-1 | **Previous and current Forest Plan:**<br>• Reduces the risk of connectivity loss on the landscape. |

### *Summary of Remaining Uncertainty and Risk to Canada lynx*

Risk to Canada lynx resulting from multiple use activities on the Rio Grande National Forest are largely addressed in the Forest Plan via adoption of SRLA management direction. However, SRLA did not address the potential effects to, or potential management approaches for, conditions resulting from significant reductions in available multi-storied mature or late-successional spruce-fir stands at the National Forest scale. In the last 10-15 years, due to insect mortality spruce-fir stands on the Rio Grande National Forest have undergone a substantial shift in structural condition from mature tree-dominated green canopy forest to snag-dominated stands providing little to no green overstory. Recent research indicates that, despite these changed conditions, lynx and snowshoe hare continue to occupy and thrive in areas substantially affected by beetle-kill, with use levels in these stands similar to that shown prior to this mortality event.

The VEG S7 (S-TEPC-2) and S-TEPC-3 standards under the Forest Plan recognizes lynx and snowshoe hare use of spruce-fir stands with high levels of overstory mortality and proposes management direction for timber/salvage harvest activity levels that varies by location within or outside of the Lynx 95% Use Area identified by Squires et al. (2018). In summary, the standards would limit effects allowances to VEG S7 stands in 95% Use Area to 7% while relaxing previous standards under SRLA for effects limitations on allowable amounts of stand initiation structural stage (VEG S1) and stand regeneration (VEG S2) in any LAU that falls completely outside the 95% Use Area.

While application of these standards recognize the need to limit impacts within areas of the Forest most highly utilized by lynx, some uncertainty and; therefore, associated risks remain to be addressed. For example, the amounts and spatial locations of existing stands with high levels of overstory mortality containing conditions utilized by both lynx and prey species, have not been identified. In addition, the impacts to lynx and prey species resulting from potential impacts of up to 7% of this habitat during salvage operations, as well as salvage removal of snags that likely provide shading and overstory cover that contribute to suitability of these stands, is unknown. The effect is likely mitigated to an extent because treatments would be limited to areas identified as suitable for timber removal, but some uncertainty remains.

Outside of areas proposed for management under VEG S7, the remaining amount and distribution of multi-story mature and late successional spruce-fir stands (SRLA VEG S6) containing winter snowshoe hare habitat have not been identified. Stands retaining these conditions or other habitat characteristics may provide a heightened role in sustaining lynx and snowshoe hare given the reduced availability of this habitat on the landscape. Therefore, the effects of continued limited allowances for impacts to remaining VEG S6 stands within lynx high use areas  and other vegetation management within habitat outside the lynx high use areas is uncertain.

### *Cumulative Effects*

Trapping was once thought to be the primary driver of the decline of lynx – the species was regularly trapped for pelts. As recently as 1980 these pelts were still being sold for export (45 FR 80444). However, as noted in the listing decision, current forest management practices are considered one of the primary effects.

Cumulative effects involving lynx habitat are determined by tracking changes to baseline conditions of individual LAUs in relationship to other planned or reasonably foreseeable activities on other non-federal lands.  Future activities on federal lands are not included in cumulative effects analysis for federally listed

species because they are subject to additional section 7 analysis when individual projects occur. Other habitat parameters involving monitoring of the SRLA implementation under the Biological Opinion for section 7 consultation for the SRLA have been tracked on an annual basis either at the LAU scale or Forest-wide.

The primary influence on lynx habitat baseline conditions is associated with the extensive spruce beetle outbreak focused within the spruce-fir ecosystem type. Aerial surveys to detect insect and disease influences indicate widespread mortality in the mature spruce component on the Rio Grande National Forest. As of 2016, these surveys indicate mortality had increased to 100% of the spruce-fir forested ecosystem (USDA Forest Service 2017). This primarily involves the mature and older spruce trees. It should be noted that aerial detection methods over-estimate total mortality, as some spruce-fir forest in the southern portion of the Forest currently remains at least partially green, and mid to lower canopy levels are usually not as severely affected by spruce beetle. This change in habitat conditions directly overlaps with the core habitat for lynx on the Rio Grande National Forest and has resulted in a significant change to the key ecosystem characteristics known to provide high-quality habitat conditions for the species. Although also variable, it is estimated that unsuitable habitat conditions average 27% across mapped lynx habitat on the Forest with 11 of the 29 LAUs (38%) being over the unsuitable habitat threshold associated with Standard VEG S1 (30% unsuitable). The majority of this change has occurred since 2010 when the spruce outbreak was affecting up to 60,000 acres or more per year.

In response, proposed salvage activities have increased, most of this occurring in lynx habitat. This increase in timber salvage activities are expected to continue for the next seven years while the dead trees are still merchantable. This will likely have both negative and positive influences on lynx habitat, depending upon the location of activities and how they are conducted in relationship to known high-quality lynx habitat.

It is also likely that the demand for certain recreational activities will continue to increase, with some activities having the potential for influencing lynx habitat.

Changes in lynx habitat condition on the RGNF due to the spruce beetle outbreak are significantly decreasing (USDA Forest Service 2016). This is because of the extensive area influenced by spruce beetles and the fact that they are running out of green trees to utilize as a food resource.

The most recent aerial detection surveys describe tree mortality as substantial in the spruce-fir ecosystem (USDA Forest Service 2017) that directly overlaps with most all of the lynx habitat on the forest. However, what this information doesn't display is the vast amount of understory release associated with the canopy mortality and therefore the amount of live forest attributes that appear to still be supporting high densities of snowshoe hare, the primary prey species for Canada lynx. The current information also indicates that most known historic use areas are still being used by lynx, and that reproduction is occurring. Some but not all of this habitat is protected from some management activities due to wilderness or roadless designations. However, there is considerable uncertainty associated with the extensive habitat change for lynx and other wildlife species, and what small but incremental impacts to habitat may mean from a cumulative effects perspective. Information from collaborative studies is being collected at this time to guide management activities through this uncertainty. The additional plan components developed for the plan revision are based on some of this preliminary information, to help minimize potential influences and reduce the potential for cumulative impacts over time.

### *Determinations*

It is determined that the Forest Plan **may affect and is likely to adversely affect** Canada lynx based on the following rationale:

- The Forest Plan addresses threats and risk factors to Canada lynx by incorporating management direction described in the SRLA, with modification to the vegetation management and activities direction.
- The forestwide change in vegetation condition in spruce-fir stands is recognized and management direction is prescribed in stands currently utilized by Canada lynx that were previously identified as unsuitable under the SRLA.
- Primary lynx and snowshoe hare use areas on the Forest have been identified as a result of recent and ongoing research.
- Limited impacts to Canada lynx and lynx prey habitats allowed under SRLA would continue, with modifications to these allowances pertaining to vegetation management and activities.
- Within Canada lynx 95% use areas, the level of effect to Canada lynx and lynx prey resulting from proposed limited allowance of 7% impact to understory and associated overstory in VEG S7 stands is uncertain, as is the level of effect generated by continued limited effect allowances for vegetation treatments in remaining multi-storied mature and late successional spruce-fir stands.

**SRLA Required Monitoring**

1. Maps of the location and intensity of snow compacting activities and designated and groomed routes that occurred inside LAUs during the period of 1998 to 2000 constitute baseline snow compaction. Changes in activities and routes are to be monitored every five years after the decision.
2. When fuels treatment and vegetation management project decisions are signed, report the following:
   a) Acres of fuel treatment in lynx habitat by Forest and LAU, and whether the treatment is within or outside the WUI as defined by HFRA.
   b) Whether or not the fuel treatment met the vegetation standards or guidelines. If standard(s) were not met, report which standard(s) was not met, why it could not be met, and how many acres were affected.
   c) Application of exceptions in Standard VEG S5:

      For areas where any of the exceptions 1 through 5 listed in Standard VEG S5 were applied, report the type of activity, the number of acres, and the location (by unit, and LAU) and whether or not Standard VEG S1 was within the allowance.
   d) Application of exceptions in Standard VEG S6:

      For areas where any of the exceptions 1 through 4 listed in Standard VEG S6 were applied, report the type of activity, the number of acres, and the location (by unit, and LAU) and whether or not Standard VEG S1 was within the allowance.
   e) Total acres of lynx habitat treated under exemptions and exceptions to vegetation standards, to assure the 4.5 percent limit is not exceeded on any Forest over the life of the amendment (15 years).
3. Application of guidelines:
   a) Summarize what guideline(s) was not followed and why.

b) Document the rationale for deviations to guidelines.

### Recommended Improvements to Resource Tracking and Reporting Procedures (Rio Grande National Forest)

1. Baseline conditions regarding snow compaction activities and routes have been challenging to report and map at specific time intervals. Reporting criteria in the SRLA have not been met. Recommend a remap of baseline conditions for the plan revision and to make reporting requirements more transparent to the Service and the public by including them as part of the section 7 consultation requirements associated with this plan revision.

2. Both suitable and unsuitable habitat conditions for lynx have been defined in documents associated with the plan revision. It is recommended that the updated criteria for these conditions in regards to understory cover values and green overstory amounts be included as an appendix to the plan revision.

3. Ensure that any allowable acres entered into VEG S7 stands for salvage or other forest vegetation management activities are counted and reported in association with the total treatment acres. For example, if 40 acres of VEG S7 are entered for salvage purposes, 40 acres are counted and reported towards the total allowance for the Rio Grande National Forest. This approach will be consistent with the conservation measures for vegetation management in the 2013 LCAS.

4. Review all remaining acreages for existing SRLA exceptions and exemptions (i.e. caps). Continue or renew all acreages applicable to the SRLA except VEG S6. Carefully consider whether continuing existing threshold amounts for VEG S6 contributes to conservation goals given the significant decrease in this forest condition due to the spruce beetle outbreak.

5. Explore opportunities to accurately map the amount and distribution of VEG S7 stands in the 95% Lynx Use Area. To help evaluate whether the proposed allowance amount (7%) will meet conservation goals as currently planned.

6. Provide an exemption for any VEG S7 stands associated with the definition of roadside hazard removal.

# Southwestern willow flycatcher (*Empidonax trailii extimus*)

## Environmental Baseline

The breeding range of the Southwestern willow flycatcher includes southern California, Arizona, New Mexico, southwestern Colorado, and extreme southern portions of Nevada and Utah: specific range boundaries are delineated in the subspecies' recovery plan (USDI Fish and Wildlife Service 2002).

Southwestern willow flycatcher was first petitioned for listing in 1992 (57 FR 39664), proposed for listing in 1993 (58 FR 39495), and listed in 1995 (60 FR 10695). Critical habitat was designated in 1997 (62 FR 1997), although there is no Critical Habitat on the planning unit. Since the initial designation, there have been multiple revisions of Critical Habitat boundaries and the development of multiple local-level Habitat Conservation Plans. The species is widespread, but very rare throughout its range.

Although willow flycatchers were known to occur in the San Luis Valley, little was known about the extent of their occurrence or what subspecies might be present. The current information suggests that important flycatcher habitat does occur in certain locations in the Valley in association with willow-dominated riparian and wetland communities on the valley floor. Although it is recognized that the San Luis Valley occurs within a gradation zone between the *E. t. adastus* and *E. t. extimus* subspecies (Paxton

et al. 2008), the USFWS at this time considers all willow flycatchers in the Valley to be the *E. t. extimus* subspecies (July 12, 2011 letter from the USFWS to the Rio Grande National Forest).

In 2008, the first (and only) detection of an individual willow flycatcher on the Rio Grande National Forest occurred during surveys of adjacent BLM lands. This detection occurred during the early survey period (June 9, 2008) approximately 5 meters from the boundary of adjacent Colorado State Land Board property. No willow flycatchers have been noted in this area or in any other location on Forest lands since that time. The Rio Grande National Forest has conducted habitat and presence surveys for the Southwestern willow flycatcher since 2003. Approximately 1,762 acres of suitable and 947 acres of potential Southwestern willow flycatcher habitat have been identified on the Forest to date (2,709 acres total). Approximately 1,428 acres (81%) of the suitable habitat and 93 acres (10%) of the potential habitat has received species protocol surveys for at least two consecutive years. Furthermore, 1,118 acres (73%) of the two-year surveys have occurred above 9,000 feet in elevation. These extensive survey efforts have yielded only one individual Southwestern willow flycatcher adjacent to the lower boundary of the Forest during an early season inventory effort conducted by the BLM (Ghormley 2018).

### *Natural history and key ecological functions*

Southwestern willow flycatchers are strongly territorial. Flycatcher territories are often clumped together, rather than spread evenly throughout a habitat patch. Territory size varies greatly, probably due to differences in population density, habitat quality, and nesting stage. Estimated breeding territory sizes generally range from approximately 0.25-5.7 ac, with most in the range of approximately 0.5-1.2 ac (USDI Fish and Wildlife Service 2002).

The flycatcher builds a small open cup nest. Typical nest placement is in the fork of small-diameter (e.g., 0.4 in), vertical or nearly vertical branches. Occasionally, nests are placed in down-curving branches. Nest height varies considerably, from 1.6 to 60 ft, and may be related to height of nest plant, overall canopy height, and/or the height of the vegetation strata that contain small twigs and live growth. Most typically, nests are relatively low, e.g., 6.5 to 23 ft above ground (USDI Fish and Wildlife Service 2002).

#### Ecological conditions for recovery, conservation, and viability

The San Luis Valley encompasses the northernmost recovery unit identified by the USFWS for the Southwestern willow flycatcher (USDI Fish and Wildlife Service 2002). In the Final Rule, critical habitat was designated on five separate portions of the Rio Grande and Conejos River in the south portion of the San Luis Valley on BLM and federal refuge lands (78 FR 344). None of the designated critical habitat occurs on National Forest System land.

### *Threats and Risk Factors*

The greatest historical factor in the decline of the Southwestern willow flycatcher is the extensive loss, fragmentation, and modification of riparian breeding habitat (U.S. Fish and Wildlife Service, 2002, Sogge et al. 2010). Large-scale losses of southwestern wetlands have occurred, particularly the cottonwood-willow riparian habitats historically occupied by this subspecies. Factors causing habitat loss and/or change include urban, recreational, and agricultural development, water diversion and impoundment, channelization, livestock grazing, and replacement of native habitats by introduced plant species (Marshall and Stoleson, 2000; USDI Fish and Wildlife Service 2002, Sogge et al. 2002).

While nest parasitism by brown-headed cowbirds has been documented to negatively impact some Southwestern willow flycatcher populations, especially at small and isolated breeding sites, it is highly variable and no longer considered among the primary rangewide threats to flycatcher conservation (USDI Fish and Wildlife Service 2002). Locally, livestock grazing is likely the most extensive activity with the highest potential to negatively influence Southwestern willow flycatcher habitat. Other activities of concern include motorized vehicle use and recreational impacts to riparian areas. These latter impacts

often occur on a smaller scale on a site-specific basis, but can be significant depending upon at these locations. Drought can be a significant factor influencing distribution and continued use of potential habitat.

## Environmental Consequences

### *Indirect Effects to Southwestern willow flycatcher*

Southwestern willow flycatcher are both largely absent from the planning unit (one sighting of Southwestern willow flycatcher at the edge of the planning unit). As such, the primary impact considerations are potential habitat and the potential ability to support recolonization, reintroduction, or population supplementation.

There is an entire section of plan components for Riparian Management Zones, nearly all of which would be protective or restorative of the vegetation structures preferred by this species.

### Effects on Southwestern willow flycatcher from Livestock Grazing

Grazing has potential to impact riparian habitat, including that of the Southwestern willow flycatcher (Brookshire et al. 2002). This is addressed by multiple plan components that are protective of riparian vegetation. These include the following:

> **DC-RNG-1:** Domestic livestock grazing is managed to promote landscape diversity (composition, structure, and function) with both a spatial context (what species, what kind of structure, and what landscape patterns are natural by ecosystems) and a temporal context (which seral stages and how many are natural by ecosystem). (Forestwide)
>
> **DC-RNG-2:** Forage, browse, and cover needs for wildlife and authorized livestock are in balance with the available forage. (Forestwide)
>
> **G-RNG-3:** Authorized grazing in Riparian Management Zones should be in compliance with residual stubble heights identified in Forest Service Technical Report INT-263, Managing Grazing of Riparian Areas in the Intermountain Region (Clary and Webster 1996). (Forestwide)
>
> **DC-RMZ-1:** Riparian areas and wetlands are healthy, fully functioning ecosystems that are resilient and able to withstand natural and human disturbances that include flood, fire, drought, changes in frequency and timing of weather events, recreation, and herbivory. Aquatic ecosystems, riparian ecosystems, and watersheds exhibit high ecological integrity. The vegetation consists of desirable native species and age classes and meets the needs of resident amphibians, fish, and migratory birds. Populations of riparian vegetation are diverse, vigorous, and self-perpetuating. Invasive species, including plants and animals, in riparian and wetland ecosystems are rare. There is sufficient vegetative cover to provide bank stability, trap and retain sediment, regulate temperature, and contribute to floodplain function. Riparian ecosystem composition, structure, and function can generally be restored and enhanced by beaver habitat. (Forestwide)
>
> **DC-RMZ-2:** Hydrologic regimes of riparian and wetland ecosystems contribute to appropriate channel and floodplain development, maintenance, and function. (Forestwide)
>
> **G-RMZ-2:** To provide for the structural nesting habitat requirements for riparian-associated birds, design management activities to avoid healthy willow carrs. (Forestwide)

However, even with current plan components it is still possible for cattle to have negative influences on riparian willow habitats by consumption of vegetation, trampling, and other impacts. Livestock grazing is

currently a widespread annual activity across the Rio Grande National Forest, including in or near riparian zones that contain potential habitat for Southwestern willow flycatcher. Even with plan components, there remains a potential for the Range program to have a minor to moderate impact or adverse effects on potential Southwestern willow flycatcher habitat on the RFNG. Strong management focus on achievement of desired conditions and adherence to plan direction should help limit the potential for those impacts. Currently, the Rio Grande National Forest is required to conduct repeat surveys on allotments with grazing that contain suitable habitat above or below 8,500 feet in elevation every 5 years. This means that if five years or more has passed since the last survey occurred, repeat surveys are required in a sample of the best available habitat if livestock grazing still occurs. This requirement has not been fully implemented on most of the grazing allotments on the Forest.

The grazing and riparian-related plan components in the preferred alternative are anticipated to provide for adequate Southwestern willow flycatcher habitat in most instances; however, it is likely that if livestock grazing occurs in riparian areas associated with Southwestern willow flycatcher habitat, a risk from grazing impacts will be present. Adequate monitoring is essential to helping to identify problem areas and reduce the potential for adverse impacts.

### *Effects on Southwestern willow flycatcher from Motorized Off-Highway Travel, Trail Management, Developed Recreation and Dispersed Recreation*

Many riparian areas on the planning unit are or potentially can be impacted by Off-Highway Vehicle (OHV) traffic, which includes but may not be limited to all-terrain vehicles (4-wheelers), utility vehicles (side-by-sides), and motorcycles. In some cases, user-created roads remain an issue where terrain does not prohibit access. Riparian zones are commonly associated with travelways, trails and other access points that contribute to the potential for legal off-road (game retrieval) or illegal, user-created activity. Dispersed recreation activities are known to cause impacts to riparian areas on the planning unit, including mapped potential habitat for Southwestern willow flycatcher. These impacts vary from heavy foot traffic in areas to motorized access and dispersed camping sites near riparian zones.

Legal, permitted use by OHV traffic could be anticipated to be conducted in a manner more consistent with habitat objectives for Southwestern willow flycatcher based on direction provided in **S-TEPC-4** and **G-TEPC-1**. It is anticipated that the new developed plan components will reduce the potential for these impacts, however, adverse impacts to riparian areas and willow-riparian systems are likely to still occur unless sufficient monitoring and regulation occurs to identify and better manage problem areas.

### *Summary of Indirect Effects on Southwestern willow flycatcher*

Known occurrences of southwestern willow flycatcher are restricted to one area near the lower elevation limits of the Forest boundary; however, mapped potential habitat occurs on approximately 2,700 acres of riparian-willow habitat. Forest plan components would present a minor to moderate potential for adverse impact to potential SWWFL habitat through the life of the plan, depending upon the activity. Plan components are protective of habitat features required by this species and expected to help address impacts when they are identified.

One year of protocol survey efforts for non-grazing related projects on or off allotment areas within 1 year of project initiation is required for southwestern willow flycatcher. These pre-activity survey requirements should help identify occupied habitat, potential quality habitat, and problem areas. The minimum patch size for areas above or below 8,500 feet also applies to non-grazing projects.

### *Cumulative Effects*

The selected alternative will not contribute to any cumulative influences that may be associated with water management activities or incidental take within the San Luis Valley since all project activities will

have no measurable effect on Southwestern willow flycatcher or their primary habitats. There are no other known non-federal actions that would affect the environmental baseline.

### *Determinations*

It is determined that the Forest Plan **may affect, but is not likely to adversely affect** Southwestern willow flycatcher based on the following rationale:

- Fourteen years of survey effort resulting in the occurrence of only one individual Southwestern on the forest boundary indicate that the subspecies does not occur or are highly unlikely to occur on the Rio Grande National Forest or that any nesting individuals will be detected in the future.
- In the event of incidental occurrence of the species on the Forest, Forest Plan components are anticipated to provide for adequate Southwestern willow flycatcher habitat in most instances; however, it is likely that if livestock grazing occurs in riparian areas associated with willow flycatcher habitat, a risk from grazing impacts will be present.

# Gunnison's sage-grouse (*Centrocercus minimus*)

### *Existing Conditions and Trends*

Historically, the range of the Gunnison sage-grouse included parts of central and southwestern Colorado, southeastern Utah, northwestern New Mexico and northeastern Arizona. Gunnison sage-grouse currently occur in seven populations in southwestern Colorado and southeastern Utah (79 FR 69312).

This species was petitioned for listing in 2001 (66 FR 54848), after multiple resubmissions of the petition, the species was found to be "Not Warranted" for listing in 2006 (71 FR 19954). After a status review in 2009, the species was listed as "Warranted, but Precluded in 2010 (75 FR 59804). In 2013 the USFWS proposed designating Critical Habitat for the species (78 FR 2539) and proposed listing the species as "Endangered" (78 FR 2485). After additional review and several modified proposals, the species was eventually listed as "Threatened" (79 FR 69191) with designated Critical Habitat (79 FR 69311) in 2014. In this final determination, no Critical Habitat was established in the planning area, although the Ponca Pass area had been considered in earlier proposals.

## Environmental Baseline

The Poncha Pass population is the only Gunnison sage-grouse population associated with the planning area. Delineated occupied distribution of this population covers approximately 27,747 acres, of which approximately 5,060 acres coincides with lands managed by the Forest. Approximately 725 acres of sagebrush habitat occur on Forest lands within or near the Poncha Pass population delineation.

Poncha Pass is thought to have been part of the historical distribution of Gunnison sage-grouse. However, there were no grouse there when a population was established via transplant from 30 Gunnison Basin birds in 1971 and 1972. No population trend information was available until 1999 when the population was estimated at roughly 25 birds. In one year, the population declined to less than 5 grouse, when more grouse were brought in, again from the Gunnison Basin, in 2000 and 2001. In 2002, the population increased to just over 40 grouse, but began declining in 2006, until no grouse were detected in lek surveys in the spring of 2013. Grouse were again brought in in the fall of 2013 and 2014 and six birds were counted in the Poncha Pass population during the spring 2014 lek count (79 CFR 69312); however, no subsequent evidence of reproduction was found. Therefore, the USFWS concluded in 2014 that the Poncha Pass area is not a landscape capable of supporting Gunnison sage-grouse, and subsequently

removed critical habitat proposed for this area from the final critical habitat determination (79 CFR 69312).

