File Code: 1950
Date: August 4, 2000

Enclosed is the Fiscal Year 1999 Monitoring Evaluation Report for the Routt National Forest. This is the first report that covers an entire year's worth of monitoring the effects of the forest plan we implemented in 1998.

You will see that we have placed a lot of emphasis on monitoring the effects of the Routt Divide Blowdown and the projects we have implemented to respond to the blowdown. This is because windthrow disturbance events of this magnitude at this elevation are not very common. Not much is known about their effects to resources or how they recover. Our monitoring is designed to provide us with this kind of information. The intensity of our monitoring is intended to provide us with early information on the effects of the projects we implement and the mitigations we apply. Our intent is to use the most current information we get from our monitoring to modify projects and to tailor activities to environmental needs. This should help us do a better job of fitting our projects to on-the-ground conditions and minimize adverse effects.

I invite your comments and suggestions about our monitoring program. If you have any questions or comments on monitoring or the Fiscal Year 1999 Monitoring Evaluation Report, please contact Larry Lindner at 307-745-2424.

/s/ Jerry E. Schmidt

JERRY E. SCHMIDT
Forest Supervisor

Concur: Frank J. Cross

Monitoring Evaluation Report

Routt National Forest - Fiscal Year 1999

I have reviewed the Annual Monitoring Evaluation Report for the Routt National Forest for Fiscal Year 1999. I believe that the monitoring and evaluation requirements as displayed in Chapter 4 of the Forest Plan have been met and that decisions made in the Forest Plan are still valid. The Land and Resource Management Plan for the Routt National Forest is sufficient to continue to guide the management of the forest. I have noted and considered the recommendations made by the Monitoring Interdisciplinary Team and will implement those I decide are appropriate after further analysis and, where required, public involvement.

/s/ Jerry E. Schmidt

JERRY E. SCHMIDT

Date August 4, 2000

Fiscal Year 1999 Monitoring Evaluation Report

for the

Routt National Forest Land and Resource Management Plan

Introduction

The purpose of this report is to evaluate the results of Forest Plan monitoring completed for Fiscal Year 1999 and to make recommendations to the Forest Supervisor concerning the sufficiency of the Forest Plan to provide management direction for the Routt National Forest for the next year. Monitoring was accomplished by specialists, individuals and the Monitoring Interdisciplinary Team (ID Team). The ID Team analyzed the resulting data to determine its significance at the Forest Plan level and then developed and presented recommendations to the Forest Supervisor. The ID Team members are listed below:

Larry Lindner, Team Leader
Tommy John, Soil Scientist
Denise Downie, Soil Scientist (Blowdown)
Gary Roper, Forester / Silviculturist
Kathy Rodriguez, Wildlife Biologist
Carol Tolbert, Data Coordinator RIS / GIS
Denise Germann, Public Affairs
Liz Schnackenberg, Hydrologist
Scott Cowman, Hydrologist (Blowdown)
Kirk Wolff, Air Resource
Jeff Tupala, Landscape Architect
Dee Hines, Ecologist
Mary Sanderson, Recreation
Ellen Frament, Analyst / Economist
Bill Schaupp, Entomologist (Blowdown)

The Routt National Forest Land And Resource Management Plan (Forest Plan) was approved on February 17, 1998 when Acting Regional Forester Tom L. Thompson signed the Record of Decision. The Fiscal Year 1999 Monitoring Evaluation Report covers monitoring completed between October 31, 1998 and September 30, 1999; the end of the Forest Service Fiscal Year (FY). The Interdisciplinary Team made an effort to monitor projects conceived and implemented under the revised Forest Plan.

On October 25, 1997, an intense windstorm occurred along the west boundary of the Mount Zirkel Wilderness, north of Steamboat Springs, Colorado, on the Medicine Bow-Routt National Forest. This event, commonly referred to as the “Routt Divide Blow down,” caused extensive wind throw to Engelmann spruce, sub-alpine fir and lodgepole pine trees on approximately 7,600 acres within the Mount Zirkel Wilderness and 5,300 acres outside the wilderness. The Medicine Bow-Routt National Forests quickly assembled an Interdisciplinary Team to analyze

the effects of the blow down and develop appropriate response. On July 17, 1998, the Record of Decision (ROD) for the North Fork Salvage Analysis Final Environmental Impact Statement (FEIS) was signed. This decision initiated a series of salvage sales designed to rehabilitate the affected area.

The projects implemented as a result of analyses completed to determine appropriate responses to the blowdown event included several innovative requirements and mitigations designed specifically to respond to conditions present in the blow down. A large amount of the monitoring accomplished during the 1999 field season was directed towards the evaluation of the effects of the Routt Divide Blowdown; the verification of assumptions made in the North Fork Salvage Analysis Final Environmental Impact Statement; the determination of the effects of the salvage operations and the effectiveness of the mitigation measures implemented. The monitoring also reviewed the effectiveness of several modifications to Best Management Practices as well as potential application of mitigations developed for the blowdown, which may have broader application on the forest.

This report summarizes observations made by the Monitoring ID Team and also reports specific measurable targets (S-2 Table, Forest Plan, 1997 Revision). Its primary thrust is to concentrate on analysis of the environmental effects of implementing the Revised Plan.

Monitoring of the Routt Land and Resource Management Plan (Routt Plan) will evolve from year to year as issues change and we obtain more experience with the plan. Under the new plan, monitoring focuses on identifying and analyzing the effects of plan implementation and refining plan direction, as necessary.

Overview of Monitoring, Team Conclusions and Recommendations

The Monitoring ID Team did not draw any conclusions that would require immediate changes to the Forest Plan. Monitoring did identify some needs to alter implementation as well as four topics that could result in non-significant amendments. The ID Team has identified a need for research to isolate the factors causing subalpine fir decline and to develop management strategies to counter its effects. The ID Team presented its recommendations to the Forest Supervisor with its conclusion that the Forest Plan is sufficient for management.

Aerial surveys completed over the past few years reflect an increase in insect and disease activity consistent with the aging of the forest. Damage and mortality due to disturbances such as windstorm, fire and forest pests are escalating. While this is to be expected on the portion of the forest with low management intensity (i.e., wilderness areas, etc.), large scale damage could adversely affect outcomes, management options and expectations for the more intensively managed portion of the forest.

Special emphasis needs to be placed on continued monitoring of spruce bark beetle populations within the Routt Divide Blowdown. Even though the large blowdown that occurred during the fall of 1997 created a very large acreage of optimal habitat, numerous smaller events in higher risk stands could also trigger a spruce beetle epidemic. The monitoring completed during 1999 has led entomologists to a confident conclusion that an epidemic will occur. This probable epidemic has the potential to significantly change the complexion of the spruce-fir vegetation

type on the Forest, with several long-term implications, particularly to the hydrologic, wildlife, timber, residential/forest interface and recreation resources.

Populations of mountain pine beetle on the Routt National Forest are also continuing to escalate at dramatic levels. There are small, intense outbreaks in several pockets across the forest.

Responses to the Monitoring Questions

The Monitoring Questions identified in Chapter 4 of the Forest Plan respond to regulatory requirements and the goals and objectives in Chapter 1 of the Forest Plan. They are designed to promote monitoring items helpful in determining how well the Forest Plan has been implemented. Several of the Monitoring Questions do not require annual evaluation and reporting. In the response to these questions, a note identifies the year in which evaluation and reporting will be completed. These questions involve situations where it will take several years for trends to become established or discernable. Where data is displayed but no analysis is completed in this report, the information was collected to ensure the information is available for the eventual analysis.

The information presented here is summarized from specialist reports compiled as part of the FY 1999 monitoring effort. The evaluations and recommendations to the Forest Supervisor were prepared by the Monitoring ID Team.

Monitoring Question 1-1. Are long-term soil health and productivity being maintained?

A review to test the draft Region 2 Soil Health Assessment Protocols was completed on four timber sales of varying ages during September 1999. The draft protocols provided useful guidance for the soil scientists in their review of these projects. Overall, the sale units looked good. It appears that BMP implementation is enabling the forest to meet Regional soil standards. Sheet and rill erosion, largely confined to the temporary roads, was considered minimal. Skid trails and roads are compacted, but little detrimental compaction is apparent elsewhere and soil structure is good. Some needs for additional erosion and sediment control were identified. The monitoring review identified three units in which openings were well vegetated with grass and elk sedge.

Soil Erosion bridges were installed on several sites within the Routt Divide Blowdown. However, the data collected during 1999 is inconclusive. This is a relatively new technique and this is the first time this method has been used on the Routt. It is not yet clear how much of the measured difference is due to the variability inherent in the measurement method and how much is due to actual soil movement. Very little visual evidence of erosion was present at any of the sites.

Soil Ground cover transects were completed on the Routt Divide Blowdown. Effective cover in all units was greater than that required by Regional Standards. Percent cover (primarily litter) ranged from 80-92% with an average of 87%. Litter/wood cover is high because fine slash was left on-site and the target for coarse woody debris was 30-40 tons per acre. Plant cover is low because the transects were completed the same season as the units were salvaged.

The 1998 Monitoring Evaluation Report identified a reforestation problem associated with the reduced amount of scarification during winter logging where elk sedge is the predominate herbaceous undergrowth and highlighted the need for additional monitoring to quantify the problem and develop recommendations and solutions. However, no logging occurred during the winter of 1999-2000 to provide an area for study and monitoring (See Monitoring Question 1-10).

