

Rio Grande National Forest – Assessment 8 Multiple Uses



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Range Assessment

Introduction

In this assessment, we (the USDA Forest Service Rio Grande National Forest) consider multiple uses related to range, and follow direction outlined in FSH 1909.12 Land Management Planning Handbook, Chapter 10 – The Assessment; Section 13.32 – Assessing Multiple Uses for range resources.

Rangelands are defined as 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 increases. 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 current Forest Plan projects a capacity for livestock grazing at 143,000 head months, including cattle and sheep. About 581,000 acres of land are considered capable and suitable for domestic livestock grazing on the Rio Grande National Forest.

Livestock-based agriculture is historically and culturally important in the San Luis Valley and Southwest Colorado. Agriculture, particularly farming and ranching, continues to be an important industry. While the range allotments on the Rio Grande National 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.

Information Sources

- Corporate databases including Natural Resource Management (NRM) and Forest Service Activity Tracking System (FACTS) contain allotment and grazing permit details, including permit holder information, number of permitted livestock, range improvements, vegetation, and other pertinent information. Allotment specific information is also contained in historical allotment folders. This information is combined with permit holder and agency staff knowledge to guide annual grazing activities through annual operating instructions, and long term implementation through allotment management plans.
- Public meetings in Alamosa, Crestone and South Fork in spring 2015
- Cohosted meetings with San Luis Valley Cattleman's Association in June 2015

Information Gaps

- Data gaps are due to incomplete or missing data, inconsistencies in data entry, and a backlog of monitoring information. This can be attributed to personnel not having adequate resources to complete comprehensive short and long-term allotment monitoring, and inefficiencies in data entry.
- An additional data gap ecological classification for rangeland vegetation; for planning purposes ecological information is gathered from soil surveys, the Soil Resource and Ecological Inventory, previous monitoring efforts and personal knowledge.

Existing Forest Plan Direction

Our standards for range management maintain desired plant communities by rotating livestock among pastures to prevent overgrazing.

Our guidelines require allotment management plans so we can establish baseline criteria for maintaining desired conditions.

Grazing must also comply with the standards and guidelines of other resource management areas, like wilderness, wherever they overlap.

Scale of Analysis

We identified about 581,000 acres of land as suitable for range in the 1996 Forest Plan, and we projected a capacity for livestock grazing at 143,000 head months, including grazing for cattle and sheep. This area is anchored by the six San Luis Valley counties of Conejos, Costilla, Alamosa, Rio Grande, Mineral and Saguache counties, as well as portions of San Juan, Hinsdale and Archuleta counties and Taos and Rio Arriba counties in New Mexico.

Most permittees base their operations on private ground in the winter months. Some have abutting allotments on two Forests, so that they cross administrative boundaries; so there may be differing standards and guidelines or other management criteria.

With these factors in mind, we are considering a larger planning area for this assessment, including shared administrative boundaries with the Carson, Gunnison, Pike/San Isabel and San Juan National Forests because there may be management implications from adjacent Forests' grazing programs.

Historic Conditions of Range Resources

The stocking rates for sheep and cattle on most if not all of the Forest allotments were much higher prior to the establishment of the San Juan Forest Reserve in 1905 and the Rio Grande National Forest in 1908. It may have taken several years for the Forest Service to gain control of the grazing practices which had prevailed for decades. We estimate that over 150,000 head of sheep were permitted to graze on the Conejos Ranger District (not including the northern part of the Conejos Peak Ranger District). Permitted sheep have dwindled down to between 5,000 and 6,000 head of sheep on the Conejos Peak Ranger District. This includes allotments which were previously part of the Alamosa District. The seasons of use were also much more liberal than they are today. Some of the entry dates were as early as April and exit dates as late as October 31st. Now there are no entry dates earlier than June 1st and most exit dates do not exceed September 30th. The cattle allotments were similarly stocked. Many of the allotments had more than 1,000 head of cattle. Today, most of the remaining allotments are carrying sustainable numbers of animals.

The number of permittees has also gone down. In 1935 on the Conejos Peak District, the Cumbres-La Manga C&H Allotment had 58 permittees. Currently there are 11 members of the Cumbres-La Manga Cattle Association. It is difficult to trace the exact history of individual permits. Many permits have exchanged hands several times. While others have been eliminated or consolidated with other permits over the years. Some families which have managed to maintain their permits for multiple generations are the Moeller (Oscar Moeller likely grazed livestock as early as the 1880s, prior to any federal designation), Espinoza, Christensen, Hamilton, Sowards, Gallegos, Crowther, V-Heart Ranch and Quinlan families. However, there are other families who held permit on the Conejos and Conejos Peak Ranger Districts for a considerable number of years. One family which most likely takes the record for longevity is the McNeil family of Monte Vista. They ran cattle at Platoro from the 1880s until 2009. Other families to

take note of which were prominent in the livestock industry and also Forest Service permittees until recent times are: Bagwell, Cantu, DeHerrera, Gilleland, Middlemist, Marquez, Romero, Ruybal and Velasquez families. However, there are other families, particularly from the southern end of Conejos County who have historically grazed their livestock in New Mexico on the Carson National Forest. These families include the Abeyta, Garcia, Lopez, Sandoval and Valdez families, just to mention a few.

Existing Condition of Range Resources

We have implemented the Rescissions Act (1995) allotment management plan process. As part of this process, we monitor range conditions in key areas on all allotments. We use this information to identify use patterns, species composition, ground cover, and species frequency. Annual monitoring data and reports on most allotments show that livestock grazing is ecologically sustainable at current levels. We now manage the majority of the allotments under an adaptive management philosophy that allows us to modify stocking levels in response to variations in forage production, water availability, and precipitation patterns. We have used adaptive management to respond to extended drought conditions and wildfires.

Spruce beetle has affected more than 90 percent of the spruce forest cover type on the Rio Grande National Forest. These areas were previously unavailable or inaccessible to livestock, primarily cattle. As the overstory has died, the understory is temporarily producing forage. While this is an opportunity for us to redistribute livestock across landscapes; it is also creating management challenges for us as the natural barriers of trees are lost between allotments. It has also created challenges for us in areas where our reforestation goals require excluding livestock until trees have become established and grow to a size that cannot be damaged by livestock.

Structural range improvements (fences and water developments) are key to successful implementation of allotment management plans and annual operating instructions. Throughout the Forest, there are improvements that no longer function due to age, weathering, falling trees and fires. We have prioritized these improvements for reconstruction or replacement as funding allows.

Current Levels of Grazing

The number of grazing permits, grazing allotments, and maximum permitted forage consumption (animal unit months [AUMs]) have remained relatively stable, with the exception of sheep. The decline of the sheep industry, changes in permittee operations, proximity to known bighorn sheep herds, regional drought conditions and access issues have challenged many sheep operators to remain economically viable. The largest threat to the domestic sheep industry is the need to maintain separation between bighorn sheep and domestic sheep. This is an ongoing issue that is reducing the suitable range for domestic sheep grazing. Annual authorized livestock numbers can vary substantially due to precipitation patterns and yearly forage production. Table 1 displays permitted information from the Natural Resource Management Range Database (2014).

Table 1. Permitted grazing information for the Rio Grande National Forest

Active Allotments	Term Permits	Permitted Cattle (Number/HM's/AUM's)	Permitted Sheep (Number/HM's/AUM's)	Permitted Horses for allotment management support
89	73 plus 2 Grazing Association permits	16,473 60,762 79,890	20,188 25,887 7,566	44
			Total HM's – 86,649	
			Total AUM's -87,456	

Capability and Productivity

The Forest Plan allows livestock grazing on suitable rangeland under all management area prescriptions except research natural areas and ski areas. We have identified approximately 581,556 acres on the Rio Grande National Forest (31.3 percent of the net Forest acres) as suitable for livestock grazing (2002 Suitability Determination).

Rangeland capability and suitability are closely connected. We must analyze and establish rangeland capability before we can make a rangeland suitability determination. Capability is the potential of an area to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends upon existing resource and site conditions such as climate, slope, landform, soils, and geology; as well as the application of management practices, such as silviculture or protection from fire, insects, and disease.

Rangeland suitability is the appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses forfeited. A unit of land may be suitable for a variety of individual or combined management practices. Rangeland suitability is a determination of the appropriateness of grazing on capable lands based on economic and environmental consequences and consideration of alternative uses forfeited if grazing is allowed.

Ecological Integrity and Species Diversity

Livestock grazing influences ecological processes such as the water cycle, nutrient cycling, energy flow, and community dynamics. Not all effects are detrimental. Activities related to livestock grazing can impact species through habitat disturbance, modification, or a direct loss of individuals by grazing or trampling. Historical grazing practices altered plant composition and density. Prior to the establishment of the San Juan Forest Reserve in 1905, livestock grazing was unmanaged, causing long-lasting environmental effects. There are still areas exhibiting remnants of those effects but for the most part the ecological integrity and diversity of vegetation species has since rebounded through years of proper stocking and modern range management techniques. Domestic livestock influence has decreased significantly in alpine ecosystems with the decline in sheep numbers.

