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Environmental Assessment Management Indicator Species Forest Plan Amendment 04

To the Routt National Forest Land and Resource Management Plan -
1997 Revision

MEDICINE BOW-ROUTT NATIONAL FORESTS
Garfield, Grand, Jackson, Moffat, Rio Blanco, and Routt Counties, Colorado



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SUMMARY

The Medicine Bow-Routt National Forests are proposing to update the management indicator species (MIS) list in the Routt National Forest Land and Resource Management Plan 1997 Revision (Forest Plan).

Currently the MIS list includes 24 species that were selected to monitor the implementation of the Forest Plan and assess the effects to wildlife and habitat. The proposed action would reduce the number of species on the current MIS list to six. Removing or replacing some MIS is needed because implementing and monitoring has indicated some are not meaningful indicators of management activities, and others have proven too difficult to monitor. This amendment will help ensure that the appropriate monitoring is feasible, useful, and not redundant.

Implementing the proposed action would require an amendment to the Forest Plan. As such, the following analysis clarifies any immediate and/or foreseeable changes in the management direction (goals, objectives, standards and guidelines) or in the anticipated goods and services, as anticipated in the Forest Plan.

This action would apply to all the National Forest System (NFS) lands included in the Routt National Forest Plan planning area, which includes the Williams Fork portion of the Arapaho Roosevelt National Forest. The Wyoming portion of the unit on the Medicine Bow National Forest and Thunder Basin National Grassland are unaffected by this amendment.

The proposed action in this amendment is based on the recommendations presented in the *“Routt National Forest Management Indicator Species Forest Plan Amendment Planning Document,”* also known as Routt National Forest (RNF) MIS Review (USDA Forest Service 2006). The RNF MIS Review is included in this Environmental Assessment (EA) as Appendix A.

The information presented enables the Responsible Official to make an informed decision on the appropriate action to be taken. The decision will most likely be documented in a future Decision Notice.

INTRODUCTION

DOCUMENT STRUCTURE

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative impacts that would result from the proposed action and alternatives.

Additional documentation, including more detailed analysis, may be found in the planning record located at the Medicine Bow-Routt National Forests and Thunder Basin National Grassland Forest Supervisor’s Office at 2468 Jackson Street, Laramie Wyoming 82070.

BACKGROUND

The Forest Service Manual defines Management Indicator Species (MIS) as "...plant and animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (USDA Forest Service 1991). The National Forest Management Act (NFMA) requires that MIS be selected as part of the forest plan to estimate the effects of planning alternatives on fish and wildlife populations.

In the selection of MIS for the Forest Plan 1997 Revision, the decision was made to use the same species identified in the 1983 Forest Plan. The MIS were selected to reflect the habitat needs for the majority of the species inhabiting the Routt National Forest (FEIS 3-121 through 3-140).

Since the establishment of the original MIS list in the revised Forest Plan, there have been advancements in MIS knowledge and application, including a Region 2 clarification (Hayward et al. 2001) of the selection criteria found in the 1982 NFMA planning regulations [36 CFR 219.19(a)(1)]. Based on this clarification, the Routt National Forest (RNF) conducted a review of the existing MIS. The goal of the review was to determine the suitability of the existing MIS as management indicators and the practicality of monitoring population trend at the scale of the planning area for each species based on species biology, available methodologies, cost, and effectiveness. The review also helped focus MIS monitoring on major management issues facing the Forest. The review based the recommendation of the proposed MIS list from a refined list of species considered suitable as MIS. The proposed species were then considered in relation to major management issues facing the Forest that could be effectively evaluated through the use of an MIS monitoring approach. This review resulted in a recommended change to the existing MIS list. Other monitoring recommendations proposed in the MIS review, such as investigating issues through administrative studies or approaches that do not involve MIS, are not part of the proposed action for this EA.

Forest Plan Amendment

A change to the original MIS list requires an amendment to the RNF Forest Plan. Planning regulations set forth a process for developing, adopting, and revising land and resource management plans for the National Forest system as required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA).

The revised 1997 Routt Forest Plan was prepared following planning regulations established in 1982 (USDA FS 1982). On January 5, 2005, a new planning rule (USDA FS 2005c) went into effect. Under the new planning rule, Forest Plan amendments initiated during the transition period identified may continue using the provisions of the planning regulations in effect before November 9, 2000 [36 CFR 219.14(d)(2)].

The proposed amendment will be prepared under the 1982 Regulations. Under 1982 Regulations [36 CFR 219.10(f)], the Forest Supervisor may amend the Forest Plan based upon new information that may have a bearing on the objectives, guidelines, and other contents of the Forest Plan. Furthermore, an amendment to the Forest Plan addressing MIS selected may be prepared at any time. This amendment will follow procedures laid out in direction found in Forest Service Manual (FSM) 1920.

The 2005 planning rule also contains direction on application of MIS for units that will continue to use the 1982 planning rule. Under the NFMA 2005 Regulations, national forests no longer have to monitor populations and trends of MIS species, “unless the plan specifically requires population monitoring or population surveys for the species” [36 CFR 219.14(f)]. The RNF will continue to have a management indicator species program with population monitoring because the RNF Plan specifically requires such monitoring.

PURPOSE AND NEED FOR THE ACTION

The purpose of the proposed action is to amend the Forest Plan with a revised MIS list that is better aligned with the planning regulation as clarified by Region 2 direction, and to ensure that monitoring is conducted on species for which monitoring population trend is most feasible and useful. An updated list would also ensure that the RNF monitoring is focused on major management issues that have the potential to affect species, and in doing so make MIS monitoring more feasible, useful, and not redundant.

The RNF MIS review found that several species on the existing MIS list do not clearly meet the criteria as appropriately functioning as MIS. Populations of several MIS are strongly influenced by factors beyond the control of land managers. As a result, for some species, population changes are difficult to interpret in relation to forest management. Other species may function as a MIS, but monitoring their populations does not help answer the questions associated with the major management issues.

Forest Plan Direction

The Routt National Forest Land and Resource Management Plan 1997 Revision (Forest Plan) guides natural resource management activities and provides an overall strategy for managing the Routt National Forest. “During plan implementation, evaluation of monitoring results may reveal that the Forest Plan needs to be changed. Changes are made by amending the Forest Plan [36 CFR 219.10(f)].” (Forest Plan p. i-4) The Routt National Forest 5-year Monitoring and Evaluation Report acknowledged the need to amend the MIS list to be consistent with Regional direction and guidance.

PROPOSED ACTION

The proposed action is to amend the current Routt Forest Plan MIS list by adding species that are better indicators and removing species that are difficult to monitor or are not meaningful indicators of management activities. The proposed action would reduce the number of species on the current MIS list from 24 to six. This amendment will help ensure that the appropriate monitoring is feasible, useful, and not redundant. Implementing the proposed action will require an amendment to the Forest Plan.

SCOPE OF THE ACTION

This action would apply to all the NFS lands included in the Routt National Forest Plan planning area, which includes the Williams Fork portion of the Arapaho Roosevelt National Forest. The scope of the proposed action involves the existing MIS list and those species whose removal or addition would improve the list's compatibility with the MIS regulation as clarified by Region 2.

DECISION FRAMEWORK

Given the purpose and need, the Forest Supervisor reviews the proposed action, the other alternative(s), and the environmental consequences in order to make the following decisions:

- **Whether or not to modify the MIS list and amend the Forest Plan.** Ultimately, this is a programmatic decision that would be implemented through the programmatic monitoring and evaluation program.
- **Whether the proposed amendment would significantly change the Forest Plan.** Forest Service policy at FSH 1909.12 outlines the procedure for determining the NFMA significance of a proposed forest plan amendment. Accordingly, the Forest Supervisor will document the requisite NFMA significance analysis in the decision document.

PUBLIC INVOLVEMENT

This proposal was listed in the January 2003 Medicine Bow-Routt National Forests and Thunder Basin National Grassland Schedule of Proposed Actions (SOPA) and each subsequent quarterly report.

On March 22, 2006, a scoping letter was sent to approximately 217 interested individuals, agencies, and organizations. This letter described the purpose and need for the action, and included a table of existing MIS and the retention/removal/addition recommendations. The letter included a 30-day opportunity for written responses from those wishing to comment and/or from those interested in future mailings about this action. As part of the public involvement process, a legal scoping notice describing the proposed action and purpose and need for action was published in the *Laramie Boomerang* and *Steamboat Pilot* on March 26, 2006. During scoping 8 written responses were received, all of which included comments pertinent to the proposed action being considered.

Using the comments received during scoping, the interdisciplinary team developed a list of Key Issues to address. On August 16, 2006, a Draft Environmental Assessment (EA) was mailed to those who had expressed interest or requested the document. A legal notice was published in the *Laramie Boomerang* on August 18, 2006, requesting public comment on the EA. In addition, a public notice was published in the *Jackson County Star* and the *Steamboat Pilot*, and the Draft EA was posted on the Forest website. Four comment letters were received. Responses to these comments can be found in *Appendix B – Response to Comments*.

INCORPORATION BY REFERENCE

In order to eliminate repetition and focus on the key issues, the following documents are incorporated by reference:

- The 1997 Revision of the Land and Resource Management Plan for the Routt National Forest, specifically pages 4-1 to 4-7 of the Forest Plan (USDA Forest Service 1998a), and Chapter 3 pages 3-121 to 3-140 of the Final Environmental Impact Statement (FEIS) (USDA Forest Service 1998b).
- Region 2 Management Indicator Species Selection Process and Criteria (Hayward et al. 2001).
- The “*Terrestrial Management Indicator Species: A Forest wide Summary of Status and Trend*” (USDA Forest Service 2005a), provides existing status and trend information for the Routt National Forest MIS species.
- The “*Routt National Forest Management Indicator Species Forest Plan Amendment Planning Document*,” also known as 2006 MIS Review (USDA Forest Service 2006) documents the process to develop the proposed action and is included as Appendix A.

These documents are available for review at the Medicine Bow-Routt National Forests and Thunder Basin National Grassland Forest Supervisor’s Office at 2468 Jackson Street, Laramie Wyoming 82070.

ISSUES

Because this is not a site-specific project, or a proposed action which results in direct impacts to land or resources, issues to be considered in the decision process are not the more usual statements of concern such as “effects on soil,” or even “effects on wildlife.” Comments received during scoping were more directed as advice to the Forest Service for species and factors to consider as we deliberate the selection of MIS and as we implement monitoring and evaluation. Written comments received are included in the administrative record for this action and are available for public review.

Key Issues

Through the scoping process, and from intra- and interagency discussions, the RNF identified the following key issues that were used to generate and assess the effects of the alternatives.

Suitability as an MIS and ability to monitor

Species selected as MIS should be suitable as management indicators and those that are not suitable should be considered for removal from the existing MIS list. Species selected as MIS should be feasible and reasonable to monitor population trends effectively at the scale of the planning area. The monitoring efforts should be efficient and not duplicate other efforts. The availability of data to reveal species responses to management issues, or ability to collect it, is a fundamental factor to be considered.

Meaningful indicators

The monitoring of species selected should be able to answer the questions associated with a major management issue facing the Forest. Regulations clarify that species will be selected because their population changes are believed to indicate the effects of management activities. For some major management issues, alternative monitoring approaches may be preferred over MIS in order to more clearly obtain the needed information. The reasons for the selection must be stated (see Appendix A).

Issues that do not drive alternatives

Retain other existing MIS and consider additional species

Through the RNF MIS review, the Forest has carefully considered each MIS on the existing list and has provided a rationale for each species to determine if the species meets the criteria as a suitable MIS. The RNF MIS review also carefully considered additional species as potential MIS during the review process. The RNF MIS Review details how the proposed list was developed and what questions the proposed MIS monitoring data should answer.

The development of other combinations of proposed MIS lists was considered. However, through the comprehensive evaluation of major management issues and appropriate MIS species, the Proposed Action was the only alternative developed in detail. Other species considered are documented in Appendix A. The consideration of various combinations of species could lead to an unreasonably large number of alternatives that do not serve to meet the purpose and need for this project. Appendix A outlines the process used in formulating the proposed action and summarizes the consideration of other species and species groups as MIS.

Retain species identified as threatened or endangered; species commonly hunted, fished or trapped; species representing all ecosystems or forest cover types

These categories of MIS are already incorporated into the existing range of alternatives, in that species that fit in these categories or those selected for these purposes are included in Alternative 1. The consideration of species representing the major ecosystem types or forest cover types was the approach used in the development of the existing MIS list and is clarified in the FEIS of the Forest Plan (USDA Forest Service 1998b). The existing MIS were selected to reflect the habitat needs for the majority of the species inhabiting the Routt National Forest. To do this the species were associated with habitat communities instead of major management issues. This distinction in approach to identifying appropriate MIS is a primary distinction between Alternative 1 and the Proposed Action.

The NFMA planning regulations do not require that MIS be included from all suggested categories, such as threatened or endangered species or species that are commonly hunted, fished, or trapped. Additionally, NFMA regulations do not require that MIS represent all ecosystems or forest cover types, or even that MIS monitoring is the only monitoring tool that could be used. The regulations give the Responsible Official considerable discretion to determine if MIS are appropriate to address specific issues, concerns, and opportunities. The MIS in the Proposed Action were identified because monitoring them was considered to be an effective approach in answering the questions associated with the major management issues facing the Forest.

COMPARISON OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

ALTERNATIVE DEVELOPMENT

Alternative 1 – No Action

The current MIS listed in the 1997 Forest Plan are the same as those originally identified in the 1983 Forest Plan. The FEIS of the Forest Plan clarifies that the selected species were considered appropriate for the recommended categories as outlined in NFMA, and to reflect the habitat needs for the majority of the species inhabiting the Routt National Forest. The 24 species identified in the current Forest Plan represent 8 habitat complexes and the individual species associated with one or more of the complexes. Individual habitat complexes are represented by 3 to 8 species. See table 3-48 of the FEIS located on page 3-125 for more detail (USDA Forest Service 1998b).

Proposed Action

The Proposed Action was developed through the completion of the RNF MIS Review and is documented in Appendix A. This review of the Forest's MIS program was based on the Region 2 MIS Selection Process and Criteria (Hayward et al. 2001). The Region 2 criteria outlined five guiding principles to consider during MIS review and selection. These include:

1. Choose MIS to reflect major management issues and challenges.
2. MIS function to facilitate evaluation.
3. Consider MIS chosen on neighboring planning units.
4. Consider whether employing MIS is the best approach to evaluate the management problem.
5. Chose an adequate but limited number of species.

Based on these guiding principles, the RNF MIS Review documents a four-step process that biologists on the Forest used in the evaluation of MIS. These steps include:

1. Review of the existing MIS list to determine if species are suitable as MIS.
2. Identify major Forest-level management issues and challenges facing the Routt National Forest.
3. Review the MIS species considered on neighboring planning units.
4. Match MIS to management issues and revision of MIS list.

The MIS in Alternative 1 represent habitat complexes and the habitat needs for the majority of species inhabiting the Routt National Forest. The MIS in the Proposed Action were selected to help answer specific questions regarding major management issues facing the Forest.

ALTERNATIVES

Alternative 1 – No Action

The No Action alternative represents the existing MIS list for the RNF. Alternative 1 would not change the current MIS list (Table 1) and implementation of this alternative would not involve preparation of a Forest Plan Amendment.

Table 1. Alternative 1 – No Action

Routt National Forest Current MIS List	
Common Name	Scientific name
Common flicker	<i>Colaptes auratus</i>
Hairy woodpecker	<i>Picoides villosus</i>
Red-backed vole	<i>Clethrionomys gapperi</i>
Pine grosbeak	<i>Pinicola enucleator</i>
Warbling vireo	<i>Vireo gilvus</i>
Blue grouse	<i>Dendragapus obscurus</i>
Beaver	<i>Castor canadensis</i>
Ptarmigan	<i>Lagopus leucurus</i>
Vesper sparrow	<i>Poocetes gramineus</i>
Sagebrush vole	<i>Laagurus curtatus</i>
Brown-capped rosy-finch	<i>Leucosticte australis</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
Elk	<i>Cervus elaphus</i>
Mule deer	<i>Odocoileus hemionus</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Green-tailed towhee	<i>Pipilo chlorurus</i>
Northern goshawk	<i>Accipiter gentilis</i>
American marten	<i>Martes americana</i>
Osprey	<i>Pandion haliaetus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Greater sandhill crane	<i>Grus canadensis tabida</i>
Wood frog	<i>Rana sylvatica</i>
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>

Proposed Action

The Proposed Action is to revise, through a Forest Plan Amendment, the existing MIS list based on the recommendations from the RNF MIS Review. This modification would retain 4 species, add 2 species, and remove 20 species from the current MIS list. This action would modify the existing MIS list from 24 species to 6 species. These species were selected because they are considered more appropriate as MIS and population monitoring data on these species are more likely to answer specific questions related to management issues facing the Forest. The proposed MIS are presented in Table 2.

Table 2. Proposed Action

Routt National Forest Proposed MIS List	
Common Name	Scientific name
Golden-crowned kinglet	<i>Regulus satrapa</i>
Northern goshawk	<i>Accipiter gentilis</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
*Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>
*Brook trout	<i>Salvelinus fontinalis</i>

*In the March 2006 Scoping Letter, Colorado River cutthroat and brook trout were listed together as one MIS, referred to as “common trout.” Based on comments received on the scoping letter and to avoid confusion, it was decided to list the two trout species as separate MIS on the proposed list.

The process used to develop the Proposed Action follows the Regional direction for identifying MIS (Hayward et al. 2001). The Medicine Bow-Routt National Forests biologists, botanists, and ecologists completed a four-step review process based on the Region 2 guidance. The following is a summary of the RNF MIS Review process; for more detailed information refer to Appendix A.

Part 1. The first step of this process was to review the existing MIS list to determine if species were suitable as management indicators (Appendix A, page 29).

To do this each of the existing species were evaluated against seven criteria. These criteria helped clarify species that are and are not suitable indicator species.

Criteria for determining species that are not appropriate as MIS include:

1. Species that are very rare or otherwise difficult to detect.
2. Species whose populations are significantly influenced by factors beyond the control of land managers.
3. Species that are very difficult (or cost prohibitive) to monitor effectively to obtain useful population data.
4. Species whose populations may be adversely impacted through monitoring.
5. Species that do not clearly respond to management actions.