Conclusion – The monitoring information gathered during 1999 from specific projects indicates that soil health and productivity are being maintained across the forest. The Forest believes that the monitoring projects it has initiated will provide good quality information over time, however, the results are still indeterminate.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 1-2 - Are management activities maintaining or improving air quality including the Mt. Zirkel Wilderness?

Air quality readings from the Mt. Zirkel monitoring station were not reviewed because the wind direction from the Beaver Creek Burn on the Yampa Ranger District and the lower Camp Creek Burn on the Parks Ranger District did not disperse smoke into the Mt. Zirkel Wilderness. The Simple Approach Smoke Estimation Model (SASEM) air quality model was used to predict the effects of this prescribed burn upon potentially affected areas such as the town of Oak Creek, city of Streamboat Springs, and the Yampa Valley Regional Airport. The burn was conducted under good to excellent smoke dispersal conditions and none of the potentially affected areas were impacted. The smoke dispersal from this prescribed 70 acre burn met the SASEM modeled run projections.

The Parks Ranger District conducted a 49 acre prescribed burn in lower Camp Creek. The SASEM air quality model was also used to predict the effects of this prescribed burn upon the Platte River Wilderness. The smoke dispersal from this prescribed burn also met the SASEM modeled run projections.

Conclusion – The projects monitored for air quality during 1999 met their modeling projections.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 1-3 - How well are management activities maintaining watersheds in a healthy condition and meeting Colorado water quality standards?

Evaluate current conditions of watersheds for compliance with state water quality standards and review State list of impaired streams: None of the streams on the Routt National Forest are listed as impaired on the 1998 state 303(d) list. Although no streams are listed as impaired, there are 23 segments on lands administered by the Routt National Forest on the Colorado State Monitoring and Evaluation List for the effects of excess sediment. Initial evaluation of the data indicates that the water quality parameters meet state water quality standards. Data analysis is not complete for the other factors. During 1999 six reference reaches were sampled to determine reference conditions for the physical and biological factors, and to compare the reaches in question. Monitoring during 2000 will focus on additional reference reach sampling.

Evaluate disturbance level of watersheds by comparison of current conditions with 1997 Watershed Health Assessment: There were no watersheds in which the disturbance conditions changed significantly from the 1997 Watershed Health Assessment during 1999. New disturbance activities occurred primarily in the North Fork of the Elk River watershed from salvage operations following the Routt Divide blowdown, but this has not significantly affected the watershed condition.

Review projects for compliance with the effectiveness of Forest Plan water and riparian Standards and Guidelines: Monitoring continued on the North Fork blowdown salvage project to evaluate the effectiveness of Forest Plan Standards and Guidelines, and to determine if mitigations identified during the NEPA process were implemented on the ground. In the NEPA process, streamside management zones (SMZs) and implementation of BMPs were identified as key in protecting streams and riparian areas during salvage operations. The streamside management zones (SMZs) were identified and marked on the ground prior to salvage operations. The purpose was to prevent removal of any down timber which may affect long term woody debris recruitment, channel stability, channel migration, shading, and aquatic habitat. Field reconnaissance found that the SMZs were successful in protecting the water resource and meeting Forest Plan Standards and Guidelines.

Additional monitoring focused on the effectiveness of BMPs in minimizing the effects of roads on stream channels with attention being focused on road-stream crossings. Temporary bridges were used for the first time to minimize the effects of new road-stream crossings on the stream channel. While the actual bridge has little effect on the stream channel, the construction necessary to establish the footers had greater impacts than expected. In the future, a specific implementation plan should be developed to minimize the impacts of building the footers.

Monitoring of the effectiveness of BMPs and Forest Plan guidelines was completed through field review and photo documentation. Overall, the BMPs and mitigation measures met Forest Plan Standards and Guidelines. Where BMPs were not effective, alternative measures were implemented to correct the problem. As an adaptive management example, the 1998 Monitoring report discussed a situation where the drainage on a road was inadequate. This problem was corrected and subsequent monitoring was accomplished to verify that the fix is effective.

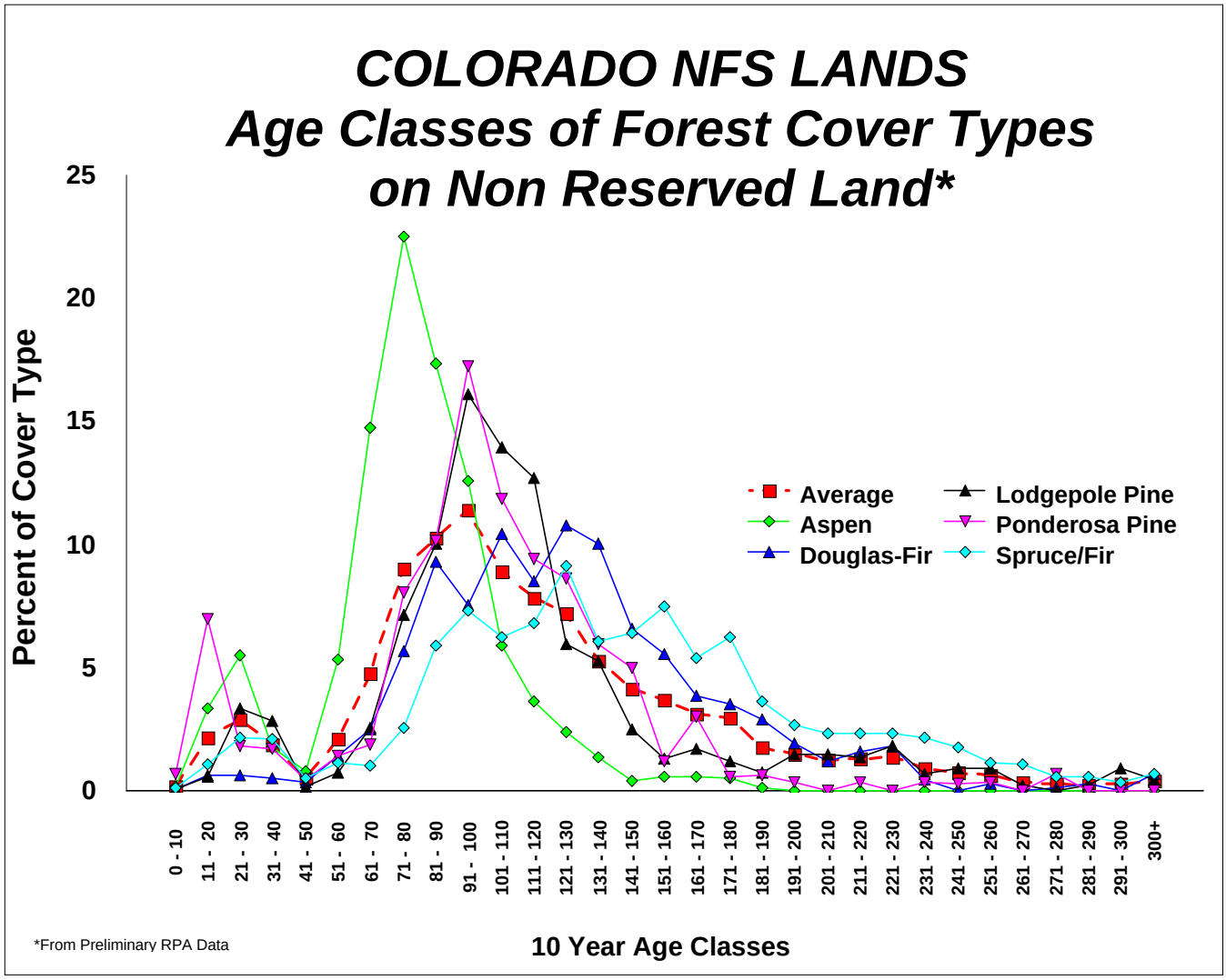
Conclusion - Monitoring completed during 1999 indicates that watersheds are in a healthy condition, including watersheds within the Routt Divide Blowdown. Monitoring of the BMPs implemented for blowdown salvage has verified their anticipated effectiveness.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations - Continue to monitor the effects of the Routt Divide Blowdown and related salvage activities. Special attention should be provided to temporary bridge installations and the effectiveness of road repairs and maintenance. Continue to monitor effectiveness of Streamside Management Zones.

Monitoring Question 1-4 - Are insect and disease populations compatible with attainment of management area goals and objectives?

The results of the 1999 aerial surveys to detect insect and disease damage and mortality are reflective of stand conditions of an aging forest that is becoming more susceptible to disturbances such as windthrow, insects and diseases.



This graph displays the age structure of timbered stands on National Forest System lands in Colorado. The graph was created over ten years ago, so the current age classes are generally older than as displayed by a factor of about ten years. As the graph shows, the majority of stands within National Forests in Colorado, which includes the Routt National Forest, are increasing in age and becoming more susceptible to disturbances such as insects, disease, windthrow, wildfire, etc.. The forest anticipates that, as our stands continue to mature, we will see an increase in both the incidence and severity of these types of disturbance events.