### *Natural history and key ecological functions*

Sage-grouse are considered obligate users of sagebrush and require large, contiguous areas of sagebrush across the landscape for long-term survival. Several species of sagebrush provide the specific food, cover, and reproduction habitats critical for sage-grouse survival (USFWS 2013).

Approximately 85% of nests occur within 4 miles of lek sites. Nests typically occur on the ground at the base of live sagebrush. Hatching begins around mid-May and usually ends by July. Most eggs hatch in June, with a peak between June 10 and June 20. Incubation typically lasts 27-28 days (Patterson 1952 cited in GSRSC 2005).

Intermixing of broods and flocks of adult birds is common with the advent of fall, and birds move from riparian areas to sagebrush-dominated landscapes that continue to provide green forbs. Fringed sagebrush is often a transitional food as grouse shift from summer to winter diets (Schroeder et al. 1999, GSRSC 2005).

Gunnison sage-grouse (GUSG) winter range in Colorado varies according to snowfall, wind conditions, and suitable habitat (Rogers 1964, GSRSC 2005). Sage-grouse may travel short distances or many miles between seasonal ranges. Movements in fall and early winter (September-December) can be extensive with some movements exceeding 20 miles. During severe winters sage-grouse depend on very tall sagebrush, which is exposed even above deep snow, providing a consistently available food source. GUSG are capable of making long movements (>18 miles) to find appropriate habitat. The extent of movement varies with severity of winter weather, topography, and vegetation cover (GSRSC 2005).

### *Threats and Risk Factors*

Principle threats to Gunnison's sage-grouse consist of habitat loss, degradation, and fragmentation due primarily to residential, exurban, and commercial development and associated infrastructure such as roads and powerlines (USDI Fish and Wildlife Service 2013). Other risk factors include improper livestock grazing, predation, and genetic viability.

## Environmental Consequences

### *Indirect Effects to Gunnison sage grouse*

#### Effects on Gunnison sage grouse from Livestock Grazing

Livestock grazing can have a significant influence on several key ecosystem characteristics important to the recovery, conservation, and viability of GUSG. Some of these primary concerns include alteration of sagebrush characteristics and residual grass heights around potential nesting areas, and alteration of riparian zones important to brood survival. Management direction under the Forest Plan addresses range management in sage grouse habitat, ensuring that livestock grazing is compatible with nesting and brood rearing objectives in sage habitats and riparian areas.

Overgrazing continues to be a threat to sage grouse habitat, but effective regulation of range practices coupled with effective monitoring as needed should help to prevent potential impacts. Grazing remains a suitable activity for forest and neighboring lands on Poncha Pass, although any impacts would be minimal.

**DC-RNG-1**: Domestic livestock grazing is managed to promote landscape diversity (composition, structure, and function) with both a spatial context (what species, what kind of structure, and what

landscape patterns are natural by ecosystems) and a temporal context (which seral stages and how many are natural by ecosystem). (Forestwide)

**DC-RNG-2**: Forage, browse, and cover needs for wildlife and authorized livestock are in balance with the available forage. (Forestwide)

**DC-RNG-4**: Range improvements support ecologically sustainable grazing and benefits for wildlife when opportunities exist. New and replacement improvements are designed to benefit aquatic and terrestrial species. (Forestwide)

**G-RNG-1:** Develop site- and species-specific vegetation use and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment management plan, the utilization and residue guidelines in Figure and Figure will apply. (Forestwide)

**Table9. Utilization guidelines for rangeland condition**

| Type of Management | Satisfactory (percent) | Unsatisfactory (percent) |
|---|---|---|
| Season-long | 35 | 20 |
| Fall and winter | 55 | 35 |
| Deferred rotation | 45 | 25 |
| Rest rotation | 50 | 35 |

**Table10. Clary and Webster residue allowances for rangeland**

| Season of Pasture Use | Satisfactory (inches) | Unsatisfactory (inches) |
|---|---|---|
| Spring | 3 | 4 |
| Summer and fall | 4 | 6 |

**G-RNG-3:** Authorized grazing in Riparian Management Zones should be in compliance with residual stubble heights identified in Forest Service Technical Report INT-263, Managing Grazing of Riparian Areas in the Intermountain Region (Clary and Webster 1996). (Forestwide)

In addition, the following management direction is provided in the Forest Plan to maintain and restore listed species and their habitats:

**DC-TEPC-1:** Maintain or improve habitat conditions that contribute to stability and/or recovery of threatened, endangered, proposed, and candidate species. (Forestwide)

**S-TEPC-4:** Management actions that have measurable effects on threatened, endangered, proposed, or candidate species or their habitats shall not be allowed if the effects of those actions would contribute to the loss of viability or not aid recovery of the species. (Forestwide)

**G-TEPC-1:** To avoid or minimize adverse effects to listed species and their habitat, management actions should be designed with attention to threatened, endangered, proposed, or candidate species and their habitats. (Forestwide)

### Effects on Gunnison sage grouse from Motorized Off-Highway Travel

Management direction in the Forest Plan allows for seasonal road closures, when needed, to protect resource values. This would allow roads through Gunnsion sage grouse habitat to be closed during mating season. Use of existing, designated routes will not cause further harm to current sage grouse habitat, but may harass any remaining birds. There is a moderate chance of some adverse effect resulting from unintentional harassment by motor vehicle users and other recreationalists, however, this risk is not new and was analyzed when the reintroductions were planned.

### Summary of Indirect Effects to Gunnison sage grouse

Indirect effects to Gunnison sage-grouse and its habitat would be generally positive in that sage grouse habitat on Rio Grande National Forestlands east of Ponca Pass will be designated Roadless. Recreation, Range, and Fire management all have some potential to cause intermittent, minor, short term harm to the species of its habitat, but also have plan components that allow corrective action to occur. It is expected that there will be no long term or major adverse effects or negative impacts to GUSG from the proposed action under the Forest Plan.

### *Cumulative Effects*

The most substantial current and future threats are habitat loss and decline due to human development and associated infrastructure (USDI Fish and Wildlife Service 2014). In the Poncha Pass area, development is not considered a significant threat at this time. Habitat quality in the Poncha Pass area is also considered to be good or very good. However, local threats do include some habitat considerations, as well as potential impacts from the proximity of State Highway 285 and the transmission line corridor in that area. Other threats impacting Gunnison sage-grouse to a lesser extent include overgrazing, mineral development, pinyon-juniper encroachment, fences, invasive plants, wildfire, large-scale water development, predation (primarily associated with human disturbance and habitat decline) and recreation. The fragmented nature of existing habitat amplifies the negative effects of these other threats (USDI Fish and Wildlife Service 2014).

The Gunnison sage-grouse Rangewide Steering Committee (CSRSC 2005) identified residential development on private land is a threat specific to Gunnison sage-grouse at Poncha Pass because the area is scenic, easily accessed via Highway 285, and some interior parcels of land are in small tracts and currently for sale.

In addition, a mica mine was recently proposed near Poncha Pass, and although the application has been withdrawn, the possibility of a mine (and potential negative impacts on GUSG and their habitat) remains (GSRSC 2005), although there are no specific proposals or applications.

### *Determination*

The Forest Plan **may affect, but is not likely to adversely affect** Gunnison's sage-grouse based on the following rationale:

- Plan components for grazing management provide for consideration of wildlife habitats.
- **S-TEPC-4** and **G-TEPC-1** would minimize potential impacts to sage-grouse.

## Uncompahgre fritillary butterfly (*Boloria acrocnema*)

The Uncompahgre fritillary butterfly (UFB) is narrow endemic, restricted to isolated alpine habitats in the San Juan Mountains of southwestern Colorado (NatureServe 2015).

The species was first petitioned for listing under ESA in 1979 (45 FR 8029), with a status review in 1984 determining that the species was warranted for listing but precluded (49 FR 2485 2488). Although the UFB was not listed at that time, the USFS and the BLM signed an interagency agreement for the conservation of the butterfly. The species contained to be classified as "warranted but precluded" annually until 1990 when it was listed as Endangered (50 FR 41721). The USFWS neither designated nor proposed any critical habitat for this species, there are no defined Primary Constituent Elements for the UFB's habitat.

## Environmental Baseline

Mt. Uncompahgre and Redcloud Peak were the only two colonies known at the time of listing and recovery planning. Shortly after completion of the Recovery Plan, an additional colony was discovered. Eight other colonies were discovered in subsequent years (USDI Fish and Wildlife Service 2009).

Currently, 11 known colonies exist - three are quantitatively monitored with line transects, and the remaining 8 are monitored only for presence. Three of the colonies have been monitored for population status for more than 10 years, but the data are not currently sufficient for to determine that the population has been stable or increasing during this time. Much of the data collected before 2003 was unreliable due to changes in transect methodology and missing data (USDI Fish and Wildlife Service 2009).

Five of the known 11 colonies occur within the planning area. Quantitative population data is not recorded for these sites; therefore, abundance and trend information for populations within the planning area has not been identified.

Based on the monitoring report for the 2014 field season (Alexander and Keck 2017) the ongoing qualitative monitoring of the 11 confirmed populations documented population persistence at only nine of the 11 known colonies. Persistence has not been documented at Rio Grande Pyramid colony for two years and likewise for seven years at the Machin Lake colony of the Canyon Diablo population. The lack of confirmation of the UFBs at the Machin Lake colony for seven years and the Cinnamon Pass colony for over a decade may indicate that some populations may be extirpated.

All known UFB populations are associated with large patches of snow willow (Salix nivalis) above 12,000 feet, which provide food and cover. The species is found primarily on northeast-facing slopes, which are the coolest and wettest microhabitat available in the San Juan Mountains.

Females lay their eggs on snow willow, which is also the larval food plant, while adults take nectar from a wide range of flowering alpine plants (USDI Fish and Wildlife Service 2015). Adults fly about late July into August. Flight is possible only in warm sunny weather. Species is biennial (requiring 2 years to complete life cycle), but flies in both odd and even years (NatureServe 2015).

Recent studies involving the genetics of UFB estimated levels of genetic variability and structure, and effective population size. Despite low demographic numbers at these sites, the species has maintained relatively high heterozygosity at three sites. Genetic structure assessed indicated that despite separation on high mountain peaks, colonies were fairly well mixed, which is surprising for these weak fliers with very short growing and adult flight seasons. Estimates of effective population sizes were low, reflecting the life history and limited habitat range for the species. Comparisons at the site with historic and modern specimens revealed a consistent pattern in genetic indices. The data suggest that the three focal butterfly colonies exist as a metapopulation that persists due to low level migration between sites and "temporal leakage" via flexibility in development time in this biennial species.

The recent genetic work leads to three important implications for the management of UFB colonies and their habitat.

1. It is imperative that all three colonies remain extant. The flow of individuals and genes between sites, even if at low levels, is critical to the persistence of this small metapopulation.

2. The Uncompahgre Peak colony may at times function as a population sink while at other times, it may be self-sustaining for some period. The Uncompahgre site is the only one of the three that is impacted by an annual sheep drive in the area which perhaps accounts for impacts to the population dynamics and genetics of this population.
3. Finally, the role of butterflies on intermittently occupied sites in terms of metapopulation dynamics is unknown.

It will be important to protect these sites from significant human impacts at least until the potential role of the individuals at the occasionally occupied sites is better understood. While direct anthropogenic threats to the species (e.g., collecting, trampling, and livestock grazing) have been mitigated to some extent, the potential effects of global climate change have not been directly addressed. Continuation of the current monitoring program and additional population genetics surveys are recommended for this species.

## Environmental Consequences

### *Effects on Uncompahgre fritillary butterfly from Livestock Grazing*

There is no scheduled cattle grazing on UFB habitat within the plan area. However, an active cattle allotment boundary overlaps one known UFB colony area. Cattle grazing within and around this colony area was documented during one field season but has not been noted again since that time (Alexander and Keck 2008). Uncompahgre fritillary Butterfly might receive additional protection from deleterious impacts associated with grazing through project level consideration of **S-TEPC-4** and **G-TEPC-1**. However, high-alpine monitoring of grazing allotments needs to occur to determine if this desired condition is occurring or not:

Plant species that are necessary for species of conservation concern as food (including grazing, forage, and nectar for pollinators) or for structure are identified and occur in numbers viable enough to fulfil that function. This includes snow willow (necessary for the Uncompahgre fritillary butterfly), flowering plants (nectar producing species for the Western bumblebee) and many others.

As grazing leases cycle through permit renewal, this Desired Condition (and all other plan components) will be taken into consideration, ensuring that any negative impacts associated with grazing are prevented or mitigated.

The USFS already prohibits direct sheep grazing in UFB habitat, and no sheep trailing occurs in UFB habitat within the Rio Grande National Forest. However, wandering bands of domestic sheep have still been observed grazing on some colony areas, including permitted sheep from the Rio Grande National Forest onto the GMUG National Forests (USDA Forest Service files, Snow Mesa Allotment, 2016). No permitted sheep grazing or trailing occurs in known UFB habitat within the Rio Grande National Forest, but does occur in unoccupied snow willow habitat that has been previously surveyed for UFB occurrence.

### *Effects on Uncompahgre fritillary butterfly from Trail Management, Developed Recreation, Dispersed Recreation*

There are no developed trails or developed recreation sites in or near any known UFB habitats or populations on the RGNF. There will be no impact to UFB or its habitat from trail management or developed recreation, and no adverse effect.

Increasing recreational traffic, including off-trail use, are consistently noted as potential threats to known UFB colonies, particularly colonies on an adjacent Forest (Alexander and Keck 2016). There is some potential for dispersed recreation to have adverse impact to the UFB and its habitat. The proposed action contains several components that could help manage these potential impacts. Protective measures within S-TEPC-4 and G-TEPC-1 would aid in minimizing potential impacts to UFB. The two components

together will still likely be enough to prevent any major or moderate adverse impacts to the species and habitat from dispersed recreation on the Rio Grande National Forest. Short term impacts to habitat and individuals are possible from dispersed recreation foot traffic, depending upon accessibility to the colony area. Trampling by recreational foot traffics has been noted as a management issue in some colony areas, however, the overall effect of this activity is not known.

### *Summary of Indirect Effects*

Generally, there will be very little, if any, adverse impact to the Uncompahgre Fritillary Butterfly from the Forest Plan. Increased visitor use and dispersed recreational pursuits likely are the primary concern. However, all but perhaps one of the UFB populations on the Rio Grande National Forest occur in remote areas that are not known to attract considerable human foot traffic at this time and therefore should have minimal influences on UFB populations or habitat. Protective measures within **S-TEPC-4** and **G-TEPC-1** would aid in minimizing potential impacts to UFB.

Overall, the species will likely benefit from these protective measures. However, continued monitoring such as that associated with the UFB Recovery Team Partnership is essential to documenting habitat trends and potential conservation concerns associated with the needs and success of the protective measures associated with the plan components.

### *Cumulative Effects*

The cumulative impact area for this species is the species' entire range, which is limited to the Rio Grande, Uncompahgre, Gunnison, and Grand Mesa National Forests and the Gunnison Field Office of the Colorado BLM.

The UFB was originally considered a little-known and poorly studied species; in the past several years however on-going research advances involving quantitative abundance estimates, phylogenetic relationships within the same and associated genera, and genetic relationships between populations, colonies, and sub-colonies  This information, plus qualitative presence/absence sampling at all sites on the Rio Grande National Forest, helps inform current baseline conditions for assessing potential impacts to the species over time.  Initially when first named as a new species, the only known direct impact involved collection, both legal and illegal, by researchers and hobbyists. The extent to which that collecting may have caused population declines is unknown. Collection of the species became regulated when the species was first listed under ESA. There are continued concerns about other issues including grazing, recreation, and climate change. Sheep may graze colonies, and in recognition of this potential threat, the USFS avoids sheep grazing within UFB colonies altogether, or allows only trailing through the colonies but not bedding or long-term grazing.

Presently, dispersed recreation is known to have some impacts to the habitat of the UFB, but the effects of this on populations is uncertain. Most high-level recreational impacts are associated with populations on adjacent public lands, although at least one population on the Rio Grande National Forest experiences considerable visitor use.

Climate change may be an issue for this species, as is commonly thought for Alpine-obligate species (Lesica and McCune, 2004).  The species cannot ascend to higher elevations to escape the impacts of a warmer climate, and lacks the ability to travel the distances needed to disperse to cooler areas further north. Adverse climate change could restrict the UFB's habitat to a zone so narrow that the species would be unable to survive, although to date, it has not been possible to correlate climatic conditions to UFB numbers. Current trends in reduced population persistence at sites qualitatively sampled, and recent general trends in abundance estimates at sites quantitatively sampled suggest concerns for the continued persistence of this species (Alexander and Keck 2008. T. Ireland, pers. comm., USFWS 2017).

### *Determinations*

The Forest Plan **may affect, but is not likely to adversely affect** Uncompahgre fritillary based on the following rationale:

- **Forest Plan components S-TEPC-4** and **G-TEPC-1** would minimize potential impacts to the species.

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# Appendix A. Forestwide Direction

This chapter contains management direction that applies Forestwide unless more restrictive direction is found in Chapter 3. Forestwide direction include desired conditions, objectives, standards, guidelines, and land suitability determinations. Unless otherwise directed, other Forest Service direction, laws, regulations, policies, executive orders, and Forest Service directives (in Forest Service manuals and handbooks) are generally not contained in forest plan components.

This chapter is organized with associated resource direction listed in alphabetical order under the most applicable goal. Most resource areas could apply under multiple goals. Because the need for plan components and direction varies by resource, not every resource includes every possible plan component. Some areas may have only guidelines, while others may need the full complement of desired conditions, objectives, standards, guidelines, and management approaches.

The Forest intends to move toward the desired conditions described below over the next 10 to 15 years. Some desired conditions have already been achieved while others will be difficult to achieve in the stated timeframes.

## Goal 1

### *Maintain and restore sustainable, resilient terrestrial ecosystems*

Forest ecosystems vary by elevation and range from alpine tundra at the highest elevations to pinyon-juniper woodland and sagebrush ecosystems at the lowest elevations. Between the extremes are spruce-fir ecosystems, mixed conifer, and a small amount of Rocky Mountain Gambel oak.

These provide habitat for many species of mammals, birds, and reptiles. Amphibians and fish are found in the various wetland ecosystems that occur across the Forest.

Commercial and noncommercial forest and wood products are provided to meet the needs of the public in a sustainable manner to provide for the needs of future generations.

## Aquatic and Terrestrial Nonnative Invasive Species and Noxious Weeds (NNIS)

### *Management Approach*

Nonnative invasive species and noxious weeds include plant and animal species that disrupt ecosystem integrity and displace habitat for native plants and animals. Integrated pest management approaches are applied when treating invasive plant species. These include effective prevention and education programs that combine mechanical, biological, cultural, and chemical methods of control. Technological advances are capitalized on if they are shown to be equivalent to or more effective than existing treatments. The Forest maintains an invasive species action plan that presents a strategy and direction for control, prevention, and management of invasive species of terrestrial and aquatic plants and aquatic invertebrates.

Resource managers intend to reduce or control existing populations and control new populations of nonnative plants and noxious weeds Forestwide, with priority given to special designations and wilderness areas. Project managers should determine the risk of introducing or spreading nonnative invasive species, plant and animal, and noxious weeds and mitigate for all activities.

Prioritization and species information is contained in the Forest’s updated Action Plan. This plan ties to noxious weed information from the Colorado Department of Agriculture.

Coordination and cooperation with Colorado Parks and Wildlife to reduce the potential to introduce, and control the spread of, aquatic invasive species will continue. Effective prevention and control methods of aquatic nuisance species are promoted to recreational water users.

Project implementation minimizes the amount of areas affected by existing populations and reduces the chance of introducing new species.

Timely and effective revegetation of disturbed sites provides protection of soil and water resources that cannot be restored naturally.

All biological, cultural, and chemical tools are available to reduce or control nonnative invasive species and noxious weeds.

The direction below is specific to the Rio Grande National Forest. Higher level direction for nonnative invasive species and noxious weeds is contained in Forest Service manuals and handbooks, specifically 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Federal Insecticide, Rodenticide, and Fungicide Act and Federal Noxious Weed Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-NNIS-1:** Populations of aquatic and terrestrial nonnative invasive species do not occur or are low in abundance. Those that do occur do not disrupt ecosystem function. (Forestwide)

**DC–NNIS-2:** Native ecosystems are resilient to invasion by nonnative invasive species. (Forestwide)

### *Objectives*

**OBJ-NNIS-1:** Reduce terrestrial or aquatic nonnative invasive species on 300 acres over the next 15 years. (Forestwide)

## Insects and Disease (INDS)

### *Management Approach*

Insects and disease cause major disturbances to the ecological processes that shape the condition of forests. Insects and diseases play an important role in the cycles of forest growth and decline. Without the influence of change agents such as fire, insects, and disease, the forest would stagnate and eventually become homogeneous, with a resultant negative impact on biodiversity and resilience to disturbance. These change agents are an integral part of forest ecosystem processes, but still pose a challenge to forest management.

Vegetation in high-use recreation areas is managed to ensure public safety and improve forest health in compliance with the desired recreational setting.

Integrated pest management techniques are employed to meet resource objectives. Treatment activities are based on the value of and risks to adjacent lands, both public and private. Priority is given to areas where value to be protected exceeds the costs of protection. An example is recreation sites or areas of concentrated public use that are adjacent to subdivisions.

Project activities are designed to minimize the risk of spreading existing infestations, while still providing habitat for those wildlife species dependent on the presence of insects and disease.

Many of the plan components that are associated with insects and disease are contained in other sections of this forest plan, including but not limited to *Vegetation*, *Pollinators*, and *Wildlife*, along with specific direction for management areas: *Wilderness, Research Natural Areas, Colorado Roadless Areas, Dispersed and Developed Recreation*, and *Ski-based Resorts*.

Higher level direction for maintaining endemic level of insects and disease are contained in Forest Service manuals and handbooks, specifically 2400 and 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction. All higher level direction that is applicable but not repeated here is contained in Appendix I.

## Range Management (RNG)

### *Management Approaches*

Rangelands are all lands producing, or capable of producing, native forage for grazing and browsing animals, and lands that have been revegetated naturally or artificially to provide a forage cover that is managed like native vegetation. They include all grasslands, forb lands, and shrublands; and those forested lands that can, continually or periodically, naturally or through management, support an understory of herbaceous or shrubby vegetation that is forage for grazing or browsing animals. Rangelands on the Forest are naturally fragmented because of highly dissected mountain slopes and changes in vegetation as elevation changes. They can be characterized as narrow canyons with riparian ecosystems and adjacent grassland communities. A forest plan identifies areas suitable and capable for livestock, and assigns standards and guidelines specific to range management for those areas. The 2002 amendment to the 1996 forest plan projects a capacity for livestock grazing at 143,000 head months, including cattle and sheep. An estimated 581,000 acres of land are considered capable and suitable for domestic livestock grazing on the Forest.

Livestock-based agriculture is historically and culturally important in the San Luis Valley and southwestern Colorado. Agriculture, particularly farming and ranching, continues to be an important industry. Domestic livestock grazing contributes to the stability of the surrounding ranching community and its values are recognized as a part of the heritage, for contributions to food and fiber, and for maintenance of open space. While the range allotments on the Forest are not the exclusive source of feed for the permitted stock, they provide important high-elevation forage during the summer months. This forage supplements private and leased pasture, and allows the permittees to maintain current livestock numbers.