Social, Economic, and Ecological Sustainability

Contributions from grazing to social and economic sustainability are addressed in Assessment 6.

Summary / Conclusion

Livestock grazing has been an important part of the local economy and culture for over a century. Grazing was directly related to the establishment of the San Juan Forest Reserve in 1905. The establishment of the Forest Reserve has led to many changes to grazing over the years. Ecological integrity and sustainability are important parts of the grazing program today. These principles will allow for productive lands which are capable of sustaining grazing and other multi-use activities into the future and will continue to be an important part of the local economy and culture.

Timber Assessment

Introduction

In this assessment, we (the USDA Forest Service Rio Grande National Forest) consider multiple uses related to timber and follows direction outlined in FSH 1909.12 Land Management Planning Handbook, Chapter 10 – The Assessment; Section 13.3 – Assessing Multiple Uses.

The purpose of a Forest Plan under the 1976 National Forest Management Act was originally a response to public concerns about timber harvest. The Act and the Planning Rule which implements the Act sets specific requirements regarding timber harvest. The Planning Rule requires an estimate of the long-term sustained-yield of timber removed from lands identified as suitable for timber production. It also requires plan direction on the types of forestry methods to be used, and the size and location of timber harvests. A Forest Plan does not authorize any timber harvest, but merely identifies what parts of the forest would be suitable or not suitable for timber harvest, and what constraints might apply.

Timber harvests and thinnings provide forest products and contribute to the local economy. They are also an important tool in shaping the structure and composition of the forest, in order to meet ecological integrity and other objectives. Timber harvest may be used for improving wildlife habitat, making the forest more resilient to disturbances such as fire, insects, and disease, and improving tree growth. It is within the context of these frameworks that any need for change may be identified.

In our current Forest Plan we estimated an available total sale program quantity; consisting of hardwood and softwood sawtimber, fuelwood, posts and poles, salvage, and house logs; at 79 hundred thousand cubic feet (MCCF) per year, equivalent to 29 million board feet (MMBF) per year, if fully funded. At realistic budget levels we anticipated a volume of 15 million board feet per year.

We set our allowable sale quantity¹ of sawtimber at 51 MCCF per year for conifer (equivalent to 21 MMBF per year), and 11 MCCF for aspen when at the full budget level.

Under the new Forest Service planning rule, no annual allowable sale quantity calculation is required, but we must generate a long-term sustained-yield calculation as the ceiling for sawtimber harvest. In our current Forest Plan, long-term sustained-yield is 54 MCCF per year for conifer and 16 MCCF for aspen.

The Colorado Roadless Rule restricts timber harvest and road building in Colorado Roadless Areas. The allowable timber harvest in the Forest Plan has been reduced, although a new number has not been calculated.

Information Sources

This section identifies the information sources used in the timber assessment. It also identifies information gaps where there may be missing information that would help further clarify a specific topic related to this assessment.

- The existing Rio Grande National Forest Revised Land and Resource Management Plan
- Harvest information supplied by Kirby Self, Vegetation Program Manager of the Rio Grande National Forest

¹ The Allowable Sale Quantity (ASQ) is defined as the maximum amount of timber that may be sold on lands suitable for timber production during a decade of implementing the Forest Plan (FSH 2409.13).

- The Rio Grande Basin Watershed Health and Forest Biomass Opportunities Evaluation (Forest Stewardship Concepts, Ltd 2014)
- The Colorado Statewide Forest Resource Assessment (CSFS 2009)
- Geographic Information System (GIS) timber suitability maps as provided by the Rio Grande National Forest
- Published literature as referenced throughout this assessment
- Other assessments as referenced, particularly assessments 1, 3, and 6
- Public meetings in Alamosa, Crestone and South Fork in Spring 2015

Information Gaps

- Spatial vegetation layers for the forest are in the process of being updated to incorporate recent mortality due to fires and beetles. This project is still in progress and the updated vegetation layers are not currently available.

Existing Forest Plan Direction

Listed here are our current forestwide standards and guidelines on silviculture and timber utilization.

Silviculture

Standards

1. Forty acres is our maximum allowable acreage opening in forest cover types. Exceptions to this maximum are stipulated in 36 CFR 219.27(d)(2)(I) through (III). The regulations at 36 CFR 219.27(d)(2)(ii) allow for size limits exceeding those established at 36 CFR 219.27(d)(2) and 36 CFR 219.27(d)(2)(I). We can permit exceptions on an individual timber sale basis after 60 days' public notice, and review by the Regional Forester. The regulations at 36 CFR 219.27(d)(2)(III) provide that the established limit does not apply to the size of areas harvested as a result of natural catastrophes such as fire, insect and disease attack, or windstorm.

Table 2. Appropriate silviculture systems by forest cover type

Forest Cover Type	Even-Aged	Two-Aged	Uneven-Aged
Ponderosa Pine	Shelterwood, Clearcut, and Seed-Tree	Irregular Shelterwood	Group Selection and Single-Tree Selection
Mixed Conifer	Shelterwood, Clearcut, and Seed-Tree	Irregular Shelterwood	Group Selection and Single-Tree Selection
Aspen	Coppice ¹	Coppice with Standards ²	Group Selection ³
Lodgepole Pine	Shelterwood, Clearcut, and Seed-Tree	Irregular Shelterwood	Group Selection
Englemann Spruce and Subalpine-Fir	Shelterwood and Clearcut	Irregular Shelterwood	Group Selection and 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 silviculture system in aspen is currently under study to determine regeneration success, but is authorized on a test basis.

2. Acceptable silviculture systems, shown by forest cover type in table 2, meet our management objectives for the landscape or individual stands of trees within a landscape setting. We can use both even-aged and uneven-aged management systems, and apply them at scales ranging from a few acres to many hundreds of acres. We are required to apply these silvicultural systems in a way that ensures natural regeneration where we do not need artificial regeneration for other resource objectives. Our stand-level vegetation management treatments must be approved by certified silviculturists. We can use the silvicultural systems listed in table 2 to convert uneven-aged stands to even-aged management and even-aged stands to uneven-aged management.
3. The size of the uncut forest areas between openings must be based on our management objectives for the landscape unit being analyzed. If our objectives include creating a mix of vegetation types to benefit wildlife associated with early-successional stages and edges, the uncut units can be small. If our objectives include provisions for old-growth- associated species, the uncut units could be large enough to function as an ecological system not overly influenced by edge.
4. When we harvest trees to meet timber production objectives, the cutting must be done in such a way that there is existing technology and knowledge to restock these areas adequately with trees within five years after final harvest. Our minimum restocking levels are defined in table 3.

Table 3. Minimum restocking levels by species

Growing Stock: All Live Trees							
Species	Spruce- fir	Aspen	Douglas- fir	Lodgepole Pine	Ponderosa Pine	Other Softwood	Other Hardwood
Trees per Acre	150	300	150	150	150	150	150

5. We have no specific minimum seedling-height requirements. Seedlings must have survived a minimum of one year and should, (on the basis of research and experience), be able to produce the desired stand condition specified for this area as defined in our Forest Plan. The numbers of seedlings in table 3 represent the minimum number of seedlings required, considering natural mortality, to produce a merchantable- timber stand at rotation age without intermediate treatments. To ensure adequate restocking of created openings; as a minimum; we conduct stocking surveys at the end of the first and third growing seasons after the restocking treatment. We cannot certify adequate stocking until after the third-year growing-season survey.
6. “Five years after final harvest” means five years after clearcutting, five years after the final overstory removal in the shelterwood and seed-tree systems, or five years after selection cutting. The requirement for adequate restocking within five years begins with the final harvest. The timing of the first- and third-year restocking surveys begins with the restocking treatment.
7. Where disease can be spread from an uncut stand to a newly regenerated stand, it is best we cut any adjacent infected stand before the regeneration reaches six feet.
8. We will conduct regulated timber harvest activities only on lands classified as "suitable²" and "scheduled³" for timber production. On unsuitable or suitable but not scheduled lands, we may conduct limited timber cutting for purposes such as salvage, protection or enhancement of

² Lands are suitable for timber production if they fall within a set of parameters that is defined not only by the timber itself, but also other resources such as wildlife, soils, hydrology etc.

³ As part of the forest plan revision, we need to produce a schedule of what will be harvested over the next two decades.

biodiversity or wildlife habitat, scenic-resource management, or to perform research or administrative studies consistent with management area direction.

9. We will not mark or harvest trees within approximately 600 feet slope distance from timberline.
10. We will use artificial regeneration methods when it is not possible to rely on the natural sequence of events or environmental conditions to regenerate the stand within five years.
11. When trees will be harvested on other than suitable lands, exceptions to the stocking guidelines are appropriate (as documented in project decisions) when the harvest meets one of the following criteria:
 - a. Where permanent openings serve specific management direction.
 - b. Where provided for in specific management practices and prescriptions.
 - c. Where it is desirable to delay the onset of regeneration and crown closure to meet specific desired conditions and management objectives.