Spruce Bark Beetle

As discussed in last year's report, with the occurrence of the Routt Divide Blowdown (October 1997), the spruce bark beetle (*Dendroctonus rufipennis*) became the agent with the greatest potential to cause wide spread tree mortality on the Routt National Forest in the near future. This wind event resulted in abundant spruce beetle breeding material throughout the spruce-fir forest vegetation type on the Hahns Peak and Bears Ears Ranger Districts. This material is readily available to populations of spruce beetle and will remain suitable for several years. During the 1998 field season, the spruce beetle was just beginning to utilize the downed spruce

trees and sparse populations could be found in almost any patch of blowdown. The spruce stands on the Hahns Peak and Bears Ears Ranger Districts are continuing to windthrow at the edges of the blowdown and contain numerous, standing live but damaged trees that will continue to create potential host material for beetle populations for another two to five years, depending on climatic conditions.

The life cycle for spruce bark beetle is normally two years. However, during the summer of 1999, monitoring located a small number of these beetles completing a one year life cycle. The one year spruce beetles add a note of urgency when dealing with the spruce beetle issue. These insects will emerge and re-infest additional blowdown material if available on a one year cycle. If additional blowdown material is not available, these individuals will attack standing trees. Either way, one year spruce beetles have the potential to increase the spruce beetle population at a more rapid rate, even though they are a small percentage of the population at this time.

Spruce beetles in windthrown trees are afforded some protection from mortality agents such as weather extremes and predators. The weather conditions for the past two winters were not severe enough to cause significant mortality to over-wintering spruce beetle populations. Therefore, we can expect a large percentage of the spruce beetle population currently in windthrown trees to survive and continue to develop. The summer of 2000 has been projected to be the earliest time when large-scale beetle movement from blowdown to live, standing trees could be anticipated.

Based on past experience with significant windthrow events, it is expected that the spruce beetle population will increase within the windthrow for several years before moving into the surrounding live, green forest as the windthrown trees decline in palatability. The scale of the Routt Divide Blowdown, the wide variety of blowdown patch sizes and the different conditions in these patches present the spruce beetle with a very significant opportunity to attack and kill standing spruce trees. With a susceptible spruce-fir forest and favorable weather, the spruce beetle may create landscape level disturbances by killing the mature spruce component of forested areas and making way for the new forests. Management efforts can have local effects that will mitigate spruce beetle impacts to varying degrees, but we know of no way to stop a landscape-level spruce beetle epidemic once it has begun. Much of the spruce-fir forest in Colorado and Wyoming is mature to very old and is approaching the time when disturbances will likely result in renewed and regenerated forests. The context of the Routt Divide Blowdown is that it is but one of several places in Colorado and Wyoming where landscape scale spruce beetle outbreaks are becoming increasingly likely.

Monitoring of spruce bark beetle populations in the vicinity of the Routt Divide Blowdown has included aerial and ground surveys, pheremone trapping, extent surveys and brood sampling. Aerial surveys, which were conducted in north central Colorado and south central Wyoming annually from 1996 through 1998, detected hardly any recent spruce mortality attributed to the spruce bark beetle. This indicated that spruce beetle activity in standing trees has been at very low levels over a large area, including the blowdown area, from 1994 or 1995 onward. The 1999 aerial survey found little activity in standing trees adjacent the blowdown, which indicated that most of the spruce beetle populations were either still within windthrown trees or had not infested the standing, green trees long enough (two years) for them to begin to fade.

In 1998, pheremone traps at only two of the seven locations they were placed caught a total of three spruce beetles (Schaupp et al., 1999). The number of pheromone trapping locations was

increased from seven in 1998 to fourteen in 1999. The seven locations used in 1998 were again used in 1999 and six of them exceeded the trap catch of 1998. The number of spruce beetles captured during 1999 varied widely by location. Although one location did not capture any beetles, the remaining thirteen caught a total of 548 spruce beetles. One site captured 304 beetles. This is 55 % of the population of spruce beetles captured and is five times more spruce beetles than captured at the site with the second highest total. Because of this dramatic increase in trap catch, it appears that, consistent with scientific literature, the blowdown was less attractive to flying spruce beetles in 1999 than it was in 1998. This may indicate that the blowdown is becoming less suitable for spruce beetle populations, which are beginning to disperse and are more responsive to the chemical lure in the traps. It is also likely that the number of flying spruce beetles was greater in 1999 than it was in 1998.

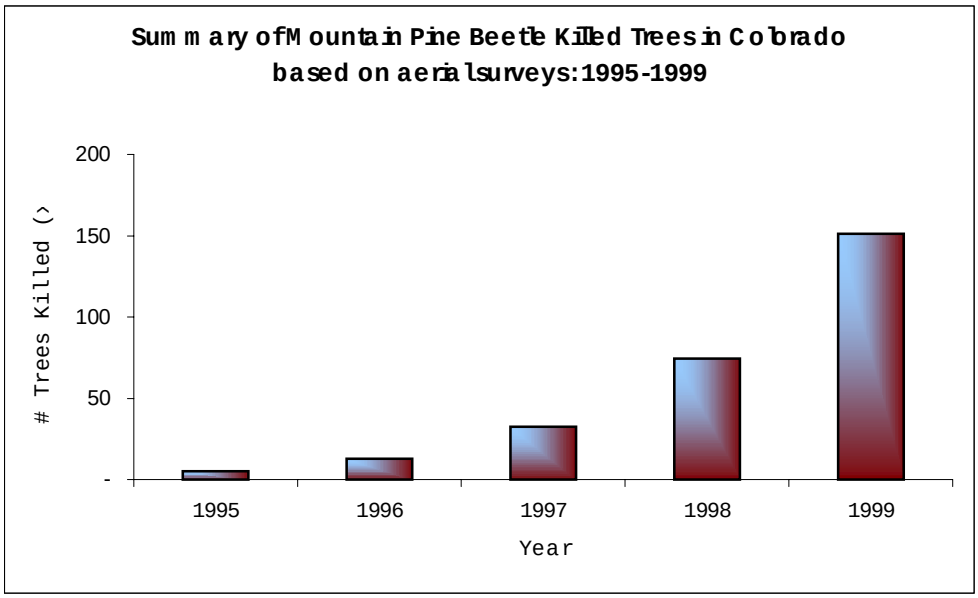
Subalpine fir decline

The most widespread damage agent detected in 1999 in Colorado was subalpine fir decline. This decline is poorly understood, but it is thought that a combination of insects (the Western balsam bark beetle, *Dryocoetes confusus*) and disease (*Armillaria spp.* or other root diseases) play a role in tree decline and mortality. Nearly 400,000 trees were affected throughout the area surveyed in Colorado in 1999 by this decline. Dead subalpine fir holds its red needles longer than most other conifer species, so it is possible that these totals may be cumulative from the last 2, 3, or even 4 years. This decline, which is present throughout the western United States and Canada, is most concentrated in the northern half of Colorado. Since little is known about this decline, it is not possible to determine how much of the damage occurred this past year.

Mountain pine beetle

Next in severity is mountain pine beetle (*Dendroctonus ponderosae*) in lodgepole, ponderosa, and limber pine. The following chart depicts the yearly two-fold or greater increase in mountain pine beetle mortality that has been occurring in Colorado since the mid-1990's.

In Colorado, this beetle killed over 150,000 trees covering approximately 120,000 acres in 1999.



The number of trees estimated killed by mountain pine beetle in the counties coincident with the Routt National Forest include 30,690 trees in Grand County; 7,090 trees in Jackson County;

4,470 trees in Routt County and 440 trees in Rio Blanco County. In 1999 Grand County had the second largest amount of mountain pine beetle killed trees in Colorado. In the East Fork of Grand County's Troublesome Creek, mountain pine beetle numbers have exploded from 500 trees killed in 1998 to almost 6,000 in 1999. The mountain pine beetle outbreak has now jumped the ridge and is starting to kill trees in Buffalo Creek along Hwy. 125. Increases in lodgepole pine mortality were predicted in the Routt Forest Plan as a result of increasing average age.

Next in severity, was Jackson County, where over 7,000 trees succumbed to mountain pine beetle attack. The outbreak near Rand, between Buffalo Ridge, Green Ridge and Owl Mountain, continues to enlarge from an estimated 1,345 trees in 1998 to over 4,000 trees in 1999. In northern Jackson County, the outbreak along the east side of Independence Mountain from County Road 6 West extending north into Wyoming appears to be increasing. Here, the number of dead trees has tripled from 1998 to more than 2,500 dead trees in 1999. Additionally, an area with light mountain pine beetle activity warranting monitoring in 2000 was found on both the Routt National Forest and the Colorado State Forest between King's Crossing and the North Sand Hills. Over 200 trees were fading from mountain pine beetle attack in this locale. Direct suppression efforts are being taken on the ongoing mountain pine beetle infestation within the Steamboat Ski Area. The infestation is being closely monitored for additional needs to protect this area of high investment from both mountain pine beetle and spruce bark beetle.

Conclusion - Stands of trees on the Routt National Forest are aging to the point they are becoming increasingly susceptible to disturbances such as windthrow, insects and diseases.

Spruce Beetle - The Routt Divide Blowdown has created optimal conditions for a spruce beetle epidemic on the Forest, and current beetle populations are increasing. If an epidemic should occur, the spruce timber type in northwest Colorado, including the Routt National Forest, could change significantly. This situation would likely be incompatible with some forest goal and objectives.

Subalpine fir decline - While more individual trees are succumbing to this pest than to others, little is known about this complex of insects and disease. Improved monitoring protocols are needed to assist measuring annual mortality and to enable the quantification of the agents' effects and potential. There is a need to complete research to verify the cause and to identify effective management techniques to counter its effects.