When allowable-use criteria, allotment management plan guidance, or annual operating instruction have been exceeded, all other solutions are extensively considered before removing livestock from the unit or allotment. Damage from use can result from many things including but not limited to flooding, livestock grazing, recreation, and wildlife. None of these other factors should push the use beyond what is allowed.

Rangelands are managed to provide a wide variety of benefits, including forage for livestock and wildlife, a diversity of plant and animal communities, and a high yield of high-quality water.

Livestock use is discouraged in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components.

Allotments may be vacated but are generally not closed except in extreme circumstances and conditions.

Work with cooperators, partners, and permittees to prioritize and restore upland ecosystems and rebuild important structural improvements.

The direction below is specific to the Rio Grande National Forest. Higher level direction for rangeland resources comes from Forest Service Manuals and Handbooks, specifically 2200. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-RNG-1:** Domestic livestock grazing is managed to promote landscape diversity (composition, structure, and function) with both a spatial context (what species, what kind of structure, and what landscape patterns are natural by ecosystems) and a temporal context (which seral stages and how many are natural by ecosystem). (Forestwide)

**DC-RNG-2:** Forage, browse, and cover needs for wildlife and authorized livestock are in balance with the available forage. (Forestwide)

**DC-RNG-3:** Temporary forage is available for grazing within existing, permitted allotments in coordination with other resource needs, e.g., reforestation. (Forestwide)

**DC-RNG-4:** Range improvements support ecologically sustainable grazing and benefits for wildlife when opportunities exist. New and replacement improvements are designed to benefit aquatic and terrestrial species. (Forestwide)

### *Objectives*

**OBJ-RNG-1:** Restore 150 acres of upland ecosystems over the next 15 years. (Forestwide)

### *Guidelines*

**G-RNG-1:** Develop site- and species-specific vegetation use and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment management plan, the utilization and residue guidelines in Figure and Figure will apply. (Forestwide)

**Figure. Utilization guidelines for rangeland condition**

| Type of Management | Satisfactory (percent) | Unsatisfactory (percent) |
|---|---|---|
| Season-long | 35 | 20 |
| Fall and winter | 55 | 35 |
| Deferred rotation | 45 | 25 |
| Rest rotation | 50 | 35 |

**Figure. Clary and Webster residue allowances for rangeland**

| Season of Pasture Use | Satisfactory (inches) | Unsatisfactory (inches) |
|---|---|---|
| Spring | 3 | 4 |
| Summer and fall | 4 | 6 |

**G-RNG-2:** Authorized grazing should not occur on an individual unit for the entire vegetative-growth period. This would be acceptable when the grazing system involves complete rest for that unit for two or more years after a full growing season treatment. (Forestwide)

**G-RNG-3:** Authorized grazing in Riparian Management Zones should be in compliance with residual stubble heights identified in Forest Service Technical Report INT-263, Managing Grazing of Riparian Areas in the Intermountain Region (Clary and Webster 1996). (Forestwide)

**G-RNG-4:** Authorized grazing in aspen stands should ensure sprouting and sprout survival to perpetuate the long-term persistence of the clones, unless elimination of the clone is planned. (Forestwide)

### *Land Suitability*

**SUIT-RNG-1:** Livestock grazing is a suitable and authorized use on all Management Areas except 4.2, Special Designation; Research Natural Areas and 4.8 Special Designations; Ski-based resorts.

**SUIT-RNG-2:** Recreational livestock grazing is a suitable use in Management Area 4.2 unless it threatens the values for which the area was established.

**SUIT-RNG-3:** Permitted livestock grazing is allowed in the Hot Creek Research Natural Area. This area is part of the Hot Creek Allotment which is under a valid grazing permit. The current permittees have agreed to avoid grazing the area inside of the boundary of the Research Natural Area.

**SUIT-RNG-4:** Grazing in National Forest Wilderness Areas is authorized by the Congressional Grazing Guidelines (§108, P.L. 96-560, H.R. Report 96-617 dated 11/14/79). Grazing authorizations would be included as part of any legislation on Management Area 1.1a, Recommend Wilderness. However, the acres of Recommended Wilderness are not currently grazed.

## Soils (SOIL)

### *Management Approaches*

Soils are a foundational and integral part of ecosystems and the services they provide. Soils provide ecosystem goods and services such as clean drinking water and forest products such as timber and firewood, and provide areas for cattle grazing and recreational opportunities. Healthy, sustainable soils will continue to provide these important ecosystem goods and services into the future. Effects of changes in temperature, and frequency and timing of weather events, can be mitigated in the short term if healthy soils are present. Soils have generally improved over time. There are still areas with needs for improvement, but soils are mostly in acceptable or good condition in areas of high use and in excellent condition in designated roadless and wilderness areas.

Genetically appropriate, weed-free seed populations of native plants are used for revegetation to avoid any potential for increasing nonnative invasive species or noxious weeds. Nonnative annuals or sterile perennial species can also be used while native perennials become established.

Soil types that support edaphic plant species of conservation concerns are identified during project-level, site-specific analysis. These include volcanic substrates such as ash-tuffs, latitic lava flows, rhyolite, and andesitic substrates. Sedimentary substrates supportive of edaphic species include calcareous substrates such as limestone and shale.

Soil resources are best protected with site-specific, project-level design and analysis.

The direction below is specific to the Rio Grande National Forest. Higher level direction for soil resources comes from Forest Service manuals and handbooks, specifically 2200. The 1996 forest plan used direction that is not contained in the watershed conservation practices handbook. This direction will

continue to be used to protect soils as higher level direction that is incorporated into plan direction. Additionally the national best management practices program allows for systematic monitoring of practices that have the potential to impact soils and overall watershed health. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. All applicable higher level direction that is not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-SOIL-1:** Occasional, intermittent, small-scale soil disturbance occurs, allowing propagation of plant species including some species of conservation concern. (Forestwide)

### *Standards*

**S-SOIL-1:** Do not authorize activities that would create detrimental soil conditions on more than 15 percent of an activity area. Cumulative effects from project implementation and restoration should not exceed conditions prior to the planned activity and should move toward a net improvement. (Forestwide)

### *Guidelines*

**G-SOIL-2:** Maintain soil and slope stability where ground-disturbing activities on soils with high erosion rates or mass movement potential are authorized. Where practical, do not authorize activities on soils with high mass movement potential. (Forestwide)

## Vegetation Management (VEG)

### *Management Approaches*

The Forest provides a diverse landscape with a wide variety of vegetation communities. The majority of the Forest is in the spruce-fir ecosystem. Other vegetation types that dominate include the Southern Rocky Mountain montane-subalpine grassland and Rocky Mountain alpine turf, followed by mixed-conifer, dry, and pinyon-juniper woodland.

Plan components contained in the section below cover the broad area of forest vegetation and management of forest vegetation. The direction includes plan components related to terrestrial ecosystem integrity, as well as the required timber harvest-related plan components, as described within Chapter 60 of Forest Service Handbook 1909.12. Plan components were designed using the natural range of variation described in the 1996 Forest Plan (Appendix A) which was used to define the key ecosystem characteristics in the Terrestrial Ecosystem Assessment (Assessments 1 & 3).

Project-level timber harvest objectives are formulated during site-specific analysis and are in compliance with forest plan direction presented here. In areas that are suitable for timber production, dead or dying trees (due to fire, insects, disease, etc.) are salvaged to recover the economic value of the wood while providing for ecosystem function. Management of ecosystem function includes, among other activities, retention of snags and downed woody material, and habitat management. In addition, snags are managed for public safety.

Special forest products include materials that are not traditional timber and fiber products, such as sawtimber or house logs. Special forest products are permitted (or contracted) for removal from public lands for commercial, personal, Native American tribal, educational, or scientific purposes. Plan components in this section cover a variety of special forest products, including but not limited to firewood, building rock, herb and vegetable products, medicinal and pharmaceutical products, wild edible mushrooms, wild berries and fruit, landscaping products, craft products, and floral and greenery products.

Identify and map populations of *Ligusticum porter*. Following mapping consider setting aside collection areas for tribal use and rotate use of the areas over time.

Treatments generally avoid alteration of the edge of natural openings.

When thinning, restore or maintain genetic diversity by using practices that consider genetic diversity and competition for water, nutrients, and light among the trees. The frequency of thinning is dependent on species, financial efficiency, and growing conditions of the site, commonly measured by site index.

Presence of old forest is determined during project-level planning based on criteria in Appendix A. The habitat is assessed for quality and distribution and retained as necessary for vegetative diversity.

Old forest, or late-successional stage forest, is often deferred from harvest to maintain biotic diversity across the landscape. The following is consider in selecting old forest stands to be retained:

- Older stands that have not been manipulated are more desirable than younger ones.
- Stands with limited use and access are better suited to maintain old forest conditions.
- Stands that provide habitat for threatened, endangered, or proposed species, species of conservation concern, or Colorado Natural Heritage Program Species of Special Concern.
- Stands exhibiting a variety of attributes such as diverse canopy layers, decadence in live trees, standing or downed dead, or both, and patchiness.

Management-created openings are no longer considered openings when the trees reach a height and density that meet management objectives. The default criteria are when the minimum stocking standards for the forest vegetation type on suitable lands are met and average height is 6 feet or greater with at least a 70 percent distribution for conifer species, and 10 feet or greater with at least 70 percent distribution for aspen. The criteria is validated and may be modified in accordance with local conditions.

Forest vegetation management that results in meeting the needs or demand for forest product offerings, for commercial, personal, or other use, is done in a manner that supports one or more of the following:

- Maintains or improves ecosystem function, resilience, and sustainability,
- Supports a sustainable level of economic activity in the local timber industry,
- Provides economic or social support to local communities,
- Ensures current and future needs for American Indian tribal use, including that associated with special forest products (e.g., teepee poles),
- Uses, to the fullest extent practicable, potential products including saw timber, poles, top wood, or slash,
- Supports innovation in utilization, including conversion of cut tree mass into biofuels, pellets, biochar, or other useful products,
- Efficiently balances or reduces costs of implementation of treatment activities, and
- Anticipates climate-related change in plant succession, such as favoring heat- or drought-resistant tree species as leave trees.

In areas suitable for timber production, dead or dying trees due to fire, insects or disease, are salvaged to recover the economic value of the wood while providing for ecosystem function. This will be the primary focus of the timber program for the first 6 years of the planning period.

The scientifically defined silvicultural systems shown by forest cover type in Figure meet the management objectives for the landscape or individual stands of trees within a landscape setting. Both even-aged and uneven-aged management systems can be used and applied at scales ranging from a few acres to many hundreds of acres. These silvicultural systems are to be applied in a manner that will create conditions favorable for natural regeneration. Artificial regeneration will be considered when necessary to meet minimum stocking standards. The silvicultural systems identified in Figure can be used to convert uneven-aged stands to even-aged management and even-aged stands to uneven-aged management.

**Figure. Appropriate silvicultural system by cover type**

| Forest Cover Type | Even-Aged | Two-Aged | Uneven-Aged |
|---|---|---|---|
| Ponderosa pine | Shelterwood, Clearcut, Overstory removal, Seed tree | Irregular shelterwood, shelterwood with reserves | Group selection, single-tree selection |
| Mixed-conifer | Shelterwood, Clearcut, Overstory removal, Seed tree | Irregular shelterwood, shelterwood with reserves | Group selection, single-tree selection |
| Aspen | Coppice[1] | Coppice with standards[2] | Group selection[3] |
| Lodgepole pine | Shelterwood, Clearcut, Overstory removal, Seed tree | Irregular shelterwood | Group selection |
| Engelmann spruce and subalpine fir | Shelterwood, Clearcut, Overstory removal | Irregular shelterwood | Group selection, single-tree selection |

[1] Coppice is a vegetation reproduction method with clearfelling or clearcutting. Clearfelling (clearcutting) stimulates sprouting from the residual roots.

[2] "Standards" are selected overstory trees reserved for a longer rotation at the time each crop of coppice material is cut.

[3] Use of group selection as an appropriate silvicultural system in aspen is currently under study to determine regeneration success, but is authorized on a test basis.

Encourage and promote aspen on the landscape. When regenerating aspen, prioritize treatment within seral aspen clones using the following criteria:

- Identify stands with large standing and down dead basal area (about 20 percent dead) that are single-storied and showing signs of animal barking (gnawing and bark stripping) or disease. Multistoried stands that have several hundred sapling-size suckers per acre under them, or that show little sign of canker disease or animal barking, are lower priority for any management intervention.
- Identify conifer stands with a small minority of live aspen basal area (less than 20 percent live basal area). (Aspen is likely to disappear from these stands within several decades without intervention).
- Identify isolated clones and stands in areas frequented by animals and in riparian areas, and those at low elevations. Any stands in these situations that meet the criteria above should be given the highest priority for regeneration. (These stands will be at greatest risk of disappearing and will be the toughest to regenerate successfully. Protection of treatment areas from browsing animals may be needed to achieve successful regeneration.)
- Identify stands that are more cost efficient and not impacted by frequent animal use to treat and contribute positively to the distribution of aspen.

The size of uncut forest areas between openings is based on project-level management objectives for the landscape being analyzed.

Plan components that affect vegetation are also contained in other sections of this forest plan including, but not limited to, *Fire*, *Insects and Disease*, *Minerals*, *Nonnative Invasive Species and Noxious Weeds*,

*Range Management*, *Riparian Management Zones*, *Soils*, *Species of Conservation Concern*, *Visual Quality*, *Watersheds*, and *Wildlife*. Specific direction is also contained for management areas: *Wilderness*, *Dispersed and Developed Recreation*, *General Forest and Intermingled Rangelands*, *Roadless Areas*, *Scenic Byways and Scenic Railroads*, and *Special Interest Areas*.

The direction below is specific to the Rio Grande National Forest. Higher level direction for vegetation management is contained in the National Forest Management Act and Forest Service manuals and handbooks, specifically 2400. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-VEG-1:** Desired conditions for snag densities and downed wood are listed in Figure. At the landscape scale, snag presence, distribution, density, size, and species are variable both spatially and over time. The highest densities of snags is generally in the spruce-fir ecosystem and in area that burned in the recent past. Snag densities are related to disturbance regimes of various forest systems. Snags suitable for nesting and denning (typically larger sizes) are present across the Forest, contributing to the diversity of forest structure and maintenance of habitat components important to the persistence of snag-associated wildlife species. Snags provide an important habitat component in the maintenance of habitat connectivity. Snag-retention policies provide a variety of snag heights. At least 50 percent of the retained snags should represent the larger size classes available. Where larger snags are not available, trend toward a greater number of smaller snags. Snags are not required to be maintained on every acre. Downed woody material (greater than 3 inches in diameter) is important for retaining moisture, trapping soil movement, providing microsites for plant establishment, and cycling nutrient components. (Forestwide)

**Figure. Recommended snags and downed wood for wildlife habitat and ecosystem processes**

[All quantities are based on an average per acre basis across the planning unit.]

| Forest Type | Snags | | | Downed Wood[1] |
|---|---|---|---|---|
| | Minimum diameter at breast height | Minimum/Acre in Planning Unit | Minimum height (feet) | Tons/Acre |
| Spruce-fir | [2]12 | 6 | 25 | 10 to 15 |
| Mixed-conifer | [2]12 | 3 to 4 | 25 | 4 to 10 |
| Aspen | 10 | 5 | 25 | 3 to 5 |
| Ponderosa pine | [2]12 | 3 | 25 | 2 to 3 |
| Lodgepole pine | 10 | 3 | 15 | 5 to 10 |

[1] Project implementation should focus on leaving larger and longer logs onsite in accordance with site capacity.

[2] At least 50 percent of the required snag numbers should represent the largest size classes available.

**DC-VEG-2:** Commercial timber harvest occurs on lands identified as not suitable for timber to meet multiple use objectives and for safety and health. These harvests are not part of the regularly scheduled harvest program. These activities meet management direction and desired conditions and may provide other services and benefits. (Forestwide)

**DC-VEG-3:** Habitat structure in Gambel oak communities provides for species assemblage associated with this habitat. (Forestwide)

**DC-VEG-4:** All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur Forestwide within the ranges identified in Figure. (Forestwide)

**Figure. Current status and desired conditions of development and structural stages of the forested terrestrial ecosystems**

| Terrestrial Ecosystem | Development Stage | Structural Stage | Current Condition (%) | Desired Condition (%) | Desired Condition in Old Forest (%) |
|---|---|---|---|---|---|
| Ponderosa Pine | Young | 1T/2T | 8 | 5–10 | 10–15 |
| | Mid-open | 3A | 19 | 5–10 | |
| | Mid-closed | 3B,C | 5 | 5–10 | |
| | Mature-open | 4A | 49 | 40–50 | |
| | Mature-closed | 4B,C | 19 | 15–25 | |
| Warm-dry mixed-conifer | Young | 1T/2T | <1 | 5–10 | 15–20 |
| | Mid-open | 3A | 6 | 10–15 | |
| | Mid-closed | 3B,C | 8 | 10–15 | |
| | Mature-open | 4A | 34 | 25–30 | |
| | Mature-closed | 4B,C | 52 | 25–35 | |
| Cool-moist mixed-conifer | Young | 1T/2T | 8 | 5–10 | 20–30 |
| | Mid-open | 3A | 10 | 5–10 | |
| | Mid-closed | 3B,C | 22 | 15–20 | |
| | Mature-open | 4A | 17 | 15–20 | |
| | Mature-closed | 4B,C | 43 | 30–40 | |
| Cool-dry mixed-conifer | Young | 1T/2T | 0 | 5–10 | 15–20 |
| | Mid-open | 3A | 12 | 5–10 | |
| | Mid-closed | 3B,C | 24 | 15–20 | |
| | Mature-open | 4A | 25 | 30–40 | |
| | Mature-closed | 4B,C | 39 | 15–20 | |
| Spruce-fir | Young | 1T/2T | 30 | 5–10 | 25–35 |
| | Mid-open | 3A | 13 | 5–10 | |
| | Mid-closed | 3B,C | 7 | 10–15 | |
| | Mature-open | 4A | 27 | 20–25 | |
| | Mature-closed | 4B,C | 22 | 30–40 | |
| Aspen | Young | 1T/2T | 6 | See MA-VEG-3 | |
| | Mid-open | 3A | 16 | | |
| | Mid-closed | 3B,C | 58 | | |
| | Mature-open | 4A | 2 | | |
| | Mature-closed | 4B,C | 19 | | |
| Pinyon-juniper woodland | Young | 1T/2T | 1 | 5–10 | 20–30 |
| | Mid-open | 3A | 47 | 10–15 | |
| | Mid-closed | 3B,C | 38 | 10–15 | |
| | Mature-open | 4A | 5 | 20–30 | |
| | Mature-closed | 4B,C | 9 | 30–40 | |

### *Objectives*

**OBJ-VEG-1:** Diversify the structure class distribution for various forest types via management on 100 acres annually in the first decade and 1,200 acres in the second decade, to work toward or maintain the desired conditions in Figure. (Forestwide)

**OBJ-VEG-2:** Annually restore 150–300 acres of dry mixed-conifer and ponderosa pine areas to move these forest types toward a species composition and landscape pattern where fire can function in its natural role. (Forestwide)

**OBJ-VEG-3:** Salvage harvest 6,000 acres per year of spruce-fir annually on average, for the first 6 years of the planning period. (Forestwide)

**OBJ-VEG-4:** For years 7 through 20, offer timber for sale at an average potential timber sale quality of 150,000 CCF (hundred cubic feet)

**OBJ-VEG-5:** For years 7 through 20, offer commercial timber and other products for sale at an average potential wood sale quantity of 222,000 CCF.

**OBJ-VEG-6:** Identify and map a minimum of five select populations of ethnobotanically important plants for tribes in concert with the heritage, botany, and timber programs over the next 15 years.

**OBJ-VEG-7:** Average 100 acres of hazardous fuels reduction per year in areas adjacent to private development and/or critical infrastructure over the next 15 years. (Forestwide)

**OBJ-VEG-8:** Average 2,000 acres of fuels reduction per year using fire managed for resource benefit or prescribed fire on Forest lands over the next 15 years. (Forestwide)

### *Standards*

**S-VEG-1:** Timber may not be harvested for the purpose of timber production on lands not suited for timber production. Timber harvest may occur on these lands for the following purposes: protecting other multiple-use values, protecting or enhancing biodiversity or wildlife habitat, scenic-resource management, research or administrative studies consistent with geographic or management area direction, and salvage, sanitation, public health, or safety. (Forestwide)

**S-VEG-2:** Timber shall not be harvested on lands where soil, slope, or other watershed conditions may be irreversibly damaged, as identified in project-specific findings. (Forestwide)

**S-VEG-3:** Timber harvest shall be conducted to assure that the technology and knowledge exist to restock these areas adequately with trees within 5 years after final harvest. (Forestwide)

Minimum restocking levels for suitable timber lands are defined in Figure. Exceptions to these levels are allowed if supported by a project-specific determination of adequate restocking.

Restocking levels for unsuitable timber lands must be specified with the silvicultural prescription. Project-specific determination of adequate stocking must be based on the plan’s desired conditions and objectives applicable to the area and project and be consistent with all other applicable plan components. (Forestwide)

**Figure. Minimum restocking level for suitable timber lands, by species**

| | Species | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Spruce-Fir** | **Aspen** | **Douglas Fir** | **Lodgepole Pine** | **Ponderosa Pine** | **Other Softwoods** | **Other Hardwoods** |
| Trees per Acre | 150 | 300 | 100 | 150 | 75 | 150 | 150 |

**S-VEG-4:** Select harvest systems to achieve desired conditions and objectives or to meet site-specific project needs, not primarily for the greatest dollar return or timber output. (Forestwide)

**S-VEG-5:** Clearcutting may be used where it has been determined to be the optimum method, and other types of even-aged harvest shall be used only where determined to be appropriate. Determinations shall be based on site-specific conditions and the desired conditions for vegetation, wildlife habitat, scenery, and other resources. (Forestwide)

**S-VEG-6:** Openings will not be created larger than 40 acres, regardless of forest type. Openings larger than 40 acres may be created under the following conditions:

- Proposals for larger openings have been approved by the regional forester, following a 60-day public review,
- Larger openings are the result of natural catastrophic conditions (including those resulting from fire, insect or disease attack, or windstorm), or
- When the area that is cut does not meet the definition of created openings. (Forestwide)

**S-VEG-7:** The quantity of timber that may be sold per decade will be less than or equal to the sustained yield limit of 737,490 CCF per decade with the following exceptions: salvage or sanitation harvesting of timber stands that are substantially damaged by fire, windthrow, or other catastrophe or that are in imminent danger from insect or disease attack. Salvage harvest of trees substantially damaged by fire, windthrow, or other catastrophe or in imminent danger from insect or disease attack may be harvested over and above the sustained yield limit, consistent with desired conditions for terrestrial and aquatic ecosystems. (Forestwide)

**S-VEG-8:** When there is a shortage of any special forest products for tribal use, commercial permits are issued only to the extent that the tribal use can be accommodated. (Forestwide)

### *Guidelines*

**G-VEG-1**: Even-aged stands shall generally have reached or surpassed culmination of mean annual increment (achieving 95 percent of culmination of mean annual increment, as measured by cubic volume) prior to regeneration harvest, unless the following conditions have been identified during project development:

- When such harvesting would modify fire behavior to protect identified resource, social, or economic values
- When harvesting of stands will trend landscapes toward desired conditions
- When harvest uses uneven-aged silvicultural systems, thinning, or other intermediate stand treatments that do not regenerate even-aged or two-aged stands
- When harvest is for sanitation or salvage of timber stands that have been substantially damaged by fire, windthrow, or other catastrophe, or that are in imminent danger from insect or disease attack

- When harvest is on lands not suited for timber production and the type and frequency of harvest is due to the need to protect or restore multiple use values other than timber production. (Forestwide)

**G-VEG-2**: Even-aged harvest openings should be irregularly shaped and blend with the natural terrain. (Forestwide)

**G-VEG-3:** To maintain ecosystem conditions for continued persistence, permit the collection of species of conservation concern plants only for scientific, educational, or conservation purposes and only to the level that persistence of the species is maintained. (Forestwide)

### *Suitability*

**SUIT-VEG-1:** Lands are identified as suitable for timber production in management area direction found in Chapter 3. Even though lands may be identified as suitable for timber production, those lands may not be feasible for harvest. Feasibility is determined at the site-specific, project level. There are an estimated 499,936 acres of lands on the Forest determined as may be suitable for timber harvest.