Criteria for determining species that are more suitable as MIS include:

6. Species that are relatively common, easy to detect and monitor.
7. Species whose populations are influenced by land management actions.

Part 2. The second step involved the identification of major management issues and challenges facing the Forest (Appendix A, page 46).

Many of these issues surfaced during the 5-year review of the Forest Plan and others through a series of meetings between 2001 and present with Forest biologists, botanists, and ecologists. Although numerous issues were identified through the exercise, the issues listed below represent the major fish, wildlife, and rare plant management issues and challenges currently facing the Routt National Forest. Each of the questions driving these issues was examined and it was determined whether specific questions could most efficiently be answered through MIS monitoring or another monitoring approach. Other monitoring approaches that do not involve MIS are not considered part of the proposed action for this EA, but rather retained as recommended actions to take as funding becomes available. Only six of the following issues (**) were determined appropriate for evaluating through MIS monitoring and the other issues were determined to be more appropriately evaluated through another monitoring approach.

- Coarse Woody Debris
- Snag Management
- Influence of Management Actions on Prey Populations
- Recreational Disturbance to Wildlife
- Snow Compaction and Subnivian Space
- Snow Compaction and Access to Competing Carnivores
- Aquatic Habitat Fragmentation **
- Terrestrial Habitat Fragmentation
- Spruce-Fir Timber Management **
- Lodgepole Pine Timber Management **
- Aspen Forest Management
- Distribution and Abundance of Late Seral Forests
- Fen and Bog Management
- Rangeland Residual Forage **
- Herbivory in Riparian Areas **
- Sedimentation in Riparian Areas and in Aquatic Habitats **

Part 3. The third step of the process considered species on neighboring planning units (Appendix A, page 56).

Management indicators from neighboring units were evaluated. Many of the species on neighboring units are either not present on the RNF, not known to occur on the RNF, or occur at such low frequency on the RNF that monitoring would be very difficult or impossible. Additionally, 4 of the species were determined inappropriate as MIS for the RNF in Part 1 of the review process. The remaining potentially suitable MIS species from neighboring planning units, along with the MIS species considered suitable from the 1997 Routt National Forest MIS list, were then carried forward into Part 4 of the process.

Part 4. Part four of the review process documents the rationale used to match the most appropriate suitable management indicator with an associated management issue (Appendix A, page 58).

Species Retained – This alternative recommends retaining 4 of the original MIS. These species include the Colorado River cutthroat trout, northern goshawk, vesper sparrow, and Wilson’s warbler. These species were retained because they met the criteria as suitable to consider as MIS. Additionally, of the individual management issues that MIS were thought to be able to effectively evaluate, these species were determined to be most suitable to monitor in order to help answer the associated question.

Species Removed – This alternative recommends removing 20 of the original MIS. Seventeen of these species met one or more of the five criteria identified as criteria characteristic of species not well suited as an MIS for the Routt National Forest. Three of the 20 species either did not match well with an identified management issue, were cost-prohibitive to monitor, or were not the most well suited to monitor to help answer the associated monitoring question.

Species Added – This alternative recommends adding the golden-crowned kinglet and the brook trout to the MIS list. These species were carried forward as suitable MIS from neighboring planning units. The golden-crowned kinglet is an effectively monitored species that was thought to be the best species to evaluate the spruce-fir timber management issue. The brook trout was identified because it can address the issues of ‘aquatic habitat fragmentation’ and ‘sedimentation of riparian areas and aquatic habitats’ in areas where the Colorado River cutthroat trout is not present to monitor.

Table 3 shows the results of the four-step process used to identify MIS selected under the Proposed Action.

Table 3. Summary of MIS Selection

Common Name of MIS	Associated Habitat in 97 Revision	Major Management Issue that MIS Monitoring Could Clarify	MIS Qualification Criteria
Common flicker	Snags & downed woody debris	--	5-Species does not clearly respond to management actions
Hairy woodpecker	Snags & downed woody debris, aspen habitats	--	5-Species does not clearly respond to management actions
Red-backed vole	Snags & downed woody debris, lodgepole pine habitats	--	3-Species is very difficult (or cost prohibitive) to monitor effectively to obtain useful population data
Pine grosbeak	Mature conifer habitat complexes, including subalpine fir & Engelmann spruce	--	1-Species is rare or otherwise difficult to detect
Warbling vireo	Aspen-habitat complex	--	2-Species populations are significantly influenced by factors beyond the control of land managers
Blue grouse	Mature conifer, shrub & grass/forb habitat complexes	--	2-Species populations are significantly influenced by factors beyond the control of land managers 3-Species is very difficult (or cost prohibitive) to monitor effectively to obtain useful population data 5-Species does not clearly respond to management actions 6-Species is relatively common, easy to detect & monitor
Beaver	Riparian wetland habitat	--	
Ptarmigan (S)	Alpine/talus habitat	--	1-Species is rare or otherwise difficult to detect 5-Species does not clearly respond to management actions 6-Species is relatively common, easy to detect & monitor 7-Species populations are influenced by land management actions
Vesper sparrow	Grass/forb habitat complex	Rangeland residual forage	
Sagebrush vole	Mixed deciduous shrub (sagebrush) habitat complex	--	1-Species is rare or otherwise difficult to detect 3-Species is very difficult (or cost prohibitive) to monitor effectively to obtain useful population data 4-Species populations may be adversely impacted through monitoring
Brown-capped rosy finch	Alpine/talus habitat complexes	--	1-Species is rare or otherwise difficult to detect

Table 3. Summary of MIS Selection (continued)

Common Name of MIS	Associated Habitat in 97 Revision	Major Management Issue that MIS Monitoring Could Clarify	MIS Qualification Criteria
Wilson's warbler	Riparian/wetland habitat complexes	Herbivory in riparian areas	6-Species is relatively common, easy to detect & monitor 7-Species populations are influenced by land management actions
Rocky Mountain elk	Mature conifer, aspen, shrub, grass/forb & lodgepole pine habitat complexes	--	2-Species populations are significantly influenced by factors beyond the control of land managers 5-Species does not clearly respond to management actions
Mule deer	Mature conifer, aspen, shrub & grass/forb habitat complexes	--	2-Species populations are significantly influenced by factors beyond the control of land managers 5-Species does not clearly respond to management actions
Blue-gray gnatcatcher	Mixed deciduous shrub land habitat complex	--	1-Species is rare or otherwise difficult to detect
Green-tailed towhee	Mixed deciduous shrub habitat complex	--	6-Species is relatively common, easy to detect & monitor.
Northern goshawk (S)	Mature coniferous habitat complex	Lodgepole pine timber management	6-Species is relatively common, easy to detect & monitor. 7-Species populations are influenced by land management actions
American marten (S)	Mature coniferous habitat complex	--	6-Species is relatively common, easy to detect & monitor. 7-Species populations are influenced by land management actions
Osprey	Mature conifer and open water habitats	--	1-Species is rare or otherwise difficult to detect 2-Species populations are significantly influenced by factors beyond the control of land managers 5-Species does not clearly respond to management actions
Bald eagle (T)	Mature conifer and open water habitats	--	1-Species is rare or otherwise difficult to detect 2-Species populations are significantly influenced by factors beyond the control of land managers

Table 3. Summary of MIS Selection (continued)

Common Name of MIS	Associated Habitat in 97 Revision	Major Management Issue that MIS Monitoring Could Clarify	MIS Qualification Criteria
Greater sandhill crane	Riparian/wetland habitat complexes	--	1-Species is rare or otherwise difficult to detect 2-Species populations are significantly influenced by factors beyond the control of land managers 5-Species does not clearly respond to management actions
Wood frog (S)	Riparian wetland habitat complexes	--	1-Species is rare or otherwise difficult to detect 2-Species populations are significantly influenced by factors beyond the control of land managers
CO River cutthroat trout (S)	Aquatic habitat	Aquatic habitat fragmentation Sedimentation of riparian areas & aquatic habitats	6-Species is relatively common, easy to detect & monitor. 7-Species populations are influenced by land management actions
Sharp-tailed grouse (S)	Mountain shrub habitat complex	--	1-Species is rare or otherwise difficult to detect 2-Species populations are significantly influenced by factors beyond the control of land managers
Golden-crowned kinglet		Spruce-fir timber management	6-Species is relatively common, easy to detect & monitor. 7-Species populations are influenced by land management actions
Brook trout		Aquatic habitat fragmentation Sedimentation of riparian areas & aquatic habitats	6-Species is relatively common, easy to detect & monitor. 7-Species populations are influenced by land management actions

(S) Region 2 Sensitive Species, (T) Threatened Species, (E) Endangered Species

COMPARISON OF ALTERNATIVES

Table 4. Comparison of Alternatives

ALTERNATIVE 1 – NO ACTION	PROPOSED ACTION	
Alternative 1 – No Action MIS list	RETAIN/ REMOVE/ADD	Proposed Action MIS list
Common flicker	REMOVE	
Hairy woodpecker	REMOVE	
Red-backed vole	REMOVE	
Pine grosbeak	REMOVE	
Warbling vireo	REMOVE	
Blue grouse	REMOVE	
Beaver	REMOVE	
Ptarmigan	REMOVE	
Vesper sparrow	RETAIN	Vesper sparrow
Sagebrush vole	REMOVE	
Brown-capped rosy-finch	REMOVE	
Wilson’s warbler	RETAIN	Wilson’s warbler
Elk	REMOVE	
Mule deer	REMOVE	
Blue-gray gnatcatcher	REMOVE	
Green-tailed towhee	REMOVE	
Northern goshawk	RETAIN	Northern goshawk
American (pine) marten	REMOVE	
Osprey	REMOVE	
Bald eagle	REMOVE	
Greater sandhill crane	REMOVE	
Wood frog	REMOVE	
Colorado River cutthroat trout	RETAIN	Colorado River cutthroat trout
(Columbian) sharp-tailed grouse	REMOVE	
	ADD	Golden-crowned kinglet
	ADD	Brook trout

Table 5. Comparison of Alternatives

Purpose and Need	Alternative 1 – No Action	Proposed Action
<p>A MIS list that is better aligned with the planning regulation as clarified by Region 2 direction</p> <ul style="list-style-type: none"> - Ensure that monitoring is conducted on species for which monitoring population trend is most feasible and useful. - Ensure that monitoring is focused on major management issues that have the potential to affect species, and through doing so make MIS monitoring more feasible, useful, and not redundant. 	<p>Does not meet the purpose & need.</p> <p>MIS represent habitat complexes and the habitat needs for the majority of species inhabiting the National Forest. Does not follow improved Region 2 MIS selection process.</p>	<p>Reflects an improvement in the knowledge and understanding of how to implement the MIS program in a way that is practical for Forest Plan implementation.</p> <p>MIS were selected to help answer specific questions regarding major management issues facing the Forest.</p> <p>Would more adequately implement and better meet the intent of the MIS program by focusing monitoring efforts on a smaller set of species and specific management issues. It will also utilize available funding more efficiently and effectively.</p>
Key Issues		
Suitability as an MIS and ability to monitor	Many species are not suitable as MIS; monitoring is difficult.	All species proposed are more suitable as MIS and feasible to monitor.
Meaningful indicators	Some species do not clearly respond to management actions.	All species proposed should clearly respond to effects such as disturbance or changes in habitat.

ALTERNATIVES NOT CONSIDERED IN DETAIL

The development of other alternatives that may have included other proposed MIS species than those presented in Alternative 1 or the Proposed Action was considered. However, through the comprehensive evaluation of major management issues and possible MIS species, included in Appendix A, the Proposed Action was the only alternative developed in detail. Other species considered are documented in Appendix A. The consideration of various combinations of species could lead to an unreasonably large number of alternatives that do not serve to meet the purpose and need for this project. Appendix A outlines the process used in formulating the proposed action and summarizes the consideration of other species and species groups as MIS.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following is a description of the affected environment and the environmental consequences of implementing each alternative. Because the scope of this action is limited to modifying the existing MIS list, the following would be true upon implementation of any of the alternatives:

- There are no anticipated changes to the goals and objectives, standards, and guidelines of the Routt Forest Plan.
- The direct, indirect, and cumulative effects of the alternatives would not differ from those disclosed in the 1997 Final Environmental Impact Statement (FEIS) for the Routt Forest Plan.
- Implementing any of the alternatives would not dictate, result in, or cause any ground-disturbing activities.

AFFECTED ENVIRONMENT

The environment affected by the alternatives includes all NFS lands included in the Routt National Forest Plan planning area, including the Williams Fork portion of the Arapaho Roosevelt National Forest. However, because none of the alternatives result in any ground-disturbing activities, the analysis of environmental consequences focuses on:

- Direction relative to MIS based on current regulations, Regional guidance and goals for MIS, and the Forest Plan direction and guidance for MIS.
- The existing 24 MIS for the planning area (Alternative 1).
- The management issues, findings, and recommendations from the RNF MIS Review (Appendix A).

ENVIRONMENTAL CONSEQUENCES

The fundamental conclusion of the analysis of this proposed change to the Forest Plan is that there will be no direct environmental effects including effect to species, habitats, or populations of animals or plants, including threatened, endangered, or sensitive species. There are no anticipated adverse indirect or cumulative environmental effects that would result from the proposed change. The proposed action is an administrative change to the MIS list. The species on the proposed list would be monitored as necessary to determine forest-wide population trend and clarify the associated major management issue facing the Forest. This constitutes no change in emphasis, or direction related to ground disturbance, habitat management, or any other aspect of active management that would lead to an environmental effect. This EA, and discussions that follow, are being used as a vehicle to record and disclose considerations in this matter, and to solicit and consider public comment.

ALTERNATIVE 1 – NO ACTION

Direct and Indirect Effects

The RNF would continue to utilize MIS from the existing list as a means to assess the effects of implementation of the Forest Plan and accomplishment of Forest Plan objectives on population changes of MIS. Monitoring and evaluation of MIS would continue to be based upon the goals of the Forest Plan and the recommended monitoring strategies. Implementing the No Action alternative would retain all existing species on the MIS list, even if they meet one or more of the MIS review criteria that indicates they may not be very suitable as an MIS.

Experience with Forest Plan implementation over the past 9 years indicated that some new issues facing the Forest have raised concerns whether the current MIS list is effectively answering the most important and urgent management questions. A review of the existing MIS indicated the need to update the MIS list to improve the usefulness of MIS monitoring and to effectively apply limited monitoring funding. Measuring and monitoring the existing MIS does not improve the ability of the Forest to manage resources.

The required monitoring of all existing MIS would result in inefficient expenditures and effort, and would be contrary to the NFMA requirement for establishing and maintaining a MIS list. In many instances, a meaningful or accurate survey of some of the existing MIS is technically difficult, impractical, very expensive, and/or does not lead to better understanding of cause and effect of management to these species as it relates to the Forest Plan direction. This could result in a delay or postponement of projects, and impair the ability of the Forest Service to produce goods and services as directed by Congress, and delay implementation of projects that improve wildlife habitat, range condition, and recreation.

By maintaining the existing MIS list, limited funding would continue to be focused on the monitoring and evaluation efforts for the unsuitable MIS and not available for other monitoring or inventory projects. This indirectly could limit the Forest's ability to use funding for focused inventory and monitoring of other species and issues, including Region 2 sensitive species and other Federally listed threatened, endangered, proposed, or candidate species. Federally listed, proposed, candidate, and Region 2 sensitive species would continue to receive project-specific special management emphasis according to current Forest Service policy (FSM 2670) and in compliance with the Endangered Species Act of 1972 as amended and through review and consultation with the U.S. Fish and Wildlife Service. However, more proactive inventories that may occur outside of project analysis would be less likely to occur.

Cumulative Effects

Continuing to implement the Forest Plan with the existing MIS list is not anticipated to effectively clarify whether the existing Forest Plan direction is adequate in meeting the major management issues facing the Forest today. This could have a cumulative effect to particular species from a lack of adequate direction used during continued project implementation. By maintaining the status quo, limited funding would continue to be focused on the monitoring and evaluation efforts for the existing MIS and not available for monitoring of the current major management issues that may be more effectively evaluated through revised MIS monitoring.

PROPOSED ACTION

Direct and Indirect Effects

While current Forest Plan standards and guidelines are anticipated to be adequately meeting the needs of native species and desired non-native species populations, the intent of monitoring is to evaluate if this is true. Monitoring the proposed MIS to answer questions related to management issues should clarify if there are inadequacies in specific current forest management direction. If an inadequacy was detected, a subsequent Forest Plan amendment process would be initiated to rectify the issue.

The Proposed Action and its related monitoring focus will clarify if the current Forest Plan direction is adequate to maintain populations of MIS. With the existing MIS approach in Alternative 1, population monitoring is compared to changes in habitat capability. While the current approach clarifies changes with populations and habitat, those changes may be influenced by many factors and thus would not serve to evaluate the appropriateness of specific Forest direction as related to management action.

There would be no direct impacts to MIS or other animal or plant species as a result of implementing the proposed action, and there would be no change in management direction. This proposed action does not propose or dictate any ground-disturbing activities.

Species viability would not be affected if a particular species is or is not on the MIS list. The species to be removed under this alternative would be managed according to the general viability requirements of NFMA (36 CFR 219.19) as described in the Forest Plan's Standards and Guidelines (Chapter 2) along with the vast majority of other species that occur on the Routt National Forest. Furthermore, viability is not a concern for 15 of the species that would be removed as MIS, as they do not appear on the recently revised Region 2 sensitive species list (USDA Forest Service 2005c).

The bald eagle, a federally threatened species, and four Region 2 sensitive species (ptarmigan, American marten, wood frog, and Columbian sharp-tailed grouse) would continue to be managed as such. These species, along with all other Federally-listed and Region 2 sensitive species, will be addressed in all projects through the Biological Evaluation and or Assessment process as described in the Endangered Species Act (ESA) and FSM 2670. Implementation of this alternative would have no effect on Federally-listed, proposed, candidate, or sensitive species because no changes would occur in management direction, commodity outputs, or analysis of these species, and no ground-disturbing actions would result due to a decision to change the MIS list.

Because of limited funding for species monitoring, keeping a MIS monitoring program focused on the most important questions will help ensure that those questions can be evaluated at the appropriate level of investigation. Additionally, it is more likely that some inventory and monitoring funds may be available for other projects such as forest-wide surveys (outside of project areas) of sensitive species or continued investigation of additional management issues better suited to evaluation through a focused short-term administrative study. Indirectly, if some inventory and monitoring funds could be used for other efforts, specific management issues may be able to be evaluated and rectified more quickly and also the understanding of sensitive species should improve.