Mountain pine beetle - Damage to pine forests in Colorado, including those on the Routt NF, from this insect has been rapidly accelerating since 1994. There are currently large area epidemics occurring on the forest in the east Troublesome area and near Rand, Colorado. Other infestations on the Routt NF are currently of less severity, but are expected to grow in size and intensity. The current rate of growth reflects susceptible stand conditions and the need to implement appropriate management strategies.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations - Continue intensive and extensive monitoring of spruce bark beetle and mountain pine beetle populations. Continue coordination with Forest Service Research to test

methodology to limit spruce beetle populations and reduce the risk of beetle epidemics in spruce stands and to promote research on subalpine fir decline. Continue monitoring forest vegetation management practices regarding the relationship between dwarf mistletoe and opening size as discussed in the FY 1998 Monitoring Evaluation Report to determine the need to modify timber sale unit layout protocols.

Monitoring Question 1-5 - How is harvest unit size affecting landscape patterns across the Forest?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation. Although no formal conclusions will be drawn until 2003, the ID Team noted some trends worth documenting for future consideration.

A copy of the Forest's vegetation data (RIS and GIS data attributes) as of January 2000 has been archived. This data will serve as a baseline for the initial comparisons to be made in the 2003 Annual Monitoring Evaluation Report.

Data on average and maximum harvest unit size for 1999 by district are presented in the following table. These will be included in the baseline data for use in the 2003 analysis. The large openings caused by the Routt Divide blowdown are not included in this analysis since they were not the result of Forest Plan implementation.

District	Average Clearcut Size (acres)	Maximum Clearcut Size (acres)
01 (Yampa District)	14	24
03 (Hahns Peak / Bears Ears District)	0	0
04 (Parks District)	11	18

The following table is added based on a recommended implementation change in the FY 98 Monitoring Report. It provides for future reference, a summary of data about openings perceived to be over 40 acres.

Requests for harvesting units in excess of 40 acres			
District	**Timber Sale and Unit Numbers**	**Maximum Unit Size (acres)**	**Year Approved/Year Harvested**
01 (Yampa District)	Gore Pass 36	117 acre created opening	1995 / 1999
	Gore Pass 37		1995 / 1999
	Gore Pass 42		1995 / 1999
03 (Hahns Peak / Bears Ears District)	No clearcuts greater than 40 acres in FY1999.		
04 (Parks District)	No clearcuts greater than 40 acres in FY1999.		

Observation - Gore Pass units 36, 37, and 42 combined to create a composite created opening of 117 acres. These units were specifically designed to combine several small units into one large unit to emulate the natural patch size and pattern found on this landscape. It will provide larger patches and increase future management options.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

As reported last year, upon reviewing Forest-wide silviculture standards 1, 4, 5, and guideline 3, it became clear that the RIS database, by itself, is not an easy or adequate tool to track created openings over 40 acres. In silviculture guideline 3, seedling height is a primary factor for determining a created opening. This is a critical measurement when created openings are located adjacent to each other. It is equally important for determining if the final removal treatment in a shelterwood system has created an opening. However, data on seedling height is not periodically gathered or tracked in the RIS database. A project status database has been modified to maintain information needed to track critical information regarding created openings greater than 40 acres. The effectiveness of this for tracking created openings over 40 acres will be monitored during FY 2000.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendation - Test methods to track requests to exceed the 40 acre harvest units size as part of project tracking database.

Monitoring Question 1-6 - Are habitats for threatened, endangered and Forest Service Rocky Mountain Region sensitive species on the Routt National Forest being maintained or enhanced? (Fine Filter Scale)

To address this monitoring question, monitoring reports, specialist reports, biological assessments (BAs) and biological evaluations (BEs) for a wide variety of projects being considered through the NEPA process were analyzed.

Aquatic BAs were conducted for three range allotments and a residential spring development. No endangered fish species are present on the Forest. Potential impacts to these species would be more likely to occur as indirect effects of water depletion. Since one of the main causes for the decline of the four endangered fishes in the Colorado River are water depletions, this resulted in determinations that these projects "*may affect, likely to adversely affect*" the continued existence of these four species. This determination has led to formal consultation with the US Fish and Wildlife Service on the projects. The progress made in the Recovery Program and the minor nature of these projects has resulted in USFWS concurrence that the projects may proceed without further consultation.

Determinations made for the grazing allotments concluded that habitat for TEP & S species would be maintained. Implementation of the management activity for these areas identified in the proposed action determined that "*adverse impacts may occur to individuals, but were not likely*

to result in a loss of viability in the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for some species and would have "*no impact*" or "*no affect*" to others.

For the majority of recreation projects reviewed, it was determined that there would be "*no impact*" to any of the regional sensitive species or their habitat on the Forest and "*no affect*" to any of the TE or P species or their habitat. One exception was for a commercial guiding permit proposal on the North Platte River. Nesting bald eagles are within the vicinity of the River. The biologist made a determination of "*may affect, not likely to adversely affect*" for FY99 with continued informal consultation with the USFWS. This active nest will continue to be monitored – should two consecutive years of reduced breeding success occur, the decision to permit rafters will need to be re-evaluated.

Threatened, Endangered, Proposed and Sensitive species monitoring continued on the Routt Divide Blowdown. Most wildlife monitoring completed in 1999 occurred before major salvage operations began. Therefore, it forms the baseline for post-blowdown effects to wildlife habitat. Future monitoring will provide data to evaluate the effects of salvage operations to wildlife. Continued monitoring is expected to provide valuable information on the effects of salvage operations. The Forest will continue to monitor and evaluate the types of human road use occurring within the blowdown analysis area and the effects this use has upon elk habitat effectiveness.

Lynx dependency upon snowshoe hare as a food base has been well documented. Snowshoe hare habitat assumptions will be monitored in both blowdown treatment units and untreated units to validate habitat assumptions currently being utilized in wildlife specialist reports and for impact determinations. The types of recreational use occurring shall be monitored and evaluated for effects this use has upon lynx habitat. Surveys to document the presence of forest carnivores (lynx, wolverine, marten and fisher) have been conducted. Only the marten has been detected to date. Although there is suitable habitat for the lynx within the analysis area, no lynx have been detected.

Effects of salvage logging on boreal toad habitat will also be monitored and evaluated. Monitoring has occurred in several locations throughout the North Fork Salvage area. No boreal toads were located during times of survey. Species detected were Western chorus frogs and tiger salamanders. This data was collected before salvage operations began and will be used to establish a baseline for future, post-salvage analyses. For the boreal toad, effects of human recreational use occurring within the analysis area as a result of changes in road management will be monitored and evaluated. This will help determine any potential effects to boreal toad breeding areas.

Goshawk nest territories were monitored during 1999. Two of the nineteen known territories are associated with the North Fork salvage area. One territory was associated with an area of the blowdown that was actively being salvaged. This territory was active and the young successfully fledged. Mitigations associated with protecting this territory were effective. The other territory was occupied but inactive this year – possibly due to disturbance associated with a recreational trail.

Boreal owl nest box monitoring revealed that none of the boxes were occupied during the 1999 nesting season in either blowdown areas or non-blowdown control sites. This lack of nesting correlates to a regional low for 1999 and may be influenced either by the fact that the boxes have only been up for one season or, possibly, a high availability of natural cavities. Since it occurred

in the spring before salvage operations were begun, monitoring for FY99 does not evaluate the effects of salvage logging. This information will be used to establish baseline data, and additional monitoring will be needed to evaluate blowdown and salvage logging effects and further clarify the effects of the blowdown.

Point counts were established within blowdown areas and in adjacent spruce-fir stands to evaluate the effects of both blowdown and salvage logging to bird species that occur in spruce-fir forests. The 1999 data was collected prior to salvage operations and indicates effects of the blowdown rather than effects of the salvage operations. This data suggests that bird species composition appears to have significantly changed as a result of the blowdown. Continued monitoring in 2000 and 2001 will be used to to further clarify effects of blowdown and to evaluate the effects of salvage operation.

Monitoring for fisheries is based on the premise that primary production (population of macroinvertebrates) would be expected to increase as a result of the large amounts of woody debris added to the stream system. The Forest currently has one year of pre-blowdown data and two years of post-blowdown data. Results from this monitoring are not yet available. Future monitoring reports will show the results, as they become available.

The Rocky Mountain Forest and Range Experiment Station established over 200 plots to collect data on coarse woody debris within the Routt Divide Blowdown. This data may be useful in determining more specifically, the appropriate level of debris to be retained for wildlife habitat and snow retention purposes. Pre salvage plots averaged 64 tons per acre. Only 13 of the plots were salvaged during 1999. The post-salvage measurements averaged 47 tons per acre.

Risk assessments were performed for proposed winter recreation activities not connected to the Routt Divide Blowdown to evaluate if boreal owl, goshawk, marten, lynx, wolverine and/or fisher or if potential habitat for these species would be impacted. Effects analyses were discussed in terms of both duration and context/intensity (direct, indirect, cumulative; past, present and reasonably foreseeable). In addition, specific mitigation measures were recommended to reduce any potential adverse impacts to these species.

Conclusion - Based on discussions of effects/impacts and incorporating effective mitigation measures into decisions, it was determined that projects identified should not have significant detrimental impacts to Threatened, Endangered Proposed and Sensitive (TEPS) species. To conclude, habitats for those TEP and S species found on the Forest are being maintained. Road closures were determined to have a beneficial impact for many TEP and S species, and would thus enhance habitat for many terrestrial species.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 1-7 - Are forest cover types and habitat structural stages (coarse filter as described in the FEIS on pages 3-107 through 3-110) being provided for across the Forest?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation.