## Wildlife and Plants (WLDF)

Sections below include direction for wildlife and plant species on the Rio Grande National Forest. Also included in this section is direction for *species of conservation concern* and direction *for threatened, endangered, proposed, and candidate species*.

### *Management Approaches*

Most of the wildlife that inhabits the Forest is outside of the protections provided by the Endangered Species Act, as amended, and is not considered a Species of Conservation Concern as defined in the 2012 Planning Rule. Plan components pertaining to these species is contained in this section. This direction maintains ecosystem integrity on a broad range of terrestrial habitats throughout the Forest, including all vegetation types. This includes all native species as well as any desirable nonnative species. Nearly all plan components have the potential to affect wildlife in some way.

The Forest will continue to participate and support, within the fiscal capacity, all recovery and conservation efforts including but not limited to: Conservation Agreements for Rio Grande Cutthroat Trout (RGCTCT 2013), Rio Grande Chub and Rio Grande Sucker (RGCSCT 2018), fens, pollinators, Uncompahgre fritillary butterfly, bats, watershed condition priorities, prairie dogs, avian monitoring and conservation, bighorn sheep, snow willow and alpine conservation, boreal toad, and unique and rare plant communities.

The movement of white-nose syndrome is being closely monitored, though it has not yet been confirmed in Colorado. The Forest intends to maintain an early detection program, follow Regional guidance, and continue to coordinate with partners and other agencies.

Bat habitat needs are addressed through the Abandoned Mine Lands program. Annually evaluate the Abandoned Mine Lands program to consider at least one project. Maintain existing partnerships and seek additional partners for adequate underground assessments, as possible, prior to closure. Ensure access for bats and reduce disturbance to resident populations when closing caves and mines. To protect bats species on the species of conservation concern list, pursue formal mineral withdrawal of abandoned mine sites. When maintaining or removing facilities or bridges, assess for potential bat roost activity. Schedule work to reduce impacts to roosting bats.

Provide education and awareness of potential disease transmission between recreational pack goats and bighorn sheep at entry point into areas known to be used by bighorn sheep.

Education and outreach materials should be provided regarding chytrid fungus. Where the fungus has been detected determine the need to implement decontamination procedures to protect boreal toads and other amphibians.

Impacts to pollinators are addressed during project analysis through project design, analysis, and implementation.

Pollinator-friendly best management practices for Federal lands are implemented to improve pollinator habitat and protect these species when implementing management actions. Actions are not limited to the following:

- Design projects to maintain or improve pollinator habitat while meeting resource objectives.
- Include plants that are desirable to pollinator species in project seed mixtures.
- Mitigate impacts to pollinator insects when applying insecticide.
- Include creation and maintenance of pollinator habitat in project design.
- Implement best management practices for pollinator habitat when managing roads.

The Forest intends to assess the range and distribution of insect species listed as species of conservation concern; information about threatened, endangered, proposed, or candidate species allows projects to be designed to reduce or avoid impacts to these species.

The Abandoned Mine Lands program addresses needs for bat habitat.

Detect mortality-causing pathogens in bats early, and establish a maintenance program for bat gates.

Integrate priority habitats and species described in the Colorado Bird Conservation Plan into management activities.

Provide a focus on bird conservation by increasing the number of Naturewatch viewing sites, and participate in International Migratory Bird Day activities.

All available tools can be used to move toward or maintain desired conditions. This includes but is not limited to prescribed fire use, thinning, constructing stock ponds, and placing guzzlers.

Education and awareness will provide information regarding potential disease transmission between recreational pack goats and bighorn at entry points to areas of known bighorn sheep use. Areas of overlapping pack goat and bighorn sheep use will be observed over time.

Activities that disturb bighorn sheep, particularly around primary use and reproduction areas, are discouraged.

Agency actions should avoid or mitigate impacts to unique or rare plant community types, particularly those with a biodiversity significance ranking of B1 (outstanding) or B2 (very high) according to the Colorado Natural Heritage Program. In riparian areas and wetland ecosystems containing plants with G1, G2, S1, or S2 NatureServe plant community conservation ranks, avoid or mitigate impacts to maintain the ecological integrity.

When new recovery plans, conservation agreements, conservation strategies, critical habitat designation, or regional management direction for threatened, endangered, proposed, or candidate species are released, all appropriate authorities will be used to adjust related forest plan direction.

Existing landscape patterns and local species concerns are used to identify and assess habitat connectivity at various spatial scales during design and analysis of forest management activities. A nest of hydrologic unit codes is used at various scales to assess connectivity patterns. Stream zones and topographic features are identified and used to facilitate movement across the landscape. Movement zones 400 to 600 feet in width along a stream may be sufficient to facilitate movement for most local species of conservation concern in most landscape conditions.

The direction below is specific to the Rio Grande National Forest. Higher level direction for management of wildlife and plants is contained in Forest Service manuals and handbooks, specifically 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction, including but not limited to the Bald Eagle and Golden Eagle Protection Act and Fish and Wildlife Conservation Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-WLDF-1:** Habitat conditions are suitable for resident and migratory birds and accommodate key life history requirements. (Forestwide)

**DC-WLDF-2:** Habitat conditions for bats are suitable for reproduction and roosting. (Forestwide)

**DC-WLDF-3:** Habitat connectivity is provided for to facilitate species movement within and between daily home ranges, for seasonal movements, for genetic interchange, and for long-distance movements across boundaries. (Forestwide)

**DC-WLDF-4:** Winter range habitat conditions provide the quantity, quality, and spatial arrangement of forage, cover, and security needed to support population objectives for mule deer, pronghorn, Rocky Mountain bighorn sheep, and Rocky Mountain elk. (Forestwide)

**DC-WLDF-5:** Motorized and nonmotorized route travel, on and off existing roads, does not negatively affect ecological conditions necessary to maintain population objectives for big game species. (Forestwide)

**DC-WLDF-6:** Suitable nesting habitat for ground-nesting or low-level shrub-nesting birds is provided by dense, interior riparian willow habitat. (Forestwide)

### *Objectives*

**OBJ-WLDF-1**: Develop and interpret at least one location identified in the Colorado Birding Trail over the next 15 years. (Forestwide)

**OBJ-WLDF-2**: Maintain or improve an average of 500 acres of big game winter habitat annually over the next 15 years. (Forestwide)

### *Standards*

**S-WLDF-1:** To reduce stress at a critical point in the lifecycle of big game, restrict activities on winter range from approximately December 1 to March 31, as needed. (Forestwide)

**S-WLDF-2:** Do not allow rock climbing within one-half mile of active peregrine and prairie falcon nest sites generally from April 15 to July 31 and active golden eagle nest sites generally from December 15 to July 31. (Forestwide)

### *Guidelines*

**G-WLDF-1:** Spatial direction related to disturbance and structural improvement needs specific to raptor species that inhabitant the Forest are contained in Figure. To maintain site integrity, structural improvements should be avoided within the buffer distances. (Forestwide)

**Figure. Raptor nest and buffer zone distances and timing considerations**

| Species | Impact/Risk[2] | Time[4] | Buffer Distance[3] |
|---|---|---|---|
| Golden eagle[1] | Disturbance | 12/15 to 7/15 | Projects and activities should not occur within one-half mile of an active nest during nesting season. |
| Golden eagle[1] | Structural improvements | Year round | New structures should not be established within a one-quarter-mile radius and an active nest. |
| Bald eagle | Disturbance (winter roosts) | 11/15 to 3/15 | Manage projects and activities within a one-quarter-mile radius (indirect line of sight) or a on-half-mile radius (direct line of sight) of communal winter roost site. Limit activity between 1000 and 1400 hours if encroachment will occur within buffer zones. |
| Bald eagle | Structural improvements | Year round | New structures should not be established within one-half mile of communal roost sites. |
| Bald eagle | Disturbance and structural improvements | Site specific determina tion by biologist | For preferred diurnal hunting perch. |
| Swainson's hawk | Disturbance | 5/1 to 9/15 | Project and activities should not occur within one-quarter mile of a nest during nesting season. |
| Swainson's hawk | Structural improvements | Year round | New structures should not occur within a one-quarter-mile radius of an active nest. |
| Red-tailed hawk | Disturbance | 3/15 to 7/15 | Projects and activities should not occur within one-eighth to one-quarter mile of nests during nesting season. |
| Red-tailed hawk | Structural improvements | Year round | New structures should not occur within a one-quarter-mile radius of active nests. |
| Peregrine falcon | Disturbance | 4/15 to 7/31 | Projects and activities should not occur within one-half mile of a nest during nesting season. |
| Peregrine falcon | Structural improvements | Year round | New structures should not occur within a one-half-mile radius of an active cliff nest complex. |
| Prairie falcon | Disturbance | 4/15 to 7/15 | Projects and activities should not occur within one-half mile of a nest during nesting season. |
| Prairie falcon | Structural improvements | Year round | New structures should not occur within a one-half-mile radius of an active nest. |
| Northern goshawk | Disturbance | 4/15 to 8/31 | Projects and activities should not occur within one-half mile of an active nest during nesting season. Management includes a 25–30 acre buffer of the nest site, a 420-acre post-fledging area (PFA) around the nest area, and considerations for alternate nest sites and foraging habitat. Structural conditions for the nest area, PFA, and foraging area should be managed similar to those recommended in Reynolds et al (1992), unless they cannot be achieved due to site conditions or other local factors. |
| Northern goshawk | Structural improvements | Year round | New structures should not occur within a one-half-mile radius of an active nest. |
| Cooper's hawk | Disturbance | 4/15 to 7/31 | Projects and activities should not occur within one-half mile of nests. |

| Species | Impact/Risk[2] | Time[4] | Buffer Distance[3] |
|---|---|---|---|
| Cooper's hawk | Structural improvements | Year round | New structures should not occur within a one-quarter-mile radius of active nests. |
| Osprey | Disturbance | 5/1 to 8/31 | Projects and activities should not occur within one-quarter mile of nests during nesting season. |
| Osprey | Structural improvements | Year round | New structures should not occur within one-quarter mile of a nest during nesting season. |
| Boreal owl | Disturbance | 4/15 to 8/30 | Site-specific protection of aspen clone containing nest tree(s) if active; may require a minimal buffer or directional felling if operating around clone during disturbance period |
| Flammulated owl | Disturbance | 5/1 to 8/30 | Site-specific protection of aspen clone containing nest tree(s) if active; considerations for post-fledging structure within 100 meters around active nest site may apply. Directional felling if operating around clone during disturbance period. |
| Great horned owl | Disturbance | 12/15 to 5/1 | Protect nest tree during the disturbance period. A buffer clump around nest tree may be warranted based on site-specific considerations |

[1]Golden eagles are protected under the Bald and Golden Eagle Act. All projects and activities within the vicinity of golden eagle nests and use areas are subject to analysis and the regulations for incidental take of eagles and eagle nests (U.S. Fish & Wildlife Service, Federal Register Vol. 81, No. 242, 91494-91554).

[2] Structural improvements include activities such as permanent roads, structures associated with recreational development, radio towers etc. that are proposed following nest establishment and are not intended to include structures that historically were present in the area.

[3] Buffer distances may vary based on factors including but not limited to site-specific information, current science, and professional judgement of the wildlife biologist.

[4]Nesting season dates may be flexible, particularly during the beginning and latter parts of the season, but are not expected to change often or significantly, as the direction is based on raptor biology and local knowledge. Area closures may be appropriate to maintain integrity of reproductive sites.

## Species of Conservation Concern (SCC)

### *Management Approaches*

Species of conservation concern (Appendix D) are animals or plants known to occur in the planning area that the regional forester has determined that the best available scientific information indicates a substantial concern regarding the species' ability to persist over the long-term (36 CFR 219.9). Many of the plan components that that contribute to the maintenance or restoration of ecological conditions to contribute to maintaining a viable population of the species of conservation concern are also addressed in other sections including, but not limited to, *Riparian Management Zones, Range Management, Native Animals and Plants*, and *Species of Conservation Concern*. The full list of species of conservation concern and those species considered but not carried forward is contained in Appendix D.

Mitigate impacts to insect species that are listed as species of conservation concern, or that are necessary to those species as pollinators or as food, from applications of insecticide or other pesticides.

Mitigate impacts to plant species that are listed as species of conservation concern, or that are necessary for those species as food (including grazing, forage, and nectar for pollinators) or cover, from herbicide or other pesticides.)

The Forest intends to assess the range and distribution of insect species of at-risk species (threatened, endangered, proposed, or candidate species and species of conservation concern). This would inform project-level planning on how to avoid impacts to these species.

The direction below is specific to the Rio Grande National Forest. Higher level direction for species of conservation concern is contained in Forest Service manuals and handbooks, specifically 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction, including but not limited to the Endangered Species Act as amended and Fish and Wildlife Conservation Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-SCC-1:** Structure, composition, and function of sagebrush ecosystems meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-2** Structure, composition, and function of coniferous forests including late seral forests meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-3** Structure, composition, and function of riparian areas, including streams, willow thickets, and cottonwood galleries, meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-4** Structure, composition, and function of aspen-dominated forests meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-5** Structure, composition, and function of alpine ecosystems, including cushion plant communities, snow willow, alpine fell fields, and talus slopes, meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-6** Snags and decaying wood processes meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-7** Structure, composition, and function of montane grasslands meet the needs of associated species, including species of conservation concern. (Forestwide)

**DC-SCC-7:** Improve or maintain habitat for bighorn sheep. (Forestwide)

**DC-SCC-8:** Maintain effective separation to minimize the risk of disease transmission between domestic sheep and bighorn sheep on active grazing allotments. (Forestwide)

### *Standards*

**S-SCC-1:** To maintain pollination as an ecosystem service, do not authorize chemical applications that would cause harm to species of conservation concern. (Forestwide)

**S-SCC-2:** Do not authorize activities that create ecosystem conditions that would not maintain the persistence of species of conservation concern. (Forestwide)

**S-SCC-3:** Maintain effective separation to minimize the risk of disease transmission between domestic sheep and bighorn sheep on active grazing allotments. Effective separation is defined as spatial or temporal separation between bighorn sheep and domestic sheep, resulting in minimal risk of contact and subsequent transmission of respiratory pathogens between animal groups. (Forestwide)

**S-SCC-4:** Do not authorize projects that will result in disturbance or displacement of bighorn sheep during their reproductive period (generally April 15 to July 1). (Forestwide)

**S-SCC-5:** Prohibit the use of recreational pack goats in the Sangre de Cristo Mountains to eliminate potential interactions between pack goats and bighorn sheep. (Forestwide)

**S-SCC-6:** Maintain effective separation between domestic goats used for vegetation management and bighorn sheep to minimize the risk of contact between animal groups. (Forestwide)

### *Guidelines*

**G-SCC-1:** To maintain ecosystem integrity, minimize, while meeting project goals, negative impacts to pollinators when applying pesticides. (Forestwide)

**G-SCC-2:** Roads and other permanent ground-disturbing structures and activities should not degrade vegetation within 100 feet where plants that are listed as species of conservation concern are known to occur. Such barren or rocky areas include, but are not limited to, alpine fell fields, alpine cushion plant communities, talus slopes at any elevation, rock fields, boulder gardens, cliff faces, recently disturbed soils, exposed shale, gypsum, volcanic, or adobe soils, and other sparsely vegetated areas within other ecosystems.(Forestwide)

**G-SCC-3:** Reduce habitat fragmentation and maintain structural conditions of sagebrush ecosystems through design of management activities. (Forestwide)

## Threatened, Endangered, Proposed, and Candidate Species (TEPC)

Plan direction is designed to protect and recover animal and plant species that are listed as threatened or endangered under the Endangered Species Act, or those species that have been proposed or are candidates for listing. Threatened, endangered, proposed, and candidate species can occur Forestwide. These species can be influenced by direction that occurs throughout the forest plan, including but not limited to direction for wildlife, range management, and vegetation management.

Eight of the nearly 300 species of amphibians, fish, mammals, birds, and reptiles that inhabit the Forest are federally recognized as threatened or endangered species. These include black-footed ferret (endangered), Canada lynx (threatened), Gunnison sage grouse (threatened), Mexican spotted owl (threatened), New Mexico meadow jumping mouse (endangered), Southwestern willow flycatcher (endangered), Uncompahgre fritillary butterfly (endangered), and yellow-billed cuckoo (threatened). None of these species currently have listed or proposed critical habitat on the Forest.

Of the eight listed species, the Uncompahgre fritillary butterfly, Canada lynx, Gunnison sage grouse, and Southwestern willow flycatcher are known to occur in the planning unit.

### *Management Approaches*

The 2008 Southern Rockies Lynx Amendment Record of Decision amended eight forest plans including the Rio Grande. The direction prescribed in the 2008 Southern Rockies Lynx Amendment (Appendix E) is incorporated, as modified below, into the current direction and would apply Forestwide. Additional direction and modifications of the 2008 direction is needed to sufficiently address the continued recovery of Canada lynx due to the current habitat conditions associated with the spruce beetle outbreak in the spruce- fir ecosystem. This direction supplements, and replaces management direction related to salvage in the Southern Rockies Lynx Amendment, specifically VEG S1 and VEG S2.

Even with higher levels of mortality due to spruce beetle infestation high quality lynx and snowshoe hare habitat persists and vegetation management activities have the potential to benefit and adversely affect lynx and snowshoe hare habitat and populations (ILBT 2013, p. 71). Most vegetation management

activities reduce canopy cover and horizontal cover in the understory which could reduce snowshoe hare densities and habitat values for Canada lynx.

The direction below is intended to encourage vegetation management in areas where habitat quality for lynx and snowshoe hare can be improved while retaining existing high quality habitat. The overall goal is to maintain areas that support high densities of snowshoe hare while promoting vegetation management that restores habitat and landscape connectivity for lynx movement.

The Southern Rockies Lynx Amendment direction was developed prior to the 2012 Planning Rule. Standard VEG S7 is formatted to be consistent with the forest plan and similar to the Southern Rockies Lynx direction. The direction in the Southern Rockies Lynx Amendment is formatted differently than direction contained in this forest plan. Superscript numbers in the text refer to definitions contained in the Southern Rockies Lynx Amendment in Appendix E.

Standard VEG S7 (below) applies to salvage harvest[42] activities conducted in conifer forests that have lynx habitat attributes, but no longer meet the definition for standard VEG S6 due to tree mortality and associated forest structural changes. These stands still provide high quality lynx habitat and are characterized by dense horizontal cover[19], and include forest structure that provides cover and food for snowshoe hares, and foraging habitat, traveling, and hiding cover for Canada lynx. According to a recent study completed on the Forest (Squires *et al.* 2018), stands with Engelmann spruce and subalpine fir in the canopy, and subalpine fir in the sub-canopy are disproportionality selected by lynx. Stands where standard VEG S7 would apply continue to support snowshoe hare and secondary prey species, such as red squirrels, particularly when live vegetation and horizontal structure is present.

Salvage harvest in lynx habitat is prioritized as follows:

a. Choose areas with good habitat restoration potential that currently exhibit poor quality lynx habitat condition, (i.e., horizontal cover density less than 25 percent, subalpine fir is a minor component of the sub-canopy, favorable site conditions, and best available science suggest that conditions could be improved through vegetation management);
b. Choose areas that provide poor quality lynx habitat and poor habitat restoration potential;
c. All other areas based on overall project considerations and needs.

Stands that are subject to VEG S7 represent high-quality habitat for lynx and are confined to the high probability lynx use area (95 percent areas) delineated in the Resource Selection Function model for the Forest (Squires *et. al* 2018). The high probability lynx use area map can be found in Appendix G. These areas are identified as having:

- Overstories that are predominantly live or dead Engelmann spruce and subalpine fir, or either species, with sub canopy layers dominated by subalpine fir, or a combination of either Engelmann spruce or aspen, or both; and
- Total live overstory canopy cover less than or equal to 40 percent; and
- Understory horizontal cover density from ground level to 3 meters above ground level, is greater than or equal to 45 percent during winter foraging conditions for snowshoe hares.

Openings in lynx habitat are areas with less than 25 percent total canopy closure. Areas with less than 25 percent horizontal cover are not considered suitable habitat.

During salvage project design, late-successional forest patches that are expected to remain green or mostly green in the next 15 years are identified for retention during project implementation. Foresters and wildlife biologists determine the optimal landscape heterogeneity objectives that include retention,

opening patch size, and configuration. Project objectives should be considered at a watershed or sub-watershed scale, using the best available science.

Forest stands that meet the VEG S7 definition represent a disproportionately high value subset of the overall suitable habitat in a lynx analysis unit. Management prioritization provides limited entry allowances into VEG S7 stands. A seven percent allowance into VEG S7 stands is available for use within 15 years of the decision date for this forest plan. Suitable lynx habitat is defined as stands with understory horizontal cover density greater than 25 percent. Timber stands subject to VEG S7 in locations that are documented as occupied by lynx and may support reproduction (Ivan 2018) should be avoided where possible. If entry does occur minimize further reduction in key habitat values.

The VEG S7 standard is associated with a management focus that supports limited entry into VEG S7 stands while promoting forest restoration in stands that may be improved by understory regeneration. The prioritization focus for vegetation management activities for non-VEG S7 stand and non-hazard trees, in the 95 percent lynx use area is as follows:

1. Activities in stands with zero to 24 percent horizontal cover density (unsuitable habitat) and high site potential for active habitat improvement;
2. Activities in areas of zero to 24 percent horizontal cover density (unsuitable habitat) with poor potential for further improvements in habitat values;
3. Activities in areas of 25 to 44 percent horizontal cover density (suitable but not high-quality).

Hazard tree removal along open and administrative use roads, trails, and campgrounds are exempt from this direction. Removing hazards trees from these locations is done to maintain safety for the public and employees. This treatment may occur up to 250 feet from open and administrative use roads, trails, and campground boundaries.

### *Desired Conditions*

**DC-TEPC-1:** Maintain or improve habitat conditions that contribute to either stability, recovery or both, for threatened, endangered, proposed, and candidate species. (Forestwide)

Desired conditions related to habitat for Canada lynx are found in the Southern Rockies Lynx Amendment.

### *Standards*

**S-TEPC-1:** The Southern Rockies Lynx Amendment direction (Appendix E), as amended and modified by the forest plan record of decision, shall be applied. (Forestwide)

**VEG S7 (or S-TEPC-2):** Salvage activities in stands that represent high quality lynx habitat may occur in up to seven percent of the high-probability lynx use area (95 percent lynx use areas shown in Appendix G) that overlaps the suitable timber base 15 years from the date on the forest plan decision. Salvage activities in VEG S7 stands in combination with all vegetation management[50] activities including incidental damage resulting in either Stand Initiation Structural Stage[44] conditions, a reduction of horizontal cover[19], or both, are tracked for 15 years from the decision date for this forest plan decision. (High-probability lynx use areas)

**S-TEPC-3:** Southern Rockies Lynx Amendment standards VEG S1 and VEG S2 do not apply on lynx analysis units that have no overlap, either wholly or partially, with the high probability lynx use areas shown in Appendix G. All other management direction (excluding VEG S1 and VEG S2) in the Southern

Rockies Lynx Amendment applies to areas outside of the high probability lynx use areas (95 percent use area). (Lynx Habitat Outside of High Probability Lynx Use Areas)

#### *Guidelines*

**G-TEPC-1:** To avoid or minimize adverse effects to listed species and their habitat, management actions should be designed with attention to threatened, endangered, proposed, or candidate species and their habitats. (Forestwide)

# Goal 2

### *Protect and restore watershed health, water resources, aquatic ecosystems, and the systems that rely on them*

Water from the Rio Grande National Forest supports outdoor recreation, biological diversity, wildlife species and habitats, agricultural irrigation, and flood control. The Forest provides clean, abundant water to local and regional aquifer systems as well as to surrounding communities.

