

## Appendix H - Research Needs

### Introduction

Management of federal lands, including the Routt National Forest, has become more controversial, as evidenced by the increase in appeals, protests, lawsuits, and court rulings. As the demand for resources produced on the Forest continues to grow, controversy over how the Forest should be managed is likely to expand. The Forest will be faced with making increasingly difficult land management decisions to produce the traditional goods, services, and resource values while ensuring sustainability. Forest research can provide the ideas, knowledge, and new technology needed to improve forest management and resolve conflicts. This appendix provides a description of the research needs identified during revision of the Routt National Forest Land and Resource Management Plan.

Forestry research within the Rocky Mountain Region is conducted primarily by Forest Service research stations and area universities. Often this research is in partnership with state agencies, other federal agencies, and organized Forest user groups.

The following research needs have been identified for improving the management and future planning on the Routt National Forest and to facilitate the change to ecosystem level management. Needs that have been identified are specific to the Routt National Forest. They supplement the Rocky Mountains Region's research needs identified in the Regional Guide.

### Wildlife

**Research Need:** Further information is needed on individual sensitive species habitat requirements in the Central and Southern Rocky Mountains. In particular, this research is needed in the context of landscape metrics (Diaz 1996).

**Importance:** New capabilities exist to measure landscape metrics. Work has been done using these measures which document changes associated with timber harvest in the Central Rocky Mountains. However, it is not clear how these measured changes effect individual species nor what their habitat requirements are, as defined by these metrics. This information is important in the location and design of timber sales, other vegetation treatments, and forestwide species viability.

### Recreation

**Research Need:** The Forest needs a snowmobile use and capacity study.

**Importance:** As with any activity where commercial outfitters are requesting opportunities to conduct business, the Forest needs to determine if there is a need for commercial operations, where it is, and how much of one exists. This can be done at the forest level, with assistance from an interdisciplinary team of recreationists, wildlife biologists, physical scientists (water and soil scientists), plant ecologists, and members of both the motorized and nonmotorized user groups.

**Research Need:** The Forest needs to validate methods for collecting recreation use information. Currently, annual use levels are estimated, based on traffic counts, periodic field checks, and fees collected.

This research topic would validate those methods and make changes where necessary. The information is used for strategic planning, forest planning, national assessments, and program evaluation.

**Research Need:** Estimate the hunter satisfaction levels in hunt areas with motorized access.

**Importance:** This study would compare satisfaction levels between nonmotorized and motorized hunting areas, as a follow-up to the wildlife study to determine elk security areas, relative to recreational use levels. Hunting is considered one of the most economically beneficial (to local communities) activities on the Forest. Maintaining elk populations on the Forest is beneficial to wildlife, recreationists, and landowners.

## Social and Economic

**Research Need:** There is need for data on employment and income at the community level. There is also a need to model the impacts on jobs and income at the community level. This includes looking at potential social effects stemming from decisions made by the Forest Service.

**Importance:** Currently, estimated impacts on jobs and income can be made at the county level.

There is a need for improved data on local expenditures made by people recreating on the Forest. There is also a need to determine the amount of recreation visitor days that are from the local area, since these expenditures are already accounted for in the household sector.

## Vegetation

**Research Need:** Additional information is needed on the fire history and general ecology of Gambel oak and other cover types associated with lower elevations on and around the Routt National Forest.

**Importance:** In general, the Routt National Forest has a low frequency, high intensity natural fire regime (Routt National Forest 1994). However, the length of fire turn over rates and average fire return intervals in the major cover types (spruce/fir, lodgepole pine, aspen), combined with current understanding of Gambel oak ecology, seem to indicate a different fire regime may have been historically present in Gambel oak and other low-elevation communities. This has important implications for the management of these low-elevation communities. Gambel oak, in particular, is important because Ecological Sections M331H and M331I contain 63% of the oakbrush cover type in Ecological Province M331. See Appendix D for a discussion of Ecological Province M331 and Sections M331H and M331I.

**Research Need:** Complete a willow production study to complement the Moose Herbivory administrative study.

**Importance:** The recent introduction of moose in north central Colorado has raised concerns about resultant browsing effects on the willow community. A

herbivory study was initiated in 1995 to determine the effects on willow from moose browsing. The study is being completed for a two-year master's degree. One important element (willow production capability) for full analysis of the effects of moose herbivory on willow cannot be completed due to time constraints imposed by the two-year master's program.

## Soil and Water

**Research Need:** To examine the criteria used to determine watershed health assessment and long-term site productivity. Develop parameters for the Forest to maintain ecosystem health.

### Importance for Water:

Examine criteria used to determine watershed condition. Determine if acres disturbed and connected disturbed area are effective measures.

Assess the relationships of hydrological recovery concept, peak flows, and channel stability by geophysical area.

Improve knowledge of interaction of riparian conditions, peak flows, and increases in sediment on water quality and channel stability.

Improve understanding of baseline stream and water quality and channel conditions in areas with differing geology and use patterns.

Determine cumulative effects of livestock grazing on water quality.

### Importance for Soil:

The effects of different harvest practices and removal of biomass.

Determine whether native or non-native seed mixtures are more useful for erosion control.

Develop site-specific parameter for coarse woody debris necessary to maintain ecosystem health.

## Fisheries/Aquatics

**Research Need:** Effects of impaired air quality/acidic deposition in the Mount Zirkel Wilderness on aquatic biological diversity, distribution of sensitive amphibians, and conservation of Colorado River cutthroat trout.

**Importance:** This research would provide important baseline data to help the Forest define this issue and answer fundamental questions on the magnitude and extent of these potential impacts to aquatic biological diversity.

**Research Need:** Effects of cumulative watershed impacts on instream fisheries habitat and definition of limiting factors for distribution of Colorado River cutthroat trout.

**Importance:** The results of this research would significantly help the Forest in analyzing effects and proposing mitigation measures associated with Forest management activities such as timber harvesting, road construction, grazing, and related activities that can effect watershed health and impact sensitive species such as the Colorado River cutthroat trout.

**Research Need:** Assessment of the effects of water depletions, drawdowns, and diversions on the habitat of aquatic species on the Forest.

**Importance:** This is a growing issue where there is a need for Forest-specific data. The data generated from this research would allow the Forest to better assess the effects of water depletions and diversions on threatened, endangered, and sensitive species through biological assessments and evaluations required by Section 7 of the Endangered Species Act. The results of this proposed research would also help the Forest better manage diverse aquatic resources, including species that are not at risk currently, but where the cumulative effects of water deletions and diversions are not fully understood.

Appendix H Research Needs .....	H-1
Introduction.....	H-1
Wildlife .....	H-1
Recreation .....	H-1
Social and Economic.....	H-2
Vegetation .....	H-2
Soil and Water .....	H-3
Fisheries/Aquatics .....	H-3