A copy of the Forest's vegetation data (RIS and GIS data attributes) as of January 2000 has been archived. This data will serve as a baseline for the initial comparisons to be made in the 2003 Annual Monitoring Evaluation Report. The forest may pursue collecting this information through cooperative agreements with other organizations. One method for obtaining cover type and habitat structural stage information is to re-measure timber inventory plots, however, this method is expensive. Cover type and habitat structural stage change very slowly, making remote sensing a viable, cost-effective monitoring option as another potential method.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 1-8 - How are management activities affecting late successional forest structure in management Areas 5.11 and 5.13?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation.

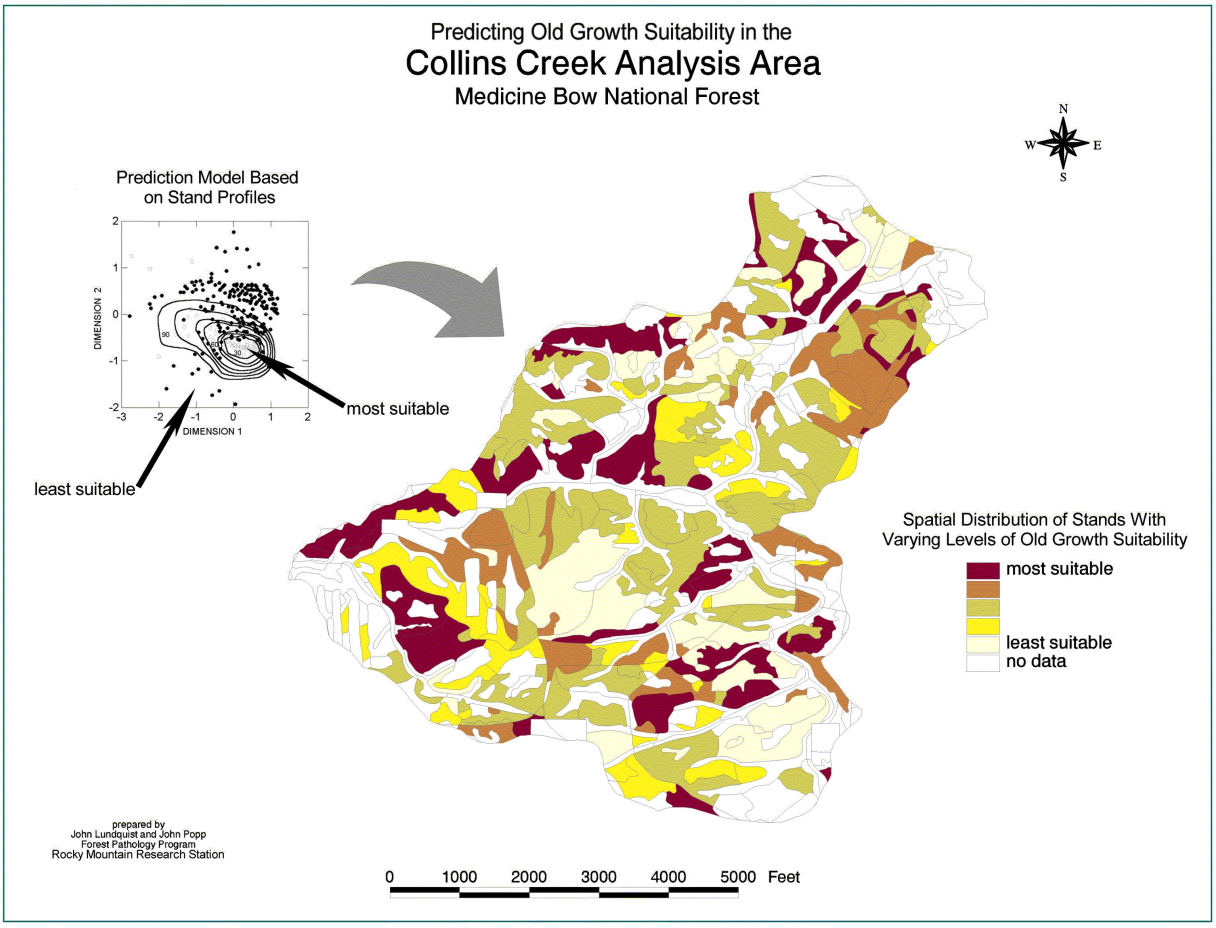
A copy of the Forest's vegetation data (RIS and GIS data attributes) as of January 2000 has been archived. This data will serve as a baseline for the initial comparisons to be made in the 2003 Annual Monitoring Evaluation Report.

A model developed to compare predictions of old growth suitability, using stand inventory data currently collected routinely on national forests, to the results of a separate, specific survey was tested on a proposed timber sale on the Medicine Bow portion of the forest (2000, Lundquist, J.E., and Lindner, L.R; Test of a Model to Assess the Condition of Lodgepole Pine Stands; Environmental Management; Volume 26(4)). The Resource Information System database was primarily developed to analyze timber information, which has often been characterized as “not very useful” for analyzing non-timber resources. However, this test has found this database of routine stand inventory information is very adequate to identify potential old growth characteristics and to make decisions.

Profiling uses multiple characteristics based on data in existing forest databases to characterize, define, and compare current stand conditions with desired stand conditions. Desired conditions are modeled using expert opinion (or - as in this case - special surveys) of what stands suitable for selected management objectives look like. The actual computations underlying this method are intense, but the output is essentially an image of a target and a dot.

The target represents the desired condition, and the dot represents the current condition of a single forest stand. The closer the dot is to the center of the target, the more suitable the stand for the selected management objective. Diseases and other disturbances, including silvicultural manipulations, cause the dot to change positions either towards or away from the target. The direction and distance of these changes are measures of positive or negative impact to attainment of the desired condition. The method should be very suitable for monitoring changes in forest condition over time as stand examinations are updated. It was designed to be highly interactive with forest decision makers and adaptable to both timber and non-timber objectives. Profiling was also designed to be economical and timely since it works with existing data and thus requires no special field surveys, although special surveys could be substituted for expert opinion, as it was in the Collins Creek assessment.

The forest anticipates continued use of the model to identify the most likely old growth stands for subsequent on-the-ground verification. The model also has potential for assessing stand suitability for a variety of other specific management objectives beyond the old growth objective of this particular test. The forest anticipates exploring additional uses for this multivariate analysis model for monitoring characteristics related to other specific management objectives and how suitability changes with time and circumstance.



No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 1-9 - How are management activities affecting riparian habitats (including wetlands) on the Forest?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation. Although no formal conclusions will be drawn until 2003, the ID Team noted some trends worth documenting for future consideration.

The effect of management activities on riparian habitats was evaluated through field reconnaissance, and Proper Functioning Condition[1] (PFC) surveys. PFC is a qualitative method used to evaluate the hydrologic, vegetative, and soil conditions of riparian areas to determine riparian health. Field reconnaissance was conducted for all types of management activities including timber sales, trails, roads, and range allotments. PFC surveys were conducted on range allotments which are currently being analyzed through the NEPA process.

As reported in the 1998 Monitoring Evaluation Report, field reconnaissance continues to verify that effects from timber management are primarily from past activities, and that current timber management activities are not affecting riparian habitats.

Poorly located roads and trails, particularly those which are user built, are impacting isolated riparian areas. These areas are being identified for watershed improvement projects, some of which were completed in the Pinkham Creek area during the summer of 1999. Monitoring of a project previously completed on Little Rock Creek indicates that riparian conditions are improving at this location.

Riparian problems related to grazing are being addressed through the Allotment Management Planning process in Environmental Assessments. Changes are being made to the type of grazing system, season of use, exclosures, and livestock numbers to address these concerns. Follow-up monitoring indicates that these measures are effective in moving the riparian habitats toward the desired condition. Implementation of watershed improvement projects is helping to improve riparian areas being affected by roads and trails.

Project areas addressed during the summer of 1999 included the Troublesome allotments in Middle Park, the California Park allotment on the Hahns Peak/Bears Ears Ranger District, and the Blacktail allotment on the Yampa R.D. There were areas in all three allotments which were rated "functional at risk." The "at risk" reaches will be addressed through NEPA, and alternatives will be developed to improve the riparian condition. Changes in management were implemented on the Troublesome allotment in 1998, and field reconnaissance in 1999 indicated that riparian conditions are on an upward trend.

Follow-up monitoring was done on Grassy Run and Ninegar Creek on the Parks Ranger District. These areas had previously been identified as functional at risk. Fencing in the Grassy Run area has greatly improved the reach identified as functional at risk, and it is considered to be in an upward trend. No specific measures have been implemented in the Ninegar Creek area, and conditions have not improved. The district is reviewing potential implementation needs in this area.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

[1] USDI Bureau of Land Management. 1993. Riparian Area Management: Process for Assessing Proper Functioning Condition. Technical Reference 1737-9. Denver, CO.: USDI Bureau of Land Managment Service Center. (Revised 1995).

Monitoring Question 1-10 – Are stands adequately restocked within 5 years of final harvest treatment?