Opportunities for collaborative stewardship of watersheds emphasize the interrelated biological, economic, and social factors that affect these areas. Healthy and functioning watersheds contribute to overall resource health.

## Fisheries (FISH)

#### *Management Approaches*

Management direction is provided for individual resource areas. This direction has been integrated across resources areas. Plan components contained in this section cover the broad area of aquatic habitats that are present throughout the Forest and support all fisheries. Species of conservation concern (Rio Grande cutthroat trout, Rio Grande chub, and Rio Grande sucker), all other native species, and desired nonnative recreational species are included. Many of the plan components that affect fisheries are also addressed in other sections including, but not limited to, *Minerals*, *Aquatic and Terrestrial Nonnative Invasive Species and Noxious Weeds*, *Recreation*, *Riparian Management Zones*, *Soils*, *Watersheds*, *Wildlife*, and *Species of Conservation Concern*. Specific direction for designated wilderness and designated and eligible wild, scenic, and recreational rivers is also provided.

Aquatic species include vertebrate and invertebrate animals that live in the water for most of all of their life cycle. Fisheries management focuses on fish species and the habitat components that are vital to their survival. Persistence of these species over time is dependent on an array of well-connected habitat conditions. Management activities can contribute to fragmentation and degradation of habitat for fish and other riparian-dependent species. Dam construction, introduction of nonnative invasive species, livestock grazing, road and facility construction, and vegetation management activities can change habitat conditions.

Annually, the Forest works with signatories of the Conservation Agreements for Rio Grande cutthroat trout (RGCTCT 2013) and the Rio Grande chub and Rio Grande sucker (RGCSCT 2018). Shared data maintains and updates species occurrences and the fisheries activity period maps facilitate consistent and effective implementation of the agreements for use during project-level analysis and in guidance specific to recreational dredging.

The Forest coordinates with staff from Colorado Parks and Wildlife on fish stocking programs. This ensures benefits and reduces degrading effects on native and desired nonnative fish and aquatic species. Recreational fish stocking reports are provided to Colorado Parks and Wildlife by June 15, or as they become available.

The direction below is specific to the Rio Grande National Forest. Higher level direction for fisheries resources comes from Forest Service manuals and handbooks, specifically 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Endangered Species Act as amended and Fish and Wildlife Conservation Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-FISH-1:** Connectivity of habitat for native and desired nonnative fish and aquatic species is maintained or enhanced by the design and implementation of management actions. Populations are expanding into previously occupied habitat, and interconnectivity is maintained within metapopulations. To maintain sustainable populations, critical life stages are distributed and abundant. Habitat conditions are not a primary factor in species being proposed or listed under the Endangered Species Act or for adding species as a species of conservation concern.

**DC-FISH-2:** Habitat and water quality in lakes and streams allow fish populations to thrive, and habitat is not fragmented by management activities.

### *Objectives*

**OBJ-FISH-1**: Complete 10 fish connectivity projects (combination of removing barriers or constructing aquatic organism passage structures) over the next 15 years.

**OBJ-FISH-2:** Maintain or restore structure, composition, or function of habitat for fisheries and other aquatic species along 30 miles of stream, with a focus on larger individual stream segments when possible over the next 15 years. (Forestwide)

### *Standards*

**S-FISH-1:** When authorizing new surface diversions in fish-bearing waters, provide upstream and downstream passage designed for all fish species that are threatened, endangered, proposed or candidate species, and for species of conservation concern except when barriers are needed to protect from undesired nonnative fish. (Forestwide)

### *Guidelines*

**G-FISH-1:** New surface diversions should provide passage for native and desired nonnative aquatic species to maintain connectivity except when barriers are needed to protect from undesired nonnative fish. (Forestwide)

**G-FISH-2:** Newly constructed perennial stream crossings and aquatic organism passages to allow natural streamflow, and bidirectional movement of adult and juvenile fish and other wildlife. (Forestwide)

**G-FISH-3:** Fisheries activity period maps should be consulted during project develop and design, including recreational dredging. Dates associates with stream class identified on the map is contained in Figure.

Fisheries activity period maps designate the class of a mapped waterbody (A, B, C, or D). They correspond with the restricted activity period in Figure and describe the locations of Class A water bodies, and may specify special conditions. Except for uncoded waters bodies, which do not appear on the maps, class is designated on the maps. Uncoded water bodies are Class D unless otherwise specified. When uncoded water bodies enter mapped Class A, B, or C water bodies, the portion of the uncoded water body 1 mile upstream from the mouth is the same class as the mapped water body it enters. This is applied even if the unmapped water body is dry or frozen to the bottom at the time of implementation.

Where unmapped water bodies enter a mapped Class A water body, the unmapped water body is Class A for the portion of the unmapped water body for a distance of 1 mile upstream from the mouth of the unmapped water body, including where the unmapped water body is dry or frozen to the bottom at the time of the project, and Class B for any other portion of the unmapped water body. Where an unmapped water body enters a mapped Class B water body, the unmapped water body is Class B for the portion of the unmapped water body for a distance of 1 mile upstream from the from the mouth of the unmapped water body, including where the unmapped water body is dry for frozen to the bottom at the time of the project, and Class C for any other portion of the unmapped water body. Where an unmapped water body enters a mapped Class C or D water body, the unmapped water body is Class C or D for all portions of the unmapped water body, respectively. Where an unmapped water body enters a fish-bearing lake, the unmapped water body is Class C, whether or not the fish-bearing lake appears on the activity period map(s).

**Figure. Dates and species of fish by class of water body**

| Water Body Class | Species | Restricted Activity Period |
|---|---|---|
| A | Core and conservation Rio Grande cutthroat trout | Dates provided by Fisheries Biologist |
| B | Recreation Rio Grande cutthroat trout | May 15 to June 30 |
| C | Brown and brook trout | October 1 to December 31 |
| C | Rainbow trout | April 1 to August 31 |
| D | No fish or any other species | None |

## Groundwater-Dependent Ecosystems (GDE)

### *Management Approaches*

Groundwater-dependent ecosystems are a vital component for the natural environment and can include fens, wetlands, seeps, springs, riparian areas, groundwater-fed streams and lakes, and aquifers. These are present throughout the Forest and vary in size and timing. These areas provide an important ecosystem component and provide later-season flows with cold water temperatures, help sustain the function of surface and subsurface aquatic ecosystems, and provide habitat important to the persistence of plant species of conservation concern.

Areas that retain moisture and associated vegetation types have long been recognized as important for both ecosystem function and human benefits. Riparian areas and groundwater-dependent ecosystems such as wetlands, springs, aquifers, and fens provide ecosystem services that are necessary for the long-term health and well-being of both aquatic and upland areas. Services provided by these areas is vital to the

water supplies to downstream users. Services include stabilizing steams banks and reducing erosion, mitigating the impacts of floods, improving water quality by trapping sediment and other pollutants, and sustaining late season base flows. These areas are also vital to a wide variety of plants and animals. Aquatic and terrestrial species depend on the forage and cover provided in these habitat types, and many rare plants only occur in these ecosystems.

Fens and watershed conditions that support healthy fens present an irreplaceable ecological feature on the landscapes. As capacity allows, these area are inventoried and evaluated, allowing managers to maintain healthy watersheds and aquatic resources.

The Forest collaboratively works with other agencies and adjacent landowners in the conservation of groundwater-dependent ecosystems. Fens will continue to be inventoried and evaluated as feasible.

The direction below is specific to the Rio Grande National Forest. Higher level direction for groundwater-dependent ecosystems is contained in Forest Service manuals and handbooks, specifically 2500, 2600, and 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the Endangered Species Act as amended, Safe Drinking Water Act, and the Water Quality Improvement Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-GDE-1:** Identified groundwater-dependent ecosystems provide habitat for species of conservation concern and other native species. Fens continue to accumulate peat. (Forestwide)

### *Objectives*

### *Standards*

**S-GDE-1**: Do not authorize management actions that alter hydrology of groundwater-dependent habitat features. (Forestwide)

### *Guidelines*

**G-GDE-1:** To maintain ecosystem diversity and function, design projects to avoid or mitigate negative impacts to ecological services of groundwater-dependent ecosystems. (Forestwide)

## Riparian Management Zones (RMZ)

### *Management Approaches*

Naiman et al. (2000) identifies that discoveries about the structure and dynamics of riparian zones have important implications for stream and watershed management. Forest plans must establish width(s) for riparian management zones around all lakes, perennial and intermittent streams, and open-water wetlands (USDA Forest Service 2015). The following guidance has been developed to help interdisciplinary teams become familiar with, and consistently apply, criteria to appropriately delineate riparian management zones, and analyze important considerations in developing appropriate management actions within or affecting riparian management zones. The intent is to ensure that interdisciplinary teams adequately consider riparian functions and ecological processes in both the delineation of riparian management zones and the determination of appropriate management actions within, or that affect, riparian management zones.

Riparian areas represent the area where aquatic and terrestrial ecosystems interface. These important areas occur along streams, rivers, lakes, wetlands and other waterbodies. These areas can be restored using passive and active management.

Delineation and further definition of riparian management zones are contained in Appendix F.

The direction below is specific to the Rio Grande National Forest. Higher level direction for riparian management zones can be found in Forest Service manuals and handbooks, specifically 2500, 2600, and 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the Watershed Protection and Flood Prevention Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-RMZ-1:** Riparian areas and wetlands are healthy, fully functioning ecosystems that are resilient and able to withstand natural and human disturbances that include flood, fire, drought, changes in frequency and timing of weather events, recreation, and herbivory. Aquatic ecosystems, riparian ecosystems, and watersheds exhibit high ecological integrity. The vegetation consists of desirable native species and age classes and meets the needs of resident amphibians, fish, and migratory birds. Populations of riparian vegetation are diverse, vigorous, and self-perpetuating. Invasive species, including plants and animals, in riparian and wetland ecosystems are rare. There is sufficient vegetative cover to provide bank stability, trap and retain sediment, regulate temperature, and contribute to floodplain function. Riparian ecosystem composition, structure, and function can generally be restored and enhanced by beaver habitat. (Forestwide)

**DC-RMZ-2:** Hydrologic regimes of riparian and wetland ecosystems contribute to appropriate channel and floodplain development, maintenance, and function. (Forestwide)

### *Objectives*

**OBJ-RMZ-1**: Restore at least 300 acres of riparian or wetland areas over the next 15 years. (Forestwide)

### *Standards*

**S-RMZ-1**: Management activities may have short-term impacts (generally less than 5 years) to composition, function, and structure of riparian areas and fish habitat. Over the long term (generally greater than 20 years), projects shall not impair connectivity, composition, function, and structure. (Forestwide)

### *Guidelines*

**G-RMZ-1:** To maintain ecological integrity and connectivity, new system roads and infrastructure should not be constructed in the riparian management zone. (Forestwide)

**G-RMZ-2:** To provide for the structural nesting habitat requirements for riparian-associated birds, design management activities to avoid healthy willow carrs. (Forestwide)

## Watershed (WA)

### *Management Approaches*

Healthy, properly functioning watersheds are essential to forest health, water quality, water quantity, and a host of others functions and services. Plan and management direction is grouped by specific resource but is also addressed in relation to other resource functions. Watershed specific direction contains both

national and regional guidance as required by the 2012 Planning Rule (36 CFR 2190). As always, additional higher level guidance is incorporated and followed to protect watersheds and their associated functions and services.

A watershed is an area of land that drains water and transports sediment and dissolved materials to a common outlet at some point along a stream channel (Dunne and Leopold 1978). Watersheds occur at multiple scales and range from the largest river basins that cover thousands of acres, such as the Rio Grande, to small streams with only a few acres of contributing area. Watersheds that are functioning properly have terrestrial, riparian, and aquatic ecosystems that capture, store, and release water, sediment, wood, and nutrients within their range of natural variability for these processes.

Many attributes can help to understand and define the condition, or health, of a watershed. These include, but are not limited to, physical and biologic characteristics such as the timing and quantity of water flows, water quality, the amount of erosion and sedimentation, the stability of streambanks, stream channel dimensions such as width and depth, the condition of riparian vegetation, and the presence of native or desired nonnative aquatic species. The attributes that reflect the state of a watershed condition are continually changing because of natural disturbances (e.g., wildfire, landslides, floods, insects, and disease), natural variability of ecological processes (e.g., flows and cycles of energy, nutrients, and water), climate variability, and human modifications.

The watershed condition policy goal of the Forest Service is "to protect National Forest System watersheds by implementing practices designed to maintain or improve watershed condition, which is the foundation for sustaining ecosystems and the production of renewable natural resources, values, and benefits" (FSM 2520). The forest plan components listed below are designed to assist land managers in maintaining or improving watershed condition by focusing on the key physical and biologic attributes and processes of watershed condition that will allow watersheds to be resilient in the face of both natural and human disturbances.

The direction below is specific to the Rio Grande National Forest. Higher level direction for watershed management is contained in Forest Service manuals and handbooks, specifically 2500, 2600, and 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the Clean Water Act as amended, Emergency Flood Prevention Act, Federal Water Pollution Control Act, and Federal Water Project Recreation Act. All higher level direction that is applicable but not repeated is contained in Appendix I.

### *Desired Conditions*

**DC-WA-1:** Physical channel characteristics are in dynamic equilibrium and are commensurate with the natural ranges of discharge and sediment load provided to a stream. Streams have the most probable form and the expected native riparian vegetation composition within the valley landforms that they occupy; they function correctly without management intervention. Historically disturbed and degraded stream channels recover through floodplain development and establishment of riparian vegetation, and demonstrate stable channel geomorphic characteristics. Beaver reintroduction, and the persistence of beaver habitat, can contribute to channel recovery and floodplain function. Upland areas function properly and do not contribute to stream-channel degradation. Roads, trails, and impervious surfaces minimally affect hydrologic processes within watersheds. The sediment regime within water bodies is within the natural range of variation. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport. (Forestwide)

**DC-WA-2:** Within the constraints of existing water rights decrees, the timing and magnitude of flood events is within the natural range of variation. Floodplains are accessible to water flow and sediment deposits. Overbank floods allow floodplain development and support healthy riparian and aquatic habitats. Floods also allow the propagation of flood-associated riparian plant and animal species. (Forestwide)

**DC-WA-3:** State water quality standards are met and State-classified water uses are supported for all water bodies. Water quality for those water bodies listed as impaired on the State of Colorado 303(d) list move toward fully supporting State-classified uses. (Forestwide)

**DC-WA-4:** Aquifers maintain natural conditions of recharge, discharge, and groundwater quality, especially where they are important to surface features dependent on groundwater for their existence (including but not limited to caves, springs, seeps, lakes, riparian areas, wetland ecosystems, fens, and intermittent and perennial streams). (Forestwide)

**DC-WA-5:** Watersheds provide clean, safe water suitable for public consumption after adequate and appropriate water treatment. (Forestwide)

### *Objectives*

**OBJ-WA-1:** Improve condition class on at least one identified priority watershed, as defined by the national Watershed Condition Framework over the next 5 years. (Forestwide)

**OBJ-WA-2:** Quantify minimum instream flows at new quantification points for stream reaches impacted by federal land acquisitions for the Baca Tract over the next 5 years. (Forestwide)

### *Standards*

**S-WA-1:** Incorporate direction included in the Watershed Conservation Practices Handbook (FSH 2509.25), and project-specific management measures described in FS 990A or as updated in land-use and project plans. (Forestwide)

### *Guidelines*

**G-WA-1:** Maintain or restore water quality by assuring that activities meet State of Colorado water quality standards. Management activities in watersheds where State of Colorado 303(d) listed impaired water bodies exist should assist in achieving State water quality standards. (Forestwide)

**G-WA-2:** Management actions should not cause long-term degradation to water resources, including lakes, streams, wetlands, and groundwater. Particular attention should be paid to public water supplies, sole source aquifers, and source water protection areas. (Forestwide)

# Goal 3

## *Actively contribute to social and economic sustainability in the broader landscape and connect citizens to the land*

The Forest contributes forest products and tourism opportunities that are important to local economies, and provides ecosystem services for current and future generations. Locations that have been influenced by humans while protecting areas of tribal importance and traditional uses and other areas of religious or cultural importance are maintained and protected. Opportunities are available for individuals, partners, and organizations to be active participants in managing, monitoring, and implementing projects that achieve integrated resource management goals.

The Forest provides natural-appearing landscapes with diverse scenery. Within the anticipated fiscal capacity, the Forest provides and maintains access to a multitude of recreational opportunities and outdoor experiences in settings that range from primitive to highly developed. Designated areas, such as wilderness and wild, scenic, and recreational rivers, are maintained to protect resource integrity and avoid damage incurred by overuse. Interpretive opportunities increase public knowledge, provide historical background, and promote connection of the current people to the past and their land.

Heritage resource sites are managed and interpreted in compliance with all applicable laws and regulations. When appropriate, sites are nominated to the National Register of Historic Places and managed to those standards.

The 2012 Planning Rule (36 CFR 219) defined ecosystem services to include provisioning services such as air, water, energy, fiber, and minerals; regulating services such as soil stabilization; and cultural services that include cultural heritage values and recreational experiences. The Forest strives to meet the demand for these services.

## Air Quality (AIR)

### *Management Approaches*

The Clean Air Act and subsequent amendments require Federal land managers to protect air quality related values in Class 1 areas and to protect human health and basic resource values in all areas. The La Garita, Weminuche, and nearby Great Sand Dunes Wilderness areas are classified as Class 1 areas where very little deterioration of air quality is allowed. Virtually all land management activities on the Forest occur outside the non-attainment boundaries. The greatest potential to affect air quality would be from smoke (wildfires, prescribed fires) and road dust.

The direction below is specific to the Rio Grande National Forest. Higher level direction for management of air quality comes from Forest Service manuals and handbooks, specifically 2500. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-AIR-1:** Air quality related values over Class 1 and Class II wilderness areas meet or exceed state standards. (Forestwide)

### *Guidelines*

**G-AIR-1:** To protect water quality, oils and solvents should not be used for dust abatement measures. (Forestwide)

## Areas of Tribal Importance (ATI)

### *Management Approaches*

The San Luis Valley and the surrounding mountains are the ancestral homelands of several American Indian clans, bands, and tribes. Despite their removal by the U.S. Government in the late 1800s, several tribes maintain strong cultural and spiritual connections to the area. These include the Jicarilla Apache, Navajo, Southern Ute, and Ute Mountain Ute Tribes, as well as several Upper Rio Grande and Western Pueblos. Ceremonial and culturally important sites and traditional gathering areas exist on the Forest. Tribes affiliated with the area exhibit a continuing interest in the homeland-related traditions of their

people and look to the Forest to aid in the maintenance and re-establishment of cultural connections to ancestral landscapes.

Policy development and methods of consulting with tribes has evolved since the last forest plan was completed 20 years ago. Though not repeated here, the legal framework of Federal policy, case law, and Executive orders provides guidance and establishes standards for tribal authorities and uses of national forests as well as creates pathways to greater collaboration and connection between the Forest and the tribes at all management levels of the Forest Service.

Interpretive and educational exhibits and other media focusing on the history of forest lands is developed in collaboration with tribes to provide the public with a greater understanding and appreciation of shared history, culture, and traditions.

The Forest maintains relationships with tribes that are meaningful and built on trust. The Forest intends to work with tribes in developing interpretive and educational materials to aid in protecting areas of tribal importance.

The Forest will partner with interested tribes in determining the eligibility of Mount Blanca as a traditional cultural property to the National Register of Historic Places.

Develop a management plan to assist in maintain cultural values, involving staff from the Bureau of Land Management San Luis Valley Field Office, Pike-San Isabel National Forest, interested tribes, U.S. Fish and Wildlife Service Sangre de Cristo Conservation Area, and other non-Federal partners.

The Forest intends to accommodate and facilitate traditional use of areas acknowledged as traditional cultural properties and other culturally important places that are essential to maintaining the continuing cultural identity of associated communities.

In coordination with tribes, develop collaborative proposals and partnerships to implement projects of mutual benefit and economic development, or both, using federally authorized or advocated programs where available.

In compliance with higher level direction, consultation with tribes occurs at initial planning stages and during project design. As appropriate, tribal perspectives, needs, and concerns, as well as traditional knowledge, should be incorporated into project design and decisions, such as areas acknowledged as traditional cultural properties.

In compliance with higher level direction, confidential and sensitive information, or both, regarding sacred sites is held in the strictest confidence. Also purposeful excavation, photography, and destructive analysis of human remains, or any one of these, for educational purposes, is not permitted.

The direction below is specific to the Rio Grande National Forest. Higher level direction for management of areas of tribal importance comes from Forest Service manuals and handbooks, specifically 2300. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Antiquities Act, American Indian Religious Freedom Act, and Native American Graves and Repatriation Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-ATI-1:** Acknowledged traditional cultural properties are present for their cultural importance and are generally free of impacts from other uses. (Forestwide)

**DC-ATI-2:** Access for tribal members is provided for the exercise of treaty rights and to provide opportunities to practice traditional, cultural, educational, and religious activities. (Forestwide)

**DC-ATI-3:** Traditionally used resources are managed sustainably and are available for future generations. (Forestwide)

### *Guidelines*

**G-ATI-1:** To protect areas of tribal importance, such as areas acknowledged as traditional cultural properties, minimize restoration and recreation activities and uses, as well as the development of new facilities and infrastructure, near these areas. (Forestwide)

## Congressionally Designated Trails (CDT)

Direction included below applies to the management of two congressionally designated trails on the Forest: the Continental Divide National Scenic Trail and the Old Spanish National Historic Trail. The Continental Divide National Scenic Trail and the Old Spanish National Historic Trail were designated by Congress in 1978 and 2002, respectively.

### *Management Approaches*

The National Trails System Act of 1968 authorized creation of a national trail system consisting of national scenic, historic, and recreation trails. National scenic and national historic trails may be designated only by an act of Congress. Both congressionally designated trails that traverse the Forest are shown with a one-half-mile-wide buffer on either side of the trail. This trail corridor is managed consistently across the Forest.

### Continental Divide National Scenic Trail

The 3,100-mile-long Continental Divide National Scenic Trail follows the backbone of the Rocky Mountains from Canada to Mexico. The trail traverses portions of 25 national forests, 3 national parks, and 4 Bureau of Land Management districts, as well as various private lands in Colorado, Idaho, Montana, New Mexico, and Wyoming. About 170 miles of the trail is routed through the Rio Grande National Forest, from its northern boundary with the Gunnison National Forest, to the New Mexico state line.

The Forest Service is the lead agency responsible for management of the Continental Divide National Scenic Trail. Management of the trail is consistent with the nature and purposes of the trail as described in the 2009 Continental Divide National Scenic Trail Comprehensive Plan, and any revisions.

Consistent with the Continental Divide National Scenic Trail Comprehensive Plan, trail partners and volunteers will be encouraged to assist in the planning, development, maintenance, and management of the trail.