Other (Non-MIS) Monitoring

In addition to on-going MIS monitoring efforts, the RNF monitors a multitude of resources – reporting the results on an annual basis, as required by the Forest Plan. This monitoring, which supplements MIS monitoring, involves the following: watershed assessments, soil and water quality, threatened, endangered, and sensitive species surveys, habitat modification and enhancements, riparian and aquatic assessments, rangeland conditions and utilization (including rangelands administered to Forest Plan standard), vegetation treatments and improvements (including forestlands administered to Forest Plan standard), as well as recreational development and use. The annual MIS monitoring information is also contained in the annual report as a small part of the overall effort to measure changes in the resource from management activities.

The proposal to reduce the RNF MIS list is considered with the awareness of other significant Forest, local, and regional monitoring efforts. Regardless of a species status, whether identified as MIS or not, population monitoring of many species would continue through the Colorado Division of Wildlife (CDOW) and partnership programs such as the Monitoring Colorado Birds partnership program with the Rocky Mountain Bird Observatory (RMBO). Several other entities and agencies also track population trends of particular species or groups of species, such as the U.S. Fish and Wildlife Service, State Natural Heritage Programs, U.S. Geological Survey, university researchers, and others. The RNF would continue to collaborate regarding habitat management for a wide variety of species, and would continue to seek the best available information on species biology and population trend from the full range of reputable sources, as needed.

The Routt National Forest has an excellent track record of supporting and implementing administrative studies, permitting research studies, and conducting other monitoring approaches that are not required monitoring. These monitoring approaches are regularly mentioned in the annual monitoring report prepared for the Forest Plan. While these other monitoring approaches are not required by law or a NEPA decision notice, they are regularly and consistently accomplished by the Forest.

Some examples of these types of projects include:

- 1998-1999: Partnering with the US Forest Service Research Station to evaluate the effects of the blowdown to small mammals (directly related to coarse woody debris and red-backed voles). This project has contributed to clarifying the identified issue relating to ‘coarse woody debris.’
- 1998-present: Partnering with the University of Wyoming (1998-2002) to monitor boreal owl populations through nest box monitoring in order to evaluate habitat use and the effects of the blowdown on the boreal owl. This monitoring has continued to present by the Routt National Forest, and in 2005 and 2006 much of the monitoring was accomplished in partnership with the Yampa Valley Birding Club.
- 1998-2002: Partnered with Colorado State University to evaluate the effects of the blowdown and salvage logging on the songbird community. Graduate research project.
- 1998–present: Partnered with the Rocky Mountain Bird Observatory and other agencies in the Monitoring Colorado Birds Program. The Forest directly contributes to this program on an annual basis and extensive field work is completed on the Routt National Forest in the implementation of the program.
- 2000-present: Partnered with Colorado State University to determine snowshoe hare habitat relationships for the Routt National Forest. Graduate research project. This project is contributing to clarifying the identified issue ‘influence of management actions on prey populations.’
- 2002-2005: The Forest funded a partnership project with Wyoming Natural Diversity Database to model and map the location of fens on the National Forest in an effort to develop the baseline of information needed mentioned in the identified issue ‘fen and bog management.’

- 2004-2006: The Forest funded a partnership project with Wyoming Natural Diversity Database to study snow compaction to develop a baseline inventory to be followed by a more comprehensive snow compaction evaluation.
- 2004: The Forest completed an ‘in-house’ administrative study on the relative abundance of woodpeckers on the Gore Pass Geographic Area. (Rock Creek EIS).
- The Forest has been monitoring other species such as American marten through extensive snow tracking efforts as well as winter bait camera stations (Bark Beetle EIS).
- The Forest has supported research proposals developed to evaluate snow compaction and subnivian space (2004, 2006).
- Management issues such as snow compaction and access to competing carnivores are currently being evaluated by Forest Service Research Station and others (Bunnell et al. 2006). Answering the question associated to this specific issue can be transferred from similar areas where this type of research is currently being conducted.

Cumulative Effects

An MIS program that focuses monitoring on questions specific to management issues should be able to more readily detect if the existing Forest Plan direction is effective in maintaining MIS populations. Inadequacies in the Plan guidance, if they exist, would be more quickly detected and modified (through a subsequent amendment). This could reduce the potential for inadequate Forest direction cumulatively affecting species through continued project implementation. Although this scenario is speculative, it is the intent of the proposed action to be forward thinking so that these types of scenarios can be avoided.

Summary – There would be no change in any goals and objectives or commodity outputs of the existing Forest Plan with selection of the Proposed Action. Habitat objectives and predicted trends in habitat and species populations would not change over those levels analyzed in the Forest Plan. This alternative would more adequately implement and better meet the intent of the MIS program by focusing monitoring efforts on a smaller set of species and specific management issues. It will also utilize the available funding more efficiently and effectively. This alternative reflects an improvement in the knowledge and understanding of how to implement the MIS program in a way that is practical for Forest Plan implementation.

Monitoring and Evaluation – The proposed action would not change the monitoring requirement as specified in Chapter 4 of the Forest Plan. The RNF would modify how MIS monitoring would be conducted with the proposed action (FEIS 3-122). The RNF has developed draft monitoring protocols in coordination with the Regional Office for the proposed MIS on the Forest. Protocols would be reviewed and finalized as necessary pending the conclusion of this amendment.

OTHER CONSEQUENCES OR EFFECTS CONSIDERED _____

Forest Plan Goals, Objectives, and Outputs

Neither alternative would make any changes in Forest Plan goals and objectives or affect any Forest Plan outputs.

Management Prescriptions and Management Areas

Neither alternative changes management prescriptions or alters management area boundaries.

Civil Rights

There are no civil rights issues, and neither of the alternatives have any related effects because consideration of MIS does not affect rights protected under civil rights law.

Environmental Justice

Since the early 1970's, there has been increased concern over disproportionate environmental and human health impacts on minority populations and low-income populations. Executive Order 12898 (February 11, 1994, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) directs each federal agency "to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations."

Neither alternative considered in this EA has any disproportionate environmental or human health impacts on minority or low-income populations.

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APPENDIX A - ROUTT NATIONAL FOREST MIS REVIEW

Routt National Forest Management Indicator Species Forest Plan Amendment Planning Document

Introduction

This planning document was developed between 2001 and present, through a series of focused meetings, and intra and interagency review. This final version of this planning document incorporates more recent interagency comments and suggestions obtained during scoping.

The Forest Service Manual defines Management Indicator Species (MIS) as "...plant and animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (United States Department of Agriculture [USDA]-Forest Service 1991). The National Forest Management Act (NFMA) requires that MIS be selected as part of the forest plan to estimate the effects of planning alternatives on fish and wildlife populations (Hayward et al. 2001).

Region 2 of the Forest Service initiated a review of MIS because of the concern that some species selected by Forests were not functioning appropriately as MIS. The Regional direction (Hayward et al. 2001) contains several guiding principles for consideration in the MIS review and selection process. These principles are:

Choose MIS to reflect major management issues and challenges.

"...expect a direct correspondence between particular MIS and specific management issues and challenges. This principle suggests that selection of MIS will be preceded by an evaluation of the primary management issues on the forest and the associated environmental conditions that relate to conserving species and ecosystems on the forest."

MIS function to facilitate evaluation.

Selecting MIS must significantly improve the agency's ability to evaluate the effects of management activities. The 36 CFR 219.19 states, "[T]hese species shall be selected because their population changes are believed to indicate the effects of management activities."

Consider MIS chosen on neighboring planning units.

“Effective monitoring requires critical consideration of spatial and temporal scale. Many vertebrate populations are most effectively monitored at broad spatial extents. Therefore, a single national forest may not represent an appropriate unit for monitoring population trend. Partnerships among neighboring forests or across most forests in a region may be necessary to build an effective monitoring network.”

Consider whether employing MIS is the best approach to evaluate the management problem.

The use of MIS represents one of numerous tools that are available to evaluate the effects of management activities.

Choose an adequate but limited number of species.

The 36 CFR 219.19 suggests that MIS may be selected from several categories that could lead to a potentially large pool of possible MIS. However, as each additional MIS is selected, it will add significant costs to an overall monitoring program. Hence, this principle is cautioning against approaching a point of diminishing returns in a monitoring program.

This analysis incorporates the guiding principles outlined in the Regional guidance. This document is both a review of the existing MIS list for the Routt National Forest and a rational framework to help shape the proposed action for an amendment to the MIS list in response to Regional guidance. This approach will follow a four-part process based on the “Management Indicator Species Selection Process and Criteria” (Hayward et al. 2001).

- Part 1. Review of the existing MIS list to determine if species are suitable as MIS.
- Part 2. Identify major Forest-level management issues and challenges facing the Routt National Forest.
- Part 3. Review the MIS species considered on neighboring planning units.
- Part 4. Match MIS to management issues and revision of MIS list.

Part 1 – Review of Existing MIS List

The existing MIS list was created as part of the 1997 Routt National Forest Land and Resource Management Plan revision process (USDA Forest Service 1998a). In Part 1, the species included on the 1997 Forest Plan list were reviewed to determine if they function appropriately as MIS. Species that were determined to function well as MIS were carried forward into Part 4 of the MIS selection process.

The MIS species identified in the Forest Plan include:

Table 1. Existing MIS List

Routt National Forest Existing MIS List	
Common Name	Scientific name
Common flicker	<i>Colaptes auratus</i>
Hairy woodpecker	<i>Picoides villosus</i>
Red-backed vole	<i>Clethrionomys gapperi</i>
Pine grosbeak	<i>Pinicola enucleator</i>
Warbling vireo	<i>Vireo gilvus</i>
Blue grouse	<i>Dendragapus obscurus</i>
Beaver	<i>Castor canadensis</i>
Ptarmigan	<i>Lagopus leucurus</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Sagebrush vole	<i>Laagurus curtatus</i>
Brown C. rosy finch	<i>Leucosticte australis</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
Elk	<i>Cervus elaphus</i>
Mule deer	<i>Odocoileus hemionus</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Green-tailed towhee	<i>Pipilo chlorurus</i>
Goshawk ¹	<i>Accipiter gentilis</i>
Pine marten ²	<i>Martes americana</i>
Osprey	<i>Pandion haliaetus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Greater sandhill crane	<i>Grus canadensis tabida</i>
Wood frog	<i>Rana sylvatica</i>
CO River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>
Sharp-tailed grouse ³	<i>Tympanuchus phasianellus columbianus</i>

¹ This species was originally referred to as 'goshawk' in the 1997 Forest Plan MIS list and will be referred to as 'northern goshawk' in this document.

² This species was originally referred to as 'pine marten' in the 1997 Forest Plan MIS list and will be referred to as 'American marten' in this document.

³ This species was originally referred to as 'Sharp-tailed Grouse' in the 1997 Forest Plan MIS list and will be referred to as 'Columbian sharp-tailed grouse' in this document.

The existing MIS list (Table 1) was reviewed to determine which of the species listed are/are not appropriate as MIS.

Criteria used to determine whether the species is not an appropriate MIS include:

- Criterion 1. Species that are very rare or otherwise difficult to detect:** Species that are rare, uncommon, or difficult to detect are generally not good MIS because they are difficult to monitor and it is very difficult to obtain a sufficient number of observations for a statistical analysis. A large number of observations are needed so that sampling variation and natural variation can be separated from the effects of management actions in an analysis.
- Criterion 2. Species whose populations are significantly influenced by factors beyond the control of land managers:** For example, populations of some species are currently influenced largely by threats such as global warming, ozone depletion, disease, and impacts to habitat beyond the National Forest (e.g. down-wind air pollution) or weather. Such species likely would exhibit population flux regardless of management actions on National Forest lands, and thus may not be the best indicators of management.
- Criterion 3. Species that are very difficult (or cost prohibitive) to monitor effectively to obtain useful population data:** Although cost should not be the dominant criteria determining choice of MIS, monitoring one or two ‘expensive’ species may preclude monitoring any others. Examples include species that must be monitored through special detection devices (e.g. bats) or mark/recapture methods. Mark/recapture methods for estimating populations of trapped species can be time and money intensive and may pose risk of mortality for individuals of the population being monitored. This cost becomes prohibitive with species that tend to be trap shy or occur at low densities and are dispersed broadly.
- Criterion 4. Species whose populations may be adversely impacted through monitoring:** Some species, including threatened, endangered, or sensitive species (TE&S) can be impacted by particular types of monitoring actions (incidental live-trapping mortality). Because effective population monitoring may require a particular methodology that can occasionally impact a species (stress or mortality), TE&S species should be carefully considered in these circumstances.
- Criterion 5. Species that do not clearly respond to management actions:** These species may not make good indicators of a particular management action because a change in their forest-wide population could reflect problems in any number of cover types rather than a specific management action in a single cover type. Species need to be clearly affected by particular management actions to be considered as a suitable MIS.

Criteria used to determine whether the species is more suited for use as an MIS include:

Criterion 6. Species that are relatively common, easy to detect and monitor: Species that are relatively common and easy to detect are generally good MIS because they are easier to monitor. With common species it is easier to obtain a sufficient number of observations for a statistical analysis. (A large number of observations are needed so that sampling variation and natural variation can be separated from the effects of management actions in an analysis.)

Criterion 7. Species whose populations are influenced by land management actions: Species whose populations are more directly influenced by management actions may have several diagnostic characteristics including (but not limited to): non-migratory, specialists, strong habitat relationships, and well documented habitat associations.

Common Flicker:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 5.

Rationale: This species was originally selected to represent habitat complexes associated with snags and downed woody debris. This species is found in a wide variety of habitats including aspen, lodgepole pine, and spruce-fir forests, as well as shrub types associated with deer and elk winter range (Kingery 1998). This species feeds on the ground, and plants and ants are a substantial part of their diet (Kingery 1998). Because of the diversity of habitats occupied by this species, its diverse diet, and its habit of nesting in both live and dead trees (and re-using nest cavities repeatedly), the common flicker is not a strong indicator of snag habitats. Impacts to snag habitats may not directly influence this species' population. Therefore it is difficult to tie this species to management actions influencing snags. If management issues relating to habitat complexes associated with snags and downed woody debris are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Hairy Woodpecker:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 5.

Rationale: The hairy woodpecker was originally selected to represent habitat complexes associated with snags and downed woody debris as well as aspen habitats. However, this species is not restricted to aspen. Hairy woodpeckers are found in a wide variety of habitats including aspen, lodgepole pine, and spruce-fir forests, as well as riparian cottonwood communities and shrub communities. The hairy woodpecker occupies a diversity of habitats from the high mountains to the plains in Colorado (Kingery 1998). Because of the diversity of habitats occupied by this bird, the hairy woodpecker is not a strong indicator of specific snag habitats. Impacts to snag habitats in particular vegetation types may not directly influence this species population because of the ability of the species to use a variety of forest types. Therefore, it may be difficult to detect a response from this species as a result of management actions influencing snags. If management issues relating to habitat complexes associated with snags and downed woody debris as well as aspen habitats are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Red-backed Vole:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 3.

Rationale: The red-backed vole was originally selected to represent habitat complexes associated with snags and downed woody debris as well as lodgepole pine habitats. This species has a well-documented association with downed woody debris and, in particular, spruce-fir forests (Keinath 2000, Keinath and Hayward 2003). This species is a primary prey of several predators including sensitive species (American marten, boreal owl). Management actions that alter red-backed vole habitat and populations could have implications for several predatory animals. This mammal is common, however monitoring would likely be cost and time intensive, as it would require mark-recapture with live traps or using a trapping index. Furthermore, populations of red-backed voles occur on a relatively small area. Populations are likely found at approximately the 6th level watershed as opposed to the Forest level. Because of the patchy subpopulations predicted to exist on the RNF and because of the NFMA requirement to determine Forest-level population trends of MIS, designing a MIS monitoring program for this species would require a random subsample from the subpopulations on the Forest. The predicted high level of stratification required and labor associated with a mark-recapture monitoring approach for this species makes monitoring the red-backed vole as an MIS difficult and cost prohibitive. If management issues relating to habitat complexes associated with snags and downed woody debris as well as lodgepole pine habitats are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Pine Grosbeak:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1.

Rationale: The pine grosbeak was originally selected to represent a large group of species occupying mature conifer habitat complexes, including subalpine fir and Engelmann spruce. A gregarious species, the pine grosbeak moves in flocks in response to seed crops and detections are patchy. It is fairly common but frequency of observations is largely driven by food supply. Although strongly associated with the spruce-fir forest, it was difficult to obtain population estimates for the pine grosbeak even after four years of intensive survey in spruce-fir forest (Skorkowsky 2003). Other songbird species that are more territorial and have high associations with spruce-fir/mature conifer may more appropriately indicate management actions and be easier to monitor, if management issues relating to mature conifer habitat complexes are identified in Part 2 of this process.

Warbling Vireo:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 2.

Rationale: The warbling vireo was originally selected to represent a large group of species occupying the aspen-habitat complex. The warbling vireo has a high association with aspen as well as deciduous riparian areas (Kingery 1998). Due to pesticide use on wintering grounds in Central America, populations of warbling vireo in Colorado may be negatively affected (Kingery 1998). Because the warbling vireo has been identified as a candidate for potential negative population impacts on its wintering grounds, population changes on the breeding grounds may not be reflective of management actions. Species associated with aspen that are not vulnerable on their wintering grounds may be more appropriate indicators of aspen forest habitats if management issues relating to the aspen-habitat complex, are identified in Part 2 of this process.

Blue Grouse:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 2, 3 and 5.

Rationale: The blue grouse was originally selected to represent an economically important game species occupying a wide range of habitats including mature conifer, shrub and grass/forb habitat complexes. This species is a habitat generalist (conifer, aspen, and shrub types). Blue grouse populations are cyclic and chick survival can fluctuate wildly depending on weather, particularly precipitation (USDA Forest Service 1998b). Wildlife managers typically have a difficult time predicting population levels and trends for this bird from hunter data (Kingery 1998). Because of the known difficulty monitoring populations and well documented influence of factors outside the control of Forest Service management on its population, this species may not be the best indicator of management actions in the mature conifer, shrub, and grass/forb habitat types. Furthermore, the Forest has not developed a monitoring strategy independent of the Colorado Division of Wildlife harvest data. Such a strategy would be necessary if the CDOW stopped monitoring blue grouse. Finally, it is not clear how particular changes in Forest management would influence this species. Other species may be more suited as indicators of the mature conifer, shrub, and grass/forb habitat complexes, if management issues warrant MIS for these types.