The forest compiles the Reforestation and Timber Stand Improvement Accomplishment Report annually. This report identifies all sites that received a final harvest five years previously. There are 827 acres of final harvest on the Routt National Forest recorded for 1994. The FY 1999 database query showed 181 acres were not certified as stocked five years later. The following table displays the reasons for non-certification:

Reason for Non-certification	Acres	Remarks
On-the-ground surveys were accomplished in FY99 and these sites are certified as stocked, but the information was not entered in the database.	78	The database will be updated.
Two sites were mistakenly not scheduled for regeneration survey in FY99.	34	Regeneration surveys are scheduled for FY 2000.
Two sites met the minimum trees / acre requirements but the seedlings were not well distributed. The district expects these sites will fill in naturally.	22	Regeneration surveys are scheduled for FY 2000. Certification is expected, but if not, fill in planting will be scheduled for FY 2001.
One site received a final overstory removal and the logging destroyed too much of the regeneration	13	The site will be planted in the spring of 2001.
Five sites were winter logged which resulted in inadequate ground scarification. There was also a fast regrowth of elk sedge which inhibited seedling establishment. These sites are 65-77% stocked.	34	One site is scheduled for fill in shelter cone seeding in 2000. The other four sites were fill in shelter cone seeded in 1998 with regeneration survey scheduled for 2000.

The review of the reforestation records pointed out that most of the natural reforestation problems are related to winter logging in areas with elk sedge competition. Summer harvest operations ordinarily scarify the site, providing numerous areas where the mineral soil is exposed in the sedge where seedlings can become established. The lack of scarification from

winter logging may not create enough sites to allow full stocking through natural regeneration. The forest Soil Scientist is monitoring winter logging operations, however, as noted in Monitoring Question 1-1, no logging occurred on these sites during the winter of 1999-2000.

For timber sales where winter logging is probable, the forest will determine where scarification is necessary for natural regeneration and include contract provision C(T) 6.42 Skidding and Yarding (Special Objectives) 11/98 with wording such as:

> *"On cutting units _____ which contain approximately _____ acres and as shown on the Sale Area Map, unless otherwise agreed in writing, a minimum of 50 percent and a maximum of 70 percent of the workable ground surface uniformly distributed over the unit area, shall be scarified down to bare mineral soil. Scarified ground is here defined as bare mineral soil in patches exceeding .25 feet by .25 feet". If the purchaser elects to work out side of the normal operation season in the winter, then the purchaser will be required to return to the unit the next summer to complete the scarification requirement. This scarification requirement will not conflict with the slash requirements of C(T) 6.43# - Felling Restrictions In Serotinous Lodgepole Pine Units (11/98) when included with lodgepole clearcut units.*

Success of this approach will be monitored.

The reforestation study on the Brush Creek/Hayden Ranger district of the Medicine Bow portion of the forest, which was initiated during 1998, was completed during FY1999. This study was designed to evaluate whether on-the-ground regeneration is adequate, correctly reported and to verify that the records system is accurate. The study, which compared on-site conditions to district stand records verified that the forest's harvest units are regenerating naturally with little need for artificial planting or seeding; and that the sites needing some artificial regeneration are being systematically identified and treated to restock the stands. As a result of this study, the forest has verified that its current management practices are resulting in stands that are adequately regenerated on schedule. The majority of problems discovered in this study were related to the accuracy of the database. Proper records management is being stressed through administrative and functional area reviews. The Forest has not identified any need to replicate this study on other districts.

Conclusion – The forest's records currently indicate that 181 acres harvested in 1994 are not certified in the database as stocked. Normal district database record maintenance needs to be improved. Corrective actions will be implemented in these areas (see the preceding table).

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendation – Continue monitoring to ensure that regeneration meets the five year requirement and that records are updated on a regular schedule to allow annual verification as part of the monitoring report. As projects, site conditions and weather permit, monitor regeneration in elk sedge, grass, and rocky sites.

Monitoring Question 1-11 - Has timber suitability classification changed on any lands?

Note: Formal evaluation for this monitoring question will not occur until the Fiscal Year 2008. However, 1999 information is being included here to ensure its availability for future evaluation.

A copy of the Forest's timber suitability database as of January 2000 has been made. This data will serve as a baseline for future comparisons in the 2008 Annual Monitoring Evaluation Report. During 1999, no significant changes in timber suitability classification were reported.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 1-12 - What is the relationship between changes in habitat and population trends of the management indicator species?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation.

A copy of the Forest's vegetation data (RIS and GIS data attributes) as of January 2000 has been archived. This data will serve as a baseline for the initial comparisons to be made in the 2003 Annual Monitoring Evaluation Report. An MOU with the Colorado Division of Wildlife is being pursued to obtain available population data. This will allow population trends to be evaluated with respect to habitat changes. It must be noted however, that populations can be influenced by a myriad of factors other than habitat.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 2-1 - Do recreational opportunities respond to Forest users desires, needs, and expectations?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. No data is currently available to respond to this question. However, 1999 information is being included here to ensure its availability for future evaluation.

A recreation and wilderness assessment was completed this year for the areas affected by the Routt Divide Blowdown event. Several decisions are expected to result from this assessment, following a full range of public involvement opportunities.

Conflicts related to Forest Plan allocations to both motorized and non-motorized recreation continue to be a major point of contention regarding recreation expectations on the Routt National Forest. Forest users are very vocal about their desires regarding perceptions of appropriate modes of travel on the forest for recreation and transportation.

The forest is currently completing two NEPA analyses related to this conflict. One concerns the potential to include a network of single-track trails in the Radial Mountain area (see Monitoring Question 2-3, below) into the Forest Development Trail System as a motorized system. The Forest received 121 comments related to the Radial Mountain project.

The second analysis is for the Arapaho Ridge trail, which is currently open to motorized use. An environmental analysis studying the effects of this trail is being completed to determine whether or not to close it to motorized use.

On May 17, 2000, Forest Plan direction was upheld in a decision resulting from two appeals regarding winter motorized / non-motorized travel. The Forest is currently involved in litigation regarding its 1997 decision to restrict cross-country motorized traffic forest-wide.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 2-2 - Does the Forest infrastructure (travelways, roads, trails) facilitate attainment of desired recreational experiences, including access for a wide range of abilities?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, accessibility information is being included here to ensure its availability for future evaluation.

Monitoring Question 2-1 is also relevant to this question.

The following tables summarize the Forest's inventory of accessible facilities as of January 2000. This inventory will be used to complete the evaluation scheduled for 2003.

Accessible Facility Type	Year 1 (1998)	Year 2 (1999)	Running Total
Developed Campsites (including access to)	11 + 5 Toilet	2 +1 Toilet	13 + 6 Toilets
Developed Picnic sites (including access to)	5 + 3 Toilets	1 + Trail	6 + 3 Toilets and 1 Trail
Granger-Thye Rentals			
Trailheads (including toilets)	2 + 2 Toilets	4 Toilets	2 + 6 Toilets
Administrative Offices	3		3
Special Uses Outfitter Guides (_____ Total) Resorts (_____Total) Recreation Events (_____Total) Organization Camp (_____ Total)	 2 1		 2 1
Field Offices	1	2	3
Programs	1		1
Pier (Bear Lake)	1	Access trail	1 = access trail

Note: One of the districts received comments from hunters with disabilities who are concerned they are no longer able to take an OHV into the backcountry for hunting.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 2-3 - How are recreational activities affecting the physical and biological resources of the Routt National Forest?

The forest is actively reviewing its recreation infrastructure and permits to determine effects to other resources and the need for changes and improvements. Most landscape level site-specific NEPA analyses include the evaluation of road and trail systems for improvement, decommissioning, etc.. Examples include:

A Recreational Assessment analyzing the effects and opportunities to recreation resulting from the Routt Divide blowdown has been recently completed. Also, two trails, which were closed by the Blowdown, are currently undergoing site specific NEPA analysis. A decision will be made to either re-open, abandon or move them to more environmentally sensitive locations. The draft Environmental Assessment for the first analysis is scheduled to be published in July.

The Record of Decision for the Upper Elk River Access analysis decided to convert approximately four miles of the Diamond Park Road (FDR431) - an existing jeep road - to a non-motorized trail with the motorized traffic re-routed to another road. The road surface will be ripped, the profile narrowed, and portions will be relocated to drier locations. This reconstruction, relocation and conversion to a non-motorized trail will reduce the current level of sediment being delivered to the North Fork Elk River from the current motorized recreational use.

Monitoring associated with the Calamity Pass Enduro event on the Parks Ranger District caused the District Ranger to refuse to consider applications for the event until the required stabilization, restoration, hardening and obliteration work previously committed to by the applicant is completed.

The Parks Ranger District is completing separate NEPA analyses of the effects to resources of motorized travel in the Radial Mountain Analysis Area and on the Arapaho Ridge Trail (FDT 1135). The Radial Mountain analysis will provide the basis for a decision concerning the development and maintenance of a network of motorcycle trails in the southeast part of the district on the trail system used for the Calamity Pass Enduro event. Motorized use has long been authorized on the Arapaho Ridge trail, but the Forest Plan revision changed the surrounding Management Area to a non-motorized prescription. The analysis will determine whether to eliminate motorized travel and make the trail consistent with the surrounding land use allocation or to change the land use allocation and permit continued motorized use.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations – Continue to review recreation facilities for the need to reduce effects to other resources.

Monitoring Question 2-4 – How are the selected projects and programs affecting visual quality?