Proposed relocations or new segment locations will be evaluated using defined optimal location criteria.

Opportunities to acquire lands or rights-of-way in or adjacent to the Continental Divide National Scenic Trail corridor will be identified and pursued as feasible.

Activities and projects occurring in the visible foreground are evaluated for their effects on user experience. Impacts are reduced and mitigated.

Consistent signage is provided along the Continental Divide National Scenic Trail at road and trail crossings to identify the trail. Interpretive signs are provided at key entry points and at historic and cultural sites to orient visitors and enhance their experience.

During emergencies, incident management teams are made aware of the Continental Divide National Scenic Trail as a resource to be protected. Fire suppression rehabilitation and long- term recovery of the Continental Divide National Scenic Trail corridor are identified as high priorities for incident management teams, burned area emergency recovery teams, and post- fire rehabilitation interdisciplinary teams.

Over time, appropriate carrying capacities will be established for specific segments of the Continental Divide National Scenic Trail by monitoring use and conditions. Appropriate management actions are taken to maintain or restore the nature and purposes of the trail if the results of monitoring or other information indicate a trend away from the desired conditions.

To provide for user safety and health, adequate trail facilities are provided that accommodate the amount and types of use anticipated on any given trail segment. Minimal facilities are provided to preserve or promote a setting that appears natural.

### Old Spanish National Historic Trail

The Old Spanish National Historic Trail was designated in 2002. Pioneered by Antonio Armijo in 1829, the Old Spanish Trail was a trade network with several routes that carried woolens and slaves between Santa Fe and Los Angeles in trade for horses in Mexico's California territory. The congressionally designated East Fork of the North Branch of the Old Spanish National Historic Trail runs through the Forest, generally following the west flanks of the Sangre de Cristo Mountains before winding up Saguache Creek and into the Gunnison Basin. Inventory and research have identified the Bunker Site as an archaeological site along the trail within Forest.

The Old Spanish National Historic Trail Comprehensive Administrative Strategy (December 2017) guides management of the trail across six states and a variety of ownerships. Trail management and activities will be coordinated across and adjacent to unit and jurisdictional boundaries.

Appropriate measures are developed to protect high-potential sites and segments from deterioration due to natural forces, visitor use, vandalism, and other impacts.

Over time, the Forest intends to comprehensively document at least 3 miles of the Old Spanish National Historic Trail; study one camp or paraje, and study on new segment that was included in the original feasibility study.

Prominent access points along the Old Spanish National Historic trail will be signed to enhance user experience and safety.

Work with trail administrators, recreation staff, volunteers, and trail organizers to plan for, develop, maintain, and manage high potential segments, sites, and segments under study for the Old Spanish National Historic Trail.

Federally recognized tribes, appropriate Federal, state, and local agencies, and trail administrators will be consulted regarding planning and development activities for the Old Spanish National Historic Trail.

The direction below is specific to the Rio Grande National Forest. Higher level direction for management of congressionally designated trails comes from Forest Service manuals and handbooks, specifically 2300

as well as comprehensive management plans for the associated trails. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the National Trails System Act and the National Historic Preservation Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-CDT-1:** Viewsheds from the Continental Divide National Scenic Trail have high scenic values. The foreground of the trail is naturally appearing. (Forestwide)

**DC-CDT-2:** The Continental Divide National Scenic Trail is a well-defined trail that provides for high-quality primitive hiking and horseback riding opportunities, and other compatible nonmotorized trail activities, in a highly scenic setting along the Continental Divide. The significant scenic, natural, historic, and cultural resources along the trail corridor are conserved. Where possible, the trail provides visitors with expansive views of the natural landscapes along the Continental Divide. (Forestwide)

**DC-CDT-3:** The Continental Divide National Scenic Trail can be accessed from multiple locations, allowing visitors to select the type of terrain, scenery, and trail length (e.g., ranging from long distance to day use) that best accommodates their desired outdoor recreation experience(s). Wild and remote backcountry segments provide opportunities for solitude, immersion in natural landscapes, and primitive outdoor recreation. Easily accessible trail segments complement local community interests and needs and help contribute to a sense of place. (Forestwide)

**DC-CDT-4:** The Continental Divide National Scenic Trail is well maintained, signed, and passable. Alternative routes are made available in the case of temporary closures resulting from natural events, such as fire or flood, or land management activities. (Forestwide)

**DC-CDT-5:** The landscape of the North Branch of the Old Spanish National Historic Trail is managed to maintain its nature and purpose while providing educational opportunities, promoting stewardship, providing opportunities for heritage tourism, and protecting traditional cultural properties. (Forestwide)

### *Objectives*

**OBJ-CDT-1:** Restore or relocate one segment of the Continental Divide National Scenic Trail to improve scenic viewing opportunities and/or to provide for a nonmotorized experience over the next 15 years. (Forestwide)

### *Standards*

**S-CDT-1:** Do not authorize development of oil and gas infrastructure, geothermal energy development, or other leasable mineral activity within the Continental Divide National Scenic and the Old Spanish National Historic Trail corridor. (Forestwide)

**S-CDT-2:** Do not authorize common variety mineral extraction (e.g., limestone, gravel, pumice, etc.) to occur within the congressionally designated trail corridor. (Forestwide)

### *Guidelines*

**G-CDT-1:** Forest health projects that result in short-term impacts the scenic integrity of the Continental Divide National Scenic Trail should apply mitigation measures, including but not limited to screening. (Forestwide)

**G-CDT-2:** To provide for a naturally appearing setting while avoiding impacts from motorized use, new temporary or permanent roads, or motorized trails, should not be constructed across or adjacent to the Continental Divide National Scenic Trail, unless needed for resource protection, private land access, or protection of public health and safety. (Forestwide)

**G-CDT-3:** To protect the values for which trails were established, manage unplanned ignitions in the foreground (up to one-half mile) using minimum impact suppression tactics, or other appropriate tactics. Allow heavy equipment line construction within the trail corridor only when necessary for protection of life and property. (Forestwide)

### *Suitability*

**SUIT-CDT-1:** The Continental Divide National Scenic Trail and corridor is not suitable for oil and gas or geothermal energy development or other leasable mineral activity.

**SUIT-CDT-2:** The Continental Divide National Scenic Trail and corridor is not suitable for common variety mineral extraction, including but not limited to limestone, gravel, and pumice.

## Cultural Resources (CRT)

### *Management Approaches*

The Forest contains cultural resources that demonstrate human occupation and use for at least the last 12,000 years. American Indian, Hispanic, and Euro-American communities continue to use the Forest for economic, social, recreational, and religious purposes. These include long-term, rural, land-based communities that use the Forest for subsistence purposes. An understanding of cultural resources and historic uses is important to understanding shared heritage and the social, economic, and ecological sustainability of the planning area, the State of Colorado, the Rocky Mountain region, and the Nation as a whole.

Currently, about 2,099 cultural resources have been documented, including prehistoric and historic remains. About 18 percent of the Forest has been inventoried for cultural resources to some degree. Resources within the Forest represent the processes and events important to the identity and history of both tribal groups and long-term land-based communities. Cultural resources can contain a wealth of information for potential scientific research regarding social and ecological conditions and changes through time, including human successes and failures in coping with these transformations over the past 12,000 years. This information is valuable to managers making decisions regarding contemporary and future ecological management as well as educating the public about the complex ecological sustainability of the Forest.

The Forest intends to protect sites from activities including, but not limited to, vegetation treatment, prescribed fire, and thinning. "Islanding" of sites can occur from simply avoiding areas to reduce impacts from erosion, severe fire effects, and livestock grazing.

Partnerships are developed and maintained to assist in meeting targets, maintaining facilities and infrastructure, completing monitoring, developing resource specific plans, mapping habitat and use, and more. Partnerships are encouraged with traditional communities surrounding communities and governments, nonprofit groups, volunteers, professional organization, schools and any other interested individuals and groups.

Areas acknowledged as traditional cultural properties, cultural landscapes, and other culturally significant areas identified by local communities provide tangible links to historically rooted beliefs, customs, and

practices. These resources are protected through consultation, traditional cultural practitioners, consulting parties, and project design.

In compliance with Section 110 of the National Historic Preservation Act, the Forest intends to complete non-project inventory annually. The following prioritization will be applied:

- Areas where eligible cultural resources are threatened or ongoing impacts are unknown and need to be assessed.
- Areas indicated to have high cultural value or high density of cultural resources.
- Areas of importance to traditional communities.
- Areas where additional survey will contribute to a greater regional understanding of a specific management unit or special interest area.

Collaborative partnerships and volunteer efforts will continue to be maintained and developed to assist the Agency in researching and managing cultural resources. Focus developing partnerships on traditional communities, nonprofits, volunteers, professional organizations, and schools.

The Forest intends to develop management and preservation plans for administrative facilities and infrastructure that are significant cultural resources with special significance, or are sites that receive frequent visitor use.

Areas that are acknowledged as traditional cultural properties or cultural landscapes, and other culturally significant areas identified by local communities, provide tangible links to historically rooted beliefs, customs, and practices. These resources are protected through consultation, traditional cultural practices, consulting parties, and project design.

Heritage resources are integrated into all resource management decisions and align with the affirmative management, including protection, of significant cultural resources.

A database of fire-sensitive sites, structures, and other resources will be developed to facilitate resource protection during fire management.

Opportunities will be provided for responsible officials and employees in the Agency to receive training to gain a broader understanding of the unique legal relationship between the Federal Government and Indian tribes, and to leave about American Indian law, customs, traditions, and values.

Populations of *Ligusticum porteri* will be mapped (see also *Vegetation Management* section). When identifying and mapping *Ligusticum porteri,* consider setting aside collection areas for traditional use. Use of these areas should be rotated over time. Consultation will assist in identifying other plants that are important to tribes.

The Forest intends to work with tribes to understand community needs and build respectful, collaborative relationships to achieve mutually desired conditions.

Operation and maintenance plans for special use permits or recreation residences include stipulations for maintenance of the historic characteristics for sites that are eligible for inclusion on the National Register of Historic Places.

The direction below is specific to the Rio Grande National Forest. Higher level direction for cultural resources comes from Forest Service manuals and handbooks, specifically 2360. Based on Federal direction, the Heritage Program Managed to Standard allows line officers to assess program health and direct attention to activities that fall short of the minimum stewardship level. The indicators of the

Heritage Program Managed to Standard correspond to key elements of Forest Service Manual 2360. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Antiquities Act, Historic and Archaeological Data Preservation Act, Historical Sites Act, and Volunteers in the National Forests Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-CRT-1:** Interpretation and management of cultural resources connects the public to the past, to the land and its history. The Forest strives to identify, preserve, and protect cultural resources that have scientific, cultural, or social values, including areas acknowledged as traditional cultural properties and historic Agency administrative buildings. Cultural and natural resources and historic uses that help sustain cultural communities and contribute to social and economic sustainability are preserved and maintained. Long-standing, land-based rural communities that have depended on the Forest are recognized and valued. Cultural resources are protected from natural forces, excessive visitor use, vandalism, and other impacts.

### *Standards*

**S-CRT-1:** Include provisions in applicable contracts, agreements, and special use permits for National Register-listed or eligible properties to protect cultural resources. (Forestwide)

### *Guidelines*

**G-CRT-1:** Preserve cultural artifacts in place, or curate when necessary. (Forestwide)

## Infrastructure (INFR)

### *Management Approaches*

Access is necessary for lands to provide a variety of uses and experiences. Structures are also necessary for the operation and management of the Forest as well as for public safety. The developed infrastructure within the Forest includes roads, trails, utility corridors, dams, and buildings for administrative, recreational, or special use purposes. An existing road system provides access to the recreating public as well as purchasers of forest products, contractors, and researchers, among others. Utility corridors and dams provide flood control, power, and telecommunications access, as well as public safety. Maintained facilities include rental cabins, historic sites, and administrative sites.

The Forest transportation system is managed to reduce resource damage.

Facilities acquired through land donation, exchange, or purchase are not retained unless they serve a definitive purpose and funding is available for maintenance, or they are historically significant.

The Forest intends to manage all facilities in compliance with the facilities master plan.

Closed or restricted use roads are available for administrative purposes upon approval by the responsible official.

Designated travelways, as displayed on the Forest motor vehicle use map, and newly constructed travelways are open to motorized vehicle use unless a document decision shows that:

- Motorized use conflicts with forest plan objectives,
- Motorized use is incompatible with the recreation opportunity spectrum class,

- Travelways are not designated routes,
- Motorized use creates user conflicts that result in unsafe conditions unrelated to weather conditions,
- Physical characteristics of the travelways are hazardous for motorized use,
- Travelways do not serve an existing or identified public needs, or
- Financing is not available for maintenance necessary to protect resources.

Motorized use is restricted on all areas not identified for motorized use on the Forest motor vehicle use map. Forest orders may also be used to close areas for various reasons. Over-the-snow motorized vehicle use is allowed unless specifically restricted.

The Forest intends to consider the impact of potential alterations in timing, magnitude, and duration of peak flows on infrastructure design and construction.

Manage road use with seasonal closures if:

- Use is causing unacceptable damage to soil and water resources due to weather or seasonal conditions,
- Use is causing unacceptable wildlife conflicts or habitat degradation,
- Use is resulting in unsafe conditions due to weather conditions,
- The road(s) serve a seasonal public or administrative need, or
- The area accessed has a seasonal need for protection.

New trails are developed to expand recreation opportunities, ensure user safety, and disperse existing use. Trail construction is consistent with other resource objectives.

The travel management process is considered during project-level design and analysis to move toward a sustainable Forest road system.

The direction below is specific to the Rio Grande National Forest. Higher level direction for Forest infrastructure comes from Forest Service manuals and handbooks, specifically 7100, 7300, 7500, and 7700. The Built Environmental Image Guide also provides input into designing Forest Service infrastructure that is consistent with the natural environment. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Forest Highways Act, National Forest Roads and Trails Act, and Forest Development Transportation System regulations. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-INFR-1:** The transportation system is commensurate with resource management needs, public safety, emergency access, and public access to use and enjoy the Forest. Road closures occur for resource management activities that protect, maintain, and enhance habitat, soil, and water objectives, among other values. (Forestwide)

### *Guidelines*

**G-INFR-1:** To blend with natural surroundings, wherever feasible and practicable, construct or restore structures to blend with the natural surroundings. (Forestwide)

## Fire Management (FIRE)

### *Management Approaches*

The fire management section provides guidance on the management of both unplanned and prescribed wildland fires, as well as fuels treatment activities to meet various desired conditions and resource objectives. This guidance carries forward into the Forest spatial fire management plan that resides within the Wildland Fire Decision Support System. This provides the strategic objectives and management requirements for managing unplanned wildland fires.

Wildland fire management is balanced between fire suppression and use of wildfire, including both prescribed and natural ignitions, to regulate fuels and move or maintain forest ecosystems toward their desired conditions. Wildland fire management assists in achieving ecosystem sustainability including the interrelated ecological, economic, and social components.

The Forest intends to manage unplanned natural ignitions to accomplish resource objectives while maintaining the ability of the site to sustain ecosystems.

The use of appropriate and authorized tools, including but not limited to grazing, mechanical treatments, prescribed fire, or naturally occurring unplanned wildfires, to meet ecosystem needs and reduce vegetation build-up is intended to lower the risk to communities and other values from damage or loss from wildfire.

Prescribed fire is an appropriate tool to dispose of slash, return inorganic and organic chemicals to foliage and small woody debris to soils, reduce hazardous fuel loadings, and create seedbeds for natural regeneration where feasible.

Unplanned ignitions are managed for multiple objectives, including resource benefit, in fir-adapted ecosystems when conditions are favorable to achieve desired resource benefits and protect values at risk.

Suppression actions are taken to mitigate threats from unplanned ignitions to public safety, communities, and unique resource values while allowing wildfire to play a natural role in fire-dependent ecosystems.

The Forest intends to implement fire management activities to reduce impacts to important or unique values where they occur.

The direction below is specific to the Rio Grande National Forest. Higher level direction for fire management comes from Forest Service manuals and handbooks, specifically 5100 and 6700. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Wildfire Suppression Assistance Act and the National Cohesive Wildland Fire Management Strategy. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Fire Management Zones*

Two strategic fire management zones are being implemented Forestwide. The zones closely correspond to management area boundaries, though some specific direction may be needed depending on the site-specific conditions. Assessing strategic fire management zones supports decision-making prior to ignition by pre-assessing areas for wildland fire, both prescribed fire and wildfire, risks and benefits. Fire management zones include:

- Wildland fire management zone: resource restoration (WFMZ-R) and
- Wildland fire management zone: resource protection and benefit (WFMZ-PB).

### Wildland Fire Management Zone: Resource Restoration (WFMZ-R)

This zone applies to Wilderness, Recommended Wilderness, and Roadless Management Areas (MA 1, MA 1.1, and MA 3). These areas represent a lower risk to resource values from wildfire. Conditions allow natural resources to benefit from wildland fire. Management of wildfire to meet resource objectives in this zone is the least constrained. Ecological restoration is accomplished by managing wildland fire under a wide range of weather, fuel moistures, and other environmental conditions that allow fire to play a natural role in the ecosystem. The use of prescribed fire to meet specific resource objectives is appropriate in this zone. All naturally occurring unplanned wildfires in these areas are managed primarily to restore and maintain the natural role of fire in the ecosystem with a minimal emphasis on suppression. However, if a natural, unplanned wildfire ignites in an area of this zone where a community or non-natural resource value is threatened, suppression action will be taken to mitigate the threat. All wildland fires can be managed for multiple objectives. All human-caused unplanned wildfires are managed using a full suppression strategy commensurate with the values at risk.

### Wildland Fire Management Zone: Resource Protection and Benefit (WFMZ-PB)

This zone applies to all other areas of the Forest, including the General Forest and Rangeland and all Special Designation Management Areas (MAs 5, 4.1, 4.2, 4.21, 4.34, and 4.8). Current conditions may put some natural resource values at varying degrees of risk of damage from wildfire. Mechanical treatments and prescribed burning may be used to protect natural resource values before using wildfire under a wider range of weather, fuel moisture, and other environmental conditions. Wildfires that burn in this zone may benefit natural resources under certain conditions. All lightning-caused wildfire in these areas will be assessed on an individual basis for the most appropriate response based on values at risk and potential benefits to natural resources from wildfire. All human-caused unplanned wildfires are managed using a full suppression strategy commensurate with the values at risk.

#### *Desired Conditions*

**DC-FIRE-1:** Wildland fire and fuels reduction treatments are used to create vegetation conditions that reduce threats to real property and infrastructure from wildfire. Fuel loads on lands adjacent to developed areas and communities are reduced. Lands adjacent to private property and infrastructure have defensible space and dispersed patterns of fuel conditions that would favorably modify wildfire behavior and reduce the rate of spread in and around communities at risk. (Forestwide)

**DC-FIRE-2:** Unplanned natural ignitions play a natural role in ecosystem dynamics when and where there is no threat to human life or property. (Forestwide)

#### *Objectives*

Refer to *Vegetation Management* section.

#### *Standards*

**S-FIRE-1:** Human-caused ignitions will not be managed for resource benefit. (Forestwide)

**S-FIRE-2:** Fire control lines will be rehabilitated to prevent their use as trails and/or roads. (Forestwide)

## Lands (LAND)

#### *Management Approaches*

The three primary functions of the Forest lands program are land survey and boundary management, land adjustments, and special uses, for both recreation and non-recreation. Boundary management ensures that the Forest secures and protects the rights, title, values, and interests of the American public on National

Forest System lands. This includes the management of boundary lines within the Forest that border state, private, and other Federal agency lands, as well as secured rights-of-way for access to the Forest.

Land adjustments consolidate and improve management efficiency through real estate transactions including sales, purchases, exchanges, conveyances, and rights-of-way within and outside the proclaimed Forest boundary. Lands can be transferred to the Forest Service through purchase, exchange, or gifting to the Agency. Regardless of the transfer method, the Forest Service can only acquire land from willing parties that meet the criteria. The types of land the Agency prefers to acquire include:

- Lands within congressionally designated areas,
- Lands with water frontage, wetlands, and associated riparian ecosystems,
- Land with habitat for endangered or threatened species,
- Lands with unique historical or heritage resources,
- Lands primarily of value for outdoor-recreation purposes and lands needed for aesthetic protection,
- Key tracts that promote effective resource management,
- Lands that consolidate ownership and reduce miles of property lines and corners to be maintained, and
- Lands that maintain or stabilize economies of local governments.

Special uses are managed in a manner that protects natural resources, public health, and safety, and are consistent with National Forest System management plans. Special uses are administered on the basis of sound resource management objectives and business principles.

Existing and designated rights-of-way in the 1996 Land and Resource Management Plan are managed to maintain them for future construction and occupancy.

Utility corridors and transmission lines are designed to be fully developed prior to authorizing new sites. New sites may be necessary to fill coverage gaps or meet public need.

Management activities in linear corridors should be consistent with the direction for the management area the corridor passes through.

Land ownership patterns support land and resource goals and objectives, reduce future management costs, respond to community needs, protect critical resource areas, increase recreation opportunities, and improve legal access.

The authorization and administration of special uses by individuals, companies, groups, and government entities protect natural resource values and public health and safety.

The direction below is specific to the Rio Grande National Forest. Higher level direction for managing National Forest land and special uses is from Forest Service manuals and handbooks, specifically 5400. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the Land Acquisition Act and Occupancy Permits Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Standards*

**S-LAND-1:** Bury electrical utility lines of 33 kilovolts or less, and telephone lines, unless scenic integrity objectives of the area can be met using an overhead line or burial is not technically feasible. (Forestwide)

**S-LAND-2:** Do not authorize conflicting uses of activities in transportation and utility corridors. (Forestwide)

## Minerals (MIN)

### *Management Approaches*

National Forest System lands are important storehouses of domestic minerals and energy resources. The search for and production of minerals and energy resources are authorized uses of National Forest System lands, except those lands formally withdrawn from mineral activities by acts of Congress or by executive authority. Mineral activities on National Forest System lands are facilitated in compliance with the national Mining and Mineral Policy Act and are consistent with the Agency mission.

Minerals activities are administered through a plan of operations, which includes permits as well as the reclamation and mitigation measures necessary to protect resources.

The Abandoned Mine Lands program addresses past mines that are no longer active. These can pose a hazard to the public, wildlife, and the environment. The program evaluates abandoned mines across the unit and the impacts of these. Mine closures consider and assess needs related to other resources as well, such as wildlife. The program uses partners to evaluate and complete the process.

The direction below is specific to the Rio Grande National Forest. Higher level direction for mineral resources comes from Forest Service manuals and handbooks, specifically 2800. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the Minerals Leasing Act and the Mineral Materials Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

Standard operating procedures assure protection of water quality and fish habitat. The list below addresses management of recreational dredging that occurs on the Forest.

1. Limit the use of the practice to outside of critical life-stage periods in streams that have Rio Grande cutthroat trout core conservation populations.
2. The Forest geologist (or designated authority) will review the notice of intent prior to the commencement of activities.
3. Where possible, retain existing instream and riparian vegetation and other features, including but not limited to trees, bushes, shrubs, weeds, or tall grasses along streambanks, natural, large wood debris, and large boulders.
4. Operations should not change the stream channel to direct water flow into a streambank or cause bank erosion or destruction of the natural form or the stream channel.
5. Whenever practical, prevent the release of silt, sediment, sediment-laden water, or any other deleterious substances into the watercourse.
6. Keep equipment and machinery in good operating condition, power washed, and free of leaks, excess oil, and grease.
7. Locate the point of discharge to the creek immediately downstream of the worksite to minimize disturbance to downstream populations and habitats.