Beaver:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6.

Rationale: The beaver was originally selected as an indicator of riparian wetland habitat complexes. The beaver is very important in the ecology of the Rocky Mountain riparian wetland system and considered a keystone species (Rutherford 1964). Beaver respond to availability of riparian shrub vegetation and may indicate particular habitat conditions for other species, even if the beaver themselves do not respond directly to FS management. Although Rutherford (1964) documented that epidemics of tularemia contribute to a cyclical boom and bust of population levels, it is not clear if this is a problem on the Routt National Forest. The beaver should be carried forward for further evaluation in Part 4.

Ptarmigan:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1 and 5.

Rationale: The ptarmigan was originally selected as an indicator of alpine/talus habitat. The alpine habitat composes only approximately 4% of the Forest (USDA Forest Service 1998b). Although some grazing and recreational activities are occurring in ptarmigan habitat, these actions are limited in the remote portions of the Forest where known populations occur. The ptarmigan is uncommon in the alpine habitats on the Routt National Forest, but it has been documented in remote and relatively inaccessible portions of both the Mount Zirkel and Flat-tops Wilderness Areas (Kingery 1998). Because of relatively low population levels, monitoring of this bird would likely be difficult and expensive. It is not clear that hunter wing returns would be consistent or substantial enough to accurately estimate populations, much less separate out natural variation influencing the populations from land management actions. Furthermore, the Forest has not developed a monitoring strategy independent of the Colorado Division of Wildlife harvest data and this would be necessary if the CDOW stopped monitoring ptarmigan. Other more common species may be more suitable as indicators of alpine habitats, should management issues be identified for these habitats in Part 2.

Vesper Sparrow:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6 and 7.

Rationale: The vesper sparrow was originally selected as an indicator of the grass/forb habitat complex. This bird is well distributed and common within suitable habitat on the Routt National Forest (Kingery 1998). This species seeks a narrow set of habitat conditions within its nesting range (middle to high elevation sagebrush and grassland habitats) and subtle changes in these conditions (reductions in residual grass and forbs) can impact essential nesting habitat components (Kingery 1998). Because the vesper sparrow responds to changes in specific habitat variables and because of its abundance and relative ease of monitoring through point-count methodology, this species should be retained as suitable for a MIS, should management issues be identified that warrant its use in the grass/forb habitat type.

Sagebrush Vole:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1, 3 and 4.

Rationale: The sagebrush vole was originally selected as an indicator of the mixed deciduous shrub (sagebrush) habitat complex. This small mammal has been documented as breeding in the northwestern portion of Colorado near the Routt National Forest (Bissell 1978). However, the sagebrush vole has not been confirmed on the Forest. This species is classified as G5 and S1 by the Colorado Natural Heritage Program, indicating global security of populations but critical impairment of state populations. This colonial species is highly associated with sagebrush ecosystems and is active all year and at all times of the day. Agriculture and overgrazing have eliminated this vole from most of its range (O'Farrell 1972). It is not known if this vole occurs in the sagebrush habitats on the Routt National Forest. Because of this species' unknown occurrence and since mark-recapture trapping and sampling design would be very labor intensive and costly, a species with a more consistent distribution and greater density within the Routt National Forest sagebrush habitats would likely be a better indicator species, should management issues be identified for these habitats in Part 2.

Brown-capped Rosy Finch:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1.

Rationale: The brown-capped rosy finch was originally selected as an indicator of alpine/talus habitat complexes. The Colorado Breeding Bird Atlas (Kingery 1998) indicates that this bird is not well distributed within suitable habitat and only two confirmed breeding blocks occur on the Routt National Forest. Because both good distribution within suitable habitat and moderate to strong abundances are important characteristics of MIS, the brown-capped rosy finch is not highly suitable as a MIS. Other species may be more appropriate indicators of this habitat, should management issues be identified in the alpine/talus habitat type.

Wilson's Warbler:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6 and 7.

Rationale: The Wilson's warbler was originally selected as an indicator of riparian/wetland habitat complexes. This bird is well distributed and relatively abundant on the Routt National Forest (Kingery 1998). This species has a close association with riparian willow communities and can be influenced by livestock grazing in riparian areas (Kingery 1998). The Wilson's warbler may be a good MIS candidate because of its close association with riparian willow communities, the potential impacts from management actions on its population, its good distribution on the Forest, and its moderate relative abundance. Unlike other migratory songbirds, the Wilson's warbler is not currently known to be declining from impacts on wintering grounds. Thus, the Wilson's warbler should be carried forward for further consideration in Part 4 to see if it matches management issues identified in Part 2.

Elk:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 2 and 5.

Rationale: The elk was originally selected as an economically important game species associated with the mature conifer, aspen, shrub, grass/forb, and lodgepole pine habitat complexes. Elk are very adaptable and populations have been steadily increasing despite new approaches by the Colorado Division of Wildlife to control the populations through hunting. Elk tend to move from public-land summer range to private-land winter range and can be impacted by changes in land use on private-land winter range. Intensive management has not significantly changed populations although some work has clarified the relationships between elk and open road densities (Ward et al. 1973, Bumstead 1975, Leege 1984). Elk populations may also be influenced by chronic wasting disease and are significantly influenced by hunter success (which can be largely driven by fall weather conditions). If chronic wasting disease becomes more prevalent, management of this species may be dictated largely by goals related to management of this disease. Because of the multiple factors influencing elk populations and their apparent lack of response (in regards to overall population numbers) to most land management actions on the Routt N.F., this species is recommended for removal from the existing MIS list. Other species may be more appropriate indicators, should management issues be identified in the mature conifer, aspen, shrub, grass/forb, or lodgepole pine habitat complexes.

Mule Deer:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 2 and 5.

Rationale: The mule deer was originally selected as an economically important game species associated with the mature conifer, aspen, shrub, and grass/forb habitat complexes. Mule deer populations have been steadily increasing over the last several years. Mule deer tend to move from public-land summer range to private-land winter range and can be impacted by changes in land use on private-land winter range. Intensive management has not significantly changed populations and there is no clear relationship between primary Forest Service land management actions and deer populations. Mule deer populations may also be influenced by chronic wasting disease and hunter success (which can be largely driven by fall weather conditions). If chronic wasting disease becomes more prevalent, management of this species may be dictated largely by goals related to management of this disease. Because of the multiple factors influencing deer populations and their apparent lack of response (in regards to overall population numbers) to most Forest Service land management actions on the Routt N.F., the mule deer is recommended for removal from the existing MIS list. Other species may be more appropriate indicators, should management issues be identified in the mature conifer, aspen, shrub, and grass/forb habitat complexes.

Blue-gray Gnatcatcher:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1.

Rationale: The blue-gray gnatcatcher was originally selected as an indicator of the mixed deciduous shrub land habitat complex. This bird is most highly associated with pinion-juniper, but also found in scrub-oak and mountain mahogany/service berry shrub types when these shrubs are in association with pinion-juniper woodlands (Kingery 1998). The blue-gray gnatcatcher is not a confirmed breeder on the Routt National Forest (Kingery 1998) likely because of the lack of pinion-juniper habitats. Because this bird does not regularly occur on the Forest and because suitable habitat is not available, this bird does not make a suitable MIS for the Routt National Forest as an indicator of shrub-habitat complexes. The blue-gray gnatcatcher is recommended for removal from the Routt National Forest MIS list. If management issues are identified in the shrub land habitats (Part 2) then an alternative MIS species or approach should be considered.

Green-tailed Towhee:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6.

Rationale: The green-tailed towhee was originally selected as an indicator of the mixed deciduous shrub habitat complex. This bird is well distributed and abundant within the mountain shrub type on the Routt National Forest (Kingery 1998). This bird is easily detected and monitored through point count methodology, demonstrates strong associations with deciduous shrub habitats, and is abundant enough to determine accurate density estimates within appropriate habitat. The green-tailed towhee should be carried forward to Part 4 of this process, to see if it matches any management issues identified in Part 2.

Northern Goshawk:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6 and 7.

Rationale: The northern goshawk was originally selected as an indicator of the mature coniferous habitat complex. This hawk is relatively common and well distributed within suitable habitat on the Routt National Forest. The northern goshawk has been consistently monitored over the past 10 years and has been demonstrated to respond to management actions within suitable habitat (Reynolds 1983, Reynolds et al. 1992). Though the northern goshawk is a habitat generalist, their movement, patterns, demographics, and reproductive success rates can serve as an indicator of impacts from human activity and development. Thus, the northern goshawk can help to measure overall condition of habitat for species of wildlife susceptible to human disturbances. Although the species is moderately difficult to monitor, the Routt N.F. has developed an effective territory monitoring program and Region 2 of the Forest Service has developed a Regional monitoring program. The northern goshawk should be carried forward to Part 4 of this process, to see if it matches any management issues identified in Part 2.

American Marten:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6 and 7.

Rationale: The American marten was originally selected as an indicator of the mature coniferous habitat complex. American marten are relatively common and well distributed within suitable habitat on the Routt National Forest. American marten have been monitored using varying techniques over the past several years and are known to respond to management actions within suitable habitat, particularly spruce-fir habitats with high levels of coarse woody debris. The American marten should be carried forward to Part 4 of this process, to see if it matches any management issues identified in Part 2.

Osprey:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1, 2 and 5.

Rationale: The osprey was originally selected as an indicator of mature conifer and open water habitats. This raptor is uncommon on the Routt National Forest and only documented within one breeding block on the Forest (Kingery 1998). Because of the species rarity and small population size, the osprey does not make a highly suitable management indicator of mature coniferous forests or open water habitats on the Routt National Forest. It is not clear that the osprey would respond to Routt National Forest management actions unless the action involved impacting the nest tree or a lake adjacent to a nest tree. The osprey is recommended for removal from the MIS list. If issues associated with open water or mature conifer habitats are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Bald Eagle:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1 and 2.

Rationale: The bald eagle was originally selected as an indicator of mature conifer and open water habitats. This federally threatened species is uncommon on the Routt National Forest and only occasionally observed on the Forest. The bald eagle is not documented as breeding on the Forest (Kingery 1998). Because of the species rarity, the bald eagle does not make a highly suitable management indicator of mature coniferous forests or open water habitats on the Routt National Forest. Without an eagle population to monitor, it is impossible to link population changes to management actions. The bald eagle is recommended for removal from the MIS list. If issues associated with open water or mature conifer habitats are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Greater Sandhill Crane:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1, 2, and 5.

Rationale: The greater sandhill crane was originally selected as an indicator of riparian/wetland habitat complexes. This bird is a recovered State endangered species and it is primarily influenced by nesting disturbance as opposed to habitat management. The greater sandhill crane's population may also be affected by management changes on the private land staging grounds (fall and spring) and wintering grounds (Boisvert and Graham 1995). Because this bird is relatively uncommon with population numbers largely influenced by factors beyond the control of the Forest Service and unlikely to be affected by management actions in the riparian/wetland habitats on Forest Service lands, it is recommended that the greater sandhill crane be removed from the MIS list. If issues relating to riparian/wetland issues are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Wood Frog:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1 and 2.

Rationale: The wood frog was originally selected as an indicator of riparian wetland habitat complexes. This amphibian is not well distributed; it is found only on the Parks Ranger District. Many amphibian populations are strongly influenced by factors beyond the control of land managers. These factors include: ozone depletion, global warming, and chytrid fungus. Because changes in amphibian populations are likely influenced by factors beyond the control of the Forest Service, it would be very difficult to associate population change with management actions by the agency. The wood frog is recommended for removal from the MIS list. If management issues relating to riparian/wetland habitats are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Colorado River Cutthroat Trout:

Recommendation: Meets the criteria for MIS, carry forward for evaluation in Part 4.
➤ Meets criterion 6 and 7.

Rationale: The Colorado River cutthroat trout was originally selected as an indicator of aquatic habitat conditions, competitive exclusion and hybridization effects due to the presence of non-native trout (in rivers, streams, and lakes). Distribution of this subspecies is limited in the Forest to the west side of the Continental Divide. The Colorado River cutthroat trout has a limited distribution in the Routt National Forest and is found primarily in isolated headwater streams. However, there are all or portions of 5 fifth-level watersheds on the Routt National Forest where Colorado River cutthroat trout are the only trout species present in the watershed. So, although Colorado River cutthroat trout have limited distribution across the Forest, they would represent a suitable aquatic Management Indicator Species for management issues in the watersheds where they occur. Colorado River cutthroat trout populations and preferred habitats are vulnerable to the unintended consequences of multiple-use activities. The Colorado River cutthroat trout should be retained for further consideration in Part 4 of this process, to see if it matches any management issues identified in Part 2.

Columbian Sharp-tailed Grouse:

Recommendation: Remove from existing list, not suitable for MIS on the Routt N.F.
➤ Meets criterion 1 and 2.

Rationale: The sharp-tailed grouse was originally selected as an indicator of the mountain shrub habitat complex. This grouse has a limited available habitat on the Routt National Forest and is quite rare. A breeding population has been identified only on one part of the Forest. Because the sharp-tailed grouse distribution is very limited in comparison with the mountain shrub habitat component and because this grouse is largely affected by management actions on private land habitats (Boisvert 2002), it is recommended for removal from the MIS list. If management issues relating to mountain shrub habitats are identified in Part 2 of this process, another more suitable MIS or approach should be considered.

Table 2 is a summary of the recommend actions proposed in Part 1 of the process for the existing (1997 Forest Plan) Management Indicator Species for the Routt National Forest.

Table 2. Recommendations for Existing Routt MIS List

Summary of Recommendations for Existing Routt MIS List	
Common Name	Recommended Action
Common flicker	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Hairy woodpecker	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Red-backed vole	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Pine grosbeak	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Warbling vireo	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Blue grouse	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Beaver	Retain for further consideration in Part 4.
Ptarmigan	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Vesper sparrow	Retain for further consideration in Part 4.
Sagebrush vole	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Brown C. rosy finch	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Wilson's warbler	Retain for further consideration in Part 4.
Elk	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Mule deer	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Blue-gray gnatcatcher	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Green-tailed towhee	Retain for further consideration in Part 4.
Northern goshawk	Retain for further consideration in Part 4.
American marten	Retain for further consideration in Part 4.
Osprey	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Bald eagle	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Greater sandhill crane	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
Wood frog	Remove from existing MIS list, not a suitable MIS on the Routt N.F.
CO River cutthroat trout	Retain for further consideration in Part 4.
Sharp-tailed grouse	Remove from existing MIS list, not a suitable MIS on the Routt N.F.

Part 2 – Identification of Routt National Forest Major Management Issues and Challenges

This process follows the Regional Protocol for identifying Management Indicator Species (Hayward et al. 2001). The Medicine Bow-Routt National Forests’ biologists and botanists identified the following management issues through a series of meetings. Although numerous issues were identified through the exercise, the issues listed below represent the major fish, wildlife, and rare plant management issues and challenges currently facing the Routt National Forest.

Coarse Woody Debris:

Question: When conducting land management actions (e.g. timber harvest, fire management), are we maintaining adequate amounts of coarse woody debris (CWD) sufficient to meet wildlife needs and ecological processes? Are Forest Plan standards appropriately set to meet these needs and ensure distribution and abundance of species dependent on CWD habitats?

Background: Coarse woody debris is an important component of forested systems for both wildlife habitats and ecological processes. Retention of adequate amounts of CWD is necessary to support populations of animals requiring CWD habitat characteristics. The relationship between amounts of CWD and animal abundance is poorly understood. Based on this uncertainty, biologists on the Forest seek information regarding the response of species to application of the current Routt National Forest Biological Diversity Standard regarding CWD on sites managed for timber production. The existing Forest Plan Standard specifies to retain CWD (where materials are available) in accordance with the average minimums specified in Table 3 below. Because of the diversity of species as well as ecological processes associated with this issue, evaluating this issue through an administrative /research study would provide insight into the adequacy of this standard for many species as well as associated ecological processes.

Table 3. CWD Average Minimums

Forest Type	Minimum Diameter (Inches)	Retention Density (Linear feet per acre)
Spruce/fir	10	50
Lodgepole pine	8	33
Aspen	8	33
Douglas-fir	10	50
Ponderosa pine	10	50

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Snag Management:

Question: Are land management actions (e.g. timber harvest, fire management) on the forest maintaining adequate numbers, distributions, sizes, and species of snags sufficient to meet ecological needs? Are Forest Plan standards and guidelines appropriately set to meet these needs and ensure distribution and abundance of species dependent on snags?

Background: Snags are an important component of forested systems for both wildlife and ecological processes. Many species of birds (primary excavators, secondary cavity nesters, and even raptors) use snags for nesting, foraging and perching. In addition to birds, other species including small mammals, bats, bears, American marten, amphibians, and invertebrates use snags as an important habitat component. Wildlife biologists on the Forest are uncertain whether the current Routt National Forest direction regarding snag retention will provide the snags necessary to maintain wildlife habitat components over the long term sufficient to support populations of animals dependent on snags. Because of the diversity of species associated with this issue and because this issue may be resolved through a short term focused study, evaluating this issue through an administrative /research study would likely be most efficient. The existing Forest Plan Standard specifies to retain snags (where materials are available) in accordance with the average minimums specified in Table 4 below.

Table 4. Existing Snag Requirements

Forest Type	Minimum Diameter (Inches)	Minimum Height (Feet)	Retention Density (Number /Acre)
Spruce/fir	10	25	1
Lodgepole pine	8	25	1
Aspen	8	25	1
Douglas-fir	10	25	1
Ponderosa pine	10	25	1

Additional Forest Direction is provided as well:

- Biological Diversity Standard #2: Retain all soft (rotten) snags unless they are a safety hazard.
- 5.11 Management Area Vegetation Standard #2: Where available, maintain a minimum of four snags per acre, calculated as per acre averages over a project area.
- 5.11 and 5.13 Management Area Vegetation Standard: Retain live trees that are broken at the top, have mechanical damage or genetic defect, to replace snags wherever available. At a minimum, retain two live trees to replace each snag.
- 5.13 Management Area Guideline #4: Retain snags in various conditions of decay and distribution. Select trees with larger-than-average diameter for the stand when available.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Influence of Management Actions on Prey Populations:

Question: Are our management actions maintaining prey populations at levels adequate to support TES carnivores and other native predators?