Guidelines

1. If the silviculture system being applied to a particular area of the landscape is uneven-aged, harvest trees designated for commercial timber production based on the desired density, as determined by age class or size, and the objective for the area.
2. Silvicultural standards and guidelines should be applied at the watershed and landscape level, as well as to individual stands of trees. The standards and guidelines must be applied to perpetuate the desired range of environmental conditions, while supplying goods and services to people. The range of environmental conditions is defined in the desired condition statements for the selected alternative. This does not imply that our desired endpoint condition must reflect the range of natural variability.
3. As part of our environmental analyses for proposed timber sales, we will review the demand for fuelwood, to determine if timber sale roads should be opened for fuelwood post-timber harvest. Where we open areas for cutting fuelwood, we will also decide when, and how long, roads will be open; in coordination with other resource concerns. Generally, we will keep areas open only one to two seasons after timber harvest.
4. Table 4 list our guidelines for when an opening is no longer considered an opening.

Table 4. Guidelines for when an opening is no longer considered an opening

Forest Cover Type	Average Trees per Acre	Average Height of Tree	Distribution
Ponderosa Pine and Mixed Conifer			
Big-Game Cover	200	6 feet	70%
Retention and Partial Retention Scenic Condition Objectives	200	25 % of the height of the adjacent stand	
Lodgepole Pine and Spruce/Fir/Aspen			
Big-Game Cover	250	10 feet	70%
Retention and Partial Retention Scenic Condition Objectives	250	25 % of the height of the adjacent stand	

5. Except for treatments designed to enhance meadows, we will avoid altering more than one-third of the edge of a natural opening whenever an artificially created opening is adjacent to a natural opening. We should not create additional edge until previously treated areas are considered closed, according to guideline #4 above.

6. The landscape should be the primary unit of analysis for silviculture. A landscape is defined here to mean a distinct landform such as a mesa, or a Level VI watershed. There are a variety of landscape types in the Rocky Mountain Region. Some are "fine grained" (characterized by many small areas in various stages of plant succession). Others are "coarse grained" (characteristically forested with large, unbroken expanses of trees and few openings). There are areas in the Region which have become a patchwork of forest and open places as a result of human use prior to establishment of the National Forests, past Forest Service management practices, and natural disturbances (wind, fire, insect activity, and earth movement).
7. In most circumstances, we rely on or make primary use of those silviculture systems which ensure regeneration of forest stands through natural seeding and suckering.
8. We use artificial-regeneration methods when we cannot rely on the natural sequence of events and/or environmental conditions to regenerate the forest within five years.
9. We use thinning practices which consider genetic diversity, as well as competition among the trees for water, nutrients, and light. The frequency of thinning should depend upon the tree species, financial efficiency, and the site growing conditions.
10. Where appropriate, we reduce competition between desired trees and other vegetation.
11. Out chosen silviculture system should emulate the pattern, timing, and frequency of natural disturbances found in the landscape being treated.
12. We should not conduct regeneration harvests of even-aged timber stands (sites) until the stands have generally reached (or surpassed 95 percent of the) culmination of the mean annual increment,⁴ measured in cubic feet. There are exceptions where our resource management objectives or special resource considerations require earlier harvest.

Timber Utilization

Standard

1. Our sawtimber utilization standards, for live and dead trees are listed in table 5. These standards are specific to the Rio Grande National Forest (reference FSH 2409.18, Ch 50).

Table 5. Timber utilization standards

Type of Product	Minimum Diameter at Breast Height	Top Diameter	Minimum Length	Percent Net Of Gross
Live Trees:				
Sawtimber				
-Coniferous	7-8	5-7	8-10	33.3-50
-Aspen	7-8	5-7	8	50
Products other than Sawtimber	5	4	6.5	Variable
Dead Trees:				
Sawtimber	7-12	7-10	8-16	33.3-50
Products other than Sawtimber	5	4	Variable	Variable

⁴ The mean annual increment (MAI) or mean annual growth refers to the average growth per year a tree or stand of trees has exhibited/experienced to a specified age.

Scale of Analysis

The scale of analysis for our timber assessment includes the plan area (Rio Grande National Forest) and the broader landscape surrounding the forest. This includes southwestern Colorado, such as Montrose, Mancos, and Dolores, areas of northern New Mexico, such as around Chama, and areas along the Colorado Front Range north of the Rio Grande National Forest.

Current Condition

The current condition of the forest is described in detail in assessments 1 and 3. One significant issue we have related to timber production is the large amount of Engelmann spruce mortality from spruce beetle.

Timber Harvest and Production

Currently, the timber from our forest is sold through timber sales and permits related to firewood and other products such as posts and poles. We have not had economically viable opportunities to use stewardship contracts and agreements on the Rio Grande National Forest. On average, over the last 7 years, we have sold 17,493 CCF of sawtimber each year, and 7,351 CCF of other products by permit for a total of about 25,000 CCF a year. The amount sold was 2 percent higher than our assigned target for this time period. Since 1997, we have sold 307,746 CCF of timber. See figure 1 below for the amount sold over time. In 2014, we harvested 1,759 acres of sawtimber, and averaged 1,218 acres of sawtimber annually for the last 7 years (table 6).

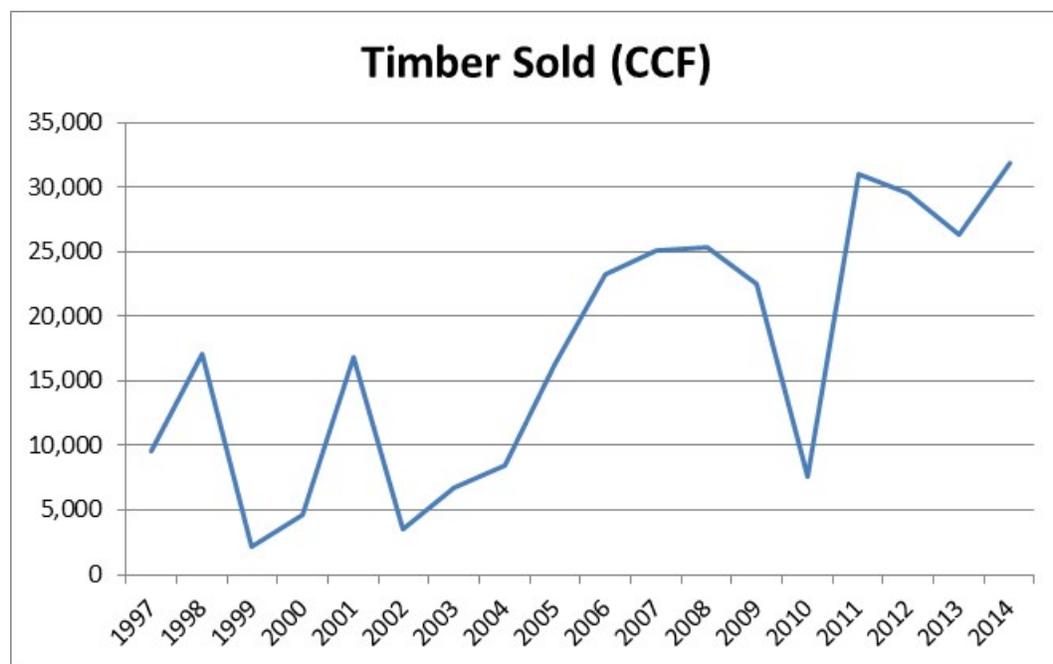


Figure 1. Total timber sold (CCF) on the Rio Grande National Forest from 1997 thru 2014. This includes material sold thru timber sales as well as thru permits for other products.

Table 6. Acres treated of sawtimber, 2008 – 2014

Year	Acres Treated of Sawtimber
2008	1,303
2009	826
2010	148
2011	1,616

Year	Acres Treated of Sawtimber
2012	1,675
2013	1,198
2014	1,759
Average	1,218

In southern Colorado, federal timber suppliers are the largest source of timber. The Rio Grande National Forest is a supplier in the commercial forest products industry and supports local industry. During our timber sales, most wood removed from the forest is processed within the San Luis Valley at mills located in Saguache, La Jara, and Del Norte (Forest Stewardship Concepts, Ltd 2014).

In the broader landscape, other national forests contribute to the forest products industry. In FY14, the San Juan, Pike-San Isabel, and Grand Mesa, Uncompahgre, and Gunnison national forests sold 20,731 CCF, 15,668 CCF, and 61,235 CCF of timber, respectively.

Although national forests contributed the majority of Colorado’s commercial timber harvest in the 1970s and 1980s, private ownerships now provide the majority, with a little less than half coming from national forest system lands (CSFS 2009).