### *Guidelines*

**G-MIN-1:** Mining activities can be acknowledged when the activity does not cause substantial surface disturbance or unacceptable impacts to water quality or fish habitat. Aspects of operation will be

contained in the notice of intent. A plan of operations will be required for any activities above the scope of a notice of intent. (Forestwide)

## Recreation Management (REC)

### *Management Approaches*

Direction below applies to the recreation management program. The natural environment of the Forest offers settings for a wide range of high-quality recreation opportunities, including motorized and nonmotorized opportunities. The Forest provides a variety of summer and winter recreation opportunities that allow visitors to escape from urban environments and enjoy a range of experiences in a variety of rural to primitive settings. Outdoor recreation opportunities include hiking, biking, fishing, hunting, wildlife viewing, driving for pleasure, and the pursuit of spiritual values provided by the natural environment.

Relationships with partners, cooperators, and permittees are vital to the success of the recreation program, as are building, sustaining, and leveraging strategic relationships to sustain high-quality recreation settings and opportunities.

Recreation development and travel routes are consistent with the recreation opportunity spectrum class designations.

Strategically invest available resources (e.g., time, budget, expertise) to support long-term recreation program goals. Developed recreation assets ae aligned with projected facility budgets, partnership capabilities, and other re-investment strategies.

The Forest intends to encourage cooperators to be involved in stewardship activities and framework design.

Leverage recreation special use permits to accomplish recreation program goals and serve the public.

Readily available off-site and on-site information about Forest recreation opportunities is available at fee campgrounds.

When campground occupancy is less than 20 percent for at least one season, determine whether to close the campground, convert it to a dispersed site, or take other action.

Coordinate trail development with systems developed by municipalities, counties, states, other agencies, and partners to promote integration and connectivity. Consider loop trails where feasible, particularly at low elevations.

The Forest intends to consider using concessionaire operations when fees are charged at developed sites.

When use exceeds the capacity of an area for a recreation opportunity spectrum class, employ the following actions to address the impacts or effects on the recreation setting: Provide information to the public and restore the site, regulate use at the site, restrict the number of users, and finally close the site.

The direction below is specific to the Rio Grande National Forest. Higher level direction for management of recreation resources comes from Forest Service manuals and handbooks, specifically 2300. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition the direction below tiers up to higher level direction including but not limited to the National Trails System Act and The Wilderness Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-REC-1:** A variety of enduring recreation opportunities are available across a variety of settings that foster high-quality, year-round developed and dispersed experiences. Development of facilities and travel routes is consistent with the recreation opportunity spectrum class designations. Recreation facilities and programs incorporate universal design concepts and meet current Federal accessibility guidelines unless doing so fundamentally alters the setting or character of the program. (Forestwide)

**DC-REC-2:** Sites and facilities are designed to be long-lasting, require low maintenance, and incorporate "green" operations. The sites and facilities should also complement the natural setting. (Forestwide)

### *Objectives*

**OBJ-REC-1:** Develop three trail connections between strategic community areas and National Forest System trails within 15 years. (Forestwide)

### *Standards*

**S-REC-1:** Manage, rehabilitate, or close dispersed recreational use areas when:

- Use area condition reaches Frissell-Cole Class 4 or 5 (compromised natural environment), or
- User conflicts substantially disrupt user experience and/or safety and closure is the only alternative (compromised human environment)

**S-REC-2:** Do not allow campsites to be established for more than 14 consecutive days in any 30 day period. (Forestwide)

### *Guidelines*

**G-REC-1:** To reduce user conflicts and resource damage, activities and project should not be authorized if they exceed the developed, appropriate threshold for the recreation opportunity spectrum objectives shown Figure.

**Figure. Recreation opportunity spectrum capacity levels**

[Capacity range is defined as follows: **Very Low** and **Low** apply to rock, mountain grass, and clearcuts 1 to 20 years old. **Moderate** applies to mountain grass, mature and pole-sized ponderosa pine, mature aspen, and shelterwood cuts 90 to 120 years old. Selection cut 1 to 20 years old and clearcuts 80 to 120 years old. **High** applies to mature and pole-sized spruce, pole-sized aspen, and clearcuts 20 to 80 years old; **ROS**, recreation opportunity spectrum; **PAOT**, persons at one time; **M acres**, 1,000 acres.]

| ROS Class/Capacity Range | Very Low | Low | Moderate | High |
|---|---|---|---|---|
| ***Primitive*** | | | | |
| Trail (PAOT/mile) | 0.5 | 1 | 2 | 3 |
| Area-wide (PAOT/M acres) | 1 | 2 | 7 | 25 |
| ***Semiprimitive Nonmotorized*** | | | | |
| Trail (PAOT/mile) | 2 | 3 | 9 | 11 |
| Area-wide (PAOT/M acres) | 4 | 8 | 50 | 80 |
| ***Semiprimitive Motorized*** | | | | |
| Trail (PAOT/mile) | 2 | 3 | 9 | 11 |
| Area-wide (PAOT/M acres) | 4 | 8 | 10 | 40 |
| ***Roaded Natural*** | | | | |
| Trail (PAOT/mile) | 2 | 3 | 9 | 11 |

| ROS Class/Capacity Range | Very Low | Low | Moderate | High |
|---|---|---|---|---|
| Area-wide (PAOT/M acres) | 40 | 80 | 1,200 | 2,500 |
| ***Rural*** | | | | |
| Trail (PAOT/mile) | 2 | 3 | 9 | 11 |
| Area-wide (PAOT/M acres) | 500 | 800 | 5,000 | 7,500 |

## Scenery (SCNY)

### *Management Approaches*

The scenery management system provides a systematic approach for determining the relative value and importance of scenery on the Forest. Scenery management involves identifying scenic components as they relate to people, mapping these components, and assigning a value for aesthetics. Forest plan direction helps incorporate scenery as a part of ecosystems to determine trade-offs at the project level.

The Rio Grande National Forest provides a scenic backdrop and contributes to the identities of communities in and around the San Luis Valley. Managing scenic resources ensures quality sightseeing and recreation opportunities. Colorado tourism thrives on outdoor recreation and the beautiful scenery of the Rocky Mountains.

Areas with low scenic integrity are rehabilitated to gain compliance with mapped scenic integrity levels.

The Forest Service identity is retained by constructing, reinforcing, and maintaining structures and building features consistent with the principles in the Built Environment Image Guide to complement the scenic character of the natural surroundings.

Management practices are designed to produce forest composition, structure, and patterns similar to those that would have occurred under natural disturbance regimes.

The direction below is specific to the Rio Grande National Forest. Higher level direction for scenery resources comes from Forest Service manuals and handbooks, specifically 2300. Higher level direction is not repeated here but should be consulted during project-level design, preparation, and analysis. In addition, the direction below tiers up to higher level direction including but not limited to the Wilderness Act. All higher level direction that is applicable but not repeated here is contained in Appendix I.

### *Desired Conditions*

**DC-SCNY-1:** Areas of high scenic quality are provided, especially in areas seen from roads and trails, developed recreation sites, administrative sites, and towns and cities near the Forest. (Forestwide)

**DC-SCNY-2:** Vegetation treatments visually blend with existing scenic character. (Forestwide)

**DC-SCNY-3:** The transition from Forest lands to adjacent lands with similar desired conditions does not exhibit abrupt changes in scenic quality. (Forestwide)

### *Standards*

**S-SCNY-1:** Management activities are consistent with identified scenic integrity objectives. Short-term impacts, less than 5 years, inconsistent with the scenic integrity objectives may occur. Restoration activities designed to meet or exceed identified scenic integrity objectives should begin within 2 years. (Forestwide)

### *Guidelines*

**G-SCNY-1:** Design management activities to minimize impacts to valued scenic attributes and scenic character. Line, form, color, texture, size, shape, edge effect, and patterns of natural vegetation openings compliment surrounding scenic character. (Forestwide)

# Appendix B. Management Area Specific Direction

This chapter summarizes the physical, biological, social, and economic environments of the planning area and the effects of implementing each alternative on that environment.

## Management Areas (MA)

Forest management provides direction for a mix of environments across the landscape. A forest plan divides a national forest into areas with similar management emphasis and settings in much the same way that city zoning zones municipalities to permit or prohibit certain land uses.

National Forest System lands within the Forest boundary have been divided into nine management areas, each with a different emphasis that is intended to direct management activities on that particular piece of land. Management area allocations are specific to the areas across the Forest with similar management needs and desired conditions.

Management area categories are listed in Figure.

**Figure. Management areas**

| Management Area Number | Management Area Emphasis |
|---|---|
| 1 | Designated Wilderness |
| 1.1a | Recommended Wilderness |
| 3 | Roadless Areas |
| 4.1 | Special Designation: Special Interest Areas |
| 4.2 | Special Designation: Research Natural Areas |
| 4.21 | Special Designation: Scenic Byways and Railroads |
| 4.34 | Special Designation: Eligible and Suitable Wild, Scenic, and Recreational Rivers |
| 4.8 | Special Designation: Ski-based Resorts |
| 5 | General Forest and Rangeland |

### Overlapping Management Area Direction

Overlapping management direction occurs when a special feature occurs within another management area, for example, when a research natural area occurs within a wilderness boundary. The direction related to wilderness is the most restrictive and is established by Congress. A research natural area that occurs within a wilderness area boundary is bound by all of the laws, regulations, policies, and forest plan

direction that applies to wilderness as well as by direction related to the management of that individual research natural area.

For Management Area 1.1 – Designated Wilderness, any management proposed in areas where other management areas overlap would be done in compliance with wilderness direction. Overlapping management areas are described below.

Approximately 11,482 acres of Management Area 4.2 – Special Designation: Research Natural Areas occur within the boundaries of designated wilderness. Research natural areas are recommended by forest supervisors in coordination with Forest Service research station directors and are designated by the Chief of the Forest Service. These areas are used as a baseline for measuring ecological changes and as control areas for evaluation and monitoring. Research natural areas that overlap with designated wilderness include three areas in the Sangre de Cristo Mountains: the Mill Creek, Deadman Creek, and North Zapata Research Natural Areas. A portion of the Mill Creek Research Natural Area overlaps with recommended wilderness as well.

An estimated 15,575 acres of designated wilderness is also managed as Management Area 4.34 – Special Designation: Eligible and Suitable Wild, Scenic, and Recreational Rivers. These areas would be managed to enhance or maintain the outstandingly remarkable features responsible for river designation while complying with wilderness practices and restrictions. Approximately 161 acres of Management Area 4.34 overlap with Management Area 1.1a – Recommended Wilderness. Additionally, an estimated 483 acres of research natural area (Management Area 4.34) overlaps with special interest area (Management Area 4.1), and wilderness (Management Area 1). Management proposed on these acres would have to be in compliance with wilderness requirements if that area is carried forward in the analysis of wild, scenic, and recreational river direction and any direction for that specific special interest area.

Approximately 7,313 acres of overlapping management area occurs with research natural areas (Management Area 4.2) and designated eligible and suitable wild, scenic, and recreational rivers (Management Area 4.34). Management activities that might occur in these areas would need to be in compliance with all management areas.

Approximately 856 acres of recommended wilderness (Management Area 1.1a) overlap with Management Area 4.34 – Special Designation: Eligible and Suitable Wild, Scenic, and Recreational Rivers and Management Area 4.1 – Special Designation: Special Interest Areas.

An estimated 2,947 acres of recommended wilderness (Management Area 1.1a) overlap with existing special interest areas (Management Area 4.1). Any activities or management proposed in this area would have to be done in compliance with wilderness practices and meet direction for that specific special interest area.

Overlapping management areas also occur in Management Area 4.2 for research natural areas. As stated previously, the most restrictive management direction would apply when working in areas with overlapping direction. When this occurs, the most restrictive level of management would be the most constraining.

Research natural areas also overlap with the acres designated as Colorado roadless areas. The 5,018 acres overlap with roadless areas in the Finger Mesa Research Natural Area on the Divide Ranger District. If management were to occur on these acres, it would have to be compliant with both the direction for the research natural area and the roadless designation. Estimated acreage of management areas is listed in Figure.

**Figure. Estimated acreage of management areas**

| Management Area Number | Management Area Emphasis | Estimated Acres |
|---|---|---|
| 1 | Designated Wilderness | 392,138 |
| 1.1a | Recommended Wilderness | 40,052 |
| 3 | Roadless Areas | 519,798 |
| 4.1 | Designated Area: Special Interest Areas | 26,939 |
| 4.2 | Designated Area: Research Natural Areas | 23,861 |
| 4.21 | Designated Area: Scenic Byways and Railroads | 27,501 |
| 4.34 | Designated Area: Eligible and Suitable Wild, Scenic and Recreational Rivers | 35,869 |
| 4.8 | Designated Area: Ski-based Resorts | 1,632 |
| 5 | General Forest and Rangelands | 837,269 |

## Management Area 1 – Wilderness

### *Desired Conditions (MA 1)*

Wilderness is designated by Congress and managed in accordance with the Wilderness Act of 1964. Management in these areas protects and perpetuates natural ecological processes and conditions. Natural ecological conditions in designated wilderness are not measurably affected by human use. Management of these area protects the overall wilderness character as described in the Wilderness Act (1964). Approximately 23 percent of the Forest, 430,000 acres, is designated as wilderness. The La Garita Wilderness Area, the Sangre de Cristo Wilderness Area, the South San Juan Wilderness Area, and the Weminuche Wilderness Area all occur on the Rio Grande National Forest. All of these areas are jointly managed with each area having a lead forest identified. Each of the four areas has a specific wilderness plan that directs and guides on-the-ground management.

Natural succession, influenced by natural processes and disturbances, occurs in all vegetation types. Structure, composition, function, and spatial distribution of vegetative types are the result of natural succession. Where no natural disturbance has occurred, vegetation is mostly in late-successional stages.

Age and structure classes may vary where natural disturbance agents, such as fire or insects, have influenced the succession process. Plant species are native and indigenous to the immediate area. Populations of nonnative invasive plant species are limited, and ongoing management activities control existing populations and eradicate new species before they can become established. Forage for wildlife, permitted livestock, and packstock is available in meadows and natural openings. Forage availability may be limited due to topography and short growing seasons. Human influences on vegetation is minimal. Timber harvest is prohibited and this area is not included in the suitable timber base.

Wildlife species are buffered from human influences. No nonnative animal species are introduced. Human influence on aquatic life and riparian areas and processes is minimal in most areas. The composition, structure, and function of aquatic ecosystems are minimally disturbed by human influence. Stocking is used as a tool to enhance threatened, endangered, and candidate species and to enhance recreational opportunities. Water impoundments, ditches, and diversions may be present in designated wilderness areas.

Designated wilderness areas favor solitude; users are expected to be familiar with and use primitive skills in an environment that offers a high degree of risk and challenge. Success or failure is directly dependent on the ability, knowledge, and initiative of the visitor. Contact with other users or Forest Service

personnel decreases with increasing distance from the entry portals. Near the entry portals, users may have contact with larger groups. Commercial permitting for day-use activities is allowed in high-use areas. Evidence of established campsites and base camps may be present. An element of discovery is maintained. The presence of interpretive signs, markers, and posts decreases with increasing distance from the entry portals, though cairns may be present. Near the entry portals, trails are marked at intersections to indicate routes. Evidence of cultural and historic sites may be present, and these sites may be signed and interpreted near entry points. Structures or facilities may be present but only as necessary for resource protection when less obtrusive measures were not successful in the past. Human influence on physical features, such as soil and geologic materials, is minimal. Outfitter-guide recreation special uses support identified public needs and provide service to the extent necessary for realizing the recreational or wilderness purpose.

Trails are the primary mode of travel from the entry portals. Trail systems favor user safety and comfort. Bridges may be present when needed for resource protection or user safety. The presence of constructed trails decreases with increasing distance from entry portals, and travel deep within wilderness is primarily cross-country with no established trails. User-created trails may exist but are not maintained or designated on maps or trail guides. Trails support wilderness experiences and preserve wilderness characteristics.

Livestock grazing is authorized and present.

Evidence of past mining activity may be present but is rare. Designated wilderness areas are withdrawn from locatable mineral entry and are legally unavailable for oil and gas leasing.

Visibility is generally unimpaired. Smoke from wildfires may be visible. The scenic integrity ranges from very high to high, and the recreation opportunity spectrum class ranges from primitive to semiprimitive nonmotorized.

Forestwide desired conditions applicable to wilderness are also contained in Chapter 2.

## Management Specific Management Approaches (MA 1)

Existing trails are primitive and maintained to minimize resource damage. The following actions will be taken as needed:

- Reduce evidence of trails
- Eliminate duplicate routes
- Remove trails from maps where repeated travel over the same route is to be discouraged.

Restrict signs to trail intersections. Limit bridges and other reminders of management control to those needed for resource protection.

Build bridges for user safety, not for user convenience, using native materials.

Signage and other infrastructure is minimal and constructed of rustic, native, or natural-appearing materials.

Manage eligible and listed historic structures to be compatible with the wilderness setting.

Maintain campsites in Frissell-Cole Class 2 or 3.

Fish stocking emphasizes a wild fishery, where species perpetuate themselves over time and are affected primarily by the forces of nature. Some high mountain lakes may be stocked to support indigenous

threatened, endangered, and proposed species as well as species of conservation concern. Species of fish that are not indigenous to the area or that are exotic will not be stocked.

Rockhounding activity must not exceed 50 pounds per person per day or interfere with existing rights, and specimens may only be collected for personal, noncommercial uses.

Prohibit pets from harassing wildlife or people. Voice control or physical restraints are acceptable.

Consider the following to minimize human impacts in wilderness:

- Limit the number of private outfitter-guide camps
- Encourage the use of self-contained stoves or prohibit campfires
- Implement a permit system
- Implement party-size and pack-animal limitations
- Prohibit dogs or implement an on-leash requirement.

Where appropriate, post printed wilderness information at trailheads outside of the wilderness boundary.

Use a Minimum Requirements Decision Guide, or current tool, when considering any action that involves motorized, or mechanized use, or both in wilderness.

Restoration activities (e.g., prescribed fire, active weed management) may be used in recommended wilderness areas to protect or enhance the wilderness characteristics.

Significant historic structures can be considered as having cultural values and, when present, may be eligible for protection or restoration.

## Management Area Specific Standards (MA 1)

**S-MA 1-1:** Protect and preserve wilderness values and character in congressionally designated wilderness, as well as in areas recommended for wilderness designation.

**S-MA 1-2:** Activities authorized by special use permit within wilderness:

- Will involve minimal physical, visual, and noise disturbance
- Will not result in permanent structures
- May exceed the group size limitation when the activity:
  - Will benefit the wilderness character
  - Is necessary for public health and human safety.

**S-MA 1-3:** Group size may not exceed more than 15 people per group, with a maximum combination of people and stock not to exceed 25.

**S-MA 1-4:** Unless justified by terrain, prohibit recreational livestock within 100 feet of lakes and streams.

## Management Area Specific Guidelines (MA 1)

**G-MA 1-1:** Pristine management areas of a wilderness should not be changed to a lesser standard of naturalness in order to disperse recreation use from other parts of the wilderness.

## Management Area Specific Land Suitability (MA 1)

**SUIT-MA 1-1:** Designated wilderness areas are suitable for removal of salable mineral material including but not limited to sand, stone, and gravel.

**SUIT-MA 1-2:** Wilderness areas are not suitable for timber production or timber harvest.

**SUIT-MA 1-3:** Wilderness areas are not suitable for commercial use of non-timber forest products, including but not limited to firewood, posts, and boughs.

**SUIT-MA 1-3:** Grazing is an authorized activity.

## Management Area 1.1a - Recommended Wilderness

These are areas that are recommended future inclusion in the National Wilderness Preservation System. The Forest Service only recommends these lands. Decisions to designate these as wilderness is made by the U.S. Congress. Congress, and ultimately the President, must establish legislation, through a wilderness bill, to officially designate a wilderness area.

The specific areas being recommended include an estimated 40,052 acres located in the Sangre de Cristo range.

## Management Area Specific Desired Conditions

Recommended wilderness areas preserve opportunities for inclusion in the National Wilderness Preservation System. The Forest maintains and protects the ecological and social characteristics that provide the basis for wilderness recommendations.

These areas are characterized by a natural environment where ecological process such as natural succession, wildfire, avalanches, insects, and disease function with limited human interaction.

## Management Area Specific Standards

**S-MA 1.1a-1:** Commercial communication sites shall be located outside of recommended wilderness areas.

## Management Area Specific Guidelines

**G-MA 1.1a-1:** To maintain and protect wilderness characteristics, communications sites for public safety that are managed by other agencies should be located outside of recommended wilderness area unless no other alternative is available. Communications sites that need to be located in recommended wilderness should blend with the environment and be located away from system trails and developed use sites.

**G-MA 1.1a-2:** To maintain and protect wilderness characteristics, new developed recreation facilities with provisions for user comfort, such as picnic tables, fire grills, and vault toilets, should not be installed.

## Management Area Specific Land Suitability Determinations

**SUIT-MA 1.1a-1:** Recommended wilderness areas are not suitable for timber production; timber harvest is not allowed.

**SUIT-MA 1.1a-2:** Recommended wilderness areas are suitable for restoration activities where the outcomes will protect the wilderness characteristics of the area, as long as the ecological and social characteristics that provide the basis for wilderness recommendation are maintained and protected.

**SUIT-MA 1.1a-3:** Recommended wilderness is not suitable for road construction or reconstruction.

**SUIT-MA 1.1a-4:** Recommended wilderness areas are not suitable for removal of salable mineral materials, including but not limited to sand, gravel, and stone.

**SUIT-MA 1.1a-5:** Mechanized transport and motorized use are not suitable in recommended wilderness.

## Management Area 3 – Colorado Roadless Areas

Roadless areas emphasize protection of roadless area values and characteristics. The Colorado Roadless Rule was enacted on July 3, 2012. The Colorado Roadless Rule provided management direction to conserve 4.2 million acres of National Forest System lands statewide for roadless values, including approximately 519,798 acres in 53 areas of the Forest.

The Colorado Roadless Rule is being wholly incorporated into forest plan direction. The areas designated in the Colorado Roadless Rule are contained in Figure.

**Figure. Roadless areas in the Forest established by the 2012 Colorado Roadless Rule**

| Roadless Area Name | Includes Upper Tier Acres | Roadless Area Name | Includes Upper Tier Acres |
|---|---|---|---|
| Alamosa River | Yes | Lake Fork | Yes |
| Antora Meadows–Bear Creek | Yes | Lower East Bellows | Yes |
| Beartown | Yes | Middle Alder | Yes |
| Beaver Mountain | Yes | Miller Creek | No |
| Bennett Mountain–Blowout–Willow Creek–Lion Point–Greenie Mountain | Yes | Pole Creek | No |
| Big Buck–Kitty–Ruby | Yes | Pole Mountain–Finger Mesa | Yes |
| Box-Road Canyon | Yes | Red Mountain | Yes |
| Bristol Head | Yes | Ruby Lake | Yes |
| Butterfly | No | Sawlog | Yes |
| Chama Basin | Yes | Sheep Mountain | Yes |
| Conejos River–Lake Fork | No | Silver Lakes–Stunner | Yes |
| Copper Mountain–Sulphur | Yes | Snowshoe Mountain | Yes |
| Cotton Creek | No | Spectacle Lake | No |
| Crestone | No | Spruce Hole–Sheep Creek | Yes |
| Cumbres | Yes | Stunner Pass–Dolores Canyon | Yes |
| Deep Creek–Boot Mountain | Yes | Sulphur Tunnel | No |
| Dorsey Creek | Yes | Summit Peak–Elwood Pass | Yes |
| Elkhorn Peak | Yes | Taylor Canyon | Yes |
| Fourmile Creek | Yes | Tewksberry | Yes |
| Fox Creek | Yes | Tobacco Lakes | Yes |
| Fox Mountain | Yes | Trout Mountain–Elk Mountain | Yes |
| Gibbs Creek | No | Ute Pass | Yes |
| Gold Creek–Cascade Creek | Yes | Wason Park | Yes |
| Hot Springs | No | Wightman Fork–Upper Burro | Yes |
| Indiana Ridge | Yes | Wightman Fork–Lookout | Yes |

| Roadless Area Name | Includes Upper Tier Acres | Roadless Area Name | Includes Upper Tier Acres |
|---|---|---|---|
| Kitty Creek | No | Willow Mountain | Yes |
| La Garita | Yes | | |

The intent stated in the Colorado Roadless Rule "is to protect roadless values by restricting tree cutting, sale, and removal; road construction and reconstruction; and linear construction zones within Colorado Roadless Areas, with narrowly focused exceptions." (Federal Register, vol. 77, no. 128, Tuesday July 3, 2012, pp. 39602-39612). Colorado roadless areas and upper tier acres areas are both included in Management Area 3 – Roadless. A detailed description of this management area and the accompanying direction is also contained in the 2012 Colorado Roadless Rule (36 CFR Part 294). Motorized and mechanized use can occur in these areas.