Background: Management actions that influence wildlife habitats can affect the ability of those habitats to support species, including snowshoe hare, red-backed voles, and red squirrels, that are important prey species to many forest carnivores. Forest predators that depend on these species include the Canada lynx, American marten, northern goshawk, boreal owl, and many others. Recent concern regarding the impacts of forest management actions on species such as snowshoe hare and red squirrels was clarified as an important issue when the Canada lynx was listed as a Threatened species. This issue clearly applies to other predators on the forest as well. Because a short-term evaluation of this issue should provide the necessary information for improving management and should be more cost-effective than long-term MIS monitoring, a focused non-MIS monitoring approach would likely be the most efficient approach to addressing this issue.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Recreational Disturbance to Wildlife:

Question: What is the effect of recreational-caused disturbance on the survival and populations of native wildlife species? Are recreational activities being managed appropriately to minimize disturbance effects to wildlife?

Background: Recreational activities are continuing to increase on National Forest lands in Colorado and specifically on the Routt National Forest. The surrounding resort community promotes recreational opportunities on the Forest. Recreational-caused disturbance is generated from snowmobile, skiing, motorcycle, ATV, bicycle, hiker, and horseback use. Some activities are legal but there is also increasing illegal off trail motorized use occurring and an increasing problem with off trail mountain-bike use. Some recreational activities such as fall hunting have been demonstrated as resulting in moving elk herds off the National Forest to adjacent private lands. Elk movements may be largely influenced by road and trail access and type of use, more than hunting pressure. Many of these recreational activities are permitted, however many are not. It is not clear how significant this potential problem may be. It is not clear what effect recreational-caused disturbance is having on wildlife survival, reproduction, and behavior. Because of the diversity of species affected by this issue and because of the multi-season and forest-wide nature of the potential affect, selecting only one or two species to monitor this issue is not anticipated to be the most appropriate approach. Developing an administrative study or partnering with a research institution is expected to more effectively clarify the extent of this issue and the wide range of species that may be affected.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Snow Compaction and Subnivian Space:

Question: Are recreational activities on the forest influencing snow characteristics to an extent that populations of small mammals, amphibians, and other taxa are impacted?

Background: Winter recreational activities (primarily snowmobiling, cross-country skiing, snow shoeing, and snowcat trail grooming activities) are continuing to increase on the National Forest and there is concern that this compaction of snow may be resulting in changes to snow pack structure (e.g. subnivian space) impacting the survival and fine-scale distribution of small mammals and/or amphibians (USDA Forest Service 2005). Small mammals use subnivian space in the winter for movement for foraging and for insulation from outside air temperatures. Compaction of subnivian space may impact the survival of small mammals. Declines in small mammal populations due to snow compaction could affect other species such as boreal owl, saw-whet owl, and American marten by reducing their ability to access or find prey in the winter. It is not clear the extent or magnitude of this potential problem or what snow compaction is doing to species survival; therefore, an administrative study that clarifies this relationship is necessary before considering the long-term population monitoring that would be associated with selecting an MIS for this issue. Examples of species that may be affected by this issue include pika, meadow vole, red-backed vole, and amphibian species.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Snow Compaction and Access to Competing Carnivores:

Question: What is the effect of snow compaction from winter recreational activities on prey populations (snowshoe hare, pine squirrels) and specialist carnivores (lynx and American marten)?

Background: Winter recreational activities (primarily snowmobiling, skiing, snow shoeing, and snowcat trail grooming activities) are continuing to increase on the National Forest and there is concern that snow-compacting activities may be resulting in the ability of species such as coyotes, bobcats, and mountain lions to access deep snow habitats during the winter differently than prior to extensive human-caused snow compaction. The addition of competing predators may influence the behavior of other carnivores or affect the ability for lynx, boreal owl, and American marten to find sufficient prey. An administrative study that clarifies this relationship is necessary before considering the long-term population monitoring that would be associated with selecting an MIS for this issue. Additionally this issue is currently being investigated by the Forest Service Research Station and others (Bunnell et al. 2006).

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Aquatic Habitat Fragmentation:

Question: Are roads and trails (construction, use, and maintenance) negatively impacting aquatic species by contributing to aquatic habitat fragmentation in the Routt National Forest?

Background: Aquatic habitat fragmentation from roads and trails may be affecting the population viability of aquatic species (fish, amphibians, aquatic invertebrates) by restricting their movements and their ability to disperse. For example, road-drainage features such as culverts may inadvertently isolate a population of fish due to improper culvert placement and installation. Because of the presence of inadvertent migration barriers, some trout may be unable to access important spawning habitats. Fish may be able to move downstream during part of the year, but unable to return upstream due to culverts and other effective migration barriers. Barriers to movement and migration can negatively affect species persistence and reproduction. Aquatic habitat fragmentation is different than terrestrial habitat fragmentation because of the nature of aquatic ecosystems. Streams, for example, are linear in nature and a road culvert barrier can greatly affect aquatic species genetics and distribution as described earlier. Aquatic habitats occur in a small portion of the landscape, and thus lend themselves to more easily be monitored.

Recommendation: Consider appropriate MIS during Part 4 or identify other monitoring strategy.

Terrestrial Habitat Fragmentation:

Question: Are roads, trails, clearcuts, and other human encroachment resulting in problems of fragmentation for terrestrial vertebrate species on the Routt National Forest?

Background: Fragmentation of habitats by harvest units, road and trail construction, and other human activities may be affecting species movement, genetic exchange, and reducing species ability to survive. Some evidence suggests highways can reduce small mammal movements and possibly result in reduced genetic exchange (Conery and Mills 2002). Both the presence and use of roads are factors that may fragment habitat by restricting movement. Although monitoring of a species that is associated with fragmentation, such as the American marten, may provide insight into this issue, an administrative study or research approach may allow for a more cost-efficient, shorter-term focused evaluation of the issue, as compared to MIS monitoring. Shorter-term evaluations would allow for multiple species to be evaluated over time and at scales appropriate to evaluate the issue, as compared to the entire planning area. Therefore, an administrative study that focuses on answering the question is recommended because it is anticipated to be a more cost-effective way to address this management issue.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Spruce-fir Timber Management:

Question: Is timber management in the spruce-fir forest changing the forest stands in such a way (within stand fragmentation and canopy openings) that species associated to spruce-fir forests are affected? What are the effects of timber cuts that affect canopy reduction (e.g. individual tree-mark) in spruce-fir to species distribution and abundance?

Background: Several species are strongly associated with spruce-fir habitats, including the boreal owl, American marten, and golden-crowned kinglet. Spruce-fir forests on the Routt National Forest are very slow growing and represent the majority of the late successional forests on the Forest. Because of the slow rate of recovery in spruce-fir forests following timber management, the biologists on the Forest are concerned that timber management in the spruce-fir forest may be affecting species that depend on these habitats. Examining the relative trends of a species that is tightly tied to spruce-fir canopies should indicate when spruce-fir management (e.g. individual-tree-mark, shelterwood, seedtree, and bark-beetle harvests) begins to cause levels of within-stand fragmentation that may be of concern.

Recommendation: Consider appropriate MIS during Part 4 or identify other monitoring strategy.

Lodgepole Pine Timber Management:

Question: Is the rate, distribution, and approaches to timber management in the lodgepole pine affecting the ability of species utilizing those habitats to retain adequate distribution and abundance?

Background: Lodgepole pine is one of the primary timber types harvested on the Routt N.F. Clearcutting is a common silvicultural approach to managing this early successional species. Some species such as the northern goshawk are highly associated with the lodgepole pine forest type on the Routt N.F. and have been impacted in the past by timber management. There is concern that the rate, distribution, and silvicultural approach to timber management in the lodgepole pine may be impacting the habitats of species that are highly associated with this forest type. Additionally, there are concerns regarding the lack of Forest direction in managing the spatial-habitat requirements of species using lodgepole pine habitats, especially those that use broad extents of forest habitat. The identification and monitoring of a MIS species affected by the rate, distribution, and types of lodgepole pine timber management is recommended.

Recommendation: Consider appropriate MIS during Part 4 or identify other monitoring strategy.

Aspen Forest Management:

Question: Are livestock and big game (elk and deer) affecting the regeneration of aspen forests?

Background: Aspen forests are important habitat for many wildlife species. There are numerous species of birds and mammals that inhabit the aspen type in the western United States. The relatively short life of the trees, and the annual shedding of the foliage create microhabitats not usually found in coniferous stands. Understory vegetation provides forage for grazing animals (both wildlife and domestic) and feeding areas for insectivorous birds. Grazing in aspen has been identified as a potential impact to adequate aspen regeneration (Ruediger et al. 2000), although it is not clear if this is a problem on the Routt National Forest. It will be important to monitor aspen forest grazing management on the Routt in order to ensure that our grazing management actions are not impacting aspen regeneration as specified in the Canada Lynx Conservation Agreement and Strategy (Ruediger et al. 2000). Because of the uncertainty regarding the scope of this issue and due to its direct relation to regeneration, an administrative study that focuses on regeneration surveys instead of MIS will more directly evaluate this issue.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Distribution and Abundance of Late Seral Forests:

Question: Is there an adequate distribution and abundance of late seral forest conditions?

Background: Late seral forests are important habitat for many wildlife species. Recent large-scale blowdown, wildfires, and pandemic bark beetle outbreaks are rapidly changing the distribution and abundance of late seral forests on the Routt National Forest. Because of the diversity of cover types and species potentially affected by this issue, a single species long-term MIS monitoring approach may not adequately clarify if this changed condition should result in changes to forest management.

An administrative study that evaluates the historic range of variability and incorporates a wide range of species dependant on both late and early seral forest conditions is needed to clarify if changes to the Forest Plan are warranted.

Recommendation: Administrative study, research question or other non-MIS monitoring approach to investigating the issue is recommended.

Fen and Bog Management:

Question: Is there adequate conservation of rare peat habitats (fens, peat lands, and bogs); are peat land habitats declining in quality or extent?

Background: The amount, distribution, and status of rare riparian ecosystems such as fens on the Routt National Forest is not well known. Without a good understanding of this baseline, it is difficult to assess if the Forest Plan is providing for adequate conservation of these areas. Are impacts occurring and does management need to change to provide additional protection?

Recommendation: Additional inventory of fens and peat lands through an administrative study is needed to gain additional information.

Rangeland Residual Forage:

Question: Is adequate residual forage being retained for native species?

Background: Livestock and wild ungulate grazing affects several habitat types, particularly mountain parks and aspen forests. Residual grass and forbs are important as food and cover for many species using rangeland habitats. Species affected include invertebrates, birds, small mammals, as well as several native predators that feed on the birds and small mammals that are associated with these communities. Retaining insufficient residual forage could affect several rangeland-associated species. Since monitoring residual forage is an ongoing activity in the management of rangelands, evaluating this issue's relationship to wildlife through the use of an MIS should be an effective way to monitor this issue and determine if residual forage direction in the Forest Plan is adequate. The selection and monitoring of an MIS is recommended to evaluate this management action on species survival, productivity, and viability.

Recommendation: Consider appropriate MIS during Part 4 or identify other monitoring strategy.

Herbivory in Riparian Areas:

Question: How is livestock and wild ungulate herbivory in riparian areas influencing the habitats of riparian dependant species?

Background: Herbivory from livestock, as well as wild ungulates, affects riparian vegetation. If not managed properly, herbivory by domestic livestock and wildlife affects streams and can adversely impact the stream bank, leading to long-term changes in stream and associated riparian systems. Herbivory effects on riparian and stream systems have been identified as a problem in local areas on the Routt National Forest but have not been identified broadly on the Routt N. F. Since monitoring herbivory in riparian areas is an ongoing activity in the management of the Forest's riparian areas, evaluating this issue's relationship to wildlife through the use of an MIS should be an effective way to monitor this issue and determine if direction in the Forest Plan is adequate. Monitoring MIS to evaluate if riparian habitats and community types are being maintained is a recommended approach to this management issue.

Recommendation: Consider appropriate MIS during Part 4 or identify other monitoring strategy.

Sedimentation in Riparian Areas and in Aquatic Habitats:

Question: Are management actions impacting riparian areas and aquatic habitats by adding unacceptable inputs of sediment into the system?

Background: Sediment transport to streams is a natural process that varies over time and space. Additional sedimentation beyond the background of an unmanaged system can result from erosion and sediment transport associated with road networks (both open and closed roads), as well as from eroding irrigation ditches and inadequately maintained trails (motorized as well as non-motorized). Characteristic of extensive road networks is increased overland flows and atypical drainage patterns, which can result in sedimentation of adjacent waters; road-drainage features such as culverts can exacerbate erosion and sedimentation problems in adjacent waters. Similarly erosion and sedimentation may result from recreational activities (camping along streams, digging fishing worms from banks, illegal off trail ATV use, and snow compaction resulting in plugged culverts). Sedimentation affects the quality, quantity, type, and distribution of aquatic habitats and affects the abundance and distribution of fish and aquatic invertebrate populations. Monitoring an aquatic MIS is recommended to assess the presence and magnitude of the aforementioned impacts.

Recommendation: Consider appropriate MIS during Part 4 or identify other monitoring strategy.

Table 5 is a summary of the issue identification portion of the MIS process.

Table 5. Management Issues and Recommended Actions

Summary of Management Issues and Recommended Approaches for the Routt National Forest	
Management Issue	Recommended Monitoring Approach
Coarse Woody Debris	Administrative study, research question or other non-MIS monitoring approach
Snag Management	Administrative study, research question or other non-MIS monitoring approach
Influence of Management Actions on Prey Populations	Administrative study, research question or other non-MIS monitoring approach
Recreational Disturbance to Wildlife	Administrative study, research question or other non-MIS monitoring approach
Snow Compaction and Subnivian Space	Administrative study, research question or other non-MIS monitoring approach
Snow Compaction and Access to Competing Carnivores	Administrative study, research question or other non-MIS monitoring approach
*Aquatic Habitat Fragmentation	Consider MIS or other monitoring approach
Terrestrial Habitat Fragmentation	Administrative study, research question or other non-MIS monitoring approach
*Spruce-fir Timber Management	Consider MIS or other monitoring approach
*Lodgepole Pine Timber Management	Consider MIS or other monitoring approach
Aspen Forest Management	Administrative study, research question or other non-MIS monitoring approach
Distribution and Abundance of Late Seral Forests	Administrative study, research question or other non-MIS monitoring approach
Fen and Bog Management	Administrative study
*Rangeland Residual Forage	Consider MIS or other monitoring approach
*Herbivory in Riparian Areas	Consider MIS or other monitoring approach
*Sedimentation of Riparian Areas and Aquatic Habitats	Consider MIS or other monitoring approach

* Carried forward to Part 4.

Part 3 – Consider MIS on neighboring planning units

Prior to matching MIS to management issues Hayward et al. (2001) recommended that a Forest consider selecting the MIS that have been identified on neighboring planning units or across most Forests in a Region. This approach is used because trends in some species populations are more appropriately evaluated at larger spatial and temporal scales, and because coordination of MIS monitoring across Forests may greatly improve our ability to learn both about the species population trends as well as effects from management actions. Table 6 below lists the MIS designated or those being considered for designation on neighboring planning units.

Table 6. Neighboring Planning Unit Review of MIS

Neighboring Planning Units	Mammals										Birds										Aquatic Species				
	Elk	Mule deer	Bighorn sheep	American marten	Abert's squirrel	Snowshoe hare	Cave bats	Northern goshawk	Hairy woodpecker	Three-toed woodpecker	Golden-crowned kinglet	Pygmy nuthatch	Wilson's warbler	Lincoln sparrow	Brewer's sparrow	American pipit	Virginia's warbler	Mountain bluebird	Wild turkey	Warbling vireo	Red-naped sapsucker	Common trout ¹	Aquatic macro-invertebrates	Boreal toad	
Medicine Bow Revised Plan Amended MIS List				X		X		X		X	X		X	X									X		
White River Revised Plan Amended MIS List	X						X								X	X	X						X	X	
Arapaho-Roosevelt Revised Plan Amended MIS List	X	X	X						X	X	X	X						X		X			X		X
Pike-San Isabel Revised Plan Amended MIS List	X				X																		X		
Grand Mesa, Uncompahgre and Gunnison Amended MIS List	X			X	X			X						X						X		X	X		

A review of Table 6 indicates that 6 of the 24 MIS on neighboring planning units would not be suitable as MIS on the Routt National Forest because they are either not present, not known to occur, or occur at such low frequency that monitoring would be difficult or impossible. These species include: bighorn sheep, Abert’s squirrel, cave bats, turkey, boreal toad, and American pipit.

¹ Common trout are defined as brook trout, brown trout, cutthroat trout (Colorado River or green-back), or rainbow trout in this table. An x-mark in the common trout box indicates that one or more of these trout were identified as an MIS by the planning unit. On the White River NF this field is defined as ‘All Trout’.

Additionally, 3 of the species in Table 6 were determined inappropriate as MIS for the Routt National Forest in Part 1 of this process. These include: elk, mule deer, and hairy woodpecker.

The remaining potentially suitable MIS species from neighboring planning units, along with the MIS species being carried forward from the 1997 Routt National Forest MIS list, (Table 2) are presented in Table 7.

Table 7. Potentially Suitable MIS Species Carried Forward

Neighboring Planning units	Mammals			Birds											Aquatic Species			
	American marten	Snowshoe hare	Beaver	Northern goshawk	Three-toed woodpecker	Golden-crowned kinglet	Pygmy nuthatch	Wilson's warbler	Vesper sparrow	Green-tailed towhee	Lincoln sparrow	Brewer's sparrow	Virginia's warbler	Mountain bluebird	Warbling vireo	Red-naped sapsucker	Common trout	Aquatic macro-invertebrates
Medicine Bow Revised Forest Plan Amended MIS List	X	X		X	X	X		X			X						X	
White River Revised Plan Amended List												X	X				X	X
Arapaho-Roosevelt Revised Plan Amended MIS List						X	X	X						X	X		X	
Pike-San Isabel Amended MIS List																	X	
Grand Mesa, Uncompahgre and Gunnison Amended MIS List	X			X							X					X	X	
Routt National Forest MIS Carried Forward from Table 2	X		X	X				X	X	X							X ²	

² This species is the Colorado River cutthroat trout on the Routt National Forest.