Lands Suitable for Timber Production

Of the 1.8 million acres which constitute the Rio Grande National Forest, only a small portion (320,581 acres, 17 percent) are considered suitable for timber production (figure 2). The acres suitable for timber production are distributed throughout different management areas (table 7). Most of the area suitable for timber production is in the spruce-fir (65 percent) and aspen (25 percent) cover types (table 8).

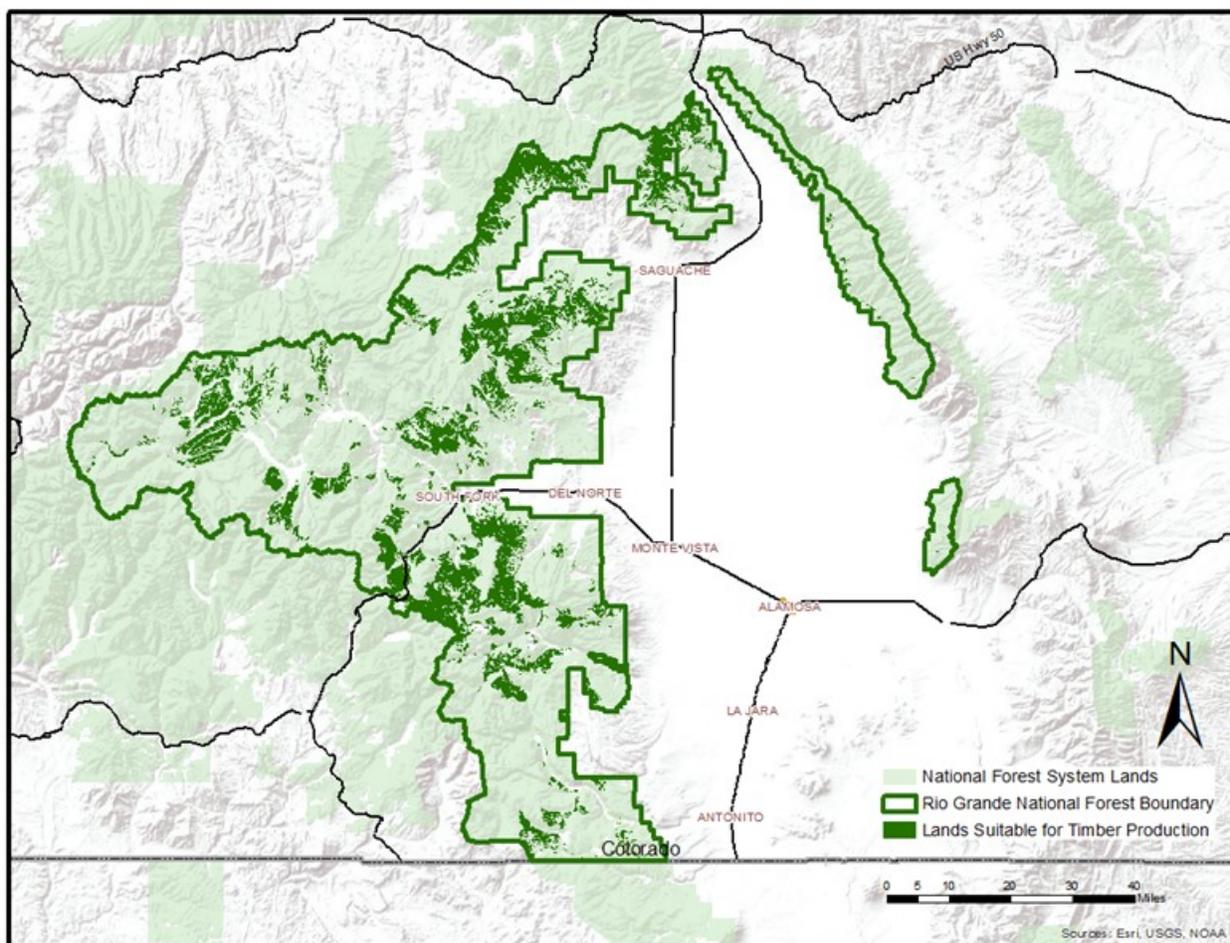


Figure 2. Area of the Rio Grande National Forest that is suitable for timber production

Table 7. Acres suitable for timber production by management area

Management Area	ACRES
4.21 - Scenic Byways or Railroads	3,099
4.3 - Dispersed Recreation	33,685
5.11 - General Forest and Rangelands - Forest Vegetation Emphasis	74,388
5.13 - Forest Production	188,619
5.41 - Deer and Elk Winter Range	20,790
Total Suitable Acres	320,581

Table 8. Acres suitable by cover type

Cover Type	Acres
TAA - aspen	79,149
TDF - Douglas-fir	3,304
TLP - lodgepole pine	22,630
TPP - ponderosa pine	5,890
TSF - Engelmann spruce-subalpine fir	209,607
Total Suitable Acres	320,581

Resistance and Resiliency to Stressors

Timber harvest and thinning affect forest structure and composition and as a result, affect forest resistance and resilience to stressors such as fire, insects, and disease.

How timber harvest and other forest management activities affect forest resistance and resilience is dependent on the forest type, the specific management activity, and the specific stressor. For the dry forests of the west, strategies to increase fire resistance and resilience include reducing surface fuels, increasing the height to live crown, decreasing crown density, and retaining large trees (Agee and Skinner 2005). Timber harvest activities that align with these strategies can have a positive impact on forest resistance and resilience to fire. Waltz and others (2014) found that reducing fuels reduces fire severity and enhances short-term metrics of ecosystem resiliency to uncharacteristic severe fire.

The Rio Grande National Forest is dominated by spruce-fir forests that have recently experienced large-scale heavy mortality from spruce beetle. Resilient spruce forests are characterized as having landscape-wide tree species diversity and spruce age-class diversity. Timber harvest activities such as group selection and shelterwood cuts may promote spruce regeneration and these characteristics (DeRose and Long 2014).

Ecological Sustainability

Forestland with high ecological integrity supports a diverse group of native and desired non-native species, all life stages of these species, and enough genetic diversity for long-term persistence and adaptability (Quigley and others 2001). Potential indicators of ecological integrity include the level of exotic species, the level of snags and down wood, the amount of wildfire, changes in fire severity and frequency, and the level of disruption to hydrologic regimes (Quigley and others 2001).

The impact of timber harvest on ecological integrity and species diversity depends on the specific forest types and management. For example, we implement restoration treatments in lower elevation ponderosa pine and mixed-conifer forests to help return these forests to their historical fire regime, with less frequent and less severe fires, and improve ecological integrity. One indicator of ecological integrity is the presence of a variety of forest types and age-classes within those forest types. Timber harvest can help increase the amount of young-aged forest when desirable. However, timber harvest activities that increase the density of roads may degrade ecological integrity (Trombulak and Frissell 2000). Timber harvest and other treatments such as prescribed fire often lead to an increase in understory species that are absent or uncommon otherwise and generally benefit long-term understory species diversity (Abella and Springer 2015).

Capacity and Trends

In general, the market for timber in the Western U.S. is experiencing a prolonged decline from the decline in the U.S. housing market after the recession in 2008, which has caused wood product prices and production to drop. “Capacity utilization at sawmills and other timber-using facilities in the West fell from over 80 percent in 2005 to just over 50 percent in 2009 and 2010” (Keegan 2011). However, there is still capacity for expanding markets, such as small diameter material and salvaged timber as biomass in the energy industry.

At a statewide scale, sawmills have closed in Colorado over the past several decades. Since 2000, five sawmills in Colorado have closed. Additional sawmills closed in the decade prior to that (CSFS 2009).

Currently, most wood removed from the Rio Grande National Forest is typically processed within the San Luis Valley by one of 3 mills. One additional local business may be interested in purchasing firewood.

Additionally, some wood removed is processed by a mill outside the valley, in Montrose (Forest Stewardship Concepts, Ltd 2014).

Several things drive the supply and demand for timber in the local area. First, supply is based on the areas on the forest that can be harvested. Only 17 percent of the forest's area is part of the suitable timber base. Excluding some of this area based on slope, distance from roads, proximity to riparian areas, and recent silvicultural activities, only 9 percent of the total forest (175,167 acres) is eligible for us to manage to improve watershed health based on the current forest management plan and economic considerations (Forest Stewardship Concepts, Ltd 2014). Second, trends in the housing market drive demand. Third, our forest timber budget, which fluctuates markedly from year to year, greatly affects what we can supply.

Because of the large-scale heavy mortality due to spruce beetle, we are increasing timber sale volumes. Whether we can sustain this increase depends on how long the larger dead trees retain their utility as saw or house logs (Forest Stewardship Concepts, Ltd 2014). As the larger dead trees decay, there may be a large volume of low value material available. It may be difficult to find a market for this lower quality woody biomass, because it costs approximately \$75/ton to remove and deliver to processors, and there are no financial subsidies in the local area (Forest Stewardship Concepts, Ltd 2014).