The Forest Landscape Architect reviewed and evaluated the newly constructed stone wall overlook of the Fish Creek Falls Recreation Area. This project is part of the Fish Creek Falls Capital Investment Project (CIP) on the Hahns Peak / Bear Ears Ranger District. The project is located in Management Area Prescription 4.3 (Dispersed Recreation) and the adopted Visual Quality Objective is Partial Retention. The color and texture of the curvelinear stone wall match the natural rock outcrops found within the site and it blends in well with the surrounding characteristic landscape. The design and construction fits with the landscape and is barely noticeably when viewed from the lower trail. This project met the adopted Visual Quality Objectives of Partial Retention.

Conclusion – The project evaluated does meet the assigned Visual Quality Objective.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 2-5 - How are partnerships contributing to maintaining or enhancing recreation resource opportunities?

To supplement its declining budget, the Medicine Bow-Routt National Forest has attempted to increase its use of volunteers and enter into partnership agreements. Most of our partnerships have been successful. However, the campground concessionaire program the forest initiated during FY1999 failed. During FY2000, the forest has received approval to manage its campgrounds as a Recreation Fee Demonstration Project, where the Forest will resume the day-to-day management in return for a percentage of the receipts which will be used for maintenance on the sites that generated them.

Program	RVDs* or Participants	Dollars Collected
Recreation Special Uses		
Concessionaire	Unknown**	$14,530 (6% of receipts)
Organization Camp	One permit - 850 participants	$75
Recreation Residences	18 residences	$16,722
Isolated Cabins		
Resorts		
Recreation Events	630 people	$7,051
Outfitter and Guides	40,139 clients	$163,180
Winter Resorts (Ski Areas)	1,013,254	$752,421
Partnerships – trail maintenance, etc.	3 people (266hrs)	$57,450 (cash) $67,550 (services)
Volunteers	204	$30,060
Motion Picture / Television Location	1 permit with 20 participants	$500

* RVDs = Recreation Visitor Days = 1 person recreating for 12 hours or 12 people recreating for 1 hour. The Routt National Forest has been selected to begin using a different process to collect recreation use data in FY 2001. It is likely that data collected with the new process will not be similar to the data collected under the current system.

** In the fall of 1999, the concessionaire in charge of managing the Forest's developed sites left their agreement with the forest without providing a final report on the number of visitors.

Conclusion - Several shortcomings in our data collection and compilation methods, as well as future changes will result in variations in the data and cause difficulty in determining trends.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendation - Implement a stable system that provides meaningful ways to measure and report partnership accomplishments.

Monitoring Question 2-6 - Does the Forest provide interpretive experiences that describe ecosystem functions and the Forest Service mission?

More than 22,000 forest visitors were directly contacted through personal interpretation and environmental education programs on the Routt National Forest during 1999. Many of these contacts were part of the "Partners in Interpretation" program. This partnership focuses on interpreting the natural and cultural resources of northwest Colorado and involves the following agencies and organizations:

The Routt National Forest.
Colorado State Parks.
The City of Steamboat Springs.
The Tread of Pioneers Museum.
The Steamboat Ski Area.
The Colorado Division of Wildlife.
Yampatika.
Steamboat Springs Chamber Resort.
Bureau of Land Management.
Nature Conservancy.

Programs are presented at various campgrounds, trailheads, community special events, school classrooms, etc. The themes of the various programs include general ecosystem functions and the forest service mission. Thirteen seasonal interpretive guides were hired and various volunteers assisted during the summer of 1999. Special emphasis was placed on the Routt Divide Blowdown, which supported three interpretative guides. These guides contacted people in the blowdown area, made presentations, and produced displays explaining the blowdown and effects from the blowdown and Forest Service activities.

Various professional interpretive signs and displays were created concerning the Routt Divide Blowdown. These signs and displays included information about forest disturbances, historical use of the forest compared to present use of the forest, orientation to the area and general blowdown information.

Conclusion - The Routt National Forest is providing interpretive experiences, focusing on opportunities that assist in communicating ecosystem functions.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations - Continue programs and partnership with other organizations. Provide more focus on interpreting the Forest Service multiple-use mission and increase the number of programs available on the forest.

Monitoring Question 3-1 - Are outputs of goods and services being produced at a rate consistent with the projections in Table S-2 of the FEIS?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation.

Following table was taken from the Routt National Forest Land and Resource Management Plan (1997 Revision). It has been modified and annotated to display a comparison between outputs projected by the Forest Plan and accomplishments reported for FY 1998 and FY 1999. The Forest Plan presents projected outputs for the anticipated ten-year planning period rather than on an annual basis. The projected outputs are neither minimum nor maximum targets. The data has been converted to an annual basis below to facilitate annual comparisons of outputs for monitoring purposes. These data will fluctuate annually as the forest budget fluctuates in response to annual constraints imposed by Congress and the Administration. The forest will review outputs at year five (2003) to compare actual accomplishment to Forest Plan projections.

Resource	Activity/Output	Units	Forest Plan Desired Condition Level	Forest Plan Experienced Budget Level	FY98 Level	FY99 Level	Running Average	Source
Recreation	Developed Capacity Available / 1	PAOT-days	1,541	1,452	1,520	1,520.2	1,520	MAR26.0 /2
	Trails Available to Std /3	Miles	601	538	590.3	554.8	573	MAR62.3
	Trails Available - Total	Miles	820	810	852.1	829.2	841	MAR 62.3 & MAR 64.3
	Developed Use	M Visits 4/	616	616	529.8	*	530	
	Dispersed Use	M Visits	877	877	938.3	*	938	
Wilderness	Wilderness Use	M Visits	98	98	109.5	*	110	
Heritage Resources	Inventory Area	Acres/yr	639	653	1375	5703	3539	
Fish, Wildlife, TES	Inventory	Acres/yr	8	5	679	-0-	339	
	Monitoring Projects	Projects	2	1		2	1	
	Project Coordination	Acres	17,100	13,300		84,742	42,371	
Grazing	Grazing - Sheep	Hd Mnth /5	174,400	137,300	150,700	149,168	149,934	MAR 75.5
	Grazing - Cattle	Hd Mnth	39,600	31,200	34,700	36,732	35,716	MAR 75.6
Rangeland Vegetation	Noxious Weeds	Ac Treat	385	303	1,871	1,871	1,500	MAR 9.0
	Rangeland Vegetation Inventory	Acres/yr	37,338	34,317	-0-	-0-	-0-	

Forestland Vegetation	Harvest - Even age regeneration cut	Acres/yr	1,211	790	1,212	303	758	RMRIS query
	Harvest - Even age non-regeneration cut	Acres/yr	245	169	53	16	35	RMRIS query
	Harvest - Uneven age	Acres/yr	235	167	128	109	119	RMRIS query
	Reforestation	Acres/yr	1,211	790	1,014	934	974	MAR 19.0
	Timber Stand Improvement	Acres/yr	1,027	1,019	1,823	1,086	1,455	MAR 20.0
	Forestland Vegetation Inventory	Acres/yr	107,856	28,235	40,486	13,124	26,805	RMRIS query
	Volume Harvested Chargeable Conifer (ASQ) /6	MCF/yr /7	3,200	2,200	1,101.7	1,999.4	1551	Sold and Removed Worksheet
	Volume Harvested Chargeable Aspen (ASQ)	MCF/yr	1,200	600	7.0	-0-	4	Sold and Removed Worksheet
	Volume Harvested - Total Sale Program	MCF/yr	5,200	3,600	1,900.8	2,130.9	2,016	Sold and Removed Worksheet
Soil, Air & Water	Soil and Water Resource Improvements	Acres/yr	14.3	13.3	40.0	18.0	29	MAR 13.0
	Watershed Condition - Class I Watersheds	Wtrshds	85	85	55	55	55	MAR 82.5
	Watershed Condition - Class II Watersheds	Wtrshds	49	49	73	73	73	MAR 82.6
	Watershed Condition - Class III Watersheds	Wtrshds	0	0	0	0	0	MAR 82.7

	Water Yield from timber harvest	Ac Ft / Year	715	490	719	719	719	Acres harvested
Fire	Fuel Treatment	Acres	1,682	1,609	2,338	786	1,562	MAR 16.2 MAR 16.3
Infrastructure	Roads Maintained /8	Miles	1,500	1,448	500	500	500	MAR 91.2
	Road Construction	Miles / yr	16.2	9.3	5.9	0.1	3	MAR 93.1
	Road Reconstruction	Miles / yr	9.8	5.2	11.5	0.0	6	MAR 93.2
	Road Obliteration	Miles / yr	18.4	18.4	0.0	20.0	10	MAR 91.3
Trail	Trail Construction / Reconstruction	Miles / yr	6	1	13.6	20.8	17	MAR 21.0

1 - Recreation Developed Capacity Available has changed due to implementation of the new INFRA structure data base which automatically calculates capacity of developed sites depending on opening and closing dates. This figure will probably fluctuate annually, depending on different conditions which affect these dates.

2 - MAR = Management Attainment Report; for tracking target accomplishments.

3 - Trails available to standard have increased more than anticipated due to changes in program emphases on the Districts, state funding availability, and an identified need.

4 - M Visits = 1,000 visits

5 - Hd Mnth = head month; calculated by multiplying the number of animals by the period of occupancy.