Part 4 – Identify MIS Suitable to Address Identified Management Issues

In Part 4 of this process, the 18 MIS species being considered (Table 7) are matched to the six management issues from Part 2 (Table 5) that were determined as appropriate for addressing with MIS. Part 4 will identify which of the potential MIS species are most appropriate to address the associated management issue. Table 8 below is a summary of the management issues that may appropriately be addressed by MIS monitoring and evaluation. Management indicator species on the existing (1997) Routt MIS list that are not associated with a management issue will be recommended for removal from the MIS list because of lack of associated management issue. The management issues that may be better addressed as either an administrative study or other non-MIS monitoring approach (Table 5) will be investigated separately as funding becomes available.

Table 8. Summary of Management Issues

Summary of Management Issues that May be Addressed via MIS for the Routt National Forest	
Management Issue	Recommended Action
Aquatic Habitat Fragmentation	Consider MIS or other monitoring approach
Spruce-fir Timber Management	Consider MIS or other monitoring approach
Lodgepole Pine Timber Management	Consider MIS or other monitoring approach
Rangeland Residual Forage	Consider MIS or other monitoring approach
Herbivory in Riparian Areas	Consider MIS or other monitoring approach
Sedimentation of Riparian Areas and Aquatic Habitats	Consider MIS or other monitoring approach

Aquatic Habitat Fragmentation:

Potential MIS: Species from Table 7 that may be suitable indicators of the aquatic habitat fragmentation management issue include: the **brook trout³, Colorado River cutthroat trout, and aquatic macro-invertebrates.**

Rationale: The species listed above are all important aquatic species that may serve to evaluate the management issue of aquatic habitat fragmentation. The Colorado River cutthroat trout and brook trout are the better indicator of the aquatic habitat fragmentation management issue for the following three reasons:

1. These trout species exhibit seasonal movements that may be useful in determining if fragmentation is an issue in a particular stream.
2. These trout species have been documented to be affected by culvert placement on the Routt National Forest.

³ This species was selected from the list of ‘common trout’ because it is wide spread on the Routt National Forest. Other species of trout such as rainbow and brown trout are very uncommon.

3. Benthic macro-invertebrates are not as mobile as are trout, therefore fragmentation effects are likely to be more difficult to detect in macroinvertebrates and may require a longer period of evaluation. Furthermore, much of the movement by benthic macro-invertebrates is through drift. Therefore, patterns resulting from discontinuities created by culverts may not be manifest in the benthic macro-invertebrates.

Recommendation: **The Colorado River cutthroat trout and brook trout are recommended as the proposed MIS for the aquatic habitat fragmentation management issue.**

Spruce-fir Timber Management:

Potential MIS: Species from Table 7 that may be suitable indicators of spruce-fir timber management issue include: the **American marten, snowshoe hare, three-toed woodpecker, and golden-crowned kinglet.**

Rationale: The species listed above are affected by spruce-fir timber management. The golden-crowned kinglet is a better indicator of the spruce-fir timber management issue for the following four reasons:

1. The golden-crowned kinglet is found almost exclusively in the spruce-fir forest and has demonstrated responses to spruce-fir timber management (Skorkowsky 2003). The other species listed are also found in other forest types such as lodgepole pine. Of the species considered to address this management issue, the golden-crowned kinglet has the highest association to the spruce-fir forest.
2. The golden-crowned kinglet is readily detected and monitored at reasonable expense through point count methodology.
3. The Routt National Forest is participating in a monitoring program that will help yield population density measurements and habitat relationships for the golden-crowned kinglet.
4. The golden-crowned kinglet is more directly associated to the canopy related aspect of the associated issue question than the other potential species.

Recommendation: **The golden-crowned kinglet is recommended as the proposed MIS for the spruce-fir timber management issue.**

Lodgepole Pine Timber Management:

Potential MIS: Species from Table 7 that may be suitable indicators of lodgepole pine timber management issue include: the **snowshoe hare, northern goshawk, and pygmy nuthatch.**

Rationale: The species listed above are affected by lodgepole pine timber management. Although none of the species above have an exclusive association with lodgepole pine cover type, the northern goshawk is a better indicator of the lodgepole pine timber management issue for the following seven reasons:

1. Lodgepole pine is the preferred habitat of the northern goshawk on the Routt National Forest (Beck et al. 2006). The other species listed are also commonly found in other forest types such as spruce-fir. Of the species considered to address this management issue, the northern goshawk has the highest association to lodgepole pine of the species listed.
2. The pygmy nuthatch is uncommon on the Routt National Forest and the frequency of detections would likely impact the ability of this species to serve as a useful MIS for this issue. This species is more highly associated with the ponderosa pine type and rather accidental in the lodgepole pine type.
3. Although the snowshoe hare uses the lodgepole pine cover type, it is most highly associated with early seral lodgepole pine and is much less common in late seral lodgepole pine. This species 'core' habitat tends to be the spruce-fir cover type.
4. The northern goshawk has demonstrated responses to timber management actions (Reynolds 1983, Reynolds et al. 1992).
5. The Routt National Forest has a monitoring program in place for monitoring territory occupancy of the northern goshawk and Region 2 has developed and is implementing a Regional monitoring program.
6. The northern goshawk is considered an MIS on 2 neighboring planning units.
7. The northern goshawk is responsive to timber management at both relatively small and larger spatial scales and is influenced by the pattern of timber management across a landscape (Reynolds 1983, Reynolds et al. 1992).

Recommendation: **The northern goshawk is recommended as the proposed MIS for the lodgepole pine timber management issue.**

Rangeland Residual Forage:

Potential MIS: Species from Table 7 that may be suitable indicators of grazing utilization standards include: the **Brewer's sparrow and vesper sparrow**.

Rationale: The species listed above are affected by residual grass/forb. The vesper sparrow is considered the best indicator of grazing utilization standard issue for the following three reasons:

1. The vesper sparrow is well documented on rangelands of the Routt National Forest and observed at sufficient frequency to expect that reasonable density estimates could be generated through point count methodology.
2. The Brewer's sparrow is uncommon on the Routt National Forest.

3. The vesper sparrow seeks a narrow set of nesting habitat conditions within its nesting range, and subtle changes in these conditions (residual grass and forb cover) can impact essential habitat components (Kingery 1998), making it a strong indicator of grazing management.

Recommendation: **The vesper sparrow is recommended as the proposed MIS for the grazing utilization standards management issue.**

Herbivory in Riparian Areas:

Potential MIS: Species from Table 7 that may be suitable indicators of the herbivory in riparian areas management issue include: the **Wilson’s warbler, Lincoln’s sparrow, and beaver.**

Rationale: The species listed above are affected by herbivory in riparian areas. The Wilson’s warbler is considered the best indicator of the herbivory in riparian areas management issue for the following seven reasons:

1. Wilson’s warbler is well distributed and relatively abundant on the Routt National Forest (Kingery 1998).
2. The Wilson’s warbler has a close association with riparian willow communities and can be influenced by herbivory in riparian areas (Kingery 1998).
3. The Wilson’s warbler is more of a riparian specialist than the Lincoln’s sparrow (Kingery 1998).
4. In addition to the Wilson’s warbler being on the existing Routt MIS list, this species is also on the MIS list of two neighboring planning units, more than any other species considered to represent this management issue.
5. Much of the riparian areas on the Routt National Forest occur at higher elevational areas more characteristic of Wilson’s warbler habitat, as compared to that of the Lincoln’s sparrow.
6. Beavers’ own herbivory is likely to have vastly more significant effects to riparian areas than that of livestock or wild ungulates, and therefore monitoring beaver may not provide insight into the effects of ungulates on the riparian vegetation.
7. Monitoring a songbird species through point transects and distance sampling is anticipated to be less expensive to implement and would work better in conjunction with other monitoring programs such as the Rocky Mountain Bird Observatory Monitoring Colorado Birds Program.

Recommendation: **The Wilson’s warbler is recommended as the proposed MIS for the herbivory in riparian areas management issue.**

Sedimentation of Riparian Areas and Aquatic Habitats:

Potential MIS: Species from Table 7 that may be suitable indicators of sedimentation of riparian areas and aquatic habitats: the **brook trout, Colorado River cutthroat trout, and aquatic macro-invertebrates.**

Rationale: The species listed above are affected by sedimentation of riparian areas and aquatic habitats. The Colorado River cutthroat trout and brook trout are considered the best indicator of the sedimentation in riparian areas management issue on the Routt National Forest for the following seven reasons:

1. The Forest currently has monitoring programs in place for monitoring trout species and is experienced in monitoring this species.
2. Trout populations are affected by sedimentation of riparian and aquatic habitats (Lisle 1989, Marcus et al. 1990).
3. Other species of trout such as rainbow and brown trout are very uncommon on the Routt National Forest.
4. In addition to being on the existing Routt MIS list, trout are also on the MIS list of five neighboring planning units, much more than any other species considered to represent this management issue.
5. Brook trout and Colorado River cutthroat trout are needed instead of the previously single MIS trout species identified (cutthroat), because the management issue is not limited to cutthroat streams and because the effects of sedimentation do not highly differ among trout species. Therefore, monitoring both species will allow for a better assessment of the management issue given the available trout species within a particular stream.
6. Aquatic macro-invertebrates have been used as indicators of water quality and they have been shown to respond to changes in water-quality conditions such as suspended sediment concentration and water temperature. However, given existing Forest trout-habitat data and existing monitoring program on the Routt National Forest and the absence of a substantial dataset or monitoring program for aquatic macro-invertebrates, 'common trout' are more suited as MIS for this management issue on the Routt National Forest.

Recommendation: **The Colorado River cutthroat trout and brook trout are recommended as the proposed MIS for the sedimentation of riparian areas and aquatic habitats management issue.**

Table 9 below is a summary of the species recommended to address the identified management issues currently facing the Routt National Forest. Table 9 includes both species retained from the 1997 Routt National Forest MIS list as well as additions of new species.

Table 9. Routt National Forest MIS List and Major Management Issue

Routt National Forest Management Indicator Species and Major Management Issue		
Management Issue	MIS	Proposed Action
Aquatic Habitat Fragmentation	Colorado River cutthroat trout and brook trout	Retained Colorado River cutthroat trout from 1997 MIS list, expanded to include brook trout
Spruce-fir Timber Management	Golden-crowned kinglet	New addition to MIS list
Lodgepole Pine Timber Management	Northern goshawk	Retained MIS from 1997 list
Rangeland Residual Forage	Vesper sparrow	Retained MIS from 1997 list
Herbivory in Riparian Areas	Wilson’s warbler	Retained MIS from 1997 list
Sedimentation of Riparian Areas and Aquatic Habitats	Colorado River cutthroat trout and brook trout	Retained Colorado River cutthroat trout from 1997 MIS list, expanded to include brook trout

Table 10 is a summary of the species recommended for removal from the Routt National Forest MIS list (1997 revision). Table 11 is a summary of the proposed MIS for the Routt National Forest.

Table 10. Species Proposed for Removal from the MIS List

Common Name	Recommended Action
Common flicker	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Hairy woodpecker	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Red-backed vole	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Pine grosbeak	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Warbling vireo	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Blue grouse	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Beaver	Remove from existing MIS list, not identified as most appropriate MIS for relevant management issue (part 4).
Ptarmigan	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Sagebrush vole	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Brown C. rosy finch	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Elk	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Mule deer	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Blue-gray gnatcatcher	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Green-tailed towhee	Remove from existing MIS list, does not fit identified management issue (part 4).
American marten	Remove from existing MIS list, not identified as most appropriate MIS for relevant management issue (part 4).
Osprey	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Bald eagle	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Greater sandhill crane	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Wood frog	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).
Sharp-tailed grouse	Remove from existing MIS list, not a suitable MIS on the Routt N.F. (part 1).

Table 11. Proposed MIS list

Routt National Forest Proposed MIS List	
Common Name	Scientific name
Golden-crowned kinglet	<i>Regulus satrapa</i>
Northern goshawk	<i>Accipiter gentilis</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>
Brook trout	<i>Salvelinus fontinalis</i>

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APPENDIX B – RESPONSE TO COMMENTS

During the initial scoping period (March 2006), eight comments were received from individuals and organizations, Federal, State, and local agencies. The Interdisciplinary Team reviewed the comments and identified key issues that were used to generate and assess the effects of the alternatives.

On August 14, 2006, the Draft EA (DEA) was available for public review. Interested parties were asked to submit specific comments on the proposed action, along with supporting reasons that the Responsible Official should consider in reaching a decision. During this public comment period four comment letters were received from individuals and organizations, Federal, State, and local agencies. The following section responds to comments received during the 30-day comment period initiated on August 19, 2006.

Letter #	Commenter
1	Intermountain Forest Association
2	Stephen Nielsen
3	Colorado Wild, Center for Native Ecosystems, Rocky Mountain Recreation Initiative, Southern Rockies Ecosystem Project
4	Focused on the Forest, LLC

Letter #1

Comment #1	“The shift from the original thinking to selecting species that are more directly affected by forest management is appropriate... Reducing the list from 24 to 6 is appropriate and will result in more meaningful monitoring and understanding the effects of management issues on wildlife and fish.”
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Response: Thank you for your comment.

Changes to FEA/Project Record: No changes were made to the Final EA (FEA) based on these comments.

Comment #2	“It would be useful in the final EA to clarify if standards and guidelines will be applied to the new MIS. There are no standards and guidelines in the current Forest Plan that address each MIS and none are discussed in the EA... Our concern is that at the project level, standards and guidelines could be applied that aren’t in the Forest Plan or addressed in the EA. For example, a restriction could be placed on silvicultural practices in spruce-fir during the nesting season for the golden-crowned kinglet that could have significant impacts on activities in the summer season. We recommend the final EA address whether additional standards and guidelines will be applied at the project level or whether the purpose of the MIS is strictly for monitoring.”
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Response: The EA states on page 18: “There are no anticipated changes to the goals and objectives, standards, and guidelines of the Routt Forest Plan.” Creating and applying new standards and guidelines specifically for the protection of MIS could actually bias the results of the monitoring. One goal of the MIS monitoring for the Routt National Forest is to determine if the existing Forest Plan direction is adequate, including the existing standards and guidelines. While it is assumed that direction is adequate, monitoring should clarify if this assumption is true. If an inadequacy was detected, a subsequent Forest Plan amendment process would be initiated to rectify the issue.

EA/Project Record: EA: *Affected Environment and Environmental Consequences*, p. 18; p. 20, Proposed Action, first two paragraphs of the Direct and Indirect Effects.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Comment #3	<p>“With brook trout being fairly abundant and adaptive to many different aquatic habitat types, we question whether it is needed as an MIS. It appears it is selected because of problems with culvert placement blocking upstream movement and creating fragmentation. Is that still a potential problem on the RNF? It is our understanding that that issue was addressed years ago. There is a standard in the Forest Plan requiring free movement of all aquatic life now. We would suggest monitoring that through other techniques such as inspections during road construction, reconstruction, and maintenance rather than as part of the MIS process. With standards and guidelines protecting riparian areas and stream flows and the Wilson’s warbler as an MIS in riparian habitats, you may not need the brook trout.”</p>
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Response: The brook trout was selected in conjunction with the Colorado River cutthroat trout to provide insight into the issues of aquatic habitat fragmentation and sedimentation of riparian areas and aquatic habitats (EA p. 15). It was not selected because of problems with culvert placement. This species deals with habitat fragmentation which culvert placement can be a contributing factor. The fact that it is fairly abundant is one characteristic of a good management indicator (EA p. 10 #6). Both the brook trout and the Colorado River cutthroat trout were selected to monitor and evaluate the issues of habitat fragmentation and sedimentation of riparian areas and aquatic habitats because some watersheds on the forest do not contain both species, but usually do contain at least one of these species.

Aquatic habitat fragmentation was identified as a major management issue still facing the Routt National Forest (DEA p. 48, FEA p. 50). Many times this issue is still related to culvert placement. Although road drainage features such as culverts can cause aquatic habitat fragmentation they can also exacerbate erosion and sedimentation problems related to the second major management issue related to aquatic species, sedimentation of riparian areas and aquatic habitats.

While Forest Plan standards now require free movement of all aquatic life, many historic culverts are passage problems or barriers. These culverts were installed before there was a Forest Plan standard and many have been in place for 20 years or more. The Forest currently does not have the budget to replace all culverts with passage problems. Higher priority culverts are being replaced when funding allows.

The second reason that brook trout was selected was to evaluate to the issue of sedimentation of riparian areas and aquatic habitats. In addition to culverts, there are many other activities related to this second issue, including grazing, timber harvest, irrigation ditches, inadequately maintained trails, and recreational activities, that can affect sedimentation of riparian areas and aquatic habitats. This separate issue was determined as most appropriately monitored through the use of the brook trout and the Colorado River cutthroat trout (DEA p. 60, FEA p. 62).

Wilson’s warbler was chosen as an appropriate MIS to address herbivory in riparian areas, and is more specific to riparian vegetation changes rather than sedimentation or aquatic habitat fragmentation (DEA p. 59, FEA p. 61).

EA/Project Record: DEA: pp. 10, 15, 48, 59, and 60; FEA pp. 10, 15, 50, 61, 62.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Letter #2

Comment #1	“Under Part 2 (p.11) is a list of “identified issues.” The issues listed are so vague as to preclude any meaningful analysis and discussion.”
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Response: This portion of the EA outlines the process used and summarizes the results of the MIS analysis. Appendix A shows a detailed account of the process used to review and select MIS, including a description of the criterion, identification of major management issues and challenges facing the Forest, consideration of species on neighboring planning units, and rationale used to match the most appropriate suitable MIS with an associated management issue.

EA/Project Record: DEA: Appendix A, pp. 25-65; FEA pp. 27-67.

Changes to FEA/Project Record: A line of text was added on page 10 to refer the reader to Appendix A to view the MIS review in its entirety.

Comment #2	“Under Part 3 (p.11) the second sentence says, “Management indicators from neighboring units were evaluated.” This evaluation needs to be explained. What is the relationship with the other units, what process was used, what were the results, etc.”
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Response: DEA p. 54 (FEA p. 56) notes that ... “This approach is used because trends in some species populations are more appropriately evaluated at larger spatial and temporal scales, and because coordination of MIS monitoring across Forests may greatly improve our ability to learn both about the species population trends as well as effects from management actions.”