Social and Economic Sustainability

The contribution of timber harvest and production towards social and economic sustainability is described in assessment 6.

Summary / Conclusion

We are a key player in the commercial forest products industry in Southern Colorado. Our timber sales support local businesses - most wood removed from the forest is processed at mills within the San Luis Valley. In addition to the economic benefits to the community, timber harvest is an essential tool for maintaining ecosystem integrity and ensuring a wide variety of benefits from our forests.

Watersheds Assessment

Introduction

This assessment considers multiple uses related to our watersheds, and follows direction outlined in FSH 1909.12 Land Management Planning Handbook, Chapter 10 – The Assessment; Section 13.34 – Assessing Multiple Uses about the contribution of watersheds and water resources to social and economic sustainability.

Information Sources and Gaps

- The existing Rio Grande National Forest Revised Land and Resource Management Plan
- Public meetings in Creede, Alamosa and Saguache in Spring 2015
- Cohosted meetings with Rio Grande Roundtable, Rio Grande Water Conservation District, San Luis Valley Irrigation District, San Luis Valley Water Conservancy District, San Luis Valley Ecosystem Council, Trout Unlimited, Rio Grande Water Users, Conejos Water Conservation District and Rio Grande Seniors.
- Rio Grande National Forest staff
- USDA Forests to Faucets website (http://www.fs.fed.us/ecosystems-services/FS_Efforts/forests2faucets.shtml)
- Additional data sources and data gaps can be found in Assessment 2.

Scale of Analysis

As the headwaters forest for the Rio Grande river basin, the scale of analysis includes the immediate plan area (Rio Grande National Forest) and the broader landscape served by downstream irrigators and recreationalists, specifically the San Luis Valley and Southwest Colorado, as well as the states of New Mexico, Texas, and Republic of Mexico.

Existing Forest Plan Direction

Our standards are designed to protect structure, function and integrity of soil and water resources within the watershed. They specify the amount of disturbance permissible in any activity unit, and provide direction for: conserving and retaining soil nutrients, preventing sediment movement into streams and rivers, and regarding water quality and quantity issues. There are also standards and guidelines for protecting riparian areas and wetlands (see Forest Plan and assessment 2).

Consumptive and Nonconsumptive Uses

Agriculture is the largest consumptive water use associated with water resources in the San Luis Valley and waters associated with the Rio Grande National Forest. Nonconsumptive uses include water storage for agriculture, recreation, and wildlife in several large and some smaller reservoirs. Rafting, fishing, and camping are directly associated with water on the forest. The forest-2-faucet web site maps surface water importance to drinking water on a regional basis. For the San Luis Valley and the surrounding lands, it shows that National Forest System and BLM surface waters do not contribute much to drinking water (http://www.fs.fed.us/ecosystems-services/FS_Efforts/forests2faucets.shtml). This is because most drinking water is pumped from wells. In 2005 it was estimated that the majority of irrigation water was surface water except in Alamosa and Saguache counties where the majority of irrigation water was ground water.

However, the forest contributes to the groundwater supply for municipal and agricultural irrigation through spring and aquifer recharging.

Existing Condition and Trends

For existing condition and trends see Assessment 2.

Ecological Integrity and Species Diversity

The largest human water uses on the forest are non-consumptive, associated with storage and recreation; and therefore, are also largest source of water quality impairments on watersheds. Cattle grazing activities are a consumptive use which though small also influence water quality and stream / riparian health if not administered properly. The cumulative effects of all these human activities can have lasting effects on watersheds by changing species diversity and thus ecological integrity. Invasive species can reduce species diversity and also have negative effects on ecological integrity and watershed health. High levels of recreation or other forest activities have led to changes in species diversity and ecological integrity in some areas, but generally, ecological integrity is intact.

Human Activities and Multiple Uses

Multiple uses on forest lands are varied and affect watersheds in varying degrees. Taken individually, each activity, be it consumptive (which are very few on the forest) or nonconsumptive, they have very little impact. Some areas may show localized impacts to water quality or riparian health, and cumulatively these may create the potential for large-scale watershed issues in the future, although there are none at this time.

Supporting Other Uses

Water supports many activities and ecological processes on the forest, both consumptive and nonconsumptive, including wildlife habitat, recreational opportunities, agriculture, municipal water supplies through spring and aquifer recharging and others. See assessments 1, 2, 5, and 6 for further discussion.

Social and Economic Sustainability

See assessment 6 for an analysis of the social and economic sustainability.

Summary / Conclusion

Watersheds of the Rio Grande National Forest provide essential services to the agricultural community through irrigation water, recreational opportunities (for wildlife and water for boating), and essential services in relation to forest and ecosystem health. Watershed health provides a basis for all aspects of ecological services associated with activities and qualities on and off forest service lands.

Fish, Wildlife, and Plants

Introduction

This assessment considers multiple uses related to fish, wildlife, and plants, and follows direction outlined in FSH 1909.12 Land Management Planning Handbook, Chapter 10 – The Assessment; Section 13.35 – Assessing Multiple Uses for fish, wildlife and plants. This discussion is limited to species that are commonly hunted or special interest species. Species of conservation concern are discussed in assessment 5.

Information Sources and Gaps

Information regarding hunting units, hunter numbers, etc. by Game Management Unit (GMU) can be found at the following link: <http://cpw.state.co.us/thingstodo/Pages/Statistics.aspx>.

Other key information sources include:

- Colorado Division of Wildlife 2008. The economic impacts of hunting, fishing, and wildlife watching in Colorado. Prepared by: BBC Research& Consulting, Denver, Colorado.
- Colorado Statewide Action Plan (SWAP). 2015. Draft.
- Annual Big Game Population Summaries for local Game Management Units. Unpublished spreadsheets. Colorado Parks & Wildlife, Monte Vista Service Center.
- Colorado NDIS Hunting Atlas: <http://ndismaps.nrel.colostate.edu/index.html?app=HuntingAtlas>
- Rio Grande National Forest, Annual Forest Plan Monitoring Reports 1997-2013. Available on the Forest website: <http://www.fs.usda.gov/detail/riogrande/landmanagement/planning/?cid=stelprdb5180587>
- U.S. Fish and Wildlife Service. 2006. Birding in the United States: a demographic and economic analysis: an addendum to Report 2001-1.
- Colorado Birding Trail: <http://coloradobirdingtrail.com/>
- Final Supplement to the Forest Plan Biological Assessment and Conservation Assessment for Rocky Mountain Bighorn Sheep: Rio Grande National Forest, March 2010.
- R2 Watershed Conservation Practices Handbook. Amendment No. 2509.25-2006-3. 04/20/2006.

Key information gaps include the following:

- We lack habitat effectiveness modeling tools to assess and inform big game management for any recreational demand species, particularly as related to key habitat attributes such as open road density influences.
- We lack monitoring information pertaining to the effects of the big game retrieval allowance on resource damage and/or big game management objectives.
- We lack ecological condition information pertaining to existing condition and habitat sustainability for big game species.
- There are Information gaps pertaining to human uses/recreational impacts on wildlife multiple-use values.

- We lack physical stream survey data to inform existing condition and long-term sustainability of endemic aquatic biota such as Rio Grande cutthroat trout.
- We lack information pertaining to movements and foray behavior of local bighorn sheep herds relative to local landscape conditions, particularly in relationship to domestic sheep allotments.
- We lack information pertaining to recreational pack goat use on the Rio Grande National Forest.
- We lack information pertaining to stream connectivity and fish passage objectives.
- We lack information on aquatic nuisance species, and finalization of a local aquatic nuisance species plan.
- We lack staffing expertise to market ecosystem services efforts with plants such as National Wildflower Week, or other regional botanical objectives.
- We lack information or management guidance regarding native pollinators such as bees, butterflies, moths, and key pollinator plants.
- We lack an adequate definition and management strategy for old growth habitat.

Existing Forest Plan Direction

Under the 1996 Forest Plan, a number of standards and guidelines govern our management decisions related to fish, wildlife and plant resources. These standards and guidelines are generally triggered at the project design criteria stage of specific management activities. In the 1996 Forest Plan, we designated individual management area (MA) prescriptions throughout the forest focused on important wildlife values and desired conditions. The two primary management area prescriptions for wildlife are MA 5.41, deer and elk winter range, and MA 5.42, Special Management Areas – Bighorn Sheep. This and other Forest Plan direction contribute important management guidance for numerous fish and wildlife species, including demand species such as Rio Grande cutthroat trout, elk, deer, moose, bighorn sheep, and black bear. In the 1996 Plan, we also provide more protective management area prescriptions, such as wilderness, backcountry, and research natural areas for fish, wildlife and plants.

Some of our Forest Plan standards and guidelines for fish, wildlife, and plant resources are too entangled in other resource area categories to repeat here. For example, there are no current standards and guidelines for fisheries - they are either interwoven into other major categories such as Watershed or tiered to other regional documents such as the Watershed Conservation Practices Handbook (2006).