6 - ASQ = Allowable Sale Quotient

7 - MCF / yr = thousand cubic feet per year

8 – The forest road system includes approximately 1500 miles, of which about a third is maintained each year on a three year cycle

* - The Routt National Forest has been selected to begin using a different process to collect recreation use data in FY 2001. It is likely that data collected with the new process will not be similar to the data collected under the current system.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 3-2 - Are costs of implementing programs occurring as predicted in the Table S-3 of the FEIS?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1998 information is being included here to ensure its availability for future evaluation.

The Forest Plan displays the activity, outputs, and budget at two different budget levels. The full implementation, or desired condition, budget level is relatively unconstrained and reflects the desired level of plan implementation. The experienced budget level is constrained to reflect current budget levels. The actual constraint was based on a 3-year average of funds allocated to the Forest for fiscal years 1992, 1993, and 1994. The actual budget will fluctuate annually in response to direction from Congress and the Administration.

Routt Plan Monitoring - FY99

in 1999 dollars

Cost Center and Cost Center Component	Fund Codes	Forest Plan Desired Condition	Forest Plan Experienced Budget	FY98 Expenditure	FY99 Expenditure	Ave. Expend. FY1998-99	Ave. Expend. % of Desired Condition Budget
Ecosystem Planning, Inventory & Monitoring							
Inventory & Assessment	NFIM	486.2	101.3	52.5	245.3	148.9	31%
Planning & Monitoring	NFLP	267.4	341.4	381.0	303.0	342.0	128%
Recreation & Wilderness							
Recreation Management	NFRM	1,328.0	1,080.9	887.8	915.4	901.6	68%
	NFTR	303.9	283.6	0.0	149.4	74.7	25%
	CNTR (non-CIP)	60.8	40.5	13.1	0.0	6.5	11%
	CNRD 1/ (non-CIP)	466.0	224.9	0.0	2.7	1.4	0%
	CNRF (non-CIP)	55.7	32.4	0.0	0.0	0.0	0%
Heritage Resource Mgt	NFHR	211.7	165.1	21.0	81.4	51.2	24%
Wilderness Management	NFWM	218.8	191.5	225.6	157.3	191.5	88%
Cooperative Work	CWFS, CWKV	0.0	0.0	33.5	46.6	40.1	n/a
Wildlife and Fisheries							
Wildlife Habitat Management	NFWL	323.1	213.7	129.6	162.4	146.0	45%

Inland Fisheries Mgmt	NFIF	195.5	130.7	155.9	163.9	159.9	82%
TE&S Species Mgmt	NFTE	121.6	70.9	25.2	78.5	51.9	43%
Cooperative Work	CWFS, CWKV	0.0	0.0	5.3	27.9	16.6	n/a
Rangeland Management							
Grazing Management	NFRG	470.0	379.9	271.4	381.8	326.6	69%
Rangeland Vegetation Mgmt	NFRV	110.4	82.1	174.2	216.9	195.6	177%
Cooperative Work	CWFS, CWKV, RBRB	61.8	61.8	59.1	69.7	64.4	104%
Timber 1/							
Timber Sales	NFTM	1,240.9	858.0	224.8	726.2	475.5	38%
	SSSS	162.1	121.6	1,647.1	477.3	1,062.2	655%
	CNRD 2/	250.2	163.1	77.2	61.0	69.1	28%
	PEPE	309.0	201.6	0.0	2,454.5	1,227.2	397%
Reforestation & Timber Stand Improvement	NFFV	306.9	274.5	166.3	201.6	184.0	60%
Cooperative Work	CWFS, CWKV,BDBD	62.8	49.6	122.2	165.8	144.0	229%
Water, Soil and Air							
Soil, Water, & Air Mgmt	NFSO	349.5	330.2	149.0	143.1	146.1	42%
Watershed Improvement	NFSI	78.0	62.8	108.6	92.4	100.5	129%
Cooperative Work	CWFS, CWKV	0.0	0.0	0.0	0.0	0.0	n/a
Minerals Management							
Minerals Management	NFMG	153.0	102.3	93.3	138.0	115.6	76%

Infrastructure Management							
Real Estate & Special Use Mgt	NFLA	238.1	139.8	114.8	166.6	140.7	59%
	NFLL	81.0	55.7	95.5	59.8	77.7	96%
	LALW	10.1	10.1	12.7	0.0	6.3	63%
Road Management & Maint.	CNRM (was NFRD)	481.2	405.2	232.8	383.7	308.2	64%
	CNRD 1/ (non-CIP)	106.4	60.8	72.3	183.1	127.7	120%
Facility Maintenance	NFFA, CNFA (non-CIP)	253.3	125.6	96.0	138.0	117.0	46%
Cooperative Work	CWFS, CWKV	0.0	0.0	24.1	37.2	30.6	n/a
Protection of Basic Resources							
Fire Protection Management	WFPR	334.3	195.5	253.5	256.0	254.7	76%
Cooperative Law Enforcement	NFLE	11.1	11.1	15.0	15.0	15.0	135%
Cooperative Work	CWFS, CWKV	0.0	0.0	2.7	0.0	1.4	n/a
General Administration							
General Administration	NFGA	1,340.2	1,269.3	741.0	708.9	724.9	54%
	SSSS	81.0	65.8	165.8	0.0	82.9	102%
	CWFS, CWKV	35.5	35.5	37.3	65.7	51.5	145%
GRAND TOTAL		10,565.6	7,938.9	6,904.9	9,567.5	8,236.2	78.0%

1/ These targets reflect a shift in the program responding to conditions created by the Routt Divide Blowdown, which occurred after the Forest Plan was developed.

2/ Road construction is no longer broken out by purpose; activity code in conjunction with CNRD fund code was used to identify expenditures by resource.

Deflation Factor for 1998
to 1999 = 1.0130

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 3-3 - How are Forest management activities affecting local employment and income?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003.

We will develop methodology to address this question. As a start, the Forest Service is currently developing a standardized approach for collecting recreation use information. In the meantime, the Forest has been verifying data from previous years.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 3-4 - How well is the forest interacting and planning in cooperation with communities?

The Bark Beetle Information Task Force was formed in the Spring of 1999 to help residents of Routt County and surrounding areas understand the potential effects of bark beetles on National Forests and private land. The Routt Divide Blowdown has created a favorable environment for this beetle, and an epidemic is expected. The Task Force includes representatives from the State Forest Service, the Medicine Bow-Routt National Forests, Colorado State University Cooperative Extension, City of Steamboat Springs, Routt County, Steamboat Ski and Resort Corporation, the Steamboat Chamber Resort Association, Inc. and private citizens.

The Forest is working in cooperation with Colorado State University Cooperative Extension Service to complete the social analysis for the Bark Beetle Environmental Imact Statement.

Routt County, CO and the Forest have working agreements to provide parking and access for winter recreation.

The Upper Elk River Community Planning Group (Routt County, CO) is working to coordinate various Land Management Plans into a comprehensive plan for North Routt County. The Hahns Peak/Bears Ears District Ranger serves as the Forest Service representative on the committee.

The Forest is working closely with the BLM and Routt County Wildland Fire personnel in fire planning and wildland fire control.

Conclusion - The Forest Service is actively interacting and planning with communities surrounding the forest, based on the preceding list of collaborative activities. However, the methods used to address this question do not lend themselves to a qualitative assessment of these collaborative efforts.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendation - Include more intensive review of selected planning efforts to provide a better basis for determining their effectiveness in building collaborative partnerships.

Monitoring Question 4-1 - Are there changes that have resulted in unforeseen issues that require Forest Plan amendment?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 information is being included here to ensure its availability for future evaluation.

The Record of Decision for the Upper Elk River Access Analysis made a slight modification to the first vegetation Standard in Management Area 3.4 (scenic river corridor eligible or designated). This non-significant amendment to the Forest Plan clarified the standard for salvage within the scenic river corridor.

Monitoring completed by the Interdisciplinary Team identified several unforeseen issues, which may require Forest Plan amendments.

Listing of the Canada lynx as threatened will likely result in a Forest Plan amendment.

On May 10, 2000, the Forest Service published a draft Environmental Impact Statement for the National Roadless Area Conservation Proposal. This documents solicits comments concerning several alternatives, which would affect the future management of roadless areas on all National Forests. The eventual decision related to this EIS may signal a need to amend the Forest Plan to change Management Area prescriptions.

The Routt Divide Blowdown has caused the Hahns Peak/Bears Ears District to evaluate relocation of two trails buried in windthrow to more environmentally sensitive locations.

The Parks Ranger District is analyzing the Arapaho Ridge Trail (Forest Development Trail 1135) which has long been open to motorized use, but is located in an area assigned to non-motorized allocation by the Forest Plan in 1998. The analysis will determine whether to close the trail to motorized vehicles or to amend the Forest Plan to allow continued motorized use.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 4-2 - Are the standards and guidelines prescribed in the plan being incorporated in NEPA documents and implemented on the ground?

The Monitoring ID Team intensively reviewed several projects over the course of FY 1999 - in particular - projects associated with the Routt Divide Blowdown. The standards and guidelines in the plan are being appropriately incorporated into project planning and project implementation. No important changes have been identified, but

some slight modifications are being made to the way Best Management Practices are implemented to make them more effective.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 4-3 - Is the Forest moving closer to the desired condition identified in the Forest Plan at the Geographic Area and Management Area scale?

Note: Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. A copy of the Forest's vegetation data (RIS and GIS data attributes) as of January 2000 has been archived. This data will serve as a baseline for the initial comparisons to be made in the 2003 Annual Monitoring Evaluation Report.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	