EA/Project Record: DEA: Appendix A, pp. 25-65; FEA pp. 27-67.

Changes to FEA/Project Record: A line of text was added on page 10 to refer the reader to Appendix A to view the MIS review in its entirety, as well as a reference to the page number in Appendix A for each part.

Comment #3	“The MIS Qualification Criteria for the Bald Eagle (p.14) states that the species is rare or difficult to detect. The bald eagle is one of the easiest species to detect, as they are large animals, have distinctive coloration, and build large nests in the tops of broken trees. This incorrect statement discredits the entire process and also the determination that this project does not need an EIS.”
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Response: Criteria #1 reads “species is rare *or* otherwise difficult to detect.” In the case of the bald eagle, the “species is rare” portion of the criteria applies. Rationale for removal from the existing MIS list can be found on DEA p. 40 (FEA p. 42): “The bald eagle is uncommon on the RNF and only occasionally observed on the Forest. The bald eagle is not documented as breeding on the Forest. Because of its rarity, the bald eagle does not make a highly suitable management indicator of mature coniferous forests or open water habitats on the RNF. Without an eagle population to monitor, it is impossible to link population changes to management actions.”

EA/Project Record: DEA: Appendix A, Bald Eagle, p.40; FEA p.42.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Comment #4	“Under Affected Environment (p.18) it states, “There are no anticipated changes to the goals and objective, standards, and guidelines of the Routt Forest Plan.” This statement is not true. By removing all the “threatened, endangered, proposed and sensitive” species from the MIS list in Table 1, Standards 7, 8, and 9 listed on pages 1-14 of the Forest Plan will become irrelevant. The proposed change does affect the Forest Plan Standards.”
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Response: The removal of species from the MIS list does not result in a removal of the species as being listed as threatened, endangered, or sensitive (TES). Species are listed as threatened or endangered by the USDI Fish and Wildlife Service under the authority of the Endangered Species Act and species are listed as ‘sensitive,’ as described in Forest Service policy, by the Regional Forester. This proposed change would not change a species status on these other lists and Forest Plan standards for TES species would continue to apply to these species as well as other species that are considered TES.

The RNF Forest Plan contains 12 Forest-wide standards that pertain to threatened, endangered, sensitive species, (TES) and wildlife (pp. 1-14 and 1-15), including:

Standard 7: Where newly discovered T&E, proposed or sensitive habitat is identified, conduct an analysis to determine if any adjustments in the forest plan are needed.

Standard 8: Manage activities to avoid disturbance to sensitive species which would result in a trend toward Federal listing or loss of population viability.

Standard 9: Avoid disturbing T&E and proposed species (both flora and fauna) during breeding, young rearing, or at other times critical to survival by closing areas to activities.

All such standards that pertain to TES will continue to apply to those TES that are removed from the MIS list, and therefore will remain relevant and constitutes no change to the Forest Plan Standards.

The current Routt MIS list contains 24 species. Fifteen of the species that would be removed as MIS under this proposal do not appear on the Region 2 sensitive species list. As stated on p. 21 of the EA, the bald eagle, a federally threatened species, and four Region 2 sensitive species (ptarmigan, American marten, wood frog, and Columbian sharp-tailed grouse) would continue to be managed as such and addressed in all projects through the Biological Evaluation and or Assessment process as described in the Endangered Species Act and FSM 2670. The Colorado River cutthroat trout and northern goshawk remain on the proposed MIS list and are also classified as ‘sensitive’ species.

As stated on p. 22 of the DEA (FEA p. 21), analysis of all Federally-listed, proposed, candidate, and Region 2 sensitive species would continue prior to any future project implementation through preparation of biological assessments and evaluations, as described by agency manual direction (FSM 2670). Implementation of this alternative would have no effect on Federally-listed, proposed, candidate, or sensitive species because no changes would occur in management direction, commodity outputs, or analysis of these species, and no ground-disturbing actions would result due to a decision to change the MIS list.

EA/Project Record: EA: Proposed Action, Direct and Indirect Effects, pp. 21-22.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Comment #5	“Under Environmental Consequences (p.18) it states, “There are no anticipated indirect or cumulative environmental effects that would result from the proposed change. The proposed action is an administrative change to the MIS that would be monitored as necessary to determine forest-wide population trend and clarify the associated major management issue facing the Forest.” If there are no impacts, why will the change be monitored? What species will be monitored? Many of the species listed in Table 3 state that they are rare or difficult to detect. How will these be monitored, considering the above quoted statement?”
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Response: The monitoring proposed pertains to the proposed Management Indicator Species rather than the administrative change (EA p. 19). There is no proposal to monitor the administrative change. While current Forest Plan standards and guidelines are anticipated to adequately meet the needs of native species and desired non-native species populations, the intent of monitoring is to evaluate if this assumption is true. An MIS program that focuses monitoring on questions specific to management issues should more readily detect if the existing Forest Plan direction is effective in maintaining MIS populations. Inadequacies in the Plan guidance, should they exist, will be more quickly detected and corrected (through a subsequent amendment) with the use of more effective MIS. This could reduce the potential for continued project implementation to cumulatively affect species through inadequate Forest direction.

Through the Routt National Forest MIS program, the species identified as MIS in the proposed action would be the species that would be monitored (EA p. 10, table 2).

While the Forest is not required to monitor all species, most of the species identified as rare or difficult to detect are monitored through other existing monitoring programs. The pine grosbeak, brown-capped rosy finch, and blue-gray gnatcatcher are monitored through the Rocky Mountain Bird Observatory Monitoring Colorado Birds Program. This program is a partnership project that the Medicine Bow-Routt National Forest actively participates in. Ptarmigan, osprey, bald eagles, and sharp-tailed grouse are monitored by the Colorado Division of Wildlife. The wood frog is monitored by the Routt National Forest aquatic species program. These monitoring programs are planned to continue to clarify the population status of most of these species classified as rare or difficult to detect.

EA/Project Record: EA: pp. 10 and 19.

Changes to FEA/Project Record: Clarification was made on page 19 that the proposed action is an administrative change to the MIS list, and that the species on this proposed list will be monitored.

Comment #6	<p>“The proposed amendment shows a list of 24 different species being replaced by only six species. The new list is comprised of four birds and two fish. MIS means that those species are also representative of the viability of other species. The old list contained six mammals and one amphibian. It needs to be explained how the new list of MIS, which contains no mammals or amphibians, can be indicators for the wide range of animals that inhabit the RNF. In addition, there are several rare or T&E species on the old list. It needs to be clearly explained that eliminating those species from the new list will not in any way contribute to their being classified as being negatively affected, which would further imperil their viability.”</p>
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Response: The purpose and need of the proposed action is not to have a list of MIS representative of all major habitat complexes and the habitat needs for the majority of species inhabiting the Routt National Forest, rather that is the intent of Alternative 1. Instead, the proposed action follows the Region 2 direction for selecting MIS and these species were identified to help answer specific questions regarding major management issues facing the Forest (EA p. 17). MIS direction does not require the inclusion of particular taxa such as mammals, birds, or amphibians, or species representing all ecosystems or forest cover types (EA p. 7).

While rare species often have a heightened status for evaluation and management and show up on various lists such as the USFWS T&E list or the Regional Forester’s Sensitive species list, such lists are based on species rarity and/or vulnerability. Status on these other lists is independent of and not affected by the species’ status as an MIS. The EA states on page 21 that “species viability would not be affected if a particular species is or is not on the MIS list.” NFMA does not require that species listed as T or E be an MIS (EA p. 7).

The DEA states on p. 22 (FEA p. 21), analysis of all Federally-listed, proposed, candidate, and Region 2 sensitive species would continue prior to any future project implementation through preparation of biological assessments and evaluations, as described by agency manual direction (FSM 2670). Implementation of this alternative would have no effect on Federally-listed, proposed, candidate, or sensitive species because no changes would occur in management direction, commodity outputs, or analysis of these species, and no ground-disturbing actions would result due to a decision to change the MIS list.

EA/Project Record: DEA: pp. 7, 17, 21, and 22; FEA pp. 7, 17, 21.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Letter #3

<p>Comment #1</p>	<p>“The Routt Forest Plan was prepared under the 1982 Planning Regulations. Under these regulations, the Forest Service clearly has the responsibility to designate management indicator species and track their populations and trends. 36 CFR 219.19(a)(1982). Part 2 of the process used to develop the proposed amendment attempted to determine “whether specific questions could most efficiently answered through MIS monitoring or another monitoring approach”. DEA at 11. Other possible monitoring approaches are vaguely identified (“administrative study, research question, or other non-MIS monitoring approach”) in the analysis of “major management issues and challenges”. DEA at 44 et seq. However, these non-MIS monitoring methods “are not considered part of the proposed action... but rather retained as recommended actions to take as funding becomes available”. DEA at 11. The result of the analysis is a recommendation to have a list of only six MIS species for the RNF, with no additional monitoring of any kind required.</p> <p>In other words, the proposed amendment would substitute a meager MIS list and indications of studies to possibly be done when/if money becomes available for the existing, and much more thorough, MIS monitoring program. MIS monitoring must be done under the Planning Regulations, but other monitoring is not required. As a result, there will be much less monitoring of wildlife species and resulting effects of management and natural forces if the amendment is approved. This is unacceptable.</p> <p>If the RNF insists on eviscerating its MIS program, it must, at a minimum, require, not just propose, other monitoring.”</p>
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Response: Issues identified that were determined more appropriate for evaluation through an administrative study, research question, or other non-MIS monitoring approach were typically put into that category because of two reasons: 1) the question could be answered through monitoring that does not require determination of species population trend at the scale of the planning unit (as is required for MIS monitoring), and/or 2) the question could be answered relatively quickly and would not necessarily require continued monitoring over the life of the Forest Plan.

Some of the questions associated with management issues could be answered through small scale focused administrative studies conducted over a shorter period of time. This would allow for a more rapid and cost effective determination of a need to change Forest Plan direction. This would allow for a more prompt resolution to a given issue and allow limited funds to be available for other issues (EA p. 21).

For example, identifying a MIS species for the coarse woody debris issue would require determining the species population trend at the planning level. A species such as the red-backed vole is highly related to levels of coarse woody debris, but determining if the current Forest Plan direction is adequate could be achieved without determining red-backed vole population trend at the planning level. Rather, an experimental design developed over a much smaller spatial scale would provide inference to the larger unit (EA p. 21). Additionally, an administrative study on the coarse woody debris issue would allow for many other approaches such as a literature review of the existing vast amount of knowledge on the relationships of species, such as red-backed voles or amphibians, to coarse woody debris. This approach would help ensure that other species would be also considered in the process of evaluating if the current plan standards for coarse woody debris are appropriate for wildlife.

The Routt National Forest does have other wildlife-related monitoring requirements that are specified in the monitoring section of the Forest Plan (Forest Plan, p. 4-4, Table 4-2, items 1-6, 1-7, and 1-9). The Forest also has an excellent track record of supporting and implementing administrative studies, permitting research studies, and conducting other monitoring approaches that are not required monitoring. These monitoring approaches are regularly mentioned in the annual monitoring report prepared for the Forest Plan. While these other monitoring approaches are not required by law or a NEPA decision notice, they are regularly and consistently accomplished by the Forest.

Some examples of these types of projects include:

- 1998-1999: Partnering with the US Forest Service Research Station to evaluate the effects of the blowdown to small mammals (directly related to coarse woody debris and red-backed voles). This project has contributed to clarifying the identified issue relating to ‘coarse woody debris.’
- 1998-present: Partnering with the University of Wyoming (1998-2002) to monitor boreal owl populations through nest box monitoring in order to evaluate habitat use and the effects of the blowdown on the boreal owl. This monitoring has continued to present by the Routt National Forest, and in 2005 and 2006 much of the monitoring was accomplished in partnership with the Yampa Valley Birding Club.

- 1998-2002: Partnered with Colorado State University to evaluate the effects of the blowdown and salvage logging on the songbird community. Graduate research project.
- 1998–present: Partnered with the Rocky Mountain Bird Observatory and other agencies in the Monitoring Colorado Birds Program. The Forest directly contributes to this program on an annual basis and extensive field work is completed on the Routt National Forest in the implementation of the program.
- 2000-present: Partnered with Colorado State University to determine snowshoe hare habitat relationships for the Routt National Forest. Graduate research project. This project is contributing to clarifying the identified issue ‘influence of management actions on prey populations.’
- 2002-2005: The Forest funded a partnership project with Wyoming Natural Diversity Database to model and map the location of fens on the National Forest in an effort to develop the baseline of information needed mentioned in the identified issue ‘fen and bog management.’
- 2004-2006: The Forest funded a partnership project with Wyoming Natural Diversity Database to study snow compaction to develop a baseline inventory to be followed by a more comprehensive snow compaction evaluation.
- 2004: The Forest completed an ‘in-house’ administrative study on the relative abundance of woodpeckers on the Gore Pass Geographic Area. (Rock Creek EIS).
- The Forest has been monitoring other species such as American marten through extensive snow tracking efforts as well as winter bait camera stations (Bark Beetle EIS).
- The Forest has supported research proposals developed to evaluate snow compaction and subnivalian space (2004, 2006).
- Management issues such as snow compaction and access to competing carnivores are currently being evaluated by Forest Service Research Station and others (Bunnell et al. 2006). Answering the question associated to this specific issue can be transferred from similar areas where this type of research is currently being conducted.

EA/Project Record: EA: p. 21

Changes to FEA/Project Record: Additional clarification has been added to the FEA on pages 21-23.

Comment #2	<p>“The MIS program should include species for the major ecological types present on the Routt. The proposed amendment would change the approach used to select MIS away from selecting species to represent major ecological types on the Forest. DEA at 7. We believe this should not be done.</p> <p>Major changes are occurring in the lodgepole pine and Englemann spruce-subalpine fir types because of bark beetle outbreaks. We believe it would be valuable to monitor populations of species like boreal owl, marten, and northern three-toed woodpecker to assess the changes in populations of these species over time. Noting these changes would help inform proposed management. For example, if populations of one or more wildlife species dependent on late-successional conifer habitat had declined significantly, it would be ill-advised to significantly alter any habitat for these species in remaining live conifer stands. Without monitoring, the Forest Service might not be aware of the magnitude of the decline of these and other species.</p> <p>We are not completely opposed to the approach used to select MIS in the proposed amendment – tying MIS to management issues. Indeed, there is some overlap of these approaches in the proposed new MIS list, e. g., in selecting trout (aquatic habitat dependent; addresses aquatic habitat fragmentation and stream sedimentation) and golden-crowned kinglet (mostly resides in spruce-fir; addresses spruce-fir management). But as we argue in section III below, we believe this approach has been inappropriately applied to unjustifiably eliminate too many species from consideration as MIS. The two approaches – ecological type representation and management issues - could be combined to produce a reasonable MIS list.”</p>
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Response: The evaluation of retaining species to represent all ecological types is presented in the EA as Alternative 1 (EA p. 8).

The issue of bark beetles affecting the lodgepole pine and spruce forest cover types is highlighted in the major management issue ‘distribution and abundance of late seral forests’ (DEA p. 50, FEA p. 52) and also these two forest types are considered as major management issues facing the forest in relation to timber management and were selected for MIS monitoring (DEA p. 49, FEA p. 51). These issues include ‘spruce-fir timber management’ and ‘lodgepole pine timber management.’ Often, the concern is over the Forest’s timber management response to the bark beetles as related to its effects on wildlife rather than the natural disturbance process itself. Focusing the MIS monitoring on our timber management in these cover types is exactly what the MIS proposed action does. The issue regarding the distribution and abundance of late seral forests and the recommendation to focus it on the forest vegetation management was thoroughly discussed among biologists on the Forest as a result of your comment.

Pandemic bark beetles were anticipated to affect all of the late seral spruce on the Routt Forest and 50% of the high hazard lodgepole and 25% of the moderate hazard lodgepole (US Forest Service 2002 Bark Beetle EIS). More recent analyses have estimated greater losses in the lodgepole pine, specifically 90% of the high hazard stands and 50% of the moderate hazard stands (US Forest Service 2003, Green Ridge Mountain Pine Beetle Analysis). Recent monitoring of beetle infestations does indicate that most late seral lodgepole pine may be affected by mountain pine beetle activity, however the spruce bark beetle epidemic shows a slowing trend that may indicate less of an impact than originally anticipated. The Williams Fork portion of the Arapaho Roosevelt National Forest covered under the Routt National Forest plan and included in this analysis is also experiencing similar mortality in late seral lodgepole pine.

Currently there are 281,692 acres of late seral lodgepole pine and 237,385 acres of late seral spruce-fir on the Routt National Forest. Sixty-two percent of the late seral spruce-fir forest and 51% of the late seral lodgepole pine forest is located in roadless areas and or wilderness areas on the Routt Forest that are well distributed across the Routt National Forest. Since a primary concern relating to the issue of abundance of late seral forest is typically the forest vegetation management actions occurring in late seral forests, it was thought to be more appropriate to consider an MIS for the issues related to ‘lodgepole pine timber management’ and ‘spruce-fir timber management’ as those issues are directly related to our management actions that can be more effectively controlled through guidance provided in the Forest Plan. The issue of the distribution and abundance of late seral forests is largely driven by natural disturbances such as the ongoing epidemic bark beetle outbreaks which are for the most part beyond the control of the National Forest.

All passerine bird species including the American three-toed woodpecker would be monitored in addition to the identified MIS songbirds as a result of the proposed sampling approach for MIS songbirds. This, in addition to the Monitoring Colorado Birds Program partnership program with the Rocky Mountain Bird Observatory would provide strong population monitoring of the American three-toed woodpecker. Also as mentioned in the response to Comment #1 for Letter #3, the Forest has been and is planning on continuing to monitor boreal owls, American marten, and woodpeckers.