Scale of Analysis

Our scale of analysis for most recreational big game species is related to either individual data analysis units, in which we manage definable populations; or game management units, in which we manage separate herds or animal populations within smaller geographic areas. Both data analysis and game management units are designated by Colorado Parks and Wildlife, without respect to land management agency jurisdiction or land ownership. These include elk and deer data analysis units, bighorn sheep data analysis units and game management units, moose game management units, pronghorn game management units, bear and other species. There are several data analysis and game management units within the scale of this analysis, depending upon species. For some species, such as moose, larger landscape areas are involved to define and manage a single population. Even when defined by management units fully contained on National Forest System lands. However, many of these species are migratory or move seasonally on and off Rio Grande National Forest System lands, requiring a broader landscape context for long-term management. Most small game species have smaller home ranges and their movements can be better identified and managed at geographically smaller unit levels.

Waterfowl and wildlife viewing values often involve migratory and transient species, and must be assessed in a broader landscape context for appropriate management considerations. For example, waterfowl management must be tiered to the appropriate flyway, while wildlife viewing involving avian species is best assessed within the hierarchical framework of physiographic regions that further contribute to larger Bird Conservation Regions. For bird species, conservation considerations often involve international movements between the South and North American continents.

Fish, Wildlife and Plants on the Rio Grande National Forest

Table 9 lists fish, wildlife, and plant species commonly enjoyed and used by the public for hunting, fishing, trapping, gathering, observing, or sustenance, including cultural or tribal uses.

Existing Condition and Trends

Table 9 describes the conditions and trends in the plan area associated with these species and their uses.

Ecological Integrity and Species Diversity

There is no known reliable published information concerning the potential impacts of hunting, fishing, or wildlife viewing on ecological integrity and species diversity locally. However, there is an increasing trend in all forms of recreation use on the Forest, including a rising demand for hunting and fishing, which is expected to continue in the future. Hunting and fishing license quotas are set by the Colorado Parks and Wildlife, and guided by multi-year management plans. Many hunting license quotas are limited by Colorado Parks and Wildlife and therefore not expected to increase much in the future, if at all. However, some units also offer unlimited tags during certain seasons and add to the large influx of visitors and potential impacts from the hunting public.

Currently, we have a large influx of visitors to the Forest during the hunting seasons, primarily during the deer and elk rifle seasons, with an associated spike in recreation-user days. Many of these visitors tend to camp on the Forest in both developed campgrounds and undeveloped sites, often along streams or other sensitive areas. There is also an increasing trend in the amount of hunters incorporating all-terrain vehicles (ATVs) and, more recently, utility terrain vehicles (UTVs) into their activities. The increase in motor vehicle and the rapid evolution and proliferation in makes and models corresponds to an increased use in motor vehicle use on- and off-road. Because of this increased motorized use, it is likely that hunting activities impact habitat integrity and habitat use for some local some wildlife species. However, we do not at this time have any data on the degree of these effects. Localized impacts on ecological integrity are most likely associated with recreational hunter camps near sensitive areas such as streams, and with the exponential increase in motorized use. Although we lack data, the game retrieval allowance in the 1996 Forest Plan may contribute to these impacts.

Fishing is also a very popular recreational activity on the Rio Grande National Forest. By the nature of this activity, Forest users are attracted to and often concentrate along sensitive streamside zones and lakesides. It is likely that the ecological integrity of known high-use fishing areas is affected. We know that motorized use associated with fishing camps and access to and from fishing sites has localized impacts. We are concerned about impacts to high alpine lakes and stream zones, and we need to evaluate our existing management direction for these areas to identify trends in use and impacts.

Table 9. Common and popular fish, wildlife and plants found on the forest, and the existing conditions and trends for each

Terrestrial Wildlife Species	Baseline Information for Species/Groups	Habitat Condition	Trends, Issues and Concerns
Rocky Mountain Bighorn Sheep	11 herds (S8, S9, S10, S15, S22, S29, S30, S33, S36, S53, S55); 1070 individuals (2014 stats); 9 hunting units, 28 tags annually (14 rams, 14 ewes). High wildlife viewing value.	Considerable high-quality habitat available, much of it unoccupied. Estimated stable habitat trend.	Approximately 4 of 11 herds considered secure due to past and current disease events, or continued risk of contact with domestic sheep, stable trend. Increase in rec use a concern that needs further evaluation. Pack goats a concern in Sangre de Cristos.
Rocky Mountain Elk	4 data analysis units (DAUs) with 24,891 individuals (2013 data); game management units (GMUs) 68, 76, 79, 80, 81, 681.	No quantitative habitat model available locally. Habitat considered good but variable depending on area. Winter range condition a local concern in some areas.	Annual Forest Plan Monitoring Report concerns regarding impacts on winter range from livestock, roads, and over-snow vehicles. Also concerns from fire suppression/succession, weeds. Habitat effectiveness index model, vulnerability assessments with open roads recommended. Chronic wasting disease not present in local game management units but expanding in CO.
Mule Deer	4 data analysis units (DAUs) with 14,729 individuals (2013 data); GMU 68, 76, 79, 80, 81, 681.	No quantitative habitat model available locally Habitat considered fair to good but variable depending on area. Fire suppression and succession influences on shrub component a greater concern for deer than for elk.	Annual Forest Plan Monitoring Report concerns regarding impacts on winter range from roads and over-snow vehicles. Also concerns from fire suppression, succession, weeds. Need habitat effectiveness index model, vulnerability assessments with open roads. Chronic wasting disease not present in local game management units but expanding in CO.
Moose	Population mgmt. based on broader area that includes GMU 68, 76, 79; estimated 450 individuals in broader area; 3 hunting units with 9 tags (2014).	No quantitative habitat model available locally. Habitat considered good but variable depending on area.	Population potentially increasing; current expansion north and south; potential willow browse impacts in localized areas. Also susceptible to chronic wasting disease.
Pronghorn Antelope	2 data analysis units (DAUs) with 2,850 individuals (2014 data); DAU A-14 & DAU A-16 encompass all local GMUs.	No quantitative habitat model available locally. Peripheral and localized use on Forest. Habitat considered fair to good but variable depending on area. Population trend stable.	Population management recently reduced from 6 to 2 data analysis units. Habitat concerns involve fire suppression, succession, over-the-snow vehicles, perhaps higher susceptibility to weeds due to lower elevation and fragmentation due to roads.

Rio Grande National Forest Draft Assessment 8
Multiple Uses

Terrestrial Wildlife Species	Baseline Information for Species/Groups	Habitat Condition	Trends, Issues and Concerns
Black Bear	Unit 68 encompasses all GMUs in the San Luis Valley. 210 tags locally (2015) do not meet demand (372 applicants).	Habitat conditions variable by species, generally unknown. Grouse potentially influenced by spruce beetle outbreak.	Turkey: No local population or harvest stats, low hunter participation locally; Increasing trend in lower elevations. Following annual hunter numbers based on last available statistics (2011/12) -Squirrels: 80; cottontails: 637; coyote: 1,552; Grouse: 858; dove: 397; ptarmigan: 14. Opportunities for more focused habitat improvement by species group.
Small Game: Gallinaceous Birds (Turkey, grouse, rabbits, coyote, etc.)	Turkey: 5 GMUs on Forest locally (76, 79, 68, 681, 82). Other species general management.	Habitat conditions variable by species, generally unknown.	No information on habitat trends, potential influences on marten from spruce beetle outbreak; bobcat population trends in BC-4 decreasing; mtn. lion population estimated at 3-7000, trend unknown.
Furbearers/Predators/Trapping (Marten, bobcat, mountain lion)	Bobcat Unit BC-4 encompasses Forest; SW Region harvest 641(2013-14 data). Marten harvest not available locally, 979 trappers statewide. Mtn. lion: all local GMUs; 31 tags locally (2014).	Major habitat areas limited on Forest lands; wetlands and water quality generally good to excellent.	Trend considered stable.
Waterfowl (Ducks, geese)	Valley refuges a heavy local draw for hunting and viewing; Minimal hunting activity on Forest. Primary viewing areas on Forest at Road Canyon Reservoir area.	Multi-agency draw locally involves National Refuge System	Estimated \$1.2 billion in economic activity generated In Colorado (2006). Increasing trend in economic value statewide.
Watchable Wildlife (birds, bighorn sheep, moose, etc.)	Multi-agency draw locally involves National Refuge System, NPS, BLM, USFS, State lands and requires interagency cooperation; SW Birding Trail involves 32 of 229 sites on Forest; 8 State Wildlife Areas on Forest.	Considerable high-quality habitat available, much of it unoccupied. Estimated stable habitat trend.	Approximately 4 of 11 herds considered secure due to past and current disease events, or continued risk of contact with domestic sheep, stable trend. Increase in rec use a concern that needs further evaluation. Pack goats a concern in Sangre de Cristos.
Cold-Water Sportfish (Rio Grande Cutthroat Trout, Rainbow, brown, brook, splake, kokanee)	Only Forest in the nation to support/offer fishing for Rio Grande Cutthroat Trout; approx. 2,000 miles of rivers/streams, hundreds of lakes/reservoirs; USFS fishing piers and other structural property; Rio Grande chub & sucker also unique endemics.		Estimated \$725 million in direct expenditures in Colorado (2006); estimated \$29.8 million in economic expenditure in 5 SLV counties (2006 data). Estimated 24 percent increase in fishing activity days in Colorado b/t 2002-2007.