### *Desired Conditions*

Colorado roadless areas and upper tier acres are generally undeveloped parts of the Forest that provide a variety of settings at different elevations. They are managed to protect roadless characteristics and to maintain plant and animal habitats that are shaped primarily through natural processes. These areas provide backcountry recreational experiences to the public in areas with less evidence of human activities.

Landscapes in these areas are predominantly natural appearing and relatively undisturbed by humans. Natural processes within the context of the range of natural variability (insects, disease, and fire) are generally allowed to occur with minimal human intervention.

Limited amounts of vegetation manipulation may occur in upper tier acres areas. Trees may be cut, sold, and removed when incidental to implementation of another authorized management activity or when needed for personal or administrative use.

The probability of experiencing solitude in these areas is high. Frequent opportunities for challenge and risk require a degree of self-reliance. Facilities are minimal and exist primarily for site protection. Recreational improvements, such as signs, may be present. Trailheads offer information and directional signage.

Trails provide a wide range of challenging recreational opportunities including horseback riding, mountain bike riding, and motorized travel on designated routes. Cross country (off trail) motorized travel is limited to over-the-snow use unless otherwise prohibited. Hunting and fishing opportunities are available for those seeking a more remote experience.

The number of miles of motorized and nonmotorized travel will not substantially change over the planning period. Activities meet the assigned recreation opportunity spectrum class and scenic integrity objectives.

### *Management Area Specific Standards*

**S-MA3-1:** The Colorado Roadless Rule direction at 36 CFR 294 Subpart D will be adhered to.

### *Management Area Land Suitability*

**SUIT-MA3-1:** Mechanized and motorized use is authorized on roads and designated trails.

**SUIT-MA3-2:** Cross country over-the-snow use is authorized.

**SUIT-MA3-3:** This area is not part of the suitable timber base.

**SUIT-MA3-4:** Incidental timber harvest may occur when associated with another authorized management activity. Personal or administrative use is permitted.

## Management Area 4

Management Area 4 emphasizes recreation and scenery. The five divisions represent areas that are designated for specific reasons that can include research; unique special areas; scenery; wild, scenic, and recreational rivers; and ski resorts.

Features in these areas are often interpreted to increase the public's knowledge of the areas and the features found there as well as to connect people with the land and the natural environment.

Some areas are included in the suitable timber base and are available for commercial timber harvest.

## Management Area 4.1 – Special Designation – Special Interest Areas

### *Desired Conditions*

Special interest areas favor the protection or enhancement of unique characteristics that occur across the Forest. Special interest areas typically contain unique botanical, geologic, historical, scenic, or cultural areas and values. Education and interpretation of the characteristics for which the area was designated are encouraged and are accomplished in conjunction with partners, private citizens, tribes, and other agencies.

### *Management Area Specific Management Approaches*

Facilities are designed to meet management objectives.

Vegetation treatment may be used to maintain or enhance special or unique values of the area.

Special use permits are appropriate for scientific or educational activities that are compatible with the values for which the area was created.

Management plans are prepared to explain and protect the values for which the area was created.

### *Management Area Specific Guidelines*

**G-MA4.1-1:** Activities should meet the assigned recreation opportunity spectrum class and scenic integrity objectives.

### *Management Area Specific Land Suitability*

**SUIT-MA4.1-1:** Grazing is an appropriate and authorized use unless it is in conflict with the values for which that area was created.

**SUIT-MA4.1-2:** These areas may be suitable for timber harvest.

## Management Area 4.2 – Special Designation – Research Natural Areas

### *Desired Conditions*

Research natural areas preserve representative areas with important forest, shrubland, grassland, alpine, aquatic, geologic, or other natural environments. They may have special or unique characteristics, or scientific importance. The management emphasis of these areas focuses on protecting or enhancing unique or exemplary ecosystems designated for non-manipulative research, monitoring, and education.

Research natural areas contribute to the preservation and maintenance of key elements of biological diversity at the genetic, species, population, community, and landscape levels. These areas are intended as baseline areas for measuring ecological changes, and as control areas for evaluation and monitoring.

### *Management Area Specific Management Approaches*

Low-impact uses such as camping, fishing, horseback riding, and hunting can occur unless otherwise restricted. Increases in recreation use that would threaten or interfere with the objectives or purposes for which the research natural area was established should be restricted.

Trails created prior to establishing the area can continue to be used for recreation and scientific research or educational access, unless values for establishment of the area are threatened. No new trail construction should occur unless needed to correct resource damage from existing trails.

Outbreaks of native insects and diseases should proceed without intervention, unless they are a substantial threat to important resources outside of the research natural areas. Use control methods for insect and disease outbreaks that minimize disturbance.

Habitat manipulation for the protection of threatened, endangered, and proposed species, or where it is necessary to perpetuate or restore natural conditions, may occur.

Special uses that do not conflict with the values for which the research natural area was established may continue. Proposals for non-manipulative research should be approved by the station director and the district ranger before implementation.

Comprehensive management plans should be developed in coordination with Forest Service Research.

Where feasible, undesirable nonnative plant and animal species should be managed.

### *Management Area Specific Standards*

**S-MA4.2-1:** Prohibit motorized and mechanized use, except when necessary for research or educational access.

### *Management Area Specific Guidelines*

**G-MA4.2-1:** Activities should meet the assigned recreation opportunity spectrum class and scenic integrity objectives.

### *Management Area Specific Land Suitability*

**SUIT-MA4.2-1:** Livestock grazing is present when it is not in direct conflict with the resource values that prompted establishment of the area.

**SUIT-MA4.2-2:** Commercial timber harvest is prohibited.

## Management Area 4.21 – Special Designation – Scenic Byways and Scenic Railroads

### *Desired Conditions*

These areas are managed to protect or preserve the scenic and recreation values and uses in designated scenic byways and scenic railroad corridors while concurrently managing the multiple-use values of the landscape. This management prescription applies to the Silver Thread and Los Caminos Antiguos Scenic Byways, and the Cumbres and Toltec Scenic Railroad and National Historic Landmark.

Multiple-use management activities such as commercial timber harvest, wildlife management, recreation activities, and mineral extraction are present but not dominant on the landscape. Features may be interpreted for the public. Facilities may be developed to enhance opportunities for viewing scenery and wildlife. Activities and interactions are managed to maintain the scenic beauty for which the area is designated.

Opportunities for solitude are limited. Visitors can expect frequent contact with other visitors. Roads, recreation facilities, range improvements, and other developments are evident but are managed to be in harmony with the natural environment. Recreation facilities could include scenic overlooks, interpretive signs, and rest areas as appropriate. Developed campgrounds are situated off the main travelway. Trailheads are easily accessible, but also are situated off the main travelway.

Road systems are well signed and roads are generally passable by a passenger car. This area has access for motorized recreation activities off of the main travelways. Nonmotorized activities such as biking and horseback riding are focused on the available trails and roads.

Activities meet the assigned recreation opportunity spectrum classes and scenic integrity objectives.

### *Management Area Specific Management Approaches*

Vegetation management maintains or enhances viewing opportunities.

### *Management Area Specific Management Approaches*

**SUIT-MA4.21-1:** This is part of the suitable timber base.

**SUIT-MA4.21-2:** Grazing is an authorized use unless otherwise restricted.

## Management Area 4.34 – Special Designation – Eligible and Suitable Wild, Scenic, and Recreational Rivers

### *Desired Conditions*

Congress created the National Wild and Scenic Rivers System in 1968 (Public Law 90-542) to preserve selected rivers that have outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Wild and Scenic Rivers Act seeks to protect these rivers while at the same time acknowledging the benefits and necessity of appropriate developments within the river corridor. Appendix B has a detailed description of the application of the Wild and Scenic Rivers Act to the Forest.

No river segments have been designated under the Wild and Scenic Rivers Act. The eligible and suitable river segments listed in Figure, with the exception of Deadman Creek, were in the 1996 forest plan. The outstandingly remarkable values identified in the 1996 forest plan remain applicable today. Segments of Medano and Little Medano Creeks have been removed from the inventory of eligible streams because they are now administered by the National Park Service (Great Sand Dunes National Park and Preserve Act of 2000).

Management areas for eligible and suitable wild, scenic, and recreational river segments extend a minimum of one-quarter mile on either side of the mean high water mark, but may be larger to protect identified outstandingly remarkable values.

Activities meet the assigned recreation opportunity spectrum class and scenic integrity objectives.

Forest Service Handbook 1909.12, 2015-1, Chapter 80 prescribed the following desired conditions for all eligible or suitable river segments:

- The outstandingly remarkable values that were identified for each eligible or suitable river segment are preserved or enhanced until the river segment is designated or released from consideration.
- The current free-flowing nature of all eligible or suitable river segments is preserved or enhanced until the river segment is designated or released from consideration.
- The water quality of all eligible or suitable river segments is preserved or enhanced until the river segment is designated or released from consideration.
- On all eligible or suitable river segments, the conditions that lead to classification as wild, scenic, or recreational are preserved or enhanced such that no segments are changed from wild to scenic or recreational, or from scenic to recreational.

**Figure. Eligible and suitable river segments for inclusion in the National Wild and Scenic Rivers System**

| Stream or River Name | Length (miles)[1] | Acres | Status | Outstandingly Remarkable Values | Classification |
|---|---|---|---|---|---|
| Archuleta Creek | 5.69 | 1,889 | Eligible | Scenic, Recreational | Scenic |
| Deadman Creek | 3.26 | 1,087 | Eligible | Scenic, Recreational, Historic, Biological | Scenic |
| East Fork Rio Chama | 3.18 | 1,078 | Eligible | Scenic, Recreational | Scenic |
| Hansen Creek | 6.72 | 2,067 | Eligible | Scenic, Recreational | Wild |
| Lower Rio de los Pinos | 4.50 | 1,364 | Eligible | Scenic, Recreational, Historic | Scenic |
| Lower Rio Grande | 4.42 | 1,081 | Eligible | Scenic, Recreational, Historic | Recreational |
| Rio Grande (Box Canyon) | 8.73 | 2,720 | Eligible | Scenic, Recreational, Historic | Scenic |
| Saguache Creek | 8.40 | 2,478 | Eligible | Scenic, Historic, Cultural | Wild |
| Toltec Creek | 2.88 | 525 | Eligible | Scenic, Recreational, Historic | Wild |
| West Bellows Creek | 6.31 | 2,065 | Eligible | Scenic, Recreational, Geologic | Scenic |
| West Fork Rio Chama | 4.81 | 1,239 | Eligible | Scenic, Recreational | Scenic |
| ***South Fork Rio Grande*** | | | | | |
| South Fork Rio Grande (above Big Meadows Reservoir) | 5.19 | 1,633 | Eligible | Scenic, Recreational, Historic | Scenic |
| South Fork Rio Grande (below Big Meadows Reservoir) | 11.98 | 3,016 | Eligible | Scenic, Recreational, Historic | Recreational |
| **South Fork Rio Grande Total** | **17.17** | **4,649** | NA | NA | NA |
| ***Conejos River*** | | | | | |
| El Rito Azul | 3.80 | 1,168 | Suitable | Scenic, Recreational, Wildlife | Wild |
| North Fork Conejos River | 3.93 | 1,208 | Suitable | Scenic, Recreational, Wildlife | Wild |
| Middle Fork Conejos River | 4.59 | 1,411 | Suitable | Scenic, Recreational, Wildlife | Wild |
| Conejos River (Three Forks to Platoro Reservoir) | 3.33 | 1,023 | Suitable | Scenic, Recreational, Wildlife | Wild |
| South Fork of the Conejos River | 12.76 | 3,985 | Suitable | Scenic, Recreational, Wildlife | Wild |
| Conejos River below Platoro Reservoir | 12.54 | 3,539 | Suitable | Scenic, Recreational, Wildlife | Recreational |
| **Conejos River Total** | **40.95** | **12,334** | NA | NA | NA |
| **Wild Rivers Subtotal** | **46.41** | **13,865** | NA | NA | NA |

| Stream or River Name | Length (miles)[1] | Acres | Status | Outstandingly Remarkable Values | Classification |
|---|---|---|---|---|---|
| **Scenic Rivers Subtotal** | **41.67** | **13,075** | NA | NA | NA |
| **Recreational River Subtotal** | **28.94** | **7,636** | NA | NA | NA |
| **Rio Grande National Forest Total** | **117.02** | **34,576** | NA | NA | NA |

[1] Length, in miles, of the reaches has been updated from the 1996 forest plan to reflect the best available information; changes do not reflect alterations to the eligible or suitable river segments.

### *Management Area Specific Management Approaches*

A suitability analysis should be initiated when a proposed action threatens the free flowing nature, outstandingly remarkable values, water quality, or scenic classification of an eligible or suitable river segment.

The Forest intends to engage the local community on the status of eligible or suitable wild, scenic, and recreational river segments and include information on currently decreed federal reserved water rights in Colorado Water Division 3 (81CW183).

### *Management Area Specific Standards*

**S-MA4.34-1:** Management actions preserve the classification, outstandingly remarkable values, and water quality of eligible and suitable river segments.

**S-MA4.34-2:** Consistent with existing water rights decrees in Colorado Water Division 3 (81CW183), the free-flowing nature of eligible and suitable river segments shall be preserved.

**S-MA4.34-3:** For eligible and suitable river segments, the width of the management area may vary to protect outstanding values, but will extend at least one-quarter mile on either side of the river segment.

### *Management Area Specific Guidelines*

**G-MA4.34-1:** Management actions within the river corridors of eligible and suitable river segments shall be consistent with management direction contained in FSH 1909.12, Chapter 80, Section 84, or current direction.

**G-MA4.34-2:** For eligible or suitable wild river segments:

- The recreation opportunity spectrum class is primitive
- The scenic integrity objective is very high.

**G-MA4.34-3:** For eligible or suitable scenic river segments:

- The recreation opportunity spectrum class is semiprimitive motorized
- Activities will meet the adopted scenic integrity objective.

**G-MA4.34-4:** For eligible or suitable recreational river segments:

- The recreation opportunity spectrum class is semiprimitive motorized
- Activities will meet the adopted scenic integrity objective.

### *Management Area Specific Land Suitability*

**SUIT-MA4.34-1:** This is not part of the suitable timber base.

## Management Area 4.8 – Ski-based Resorts

### *Desired Conditions*

These areas are managed for their existing or potential use as ski-based resort sites. Wolf Creek Ski Area is the only resort permitted on the Forest. This is an area of concentrated use where visitors can expect a high degree of interaction and many facilities associated with the ski resort industry.

Protection of recreation resources and public safety, including management of insects and disease, is the primary focus. Project implementation in this area maintains the possibility of winter sports recreation. Resource management activities are designed and implemented to maintain or enhance existing resources.

Development in the area will be consistent with the terms and conditions of the special use permit, including submission of a master development plan. These lands are withdrawn from locatable mineral entry.

Facilities are designed and constructed to blend with the natural area. Line and form, indicating past activities, and geometric shapes associated with ski-trail and lift development should be “softened” as opportunities becomes available.

Activities meet the assigned recreation opportunity spectrum classes and scenic integrity objectives.

### *Management Area Specific Management Approaches*

Vegetation management is included in resort management plans.

### *Management Area Specific Land Suitability*

**SUIT-MA4.8-1:** Grazing is authorized on a limited basis with the agreement and cooperation of the permit holder.

**SUIT-MA4.8-2:** This is part of the suitable timber base.

## Management Area 5 – General Forest and Rangelands

This management area combines several management areas designated in the 1996 forest plan into one large area. A variety of management activities is present, including livestock grazing, management of wildlife habitat, developed and dispersed recreation, exploration and development of minerals and energy resources, and timber harvest. Characterized by forest and grassland communities, this area is managed with a multiple-use emphasis to achieve a variety of goals.

### *Desired Conditions*

Management goals are met using a full range of silvicultural options. Harvest rotation periods vary depending on species, site, conditions, and management objectives. Timber management activities focus on a variety of management objectives, including but not limited to timber production, habitat management, restoration and maintenance, and management to meet stated recreation objectives, maintain vegetation cover for wildlife, and protect soil stability. All successional stages are represented. Natural landscape diversity is perpetuated including composition, structure, and function, and includes consideration within a spatial context—for example: what species, what kind of stand structure, and what kind of landscape patterns are natural, by ecosystem. Habitat of sufficient quality for wildlife dispersion exists between undeveloped areas of the Forest.

A full range of activities is present with an emphasis on the production of commercial wood products. These areas have a high potential for timber growth, and operations focus on wood production. Suitable

forested areas are maintained with commercially valuable species at ages, densities, and sizes that allow growth rates and stand conditions that are conducive to providing a sustained yield of forest products.

Landscape diversity is similar to natural conditions (composition, structure, and function) and includes consideration within a spatial context—for example: what species, what kind of stand structure, and what kind of landscape patterns are natural, by ecosystem. All succession stages are represented, including old forest. Mature stands are identified for old-forest characteristics (See Appendix A).

Rangelands are composed of grassland ecosystems that maintain and improve desired vegetation conditions for livestock, wildlife, and recreational stock. These areas are characterized by a mix of grassland and forested ecosystems that features open meadows and other grasslands, intermixed with stands of aspens and conifers.

Forested cover is interspersed with grassland areas and managed so that quality forage is readily available, depending upon site-specific conditions. Cover types on winter range areas frequently consist of lower-elevation pinyon-juniper communities, ponderosa pine, and warm-dry ecosystem types that may include Douglas fir, white fir, and aspen. Various shrub species such as mountain mahogany, sagebrush, rabbit-brush, gooseberry, and bitterbrush are interspersed with low-elevation grasses including fescues, squirrel tail, oat-grass, and needle and thread grass. Water sources provide water for both wildlife and livestock where it is a limiting factor on the landscape.

Plant communities occur in a variety of successional stages to provide biological diversity of both plant and animal species. A variety of tools and methods is applied, including but not limited to timber harvest, prescribed burning, and planting.

Watersheds, scenic resources, and wildlife habitat are restored in locations where past management actions have reduced resource effectiveness.

This area has a well-developed transportation system that provides access for recreation opportunities and management. The area has numerous open roads that offer commercial access and roaded recreation opportunities, while roads with restricted access offer nonmotorized recreation opportunities.

Access may be limited in some areas during the winter to reduce disturbance to wildlife. Vegetation management that occurs during the winter will have authorized access as needed. Access during other seasons is based on travel management objectives.

Prescribed road densities of 1 mile per square mile provide for critical wildlife needs, in areas used for winter concentration, critical winter range, calving areas, and transition habitat.

Where feasible, mutual population objectives are established with Colorado Department of Parks and Wildlife to provide maximum recreation opportunities while minimizing habitat and resource conflicts. Existing and potential partnerships strive to improve or enhance habitat and species numbers.

Recreation opportunities and human disturbance are balanced to allow game species to effectively use resources while conserving energy reserves. Disturbance from motorized and mechanized activities is limited during the primary winter use period, generally from December 1 through March 31, or as needed. Winter weather increases secure habitat by limiting access; however, seasonal road closures or area closures are also used to attain the desired conditions.

Viewing areas provide interpretation of the resources and management.

Quality habitat provided for wildlife dispersion exists between undeveloped areas of the Forest.

Livestock grazing is present. Grazing systems are managed to provide quality forage for use by both big game species and livestock.

Appropriate settings are offered that are suitable for a broad range of recreation opportunities. Dispersed and developed recreation areas are designated mostly along road corridors where opportunities for developed and undeveloped recreation can be managed as an integrated resource. These popular areas generally have access to water features or other natural attractions and offer a more social recreation experience with frequent visitor contacts.

Insects and disease are managed to maintain the recreation resource.

Summer homes, resorts, and organizational camps are present and managed to provide unique recreation opportunities. Developed recreation sites and facilities, such as campgrounds and picnic sites, are maintained and updated to meet customer needs. Management actions in dispersed sites maintain the natural characteristics that make the area popular.

Forest visitors to these areas can expect to experience active forest management including timber harvest, livestock grazing, established infrastructure, and improvements. In timber harvest areas, stumps, logging slash, skid trails, and soil disturbance will be evident.

Activities meet the assigned recreation opportunity spectrum classes and scenic integrity objectives.

Opportunities exist for exploration and development of mineral and energy resources.

Recreation facilities are improved on the basis of user demand. Users can expect to have a more social experience.

### *Management Area Specific Management Approaches*

Coordinate domestic livestock grazing with vegetation management activities to ensure adequate regeneration of vegetation and prevent impacts on range improvements and natural barriers.

Authorize retrieval of game using off-road vehicles from 12 p.m. to 5 p.m. daily when conditions would not provide damage to resources including soils and vegetation.

Reduce fire hazard by treating fuels consistently with other resource uses and needs.

Avoid or mitigate impacts to winter range in the operating and reclamation plan for locatable minerals. Avoid placing new roads in locations with important forage and cover.

Manage forage and cover across the landscape to sustain ungulate populations and support population objectives.

Design and manage livestock grazing strategies to provide the forage quantity and quality needed to sustain desired ungulate populations during the winter period.

Grazing is only suitable in one research natural area, specifically Hot Creek Research Natural Area. Motorized and mechanized travel is only suitable on designated routes.

Communication sites and renewable energy development are also subject to project-specific environmental review. Over-snow motorized travel is suitable in only three special interest areas, specifically the Bachelor Loop, Elephant Rocks, and Wagon Wheel Gap Experimental Station, and may be subject to timing restrictions to protect deer and elk winter range.

Vegetation treatments in developed recreation areas maintain or enhance recreation opportunities or contribute to visitor safety.

Consider user conflicts when scheduling vegetation manipulation projects.

Treat fuels resulting from vegetation manipulation projects commensurate with the risk of human-caused ignition.

Harden or enforce additional restrictions on high-use dispersed sites to protect sensitive natural resources.

### *Management Area Specific Standards*

**S-MA5-1:** Do not allow off-road travel on big game winter range areas, including over-the-snow vehicles, during the primary use seasons for big game (December 1 – March 31). Exceptions may be allowed under contract or special use authorizations.

### *Management Area Specific Land Suitability*

**SUIT-MA5-1:** Off-road travel is not allowed on big game winter range during big game primary use seasons. Exceptions made be made for permittees or contractual obligations.
**SUIT-MA5-2:** This is part of the suitable timber base.

**SUIT-MA5-3:** Grazing is an authorized use.

# Appendix C. Southern Rockies Lynx Amendment

(see attachment, will be added as PDF)