The American three-toed woodpecker was considered in detail in the analysis and has been used as a ‘surrogate’ MIS in project level analysis (US Forest Service 2002, Bark Beetle EIS). The Bark Beetle EIS provides a thorough examination of this species suitability as a management indicator and uses it as such. However for Forest level monitoring of management issues that are within the control of the Forest Service (as opposed to the project level analysis presented in the Bark Beetle EIS), it was decided that since this species has cyclical population responses that are driven by natural disturbance, monitoring the species would not inform the Forest how to change its management. The American three-toed woodpecker populations are increasing across the planning area as habitat increases with the spread of the bark beetle epidemic and will continue to do so until the epidemic is finished and then the population will decline as its population is driven more by availability of insect forage than by snags. It is not apparent how monitoring this trend can inform our management in relation to an issue that is largely beyond the management control of the Forest Service.

Because the proposed action focuses MIS selection and monitoring on species that respond to management activities, selecting a species such as the American three-toed woodpecker does not meet this objective.

Like the American three-toed woodpecker, the boreal owl (as a surrogate MIS) and the American marten have also been used as indicators in project analyses related to management of bark beetles (US Forest Service, 2002, Bark Beetle EIS). The American marten was considered in detail as described in the EA, Appendix A and Appendix B. Monitoring programs for martens and boreal owls were subsequently established and have been implemented at the project level for implementation 2002 Bark Beetle EIS projects. A boreal owl nest box program, involving several hundred owl boxes, was started in 1998 and continues to the present. Marten have been monitored in some areas through a snow track transect and baited camera stations approach that has been implemented intermittently as required in the Bark Beetle EIS and blowdown salvage logging EIS. These monitoring programs are anticipated to continue as specified in the associated NEPA document and decision.

The boreal owl was not considered in this analysis because it was not listed as an MIS on the existing MIS list or found on a neighboring planning unit as outlined in the process described in Appendix A. This species has been used as a surrogate MIS during project level NEPA (US Forest Service 2002, Bark Beetle EIS). The Bark Beetle EIS predicts that the Forest population of the boreal owl is anticipated to decline with loss of mature spruce trees. As with the American three-toed woodpecker, this is anticipated to be a normal population response to a natural disturbance event and with the boreal owl, it too is not apparent how monitoring this trend would result in changes to our Forest Plan or management in relation to an issue that is largely beyond the management control of the Forest Service. Subsequent monitoring has demonstrated that even with establishment of hundreds of nest boxes across the Forest, it is difficult to get an adequate number of nesting boreal owls to allow for an estimate of population and trend. Based on the existing monitoring and improved understanding of MIS, this species is not a suitable MIS as its species characteristics match criteria 1 and 3 as described in the Appendix A process.

The reason an administrative study, research question, or other non-MIS monitoring approach is recommended for the issue of distribution and abundance of late seral forests is clarified in the DEA on page 50 (FEA p. 52). Non-MIS monitoring approaches are often more short-term and allow for a more rapid conclusion regarding the issue. A rapid conclusion regarding the issue for the distribution and abundance of late seral forests is much more important than engaging in a long-term monitoring project for a single species. Such analyses, coupled with our proposed MIS monitoring in the lodgepole and spruce-fir cover types as well as other species monitoring that is occurring, will effectively address this issue.

A guiding principle developed by the Region to consider in the selection of MIS species is to ‘choose an adequate but limited number of species’ (DEA p. 26, FEA p. 28). The Regional direction on MIS was the basis for the development of the proposed action. The Forest considered this guiding principle in conjunction with the existing budgetary limitations and in consultation with the biologists on the Forest. The biologists were able to help estimate costs for determining population trend at the planning level for different species and this information was used in conjunction with Regional direction and budgetary limitations to determine that 6 species was ‘adequate’ for the Routt National Forest.

EA/Project Record: DEA: pp. 8, 26, 49, and 50; FEA pp. 8, 28, 51, 52. Project Record: Forest Plan monitoring reports from 2005 and 2006.

Changes to FEA/Project Record: Additional clarification has been added to the FEA on pages 22-23.

Comment #3	<p>“Criteria for including or excluding species from MIS designation are inappropriately applied. DEA p. 10 lists five criteria for determining that species are not appropriate as MIS. These criteria include:</p> <ul style="list-style-type: none"> • Species whose populations are significantly influenced by factors beyond the control of land managers. • Species that do not clearly respond to management actions. DEA at 10. <p>Strictly applied, these criteria could be used to eliminate almost all species from consideration as MIS. Indeed, the proposed amendment nearly does that, by reducing the MIS list from 24 species to just five. But we believe it would be a good idea for the Routt to track populations of some of these species, as the cumulative impacts from management actions and other factors could be devastating to local populations of some species.</p> <p>A good example is the current bark beetle mortality affecting various species. Habitat for these species is being changed, and in some cases eliminated, by bark beetle mortality. Management actions, such as large-scale logging (e.g., projects like Rock Creek), may increase or accelerate the destruction or degradation of habitat for some species. Particularly, northern three-toed woodpecker, which consume large numbers of bark beetles, could be harmed by logging if nest trees and/or a large number of trees infested with bark beetles or borers are removed. Even though this species might be more influenced by events outside the land manager’s control, it might still be affected by management activities. Note that under the Planning Regulations, plant and animal species can be selected as MIS “because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities...”. 36 CFR 219.19(a)(1)(1982).</p>
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	One criterion for “determining that species are more suitable as MIS” is “[s]pecies that are relatively common, easy to detect and monitor”. DEA at 10. Species need to be detectable to be monitored, but if they are extremely common, it probably means that they are generalist species with a wide range of tolerance for various habitats and conditions. It is unlikely that any management actions would significantly affect populations of such species. Thus for MIS that are very abundant, monitoring them won’t provide very much useful information about the effects of management.”
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Response: In order to make use of Forest population trend data in determining if Forest Plan direction is adequate, the species that is monitored must clearly respond to management actions and not be significantly affected by factors beyond the control of the Forest land managers. Without these criteria for suitable MIS species, changes in populations, whether stable, increasing or decreasing, would be extraordinarily difficult to relate to causes found in Forest Plan direction. To achieve such a goal would require a much broader monitoring program than one confined to a single National Forest in order to account for all the variables that may be affecting a species population. Broad scale monitoring programs are in place, for example, through the Monitoring Colorado Birds Program and the National Goshawk Monitoring Program, Forests are alerted to changes in populations across large geographic areas (for example, Colorado).

The analysis of the effects to species like the American (northern) three-toed woodpecker are addressed in project level analyses because this species is classified as a Sensitive species and as such would be addressed in a Biological Evaluation prior to issuing a decision regarding implementation of the project (DEA p. 22, FEA p. 21). With the Rock Creek project, the Forest conducted an administrative study of the relative abundance of woodpeckers in the Gore Geographic Area to provide a necessary baseline for evaluation in the development of the project. This species was also extensively discussed in the Bark Beetle EIS (2002) in regards to that proposed bark beetle management. This existing level of review for these projects, coupled with ongoing monitoring of this species in partnership with the Rocky Mountain Bird Observatory MCB program and the additional data gained for this species through the Forest’s regular MIS songbird monitoring experimental design, will provide monitoring data and effects analyses for this species.

While some species that are relatively common and easy to detect and monitor are generalists, this does not hold true for all species. The golden-crowned kinglet, Wilson’s warbler, and the vesper sparrow are excellent examples of relatively common, easy to detect and monitor species that are habitat specialists (DEA pp. 34, 36, 57; FEA pp. 36, 38, 59).

EA/Project Record: DEA: pp. 22, 34, 36, and 57; FEA pp. 21, 36, 38, 59.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

<p>Comment #4</p>	<p>“Additional species should be MIS. We reiterate our discussion of individual species that should be MIS from our April 17 scoping comments. See sections III and IV of those comments. Below we reiterate a few important points.</p> <p>The species proposed for the new MIS list, though the list itself is woefully insufficient, are acceptable to us, except that golden-crowned kinglet is not the best indicator for spruce-fir management, or at least should not be the only species selected for this, as it is “fairly non-specific in its requirements, needing only dense, shrubby undergrowth”. Forest Plan FEIS at J-23. It uses a wide variety of habitats”, including woodland thickets, riparian woodlands, willow thickets, and montane coniferous scrub. Id.</p> <p>We also note that one of the justifications for selecting golden-crowned kinglet over other species to indicate the effects of spruce-fir management is that the kinglet is “readily detected and monitored at reasonable expense through point count methodology”. EA at 57. However, this methodology indicates presence or absence of a species; it cannot be used, by itself, to determine population size or trend.</p> <p>The other three species listed as possible indicators for spruce-fir management, snowshoe hare, marten, and three-toed woodpecker, should all be MIS. See our scoping comments for further discussion. They are more appropriate as an indicator for spruce-fir management than is golden-crowned kinglet, as they all have relatively narrow habitat niches. Hare needs young conifer, which is often destroyed during logging. Marten needs piles of down dead wood and snags, both of which are usually removed or adversely altered during logging. Three-toed woodpecker is most often found in spruce-fir forests.</p> <p>We are pleased to see goshawk retained on the proposed new MIS list. It is a good indicator for mature, interior forest, and does show a response to logging.</p> <p>Beaver should be an MIS. This species provides ecological benefits unlike any other aquatic species. Its habitat and populations are likely to be affected by livestock grazing in riparian areas.</p> <p>As we discussed in our scoping comments (p. 3), we believe Colorado River cutthroat trout is a much better indicator than brook trout because the former is much more sensitive to changes in stream conditions.</p> <p>At least one plant species should be an MIS. One or more non-native, noxious weeds would be appropriate as MIS, as monitoring of their populations would indicate the success (hopefully; otherwise the lack thereof) of the Routt’s efforts to reduce and eradicate these plants.”</p>
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Response: The golden-crowned kinglet is specific in its habitat requirements. The reference cited in Appendix J of the Forest Plan is older information stemming from one source. This species has a high association with mature spruce-fir forests and in particular they are highly associated with the live foliage of trees (Kingery 1998). The species has demonstrated responses to spruce-fir timber management and the species density can quickly be assessed through distance analysis following data collection associated with ‘point count’ approaches (DEA p. 57, FEA p. 59, and Skorkowsky 2003). This species’ high association with the canopy of the spruce-fir forests was considered in light of the impending bark-beetle epidemics and timber management actions that affect spruce-fir forest canopy density.

The term ‘point count’ is often used to refer to a variety of bird monitoring techniques. The Routt National Forest and the songbird monitoring aspect of the Monitoring Colorado Birds partnership program with the Rocky Mountain Bird Observatory uses ‘point counts’ or more specifically distance sampling from point transects to determine not simply presence or absence, but rather very specific density estimates for individual species.

The golden-crowned kinglet is more specifically associated with spruce-fir than snowshoe hare, marten, or three-toed woodpeckers. These species regularly use other cover types. The snowshoe hare are clearly associated with early seral lodgepole pine, marten are also found in lodgepole pine and riparian woodlands; and, three-toed woodpeckers are found in recently disturbed forested lands such as recent wildfires or bark beetle outbreaks, irrespective of tree species. Of these 4 species the golden-crowned kinglet has the most specific habitat association with mature spruce-fir forests (DEA p. 57, FEA p. 59).

Beaver is considered in the analysis in Alternative 1 (EA p. 9). This species was also identified as potentially suitable as an MIS in part 1 of the evaluation process (DEA p. 33, FEA p. 35). The species did not however align suitably with a major management issue facing the Forest that could suitably be addressed through MIS monitoring (part 4). The closest issue is ‘herbivory in riparian areas’ and this species could be a suitable indicator like the Wilson’s warbler for this issue. This has been clarified in Appendix A of the Final EA. In considering this species as suitable for this issue, primary factors would include how to monitor forest-wide population trends of this species as well as the associated cost and relative ease, and also how the species indicates riparian areas as compared to influences them.

Both the Colorado River cutthroat trout and brook trout were selected as MIS species, because the cutthroat is not found in many of the watersheds on the forest and is only native to the western slope portion of the forest. Adding the brook trout allows the forest to monitor the effects of aquatic habitat fragmentation and sedimentation of riparian areas and aquatic habitat management issues to trout regardless of which species is present in a particular watershed (DEA p. 60, FEA p. 62).

Plants, specifically aspen, were considered during the analysis process. Aspen was discussed in relation to the aspen forest management issue. However, noxious weeds were not considered as an MIS on a neighboring planning unit (Part 3, DEA pp. 54-55, FEA pp. 56-57) and did not align with any existing major management issues identified in part 4 of the species evaluation process (DEA pp. 56-60, FEA pp. 58-62). Noxious weed are however managed and monitored and species are tracked, to determine if treatment is effective in achieving their elimination. This information is contained in the Forest’s databases, and highlights of this are mentioned in the Forest’s annual monitoring and evaluation report.

EA/Project Record: DEA: pp. 9, 33, 54-60; FEA pp. 9, 35, 56-62. Project Record: White papers version 2-7; draft Medicine Bow-Routt National Forest Songbird MIS Monitoring Protocol.

Changes to FEA/Project Record: Added beaver as possible species to consider for the ‘herbivory in riparian areas’ management issue on Page 61 of the FEA.

Comment #5	<p>“Conclusion. The proposed MIS list is unacceptable. It is too small to sufficiently monitor wildlife and their response to management and natural forces, the combined effect of which could lead to major changes in habitat and populations for some resident species on the Routt National Forest. The MIS list should be greatly expanded, as discussed herein and in our (incorporated) scoping comments. It should, but does not, include any plants.</p> <p>If a very insufficient list similar to the one proposed in the DEA is approved, the Routt must also require other monitoring to address management issues and the effects on various ecological types.”</p>
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Response: Alternative 1 in the EA presents a larger list of MIS (EA. p. 9). It is not the intent of the proposed action to monitor all wildlife and their response to management and natural forces. Rather, the proposed action focuses on monitoring specific species that are considered useful to monitor in order to evaluate particular ‘major management issues.’ NFMA does not require the inclusion of specific taxa such as birds or plants, or categories such as threatened, endangered, or species commonly hunted fished or trapped (EA p. 7). Plants were considered in earlier versions of the analysis; however, in the end, specific plant species were not most suitably aligned with the process for identifying the proposed list of MIS.

The Medicine Bow-Routt National Forest(s) has an effective track record for completing monitoring that is important but not necessarily required (see response to Letter #3 Comment # 1). Thus, there is no reason to suspect that the Forest would not also work to follow through on the currently proposed non-MIS monitoring approaches in Appendix A of the DEA as funding and budgets allow.

EA/Project Record: EA: pp. 7, 9. Project Record: white papers version 2-7.

Changes to FEA/Project Record: Additional clarification has been added to the EA on pages 22-23.

Letter # 4

Comment #1	“...we are concerned about the removal of the only amphibian from the list. It is our impression from the reading we have done and the wildlife officials to whom we have spoken that amphibians are the “canaries in the coal mine” for ecosystems. Our concern about the removal of the only amphibian was enhanced by the fact that the wood frog is a Region 2 Sensitive Species, indicating your own staff recognizes the importance of this species.”
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Response: The inclusion of the wood frog was considered in Alternative 1 (EA p. 9). The species was not carried forward in the proposed action because it met criterion 1 and 2 that are characteristics of a species that is not highly suitable as an MIS (DEA p. 41, FEA p. 43). The wood frog is still monitored through the Forest’s aquatics wildlife program (see response to Letter #3 Comment #1) and its status as sensitive would not be changed with removal from the MIS list (also see response to Letter #2 Comment #4). This species however does not align in the proposed action as a highly suitable indicator of Forest management actions related to major management issues that could be addressed through MIS monitoring. Amphibians are highly susceptible to issues such as global warming and ozone depletion (EA p. 9) and these species do act as ‘canaries in the coal mine’ for these issues. However, the cause of such issues is not rooted in Forest Plan direction and is well beyond the scope of this analysis.

EA/Project Record: DEA: pp. 9 and 41; FEA pp. 9 and 43.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Comment #2	“The EA indicates that you have chosen your MIS list to include only species that can be readily monitored, can give feedback on management issues, and are not overly influenced by factors outside management control. While we can appreciate the management efficiency of these criteria, we feel they result in a much too narrowly focused MIS list.”
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Response: See comment response for Letter #3, Comment #2, last paragraph and comment response for Letter #3, Comment #3, first paragraph.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Comment #3	<p>“In our view, the USFS is responsible for the long-term health and welfare of the renewable resources that are our national forests. As both taxpayers and timber professionals, we have a vested interest in the responsible management and wise use of the resources on our national forests, especially the RNF. If USFS management is focused only on what is currently within the sphere of understood problems, the forests of the future could be jeopardized by what is not within view. Retaining species who are highly sensitive seems necessary to indicate the longer term, larger scale, and emerging threats to our national forests that are not currently management issues.”</p>
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Response: Assessing threats that are not current management issues is not the basis of the proposed action or the purpose of MIS monitoring as clarified by Region 2 Forest Service office (EA pp. 10-16 and DEA pp. 25-26, FEA pp. 27-28). Other aspects of Forest Service research and monitoring, separate from the MIS program, may help alert Forests to upcoming issues. Additionally, the Forest Service is involved in monitoring and managing sensitive species and that is in essence the purpose of the Regional Forester’s sensitive species list. Changes to the MIS list will not change the existing sensitive species emphasis on the Forest or in the Region. Also see response to Letter #2, Comment #4.

EA/Project Record: DEA: pp. 10-16, pp. 25-26; FEA pp. 10-16, pp. 27-28

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.

Comment #4	<p>“In sum, the Proposed Action could have significant adverse impacts on the RNF. The threats that are missed by too narrowly defined an MIS list could jeopardize the future of the forest. As the Forest Plan is up for revision soon, we recommend adopting Alternative 1, the No Action Alternative, and reviewing MIS needs when the Forest Plan is revised.”</p>
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Response: The analysis of effects in the EA does not conclude that the proposed action would have significant adverse impacts to the Routt NF. In fact, it concludes quite the opposite - that there would be no direct impacts, with potential for a reduction in indirect cumulative impacts (DEA p. 22, FEA p. 23). Routt MIS monitoring is not intended as the single method of determining conditions on the Forest or emerging threats, but is simply one tool that the Forest Service uses to gauge adequacy of Plan direction. Other monitoring and research by the Forest Service, outside partners, and independent organizations all contribute to the body of knowledge that the Forest may draw on to proactively manage for emerging threats.

When the Forest Plan is revised it would be revised under the 2005 NFMA regulations and follow the process outlined in those regulations for considering MIS (EA p. 3)

EA/Project Record: DEA: p. 3, pp. 20-22; FEA p. 3, pp. 20-23.

Changes to FEA/Project Record: No changes were made to the FEA based on these comments.