Rio Grande National Forest Draft Assessment 8
Multiple Uses

Terrestrial Wildlife Species	Baseline Information for Species/Groups	Habitat Condition	Trends, Issues and Concerns
Wildflowers	Baseline conditions generally unknown locally; high wildflower viewing and native pollinator values locally. Currently 34 R2 sensitive plants on Forest, no federally listed species.	Habitat trends unknown but considered stable. Some research suggests alpine systems vulnerable to climate change.	High wildflower viewing and native pollinator values locally. Trends of sensitive species generally unknown but most considered stable.
Medicinal/Cultural Plants (osha, chamisa, etc.)	See assessment 13.		See assessment 13. High cultural values locally.

Social and Economic Sustainability

Contributions from the use and enjoyment of these species, to social and economic sustainability, is discussed in assessment 6.

Summary / Conclusion

Multiple-uses associated with wildlife and fisheries are an important social, economic, and cultural tradition on the Rio Grande National Forest. High visitor use is associated with these activities, with the highest and most concentrated use associated with recreational hunting. These activities not only contribute substantially to the local economy but also to the culture of the local communities.

The state Colorado Parks and Wildlife administers hunting and fishing regulations. Currently, there are no limitations on the number of fishing licenses, and users distribute their activities based on their preferences and abilities, toward concentrated use areas or more secluded recreational settings. Hunter numbers are limited for all big game species by Colorado Parks and Wildlife in many local hunting units, which helps to minimize impacts and user concentrations. However, big game hunting remains one of the most popular user activities on the Forest and draws a large number of visitors from both Colorado and out-of-state. Once localized use and tradition is established, many users return to the Rio Grande National Forest at least once a year because of the unique opportunities associated with fish and wildlife resources and the local scenic environment associated with the pursuit of these activities.

References

- Abella, S. R. and J. D. Springer. 2015. Effects of tree cutting and fire on understory vegetation in mixed conifer forests. *Forest Ecology and Management*. 335(2015):281-299.
- Agee, J. and C. Skinner. 2005. Basic principles of forest fuel reduction treatments. *Forest Ecology and Management*. 211(2005): 83-96.
- Colorado State Forest Service. 2009. Colorado Statewide Forest Resource Assessment. A Foundation for Strategic Discussion and Implementation of Forest Management in Colorado. <http://csfs.colostate.edu/forest-action-plan/>
- DeRose, R. and J. Long. 2014. Resistance and resilience: a conceptual framework for silviculture. *Forest Science* 60(6):1205-1212.
- Forest Stewardship Concepts, Ltd. 2014. Rio Grande Basin Watershed Health and Forest Biomass Opportunities Evaluation. Report prepared for the Rio Grande Watershed Emergency Action Coordination Team (RWEACT). 28p.
- Keegan, C. E., C. B. Sorenson, T. A. Morgan, S. W. Hayes, and J. M. Daniels. 2011. Impact of the great recession and housing collapse on the forest products industry in the western United States. *Forest Products Journal* 61(8):625-634.
- Quigley, T. M., R. W. Haynes, and W. J. Hann. 2001. Estimating ecological integrity in the interior Columbia River basin. *Forest Ecology and Management*. 153 (2001) 161-178.
- Trombulak, S.C. and C.A. Frissell. 2000 Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology*. 14(1): 18-30.
- Waltz, A., M. Stoddard, E. Kalies, J. Springer, D. Huffman, and A. Sánchez Meador. 2014. Effectiveness of fuel reduction treatments: Assessing metrics of forest resiliency and wildfire severity after the Wallow Fire, AZ. *Forest Ecology and Management*. 334(2014): 43-52.

Wildlife Management Area Prescription, Standards and Guidelines

Management area prescriptions for wildlife:

Deer and Elk Winter Range (MA 5.41)

A summary of the important standards and guidelines for Deer and Elk Winter Range (MA 5.41) and key findings based on annual Forest Plan Monitoring Reports is as follows:

Standards:

#1. Motorized travel, including snowmobiles, is restricted to designated roads and trails, except for ATV big-game retrieval.

Guidelines:

#1. These lands are available and authorized for oil and gas leasing, with a timing limitation stipulation.

#2. Operating and reclamation plans for locatable minerals should mitigate impacts on deer and elk winter range.

#3. Livestock-grazing strategies are implemented to achieve goals for deer and elk.

#6. Existing recreation facilities should be closed during the season when deer and elk are present in concentrated numbers.

Bighorn Sheep Special Management Areas (MA 5.42)

A summary of the important standards and guidelines for Bighorn Sheep Special Management Areas (MA 5.42) and key findings based on annual Forest Plan Monitoring Reports is as follows:

Desired conditions:

Maintain a buffer between domestic sheep and bighorn sheep, to prevent interaction.

Standards:

#1. Domestic sheep allotments that become vacant within the identified buffer shall not be reissued for domestic sheep use, but may be issued for cattle use.

#2. No new travel routes shall be constructed across any lambing grounds.

Guidelines:

#1. Operating plans for locatable minerals specify minimal impacts on bighorn sheep.

#2. These lands are available and authorized for oil and gas leasing, with a no surface occupancy stipulation.

#3. Domestic sheep allotments within the buffers are moved to vacant allotments outside the buffers, as opportunities arise.

#4. Grazing strategies should be implemented that include achieving objectives for bighorn sheep herds.

#5. Recreation activities that disturb bighorn sheep should be discouraged or prohibited.

Riparian Guidelines: (For Fisheries and Riparian-Associated Birds/Wildlife Viewing)

Guidelines

#6. Remove livestock from riparian areas when average stubble heights on key species reach 4 inches in early-use pastures and 6 inches or more in late-use pastures.

#8. Limit utilization of riparian woody plants to 15-20 percent of current annual growth, and of herbaceous plants to 40-45 percent of annual production.

#9. Maintain the extent of stable banks in each stream reach at 80 percent or more of reference conditions. Limit cumulative stream bank alteration (soil trampled or exposed) at any time to 20-25 percent of any stream reach.

Changes based on the 2003 Forest Plan Management Indicator Species Amendment - **Replace Guideline 9** with the following:

Maintain the extent of stable banks in each stream reach at 80 percent or more of reference conditions. Consider the degree of livestock trampling on stream banks when determining the timing of livestock moves between units. As a general rule, stream banks can receive a maximum of 20 to 25 percent alteration while continuing to maintain their health and integrity, as long as the alteration will recover in one season.

Biodiversity Standards and Guidelines: Snag and Downed Wood Habitat

Biodiversity Standards:

#1-Minimum Requirement Prescriptions.

There are at least 68 species of vertebrate wildlife that utilize snags for critical life history needs. The current Forest Plan prescriptions are described in table III-1 (LRMP pg. III-13). Minimum requirements for ponderosa pine snags were adjusted in the 2003 Management Indicator Species Amendment to the Forest Plan, all others remained the same. Annual Forest Plan Monitoring Reports indicate that in most cases, snag management standards and guidelines have been satisfactory. The one exception involves ponderosa pine snags in lower elevation landscapes.

Changes based on the 2003 Forest Plan Management Indicator Species Amendment - **Revise Table III-1 Coarse Woody Debris Retention Requirements** with the following:

For ponderosa pine the retention density for snags will be 3 per acre.

#2. Local populations of native plant species (at the subsection level) will be used for revegetation efforts where technically and economically feasible. Seed mixtures should be weed free. To prevent soil erosion, nonnative annuals or sterile perennial species may be used while native perennials are becoming established.

#3. On suitable lands, an inventory or reconnaissance will be conducted early in the timber sale planning process to determine if old growth is present, and make assessments of quality and distribution. The inventory/reconnaissance will be conducted for the landscape/watershed being proposed for harvest using Mehl's (1992) description as the basis for identifying old growth.

Biodiversity Guidelines:

#1. Some old-growth/late-successional forest stands may be preserved or deferred from harvesting to maintain biotic diversity within the landscape/watershed. Size, distribution, abundance, and degree of habitat variation between old growth stands will be assessed.

- See feedback for Standard #3, above.

#2. Aspen will be maintained in the environment. Analyze aspen's spatial and structural occurrence in the landscape during project design. Use landscape spatial analysis in aspen project design to assist in selecting which existing and future old-growth stands are retained, maintaining habitat composition and structure, and providing habitat connectivity.

Spatial analysis allows a project area to be compared with reference areas, and considers a variety of attributes (e.g., composition, structure, patch-size distribution, etc.). The intent is to use the reference areas as baseline information to guide project design. The project interdisciplinary team will suggest how quickly or closely to approximate the reference areas. The analysis and resulting decision will document the rationale for choosing to deviate from reference conditions. For those timber sales in the Englemann spruce on mountain slopes land type association (LTA 1), a landscape spatial analysis approach is described in Erhard et al. (1996). To keep within the parameters of the approach, the analysis area should contain at least 15,000 acres or more of LTA 1. It is recommended that the area boundaries follow watersheds and remain fixed for the duration of the Plan. For those projects in the other forested LTAs, the reference conditions will have to be inferred from the literature, experts, and local knowledge. Comparisons should be made within the same ecological land type association.

#3. If aspen regeneration is considered, prioritize treatment within seral aspen clones using the following criteria: 1) Identify stands with large standing and down dead basal area (20 percent dead) that are single-storied and showing signs of animal barking (gnawing and bark stripping) or disease. Stands which are multi-storied, have several hundred sapling-size suckers per acre under them, or show little sign of canker diseases or animal barking would be a lower priority for any management intervention. 2) Identify conifer stands that contain a small minority of live aspen basal area (less than 10 percent live basal area). (Aspen is likely to disappear from these stands within several decades without intervention). 3) Identify isolated clones and stands in heavy-animal-use areas and 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). 4) Identify stands that are more cost efficient to treat and contribute positively to aspen's distribution.

Wildlife Standards and Guidelines:

Wildlife Standards:

#1. Manage human disturbance at caves and abandoned mines where bat populations exist. When closing mines or caves for safety or protection reasons, reduce disturbance of residing bat populations and ensure bat access.

#2. Provide adequate cover to maintain screening along roads that are kept open for human use and around openings, so as to minimize disturbance and harassment of deer and elk.

#3. In areas where tall, dense cover is desired for ground-nesting birds, residual cover needs to be carried over from previous growing seasons, since some species begin nesting in April and May before spring growth.

Some bird species prefer to nest in undisturbed cover. In areas where these species are a primary consideration, manage livestock grazing to avoid adverse impacts on nesting habitat.

#4. Protect known active and inactive raptor nest areas. The extent of the protection will be based on proposed management activities, human activities existing before nest establishment, species, topography, vegetative cover, and other factors. A no-disturbance buffer around active nest sites will be required from nest-site selection to fledgling (generally March through July). Exceptions may occur when individuals are adapted to human activity.

#5. Where newly discovered threatened, endangered, proposed, or sensitive species habitat is identified, an analysis shall be conducted to determine if any adjustments in the Forest Plan are needed.

#6. Activities will be managed to avoid disturbance of sensitive species that might result in federal listing or loss of population viability. The protection will vary depending on the species, potential for disturbance, topography, location of important habitat components, and other pertinent factors. Special attention will be given during breeding, young rearing, and other times which are critical to survival.

#7. Areas should be closed to activities to avoid disturbing threatened, endangered, and proposed species during breeding, young rearing, or at other times critical to survival. Exceptions may occur when individuals are adapted to human activity, or the activities are not considered a threat.

#9. If a bald eagle traditional winter roost or nest site is discovered, a management plan will be written to ensure that the necessary habitat components are maintained. In addition, a no disturbance buffer will be established around the location. The size of the buffer will be determined by the eagle's tolerance of human activity, and local conditions (e.g., topography, vegetative cover).

#10. As new recovery plans, conservation agreements, conservation strategies, designations of critical habitat, or Regional documents that contain accepted management direction for threatened, endangered, proposed, or sensitive species are developed, the Forest Plan will be reviewed to determine consistency with the new documents. Where appropriate, the Plan will be amended to incorporate the new direction.

#11. Discourage land-use practices and development which adversely alter or eliminate the hunting habitat or prey base within ten miles, and the immediate habitats within one mile, of a peregrine falcon nesting cliff.

#12. Restrict human activities within one mile of a peregrine falcon nest site between February 1 and August 31.

#13. No ground-disturbing activity shall be allowed in potential Uncompahgre fritillary butterfly habitat unless a survey is conducted to determine the existence of the species. Ground-disturbing activities include trail building, livestock driveways, or domestic sheep bedding grounds. The usual grazing associated with livestock in the area is not considered ground disturbing. Potential habitat definitions and survey protocols are found in the *Uncompahgre Fritillary Butterfly Recovery Plan*.

#14. If any new Uncompahgre fritillary butterfly populations are discovered, a "No Butterfly Collecting" regulation shall be imposed on the area.

#15. Do not allow any even-aged timber management within canyons considered to have potential habitat for Mexican spotted owls, or within one-half mile of the canyon's rim.

#16. Allow uneven-aged timber management only if the resulting timber stand contains the necessary habitat components (for native and desirable nonnative species).

#17. Develop a fire strategy within potential Mexican spotted owl habitat that will reduce the risk of losing the habitat to a catastrophic fire.

#18. If any Mexican spotted owl nests are discovered, limit the amount of human disturbance around the nest through such measures as special area closures, seasonal restrictions, or rerouting of trails.

Changes Based on the 2003 Forest Plan Management Indicator Species Amendment - **Add Standard 20** to include the following:

Activities will be managed to avoid loss of population viability to management indicator species. The protection will vary depending on the species, potential for impact, topography, location of important habitat components, and other pertinent factors. Special attention will be given during breeding, young rearing, and other times that are critical to survival. Where appropriate, measures to mitigate adverse effects shall be applied.

Add Standard 21 (page III-24) to include the following:

Consider the effects of proposed management activities (forest and rangeland management, prescribed and wildland fire use, recreation, etc.) on resident and migratory birds. Incorporate conservation measures and principles, as appropriate, from local bird conservation plans (NABCI) and /or other references into project designs so that potential adverse effects are minimized.

Add Standard 22 (page III-24) to include the following:

When considering management actions within potential and suitable southwestern willow flycatcher habitat, use the Riparian Guidelines 6 through 9 and the Range Clary and Webster residue allowances guidelines (Table III-3) in riparian areas as standards.

- This standard is no longer considered necessary for Southern willow flycatcher because nearly all potential habitat has been investigated and it is highly unlikely that any breeding pairs occur on the Rio Grande National Forest. If any Southern willow flycatcher pairs or individuals are discovered, the U.S. Fish and Wildlife Service would be informed and the appropriate management actions would be implemented.
- Riparian Guidelines 6 through 9 and the Range Clary and Webster residue allowances guidelines (Table III-3) should apply as minimums within riparian habitats regardless of occupancy by Southern willow flycatcher.

2003 Management Indicator Species Amendment to the Forest Plan:

The Management Indicator Species Amendment to the Forest Plan (2003) added and/or adjusted several additional standards and guidelines. The following are the edits and additions to forest-wide standards and guidelines to address management indicator species, not captured in the categories above.

Biological Resources – Silviculture:

Add Guideline 13 (page III-22) to include the following:

Manage the firewood program in a manner that reflects overall resource objectives, including snag management.

Forest Plan Monitoring Findings and Potential Need for Change:

- See response to Biodiversity Standard #1, above.

Biological Resources: Wildlife

The following nine species are management indicator species for forest-wide monitoring considerations, and any or all may be selected for project analysis purposes. For projects where significant species or habitat concerns or issues are identified, address effects on management indicator species accordingly in project NEPA analysis. For threatened, endangered, proposed, or Forest Service sensitive species, a biological evaluation/biological assessment will be prepared.

Brown creeper (Certhia familiaris)

Hermit thrush (Catharus guttatus)

Pygmy nuthatch (Sitta pygmaea)

Lincoln's sparrow (Melospiza lincolnii)

Wilson's warbler (Wilsonia pusilla)

Vesper sparrow (Poocetes gramineus)

Mule deer (Odocoileus hemionus)

Rocky Mountain elk (Cervus elaphus nelsoni)

Rio Grande cutthroat trout (Oncorhynchus clarki virginalis) (brown trout [O. trutta], brook trout [salvelinus fontinalis], or rainbow trout [O. mykiss] to serve as proxies if Rio Grande cutthroat trout is not present).

Forest Plan Monitoring Findings and Potential Need for Change:

- This standard is no longer necessary as management indicator species are not retained as a component of the 2012 Planning Rule.

Section 5– Social Resources: Dispersed Recreation –

Add Standard 6 (page III-28) to include the following:

Within riparian areas, the tethering of livestock is prohibited.

Forest Plan Monitoring Findings and Potential Need for Change:

- This Standard has been useful to help protect riparian areas but requires enforcement.

Add Standard 7 (page III-28) to include the following:

Recreational livestock are prohibited within 100 feet of lakeshores and stream banks, except during watering and through travel, unless exceptions are justified by terrain.

- This Standard has been useful to help protect riparian areas but requires enforcement.